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BAFFIN ISLAND CARIBOU SURVEY

with

population estimates and recommendations

1949.

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BAFFIN ISLAND CARIBOU SURVEY:

NARRATIVE

The Baffin Island caribou survey party, code-named "Operation Frobisher", left Rockcliffe Airport, Ottawa, at 11:30 on the morning of April 5. Transportation was by a ski-wheel-equipped Dakota aircraft with a long range gas tank installed in the fuselage (Figs.7 and 11). Included in the party were four R.C.A.F. officers - pilot, co-pilot, navigator and wireless operator - four R.C.A.F. crewmembers to service the aircraft, two fieldmen of the Geodetic Survey and the Wildlife Observer.

The flight to Goose Bay, Labrador took 5 hours and 40 minutes, for the most part at altitudes of 5000 to 7000 ft. with excellent visibility. There was considerable snow cover at Goose Bay but the runways were clear, and water on the roads indicated thawing through the day. The observers were provided with comfortable quarters for the night in the R.C.A.F. Officers' quarters.

The flight north was resumed the next day, the direct flight from Goose Bay to Frobisher Bay taking five hours and twenty-five minutes. The magnificent rugged coast of Northern Labrador was visible for a considerable time (Figs.3,4 and 5), but cloud conditions were encountered from south of Hudson Strait to Frobisher Bay. Although visibility was poor at Frobisher Bay the aircraft got in without difficulty.

Frobisher Bay was found to be a comfortable station although cold (Figs.8,12 and 13). Although there was no evidence of thawing, there was less snow than at Goose Bay on account of lighter precipitation (Fig.20). Outdoor temperatures

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ranged from -18°F at nights to 12°F during the day while "Operation Frobisher" was based there. The buildings were well heated and comfortable at all times. American tastes in recreation were evident. A large area was bull-dozed free of snow and parka clad men played baseball on it frequently, movies were shown almost nightly and the mess was complete with a large pin-up girl and a juke-box which played continuously.

On April 7 the first caribou survey flight was made. The flight lasted for some five hours, covered approximately 750 miles and was flown at altitudes of 200 to 1000 feet.

On April 8 short flights of two hours each were made in the morning and afternoon for purposes of test-landing the aircraft on skis and for laying an experimental point "target" for the Geodetic Survey.

On April 9 an eight-hour survey flight was made northward covering approximately 1200 miles. On this flight, as on the others, the vastness of Baffin Island as seen from the air, created a deep impression. In places the country would appear as flat as a table top for up to a hundred miles with scarcely a hill, valley or rock to break the solid snow cover. Here the aircraft could be flown in safety at altitudes of 200 feet and less. In other places gently sloping hills and valleys, sometimes with uncounted lakes, would extend as far as the eye could reach in all directions; in still other places great ravines, fiords and mountains would break the country so that the aircraft would be skimming a mountain top at one moment and be over thousands of feet of air the next.

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Navigation was found to be difficult at the low altitudes at which we flew. It is much to the credit of the aircrew that they kept the aircraft at the low altitudes necessary for spotting caribou on the several occasions when our position was doubtful. Map reading was found to be next to impossible, because of snow covering the majority of the lakes.

On April 10 we prepared for a survey flight to the east of Nettilling Lake, but one of the aircraft's skis jammed in the down position and the flight was cancelled. The mechanics removed both the forward skis, leaving only the wheels for the rest of the operation.

On April 11 weather was C.A.V.U. (ceiling and visibility unlimited), and the final survey flight was flown, much of it in very rugged terrain east and northeast of Nettilling Lake (Figs.21,22 and 23). It had been hoped that more time could be spent and more flights made on the survey. However, the aircraft had taken part in an emergency search and rescue operation prior to the Baffin Island trip, and its periodic mechanical check-up was due. Actually less than three hours' serviceable flying time was left on it when we finally returned to Rockcliffe.

The return trip to Ottawa was started on April 12. This time visibility was good, and a clear view was obtained of southeast Baffin Island, Hudson Strait and Labrador. In four hours and forty minutes we were in Goose Bay, where we spent the night. The next day, April 13, we returned to Ottawa from Goose Bay in five hours and thirty minutes, completing "Operation Frobisher".

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The operation was a success from all standpoints. The Geodetic Survey and the R.C.A.F. were able to make the desired tests on winter equipment. The survey flying, while a little short of the desired distance, was flown with better visibility and at lower altitudes than had been hoped for. In addition a considerable amount of data was gathered through contacts with Eskimos, R.C.M.P., personnel of the airbases visited and aircrews at the bases.

RECENT HISTORY

There are many historical references which give indications of excellent caribou hunting on Baffin Island during the times of the early explorers. During the days of early exploration it was entirely possible for dog-team parties to travel through almost any part of the island and subsist on caribou as they went. As exploration and development progressed the area over which this was possible diminished. Caribou began to withdraw or diminish in numbers on the south end of the island, particularly on Foxe Peninsula, on the northwest end of the island and in most of the other well hunted or travelled areas. However, as late as 1939-40 Manning was able to find caribou in good numbers along the Foxe Basin coast, and Eskimo hunters from specific areas still get caribou in numbers.

A complete historical review of the caribou records on Baffin Island would be of interest and value in analysing the present situation. However, it would take some time to prepare such a review in a detailed manner, and the basic facts are quite evident:

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1. Caribou are at present scarce on much, if not all, of Baffin Island in comparison with the early 1900's and before, and in some areas have disappeared completely.
2. Many factors such as predation, climatic conditions and disruption of migration routes may be involved in this decrease, but the increased hunting efficiency of the Eskimo resulting from the introduction of firearms may be regarded as the major factor.

Specific figures on which to gauge the extent of caribou decrease on the island are available only for the last 16 years. That is the period during which yearly records have been compiled by the R.C.M.P. on native hunting successes. These are presented in Table I. It will be noted that these records are incomplete, particularly in the early years, and in many cases are not detailed. Only since 1936 has the number of hunters involved been recorded, and this is particularly valuable information.

In using these figures several relevant circumstances must be considered, some of the more important being:

1. The number of hunters reporting varies from year to year,
2. The fact that coverage was less thorough in early years than it has been recently.
3. The fact that a given group of Eskimos may report in one area in one year and in another area in another. For example, the 1936-40 figures for Pond Inlet almost certainly include reports from natives from Arctic Bay, River Clyde and Igloolik. This may be due in part to native travel and in part to non-segregation by the reporting officers.

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	32-33	33-34	34-35	35-36	36-37	37-38	38-39	39-40	40-41	41-42	42-43	43-44	44-45	45-46	46-47	47-48
Pond Inlet	663	1214	149	458	(157) 1499	(171) 832	1156	(114) 756	(78) 66	(217) 982	(79) 315	(47) 58	(39) 5	(42) 0	(49) 22	(50) 34
Arctic Bay												(62) 77	(50) 20	(76) 83	(89) 88	(49) 25
Igloolik																(29) 77
River Clyde			467	203								(15) 96	(18) 243	(32) 5	(24) 49	(19) 64
Dorset							(13) 49		(82) 13			0		(70) 0		
Lake Harbor	(29) 30		42	23	(182) 103	(40) 29	(65) 157	(50) 17	(54) 31	(95) 63	(99) 41	(81) 0	(28) 0	(47) 0	(69) 0	(34) 54
Frobisher Bay			161	83				(36) 122	(26) 19						(34) 0	
Pangnirtung					(58) 442	(44) 226	350	400	185	(99) 246	(100) 213	(80) 88	(70) 313	(103) 452	(61) 390	(59) 354
Amadjuak				50												
Totals	690	1214	819	817	2044	1087	1712	1295	314	1291	569	269	581	540	549	608
Total north area	663	1214	616	661	1499	832	1156	756	66	982	315	181	318	88	159	200

N.B. North area refers to the Pond Inlet, Arctic Bay, River Clyde and Igloolik districts.

TABLE I. Based on RCMP reports
Reported caribou kills on Baffin Island since 1932.
Number of hunters, when known, in brackets.

4. The probability that caribou kills are fewer during some winters because of factors such as poor inland travelling conditions, abundance of seals inducing the Eskimos to remain on the coasts, etc.

5. Also to be considered is the assumption that caribou were already seriously depleted on much of the island by the time that systematic records were commenced. Worth noting is the probability that when caribou are fewer in number the Eskimos will hunt for longer periods and more assiduously, and thus the kill figures will be somewhat higher in proportion to caribou population, than in years of plenty.

Figure 1 shows graphically the native caribou kills on Baffin Island between 1932-1948 as recorded on the annual game returns. These have been plotted as two-year averages for the purpose of levelling the graph and compensating somewhat for variables in the records.

It will be noted that the recorded kill from 1932 to 1936 is not so high as that from 1936 to 1940. Unfortunately there is no record of the number of hunters interviewed during the earlier years but it is to be strongly suspected that the coverage was far less than it has been since 1936. In all probability the kill in 1932-36 would equal or exceed that in succeeding years. The total kill for the northern end of the island has been plotted separately as it is felt that it has more complete yearly coverage than the island as a whole. This includes the Pond Inlet, Arctic Bay, Igloolik, River Clyde areas which are sometimes reported separately and sometimes as Pond Inlet only.

Figure 2 gives the total kill, as in figure 1, divided by the number of hunters reporting, to show the average kill per hunter per year. In this case figures are available only for the period 1936-48.

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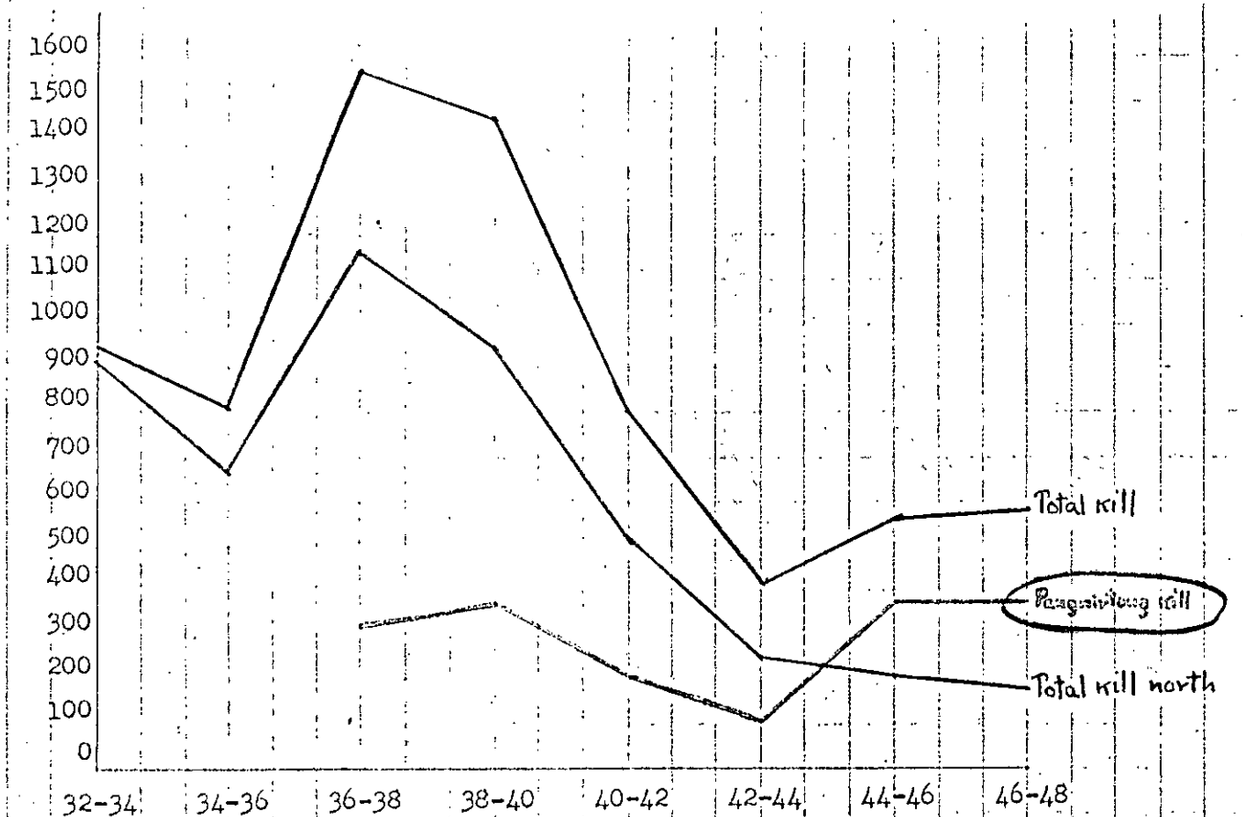

Figure 1 Caribou killed on a two year average basis from 1932 to 1948.

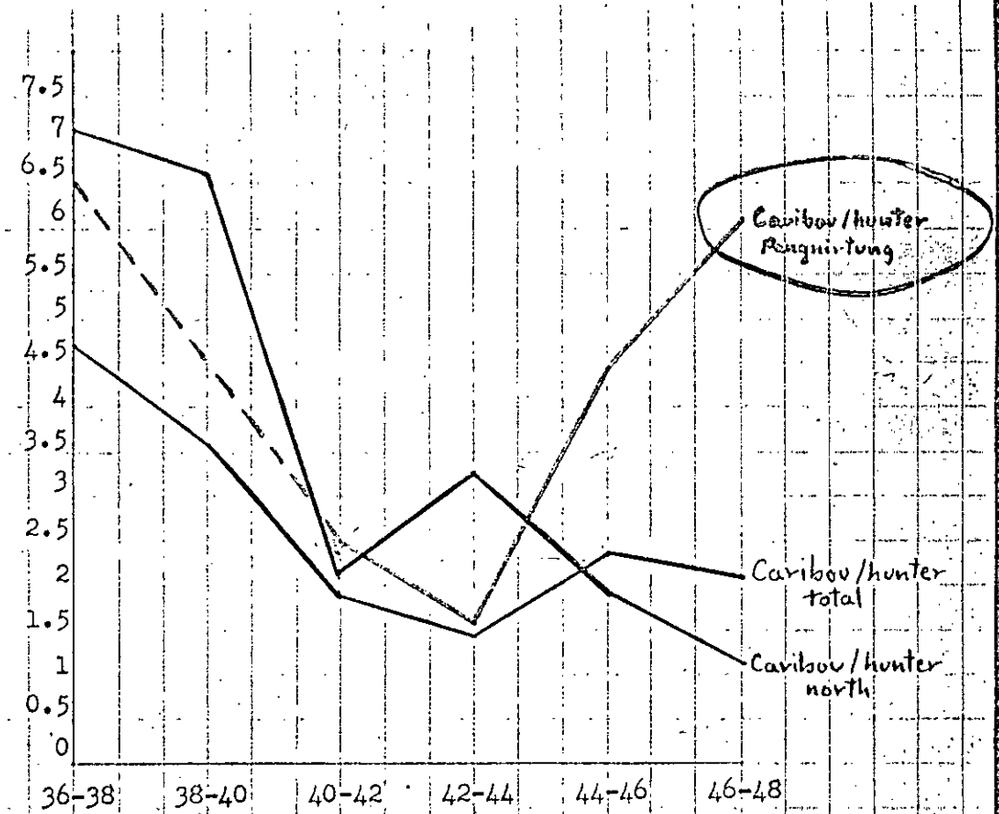

Figure 2 Caribou killed per hunter on a two year average basis from 1936 to 1948.

N.B. North above refers to the River Clyde, Pond Inlet, Arctic Bay and Igloolik districts.

In both figures one thing is evident. The annual kill by the Eskimos has been diminshing through a twelve year period. Historical evidence indicates that this trend was the same for many years before statistical evidence was available.

The most recent estimates of caribou numbers on Baffin Island have come from Manning (1943) and Wright (1944). Manning, from personal observations in 1938 to 1940 estimated a coastal strip between the Koukdjuak River and Piling to hold about 10,000 animals. Wright, using authoritative information from many sources, estimated the total population of the island at about 25,000 animals.

Both these estimates were very reasonable in view of the known facts and both considered the west central area, along Foxe Basin and inland, to be the "centre" of caribou abundance on the island and the area with the least hunting pressure.

AERIAL SURVEY OF APRIL 1949

During the month of April 1949, observers in low flying aircraft attempted to discover the numbers and distribution of caribou on Baffin Island. Two separate parties took part in this survey and their approximate survey tracks are shown on Map 1.

The northwestern survey was made in a Norseman aircraft flown by Gunnar Ingorbrightson with Mr. S. Bailey of the N.W.T.A., as reporting observer. This party flew at altitudes up to 2000 feet and covered about 600 survey miles with good visibility.

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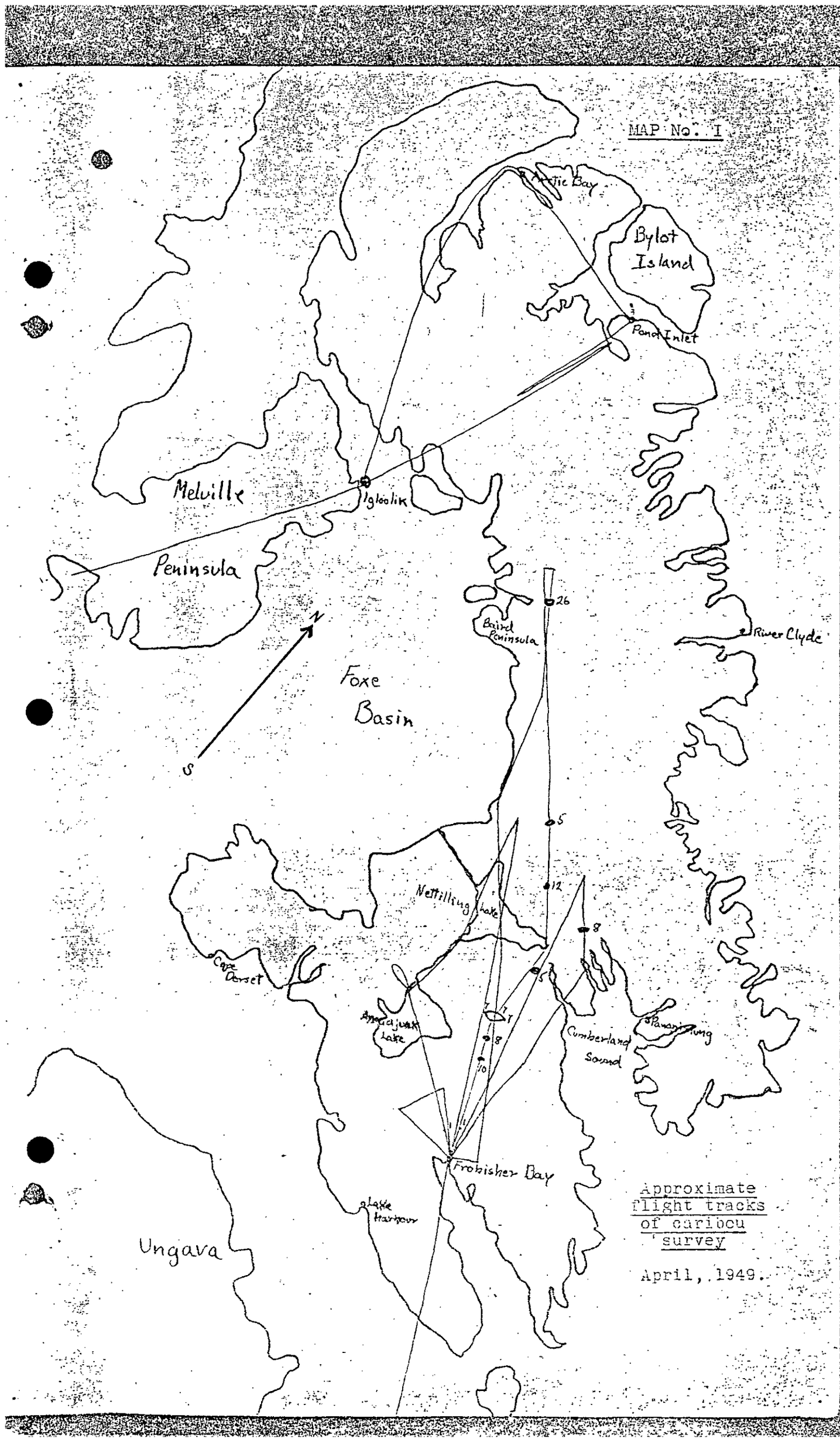
MAP No. I
Bylot Island
Pond Inlet
Melville Peninsula
Igloolik
Foxe Basin
Baird Peninsula
River Clyde
26
5
12
8
5
7
7
8
10
Nettilling Lake
Cape Dorset
Amadjuak Lake
Cumberland Sound
Frobisher Bay
Lake Harbour
Ungava
Approximate flight tracks of caribou survey
April, 1949.

The southeastern survey was flown by the R.C.A.F. in a Dakota aircraft with the author as reporting observer. This survey was flown at altitudes of 300 to 1000 feet and covered about 2500 survey miles.

The observations of the northwestern party may be simply stated. They saw neither caribou nor their tracks. There is little doubt that at altitudes of 2000 feet they could easily have overlooked small numbers of caribou, but it is hardly possible that if any substantial number of tracks had been present all of them would have escaped observation. The southeastern party, which saw both animals and tracks, found that while animals were often difficult to see from altitudes of less than 1000 feet, tracks stood out clearly from altitudes of 3000 feet.

The southeast party made three separate flights from Frobisher Bay in search of caribou. These flights were designed to cover as far as possible the known and presumed winter range of caribou in the area surveyed. They also gave a cross-section of some summer ranges as well. Areas known to hold few or no caribou were avoided.

A recital of all observations made from survey flights of "Operation Frobisher" would be long and cumbersome and would prove very little; therefore the major findings will be summarized below:

In total 97 caribou were seen. The approximate positions of these sight records are plotted on Map 1.

The animals were widely scattered along the flight tracks and all were in small groups. The largest number seen at any one point was 26 in the vicinity of Flint Lake.

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These comprised a herd of 19, with two small groups of 3 and 4 apart from the rest.

All animals noted were on what might be considered as ideal winter range. They were in or near hilly areas where hill tops and steep slopes would be blown fairly free of snow, thus providing feeding areas. The majority were in country that would average slightly less than 1000 feet above sea level. No caribou were seen in the great flat low areas of the island, which presumably provide summer range for many of them.

Groups of 7 caribou were seen on each of the three flights in the vicinity of 65°35' latitude 69°10' longitude. It is strongly suspected that the same caribou were encountered on each occasion. The aircraft passed reasonably close to the same point on each occasion, and no other tracks or animals were seen in that vicinity.

It is not believed that any significant numbers of caribou were missed during the survey flying. Most of the flying was done at altitudes of less than 1000 feet and at all times there were at least two men watching for caribou and frequently as many as 5 or 6.

Over terrain suitable for caribou, tracks were spotted readily and frequently. In general, they were much easier to see than animals themselves and were visible even at altitudes of 3000 feet.

Tracks certainly gave good indication of caribou range in April, but as indicators of abundance they were of doubtful use. With few exceptions tracks were seen in the same type of terrain that animals were seen in - that is, hilly country with good possible feeding areas. There were no tracks in areas such as the low plains between Taverner Bay and Nettilling Lake

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or the continuous level plateau and marsh areas east of Amadjuak Lake.

All the tracks noted had two main features in common:

1. They were made by small bands, sometimes even by single animals. It was unusual to see tracks indicating that more than 20 animals were travelling together. The average would be about 7 animals per band.

2. They did not indicate migration trends but rather seemed to follow paths of easiest resistance in an extremely haphazard manner. Among the hills and valleys, and even where tracks were seen on large lakes, movement was erratic. It was evident that while the animals were moving continuously they were at the same time confining themselves pretty well to specific types of range.

It is thought that an estimate of caribou numbers from tracks is nearly impossible for the following reasons:

1. The tracks were so meandering that undoubtedly many noted sets would have been made by the same animals.

2. It was impossible to estimate accurately the age of tracks seen.

3. Sometimes tracks noted from the aircraft had evidently been made by a number of animals travelling in single file. It was not practicable to follow all such tracks to a point where the animals had fanned out, making an accurate count possible.

4. Frequently small herds apparently split into smaller herds, sometimes rejoining, and sometimes not. This gave a very complex picture when viewed from a straight course

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at under 1000 feet. A single herd might easily be recorded on 8-10 separate occasions under such conditions.

In general, it may be said that about 10 groups of tracks were recorded for every group of animals. When all factors are taken into consideration it is not believed that tracks indicated any larger population than sight records would indicate.

It had been hoped that feeding areas might indicate caribou abundance. Feeding areas were very evident where present. They would show as small, well trampled areas on hillsides and hilltops where the snow cover was thin. However, only a half dozen such areas were seen, and it considered probable that the animals must do a considerable percentage of their feeding as they move, from small exposed patches of browse which are fairly numerous.

From observations of all types the April caribou range was pictured as follows: A few animals in suitable but widely scattered terrain between Frobisher Bay and Nettilling Lake. A very few animals between Amadjuak and Nettilling Lakes. Most abundant (if the term abundant can be used) inland from Cumberland Sound toward and including eastern Nettilling Lake; also just south of the east tip of Nettilling Lake and for a good distance north toward Cumberland Peninsula. It might be added that it is from this general area that the largest kills and most consistent good winter hunting on the island have come for many years. From northern Nettilling Lake to the upper Hantzsch River area, tracks were widely scattered in a large and excellent looking range. From there northward to Flint Lake and the vicinity of Lake Gillian, what appeared to be good winter range was almost continuous, but caribou were more widely scattered. The most frequent signs in this area were encountered among the valleys in the rugged country inland to the south of the Baird Peninsula.

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POPULATION ESTIMATE AND SUMMARY

In estimating the caribou population of Baffin Island from the April aerial survey one basic assumption must be made. That is, that the caribou numbers and distribution noted on the survey flights are truly representative of what is to be found over the greater part of the Island. This is a reasonable assumption since historical references, Eskimo reports and flight observations support it.

Since actual sight records on animals will be used, two more assumptions must be made. These are:

1. All caribou within sight range were actually seen and recorded. Thanks to excellent visibility, flying and observation and the snow cover, the crew of "Operation Frobisher" were convinced that very few, if any, animals were missed. If the crew of the northern flight had seen tracks, allowances would have to be made for animals missed due to higher flying, but since they saw no tracks it is safe to assume that they would have seen no animals at lower altitudes.

2. Average visibility for sighting animals was ½ mile on either side of the aircraft or 1 square mile surveyed for each land mile flown. Since so few animals were seen it is very difficult to state positively the exact distance at which 100% sighting could be achieved. However, animals were readily seen ½ mile and sometimes more from the aircraft. Experience of the Barren Ground Caribou Survey has shown that on occasion small groups of animals can be spotted as far as 4 to 5 miles from the aircraft. Since some allowance should be made for possible animals missed, and since the caribou were seen to blend very well with the April terrain, the assumption that the effective width of the survey strip was one mile appears to be conservative.

The two basic figures to be used will be 3000 square miles surveyed and 97 caribou seen. This gives an average of one caribou per 31 square miles.

The Baffin Island area is approximately 200,000 square miles. Using the 1:31 ratio the island population would be 6,451.

However, it must be remembered that the survey concentrated on winter caribou range and that known summer range, barren ice fields, mountains and coastal areas were avoided. Of the 3000 survey miles flown about 900 can be deducted as not being suitable winter range. It is true that large sections of the remaining 2100 miles were not occupied by caribou at the time of the survey, but from the air they appeared to be potential winter ranges. On this basis there was one caribou for about every 22 square miles. How much of Baffin Island might be considered as winter range, is a purely theoretical question. In the most limited sense probably only a small fraction of the island would actually provide feeding areas. But if all country is included in which caribou could range without actually starving to death, possibly half the island could be considered as possible winter range.

Using these theoretical winter range figures the caribou population would be 100,000 divided by 22 or 4,504.

It is perfectly true that less than a 3% sample of winter range was covered and that statistically this is hardly adequate for estimating total population on an island so large as Baffin. However, this sample certainly gives a more correct picture than has been obtained previously, and in view of the necessity for a population estimate it must be used - accurate or not. Therefore, until more much-needed surveying can be done,

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my estimate for the caribou population of Baffin Island is between 4500 and 6500.

Is this figure compatible with known Eskimo utilization? In view of the fact that a decided decrease in caribou population has been taking place the answer is "yes". Reference to Table 1 shows the recorded caribou kills for the past 16 years. It is believed that for the past ten or twelve years at least, these figures are very accurate. There are about 2000 Eskimos on the island but of these only a very few get, or go after, caribou each year. Caribou kills are remembered and discussed by the natives and are much more apt to be recorded than kills of most other mammals. Police interviews have been very thorough in recent years. Probably no more than 100 to 200 animals are now killed yearly in addition to those recorded officially, although in earlier years the number of unrecorded kills was probably much larger.

Probably the best annual caribou increase that could be expected for Eskimo utilization would be about 10%, if the increase on Baffin Island is analogous to that found by A.W.F. Banfield on the mainland Barren grounds. If the population estimates above are correct, and if an extra hundred animals are added to the 1947-48 kill figures, the yearly kill by natives runs between 10% and 15%. This fits in well with the whole general picture. Such a kill over a number of years would inevitably cause a gradual decrease in the whole population, and this is certainly what has been happening.

The situation at Pangnirtung differs from that on the rest of the island and requires separate analysis. Reference to figure 1 and table 1 shows that the yearly kill at Pangnirtung has been remarkably consistent, which is surprising in view of the decrease elsewhere. Reference to figure 2 shows that the number

of animals taken per hunter in 1946-48 was actually very nearly the same as that taken in 1936-38. Data are hardly sufficient to state positively that an actual increase in number of animals has taken place since the early 1940's, when the kill per hunter was much lower. It is evident that Pangnirtung natives have in recent years been taking half or more of the caribou that are killed annually on the island. It is further evident that no decided caribou decrease has been apparent in the Pangnirtung district in the past 12 years at least.

There are several factors which might be used in explanation. The Pangnirtung natives do the most of their caribou hunting toward the north and west of the western end of Cumberland sound, including the eastern tip of Nettilling Lake. As has already been noted, this area was found to contain more caribou signs than any other one area seen during the April surveys. There were many more tracks and animals in a limited area here than there were, for instance, on the winter ranges between Hantzsch River and the Baird Peninsula. This observation, plus the relatively high consistent winter kill by natives, would indicate that this may be the best winter range on the island; possibly nearly a half of the caribou on the island may winter in this general area.

The nature of the terrain in this area would limit the Eskimo kill at any season of the year. While there are relatively easy routes through it in some places, it also contains some of the ruggedest country surveyed. Therefore Eskimo hunting might create a vacuum in certain accessible areas, but it is doubtful if the natives would even try to get at the animals that would remain in the inaccessible

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parts of the range. There would appear to be always reservoirs of animals which would rapidly fill in vacancies created by hunters. This is quite a different situation from that on many other parts of the island where it is possible for natives to pick up fresh caribou tracks and stay on the trail for several weeks, if necessary, to make a kill. In these latter areas most of the present limited number of animals wintering in a given district are killed by the end of the winter. In the Pangnirtung district, however, it is topographically impossible for the natives to get at all the animals in the district, and yet the fast-travelling wide-ranging habit of the caribou would ensure that there were animals constantly on some sections of the accessible range. Therefore a combination of excellent winter range, relatively large numbers of caribou and rugged topography continue to ensure a constant winter supply of caribou, and at the same time insure against hunters eliminating all the caribou in any one winter. Further enlargement on this point would be pure speculation, and obviously much more factual information on this area is needed.

RECOMMENDATIONS:

In submitting the following recommendations the author wishes to emphasize two matters:

1. There is the possibility of a considerable margin of error throughout this report. The limitations of the presented data are evident. However, it is felt that the new information, analysed in the light of old information, gives a far more accurate picture than has been available previously.

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2. It is unwise as a general rule to base recommendations concerning management on data which are as limited in scope as those above. In the normal course of events a great deal of field work and much more surveying would be required before recommendations could be made with any guarantee of success. In this case the matter is of vital and immediate importance. If caribou are to be saved and increased for future generations of Eskimos, action cannot be delayed. The expense involved will be considerable, and active co-operation will have to be received from all white residents of Baffin Island who are in contact with Eskimos.

However, it would be much more costly to have to maintain all Eskimos on the island with imported types of clothing and with supplementary rations, which will have to be done if the caribou decrease further.

MY RECOMMENDATIONS ARE AS FOLLOWS:

1. A summer aerial survey should be conducted in August and September by a Norseman aircraft with a competent pilot who will risk low flying over the summer caribou range and landing on unchartered lakes. This survey might not even contact caribou, as they would be difficult to see without snow cover, but it would give opportunity to get on the ground for close, if limited, studies of terrain, tracks, range conditions, etc. It would give the Mammalogist for Franklin and Keewatin information which is necessary if he is to speak and think with first-hand knowledge of summer conditions on Baffin Island. It would give opportunity to obtain data directly from natives and whites at various places.

2. Plans should be made with the R.C.A.F. for a second aerial survey of the island in April 1950. This survey should cover

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at least 6000 survey miles, preferably more, and should include several close strip flights over the better caribou ranges. In connection with this, the possibility of establishing a camp on an island in Nettilling Lake for the purpose of observing the spring migration of caribou across the lake should be explored, and aerial photography should be planned for.

3. The winter hunting of caribou on Baffin Island must be discontinued. At Frobisher Bay, and it may be assumed, pending more positive information elsewhere, the majority of caribou killed are taken during the winter. At this time the skins are not suitable for clothing and can be used only for bedding. At their present low in population, caribou should not be killed for meat and bedding alone. Actually caribou at present supply only a small fraction of the subsistence of a few Baffin Island families. It was noted at Frobisher Bay that the Eskimos who had shot most of the caribou this past winter were resident and were employed at the American base, and the shooting was in no way essential to their well-being, as they had sufficient funds to purchase substitutes for caribou skins. In fact, the value of the dog food and supplies expended to secure caribou meat was, in some instances at least, much greater than the returns. It is thought that possibly a fair percentage of Baffin Island kills come in this category.

4. Caribou hunting should be allowed on the island only during the month of August, for the purpose of procuring skins for clothing and on the condition that excess meat is either dried or otherwise utilized in a practical manner. Females with fawns should not be taken. Unless there was a wide-scale movement of natives to caribou summer ranges, this would ensure that so few caribou were taken annually that the number taken would make little difference. With the possible exception of

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natives on the north and east coasts of Foxe Basin, very few families are living on, or would be apt to travel deliberately to, summer ranges.

5. The hunting of caribou by whites on Baffin Island must be discontinued. Very few animals are taken by whites on the island anyway, but because of the possible effect as an example to the natives, white hunting, must be discontinued.

6. The N.W.T.A. must initiate a program of education for the Eskimos with regard to caribou. Any such program must have the sympathetic co-operation of Missions, R.C.M.P., traders and others on the island. This is probably the most important recommendation of all. Without it, the carrying out of recommendations 3, 4 and 5 would not be effective. Such a program should not be confined to written instructions, memoranda and pamphlets alone. A man, or men, with ability to speak the Eskimo language and to impress the natives favourably, should visit the island and work with them on the ground. Lack of education regarding conservation is probably the most serious native welfare problem in the north today. It should be compulsory that the missions at least be required to teach and practice sound conservation. Such a program would benefit through the employment of a social anthropologist on the island for several years to study the social and psychological implications and changes necessary. Probably such an educational program should not be confined to the subject of caribou alone, but should include conservation in general.

7. The resources of the sea around Baffin Island must be further explored, investigated and developed for native use.

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With an increasing Eskimo population it is hardly possible that terrestrial wildlife, seals and walrus alone can supply the needs of natives ad infinitum. A study of Danish experience on the east Greenland coast makes this point very clear. The following are possible lines of investigation, and there are doubtless many more:

1. Investigation and development of whale fishing.
2. " " " " Arctic char fishing.
3. " " " " shark fishing.
4. " " " " other commercial fishes.
5. " " " " plankton as a source of food.
6. Investigation of salt water algae as food or as a source of useful sea products.

The scope and possibilities of such investigations is unlimited. The resources are undoubtedly there. It remains for scientific ingenuity to find them, discover their uses and possibilities for native use, and initiate their use by natives. Such a program calls for a permanent or semi-permanent fisheries research station on the island, and the complete discouragement of commercial interests until much research has been done.

REFERENCES

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MANNING, T.H. 1943. Notes on the mammals of south and central west Baffin Island. Jour.Mamm. Vol.24, No.1.

WRIGHT, J.G. 1944. Economic Wildlife of Canada's Eastern Arctic - Caribou. Can. Geog. Jour. Oct. 1944.

NOTE: Aerial photographs, four inches by five inches, of caribou and caribou terrain were taken during Operation Frobisher. As only a limited number of prints are available they will be filed for reference purposes on Wildlife Service file WLU 228-2.

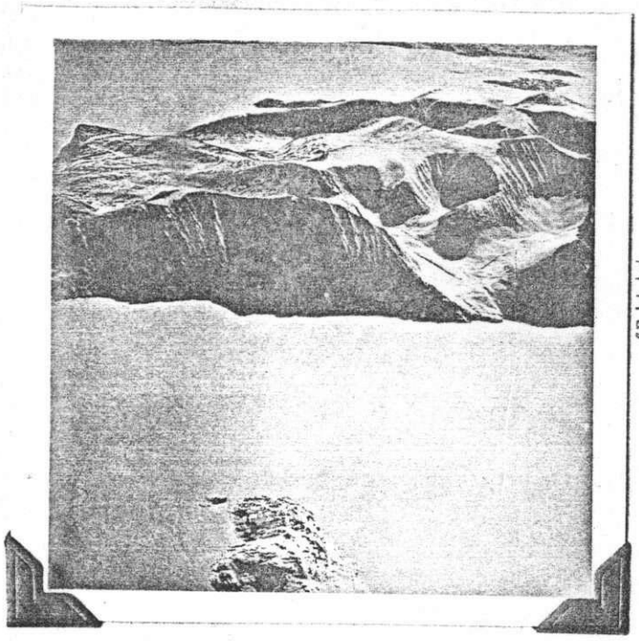

Fig. 3. Labrador coast in the vicinity of 57° 30' north latitude.

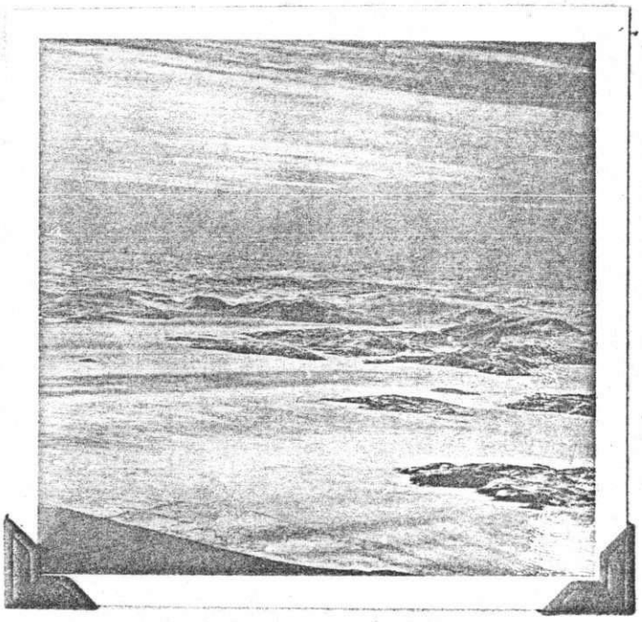

Fig. 4. Labrador coast. Note the ice-shelf extending out from the coast.

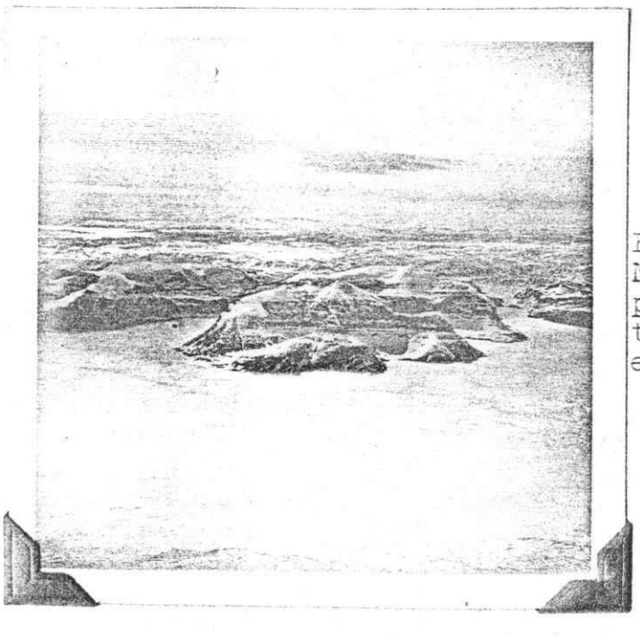

Fig. 5. Labrador coast. Note that the rocky, precipitous terrain of the coast apparently extends well inland.

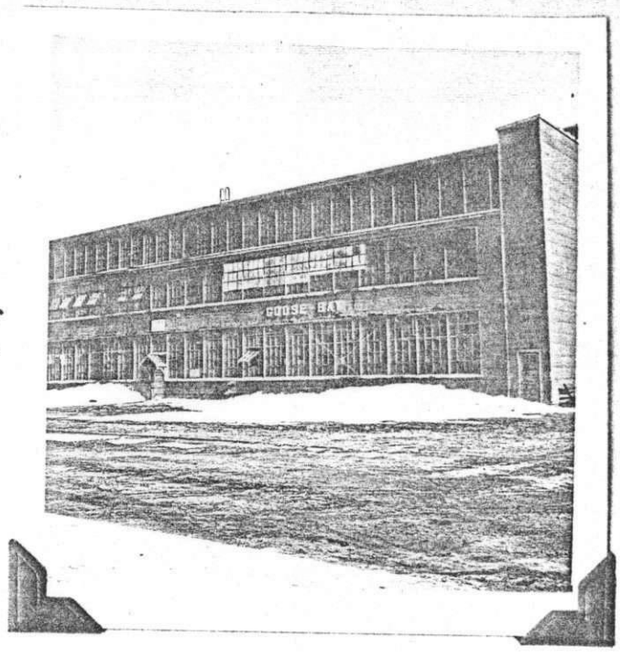

Fig. 6. Aircraft hanger at Goose Bay, Labrador.

Fig. 7. Dakota aircraft used by "Operation Frobisher" at Goose Bay.

Fig. 8. Airstrip tower at Frobisher Bay, Baffin Island. Crystal II is the American name for the base.

Fig. 9. Wildlife observer showing type of clothing used during, and recommended for, this type of operation.

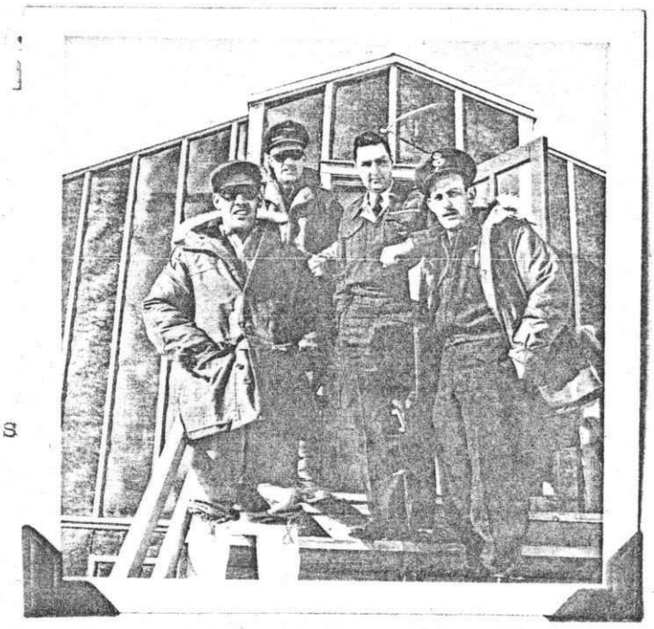

Fig. 10. Geodetic observer, co-pilot, navigator and wireless operator outside the officers quarters at Frobisher Bay.

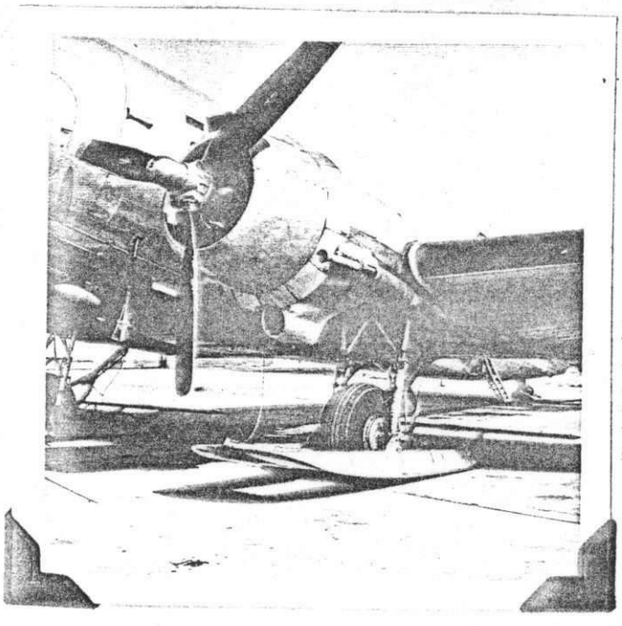

Fig. 11. Close-up of the ski-wheel equipment used during "Operation Frobisher". The landing gear retracts flush with the engine nacelle.

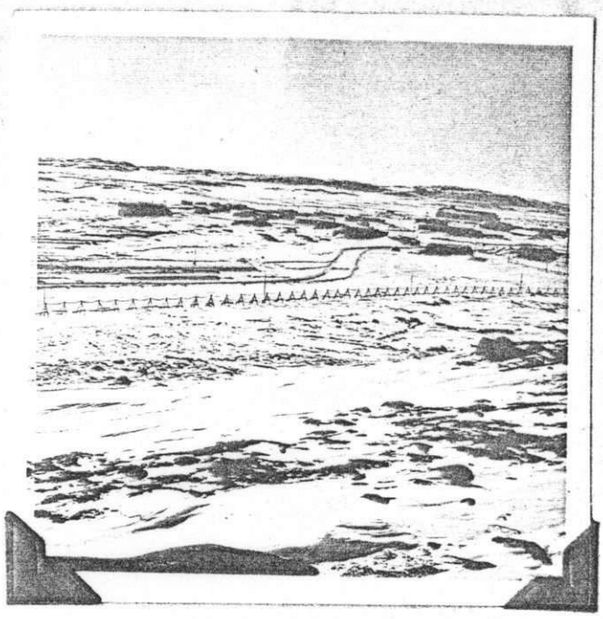

Fig. 12. General view of the Frobisher air-base. Hanger and air-strip in right background; power line to wireless station in foreground.

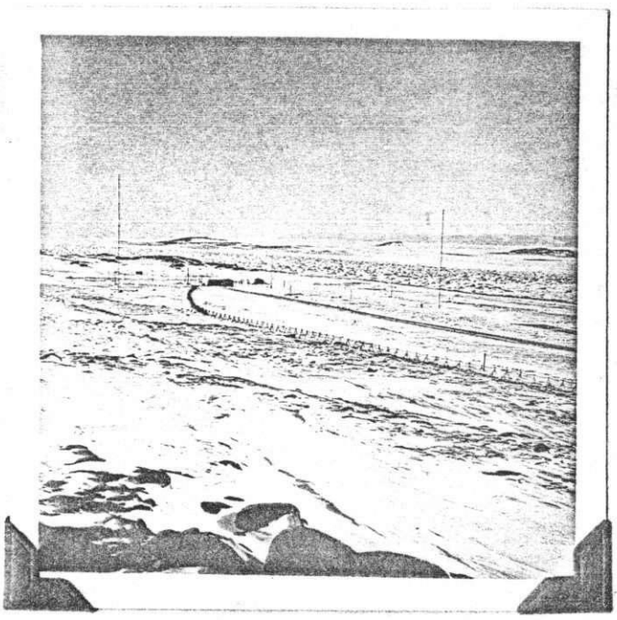

Fig. 13. Wireless station at Frobisher Bay with rough shore-ice and Frobisher Bay in the background.

Fig. 14. A small Eskimo with a very large dog at Frobisher.Bay.

Fig. 15. Eskimos at Frobisher Bay. Resident natives live in neat little shacks of the type shown built from surplus materials from the base.

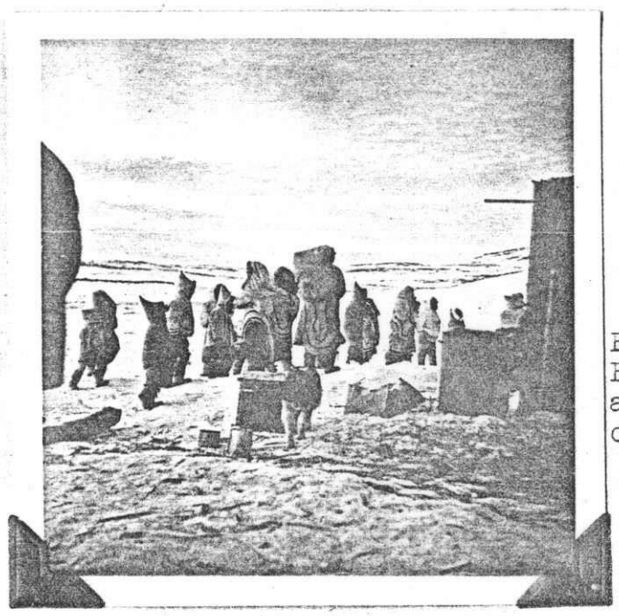

Fig. 16. Eskimos at Frobisher Bay. Note the absence of caribou skin clothing.

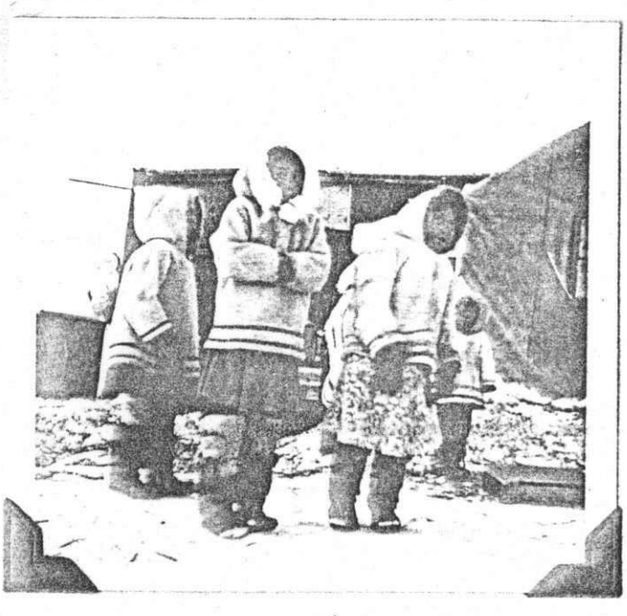

Fig. 17. Eskimo girls at Frobisher Bay.

Fig. 18. Eskimo shack burning at Frobisher Bay.

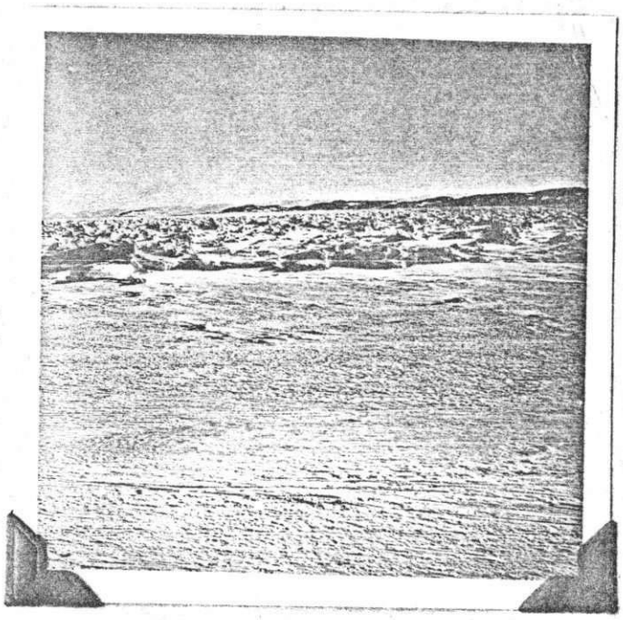

Fig. 19. Rough shore-ice between the shore (foreground) and the bay (background).

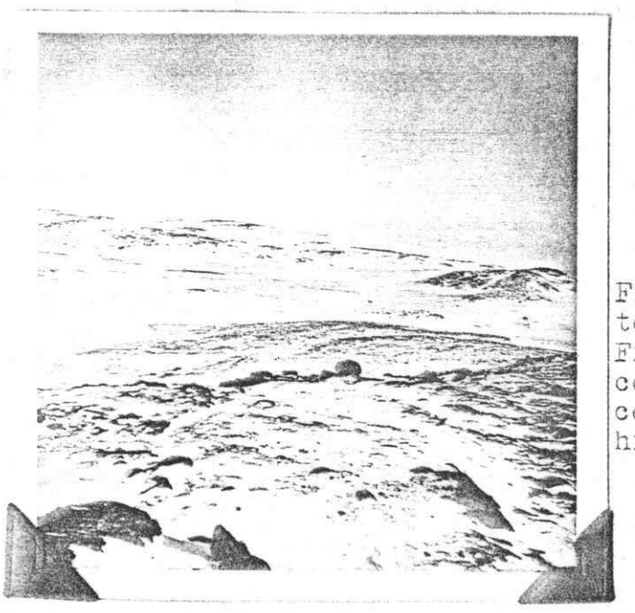

Fig. 20. Typical hilly terrain in the vicinity of Frobisher Bay. Note the comparitively light snow cover, particularly on the hill tops.

Fig. 21. Nettilling Fiord.

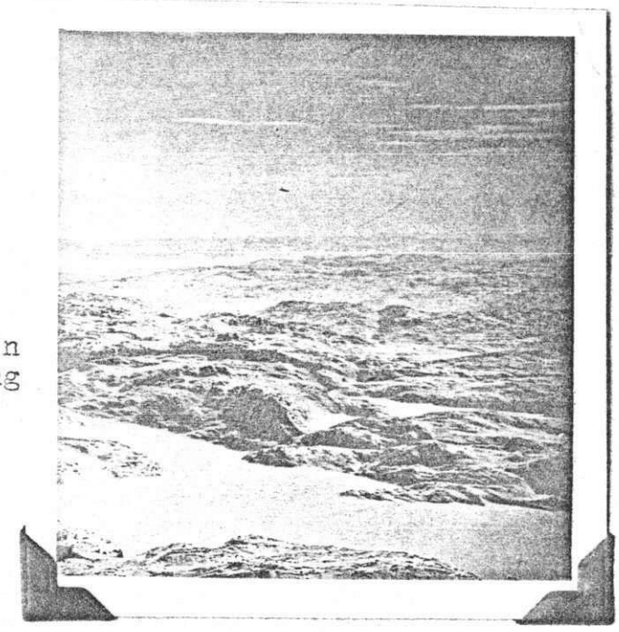

Fig. 22. Rugged terrain in the vicinity of Nettilling Fiord.

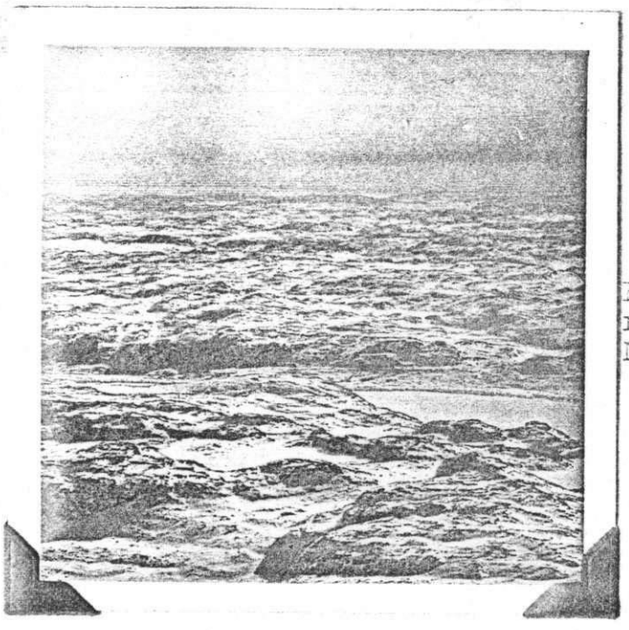

Fig. 23. Rugged caribou range in the vicinity of Nettilling Fiord.

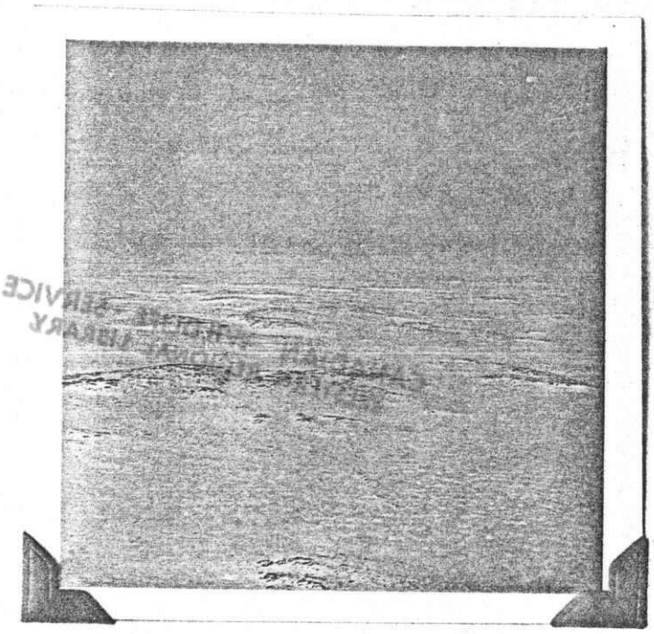

Fig. 24. Winter caribou range of a type in which animals are only occasional. Note the hill tops comparitively free of snow.

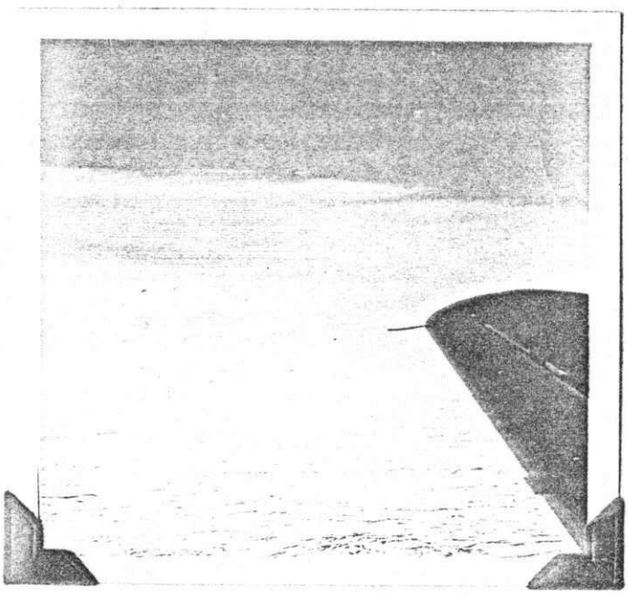

Figure 25. Caribou winter range of a type similar to that in the picture above. Here irregular ridges replace scattered hills but the tops are still comparitively snow-free.

Kelsall, John P.
Baffin Island
caribou survey, with
population estimates

DATE	ISSUED TO
12/7/76	Redhead
21-6-78	M. Peterson
5/14	Pete Bolnyorky CWS YK
Feb 1/94	Janice Roosdahl 12F