



THE BARREN-GROUND CARIBOU TAGGING PROGRAM
IN THE NORTHWEST TERRITORIES

by

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Since 1959 barren-ground caribou (Rangifer tarandus groenlandicus) have been ear tagged annually in Manitoba and at various points in the Northwest Territories. The tagging sites and the names given them here are shown on Maps 1 and 2. The tagging operations have been adequately and repeatedly described in annual reports by people involved in the field operations (Miller, 1965; Ruttan, 1965). This report deals with the results of the work in the Northwest Territories as shown by tagging and tag return records on Canadian Wildlife Service files in Edmonton. *

Numbers of caribou tagged and returns received.

Table 1 shows the numbers of caribou tagged in Manitoba and in the Northwest Territories. At the time of writing there is no formal report on the 1965 operation in the Northwest Territories, and figures shown for that year in the table and elsewhere are from oral reports by Mr. R. A. Ruttan, who was in charge of tagging.

* Data from Manitoba, used for clarification and comparison, is provided through courtesy of the Manitoba Game Branch. Tabulated data from all sources is complete to February 8, 1966. Mapped data, complete to January 31, has 16 fewer returns.

The figures given for some years in the Northwest Territories (1962-65) may be slightly higher than is actually the case. In some reports it seems possible that full allowance was not made for tags which were broken, otherwise damaged, or lost, and that the total number of tags used was assumed to equal the number of caribou tagged. Thus Rutan (1965) showed Thomas as having apparently used 242 tags in his operations in 1960. Reference to Thomas's (1960) reports, in Canadian Wildlife Service files, show that 215 caribou were actually tagged in that year. For practical purposes it is assumed that the figures shown in Table 1 and elsewhere are accurate.

Table 1 shows that 8,405 caribou have now been tagged, 5,966 of them in the Northwest Territories. Well over two-thirds of these were tagged in the past three years, and approximately half in the past two years. Since we are still receiving tags which were applied to caribou more than five years ago, we can expect a continuous flow of useful data from presently tagged animals, until 1970 at least.

Table 2, in part, shows the numbers of caribou tagged in the Northwest Territories by tagging site and year. Table 1 showed that 2,439 caribou had been tagged at Nejanilini Lake in Manitoba. It is apparent from these figures and from return data below, that for purposes of demonstrating movement, hunting pressure areas, longevity, and herd discreteness there are now adequate numbers of caribou carrying tags

in the east. The 2,439 caribou tagged in Manitoba have given us 85 returns (Table 3) from that group of caribou which calves in the Kaminuriak Lake area. The 5,601 caribou tagged at Mary Frances Lake and on the Thelon River have provided 204 returns from that caribou group which calves in the Beverly Lake area. In all probability more than double the present returns will be received from those caribou over the next five years. It is also apparent that inadequate numbers of caribou have been tagged in the west, among those animals that calve at Bathurst Inlet. At present rates of return, we can expect only about two dozen returns from the 365 animals tagged at Contwoyto Lake.

The per cent of tags returned is variable from area to area. Returns from Manitoba tagged animals are similar in ratio to those from animals tagged in the Northwest Territories generally (Table 3). The usefulness of Manitoba returns is greater, however, when used to show movement. Virtually all returns there are from areas other than the tagging site while the same is not true in the Northwest Territories.

Table 2 shows a remarkably high tag return (8.7%) from the few animals tagged at Mary Frances Lake, a poor return (1.1%) from those tagged at Contwoyto Lake, and an average of 3.6 per cent returned from those tagged on Thelon River. However, the latter figure contains a substantial bias.

Of the 198 useable returns from animals tagged on the Thelon River from 1960 to 1964 inclusive, no less than 68 (34%) were taken within two months of tagging and within 100 miles of the tagging sites. Most were taken within a few days of tagging and within a few miles of the sites. For most purposes these returns are useless. They simply show that a substantial hunt is conducted by local Eskimos during the period when caribou are bunched along the Thelon River region. They also suggest that tagged caribou may be particularly vulnerable to shooting for a short while after tagging. Some are known to be injured; some may be disoriented through separation from parents or through being driven in a direction opposite to that of the general movement. Some Eskimos are thought to selectively shoot tagged animals for the reward. In view of the above the per cent of returns that are useful for most purposes from animals tagged on the Thelon River are much less than Table 2 indicates. A comparison of total returns with those judged to be useful is given in Table 4.

It is strongly suspected, from tag returns, from scrutiny of maps showing returns, and from comparison with Manitoba results, that some Northwest Territories hunters may not be returning tags. There is reportedly antipathy to the program among some Indians in the Great Slave Lake area, and the present reward of \$1.00 is not a strong incentive.

There is a belief among some Indians that the presence of a tag causes caribou to sicken or die. Certainly the number of tags returned from the general area of the east arm of Great Slave Lake (Map 2) looks sparse in view of the known hunting habits of the Indians involved and the known patterns of movement of the caribou, which are essentially the same general group which have provided many returns from the Saskatchewan - N. W. T. border area. In addition there may be reluctance on the part of some Mackenzie District people to turn in tags for fear that they may have shot a reindeer. In times past marked reindeer have reportedly been shot in the vicinity of both Great Bear and Great Slave lakes, and all residents are well aware of the fact that reindeer are protected by law.

Distribution of ear tag returns.

(a) Age and sex data.

Data relating to age and sex is so confused and perhaps biased, as to be almost completely worthless. In the Northwest Territories, at least, it is known that many errors in recording age and sex of tagged animals have been made. The reports of taggers, of independent observers of the tagging operation, and discrepancies between ages given by taggers and ages as determined from returned jaw bones all indicate that this is so.

Furthermore, the sex as reported by taggers and returners provides strong reason for lack of confidence in age and

sex data. Table 5 shows the pertinent data in regard to sex. The first two columns show the number of instances where both tagger and returner agreed on the sex of a given animal. The third column shows instances where the two disagreed. The last column shows cases where one or the other, and sometimes both, did not show sex at all. The total number of discrepancies (36) is not too far short of the total cases where there was agreement (48). It might be expected that hunters would be biased toward giving male reports, fearing legal action for shooting females, but the returns do not bear this out. In a good many cases the hunters returned an animal as a female where the taggers reported a male. There was agreement in more cases where males were involved than females, but there is almost certainly a bias favoring the tagging of males because of their greater catchability when antlered, and there may be a bias on the part of hunters toward shooting them because of their greater size.

Despite the foregoing, one observation does appear pertinent. Adult males do appear to be the age and sex class of animals most apt to be taken beyond the confines of the "normal" range for the group of animals within which they were tagged. Also, with some exceptions, where there is agreement on sex between taggers and returner, those animals from the southern peripheries of winter range are males.

(b) Contwoyto Lake returns.

There are only four returns from the 365 animals

tagged at Contwoyto Lake in 1960 and 1965 (Table 3 and Map 1). Two of these were taken at Concession Lake approximately 60 miles northwest of the tagging site. One (tag 247A) was tagged in 1965 and shot within two months; the other (529) was tagged in 1960 and shot slightly over five years later. Number 536 was shot at Ayimer Lake several months after tagging in 1960, and number 128A was shot close to the settlement of Coppermine about three months after tagging in 1965.

While few in number, the returns do show that caribou movements, following the southward crossing of Contwoyto Lake in summer, may be varied. The two distant returns are from exactly opposite directions, and from the extreme edges of the range of those animals that usually calve at Bathurst Inlet. The 1965 return from Coppermine was taken from a substantial herd, estimated to number up to 10,000 animals. Simultaneously a second herd, known to have crossed Contwoyto Lake from the north, had established far to the south at Indin Lake.

(c) Mary Frances Lake.

Six returns from the 69 animals tagged at Mary Frances Lake are a remarkably good record. They are plotted on Map 1. The returns were submitted five months, 16 months, 20 months, 2½ years, 3-¾ years and 4½ years after tagging. The dispersal of the returned tags is also remarkable. Number 427 was returned 16 months after tagging from near Gordon Lake, well within the range of animals normally calving at Bathurst

Inlet. Number 14 was returned 4½ years after tagging from the western portion of the winter range of the animals which calve at Kaminuriak Lake. The balance were returned from within the winter range of the herd calving at Beverly Lake, to which they would be expected to belong. Even so, as the Map shows, all but one were near the peripheries of that range.

(d) Thelon River.

Tagging on the Thelon River has variously been conducted east and west of Aberdeen Lake with the most distant sites about 60 miles apart. It is assumed that all animals involved belong to that group recognized as the Beverly Lake calving herd.

Map 2 shows a pattern of tag returns that is almost entirely compatible with what was known of the annual distribution of those caribou from extensive observation (Kelsall, 1960). The normal winter range of those animals has long been known to be bounded to the north by the east arm of Great Slave Lake and Artillery Lake, and returns to date show no exceptions to this for animals tagged on the Thelon. In the southeast regular returns are received a few miles further east (e.g. Snowbird Lake, Hatchet Lake) than the winter range was usually thought to extend.

In the north, less than half the returns shown are precisely located by data given by the tag returners. Many were returned simply from Baker Lake, when they were probably

secured many miles from that point. However, with few exceptions the returns conform to repeatedly observed summer distribution of the animals involved. From the usual calving grounds in the Beverly Lake area there is a post-calving movement east as far as Baker Lake between latitude 64° and $65^{\circ} 15'$ north. Several animals have reliably been reported, on the north side of the Thelon water system only, as far eastward as Quoich River. One animal, number 6920, tagged in 1964, was reported taken 15 months later far to the north on the Back River in longitude $96^{\circ} 30'$.

The temporal distribution of the tags recovered on, or near, the Thelon River has some points of interest. There are 102 returns from there having reasonably precise dates. Seventy-seven of these were apparently recovered before the end of the year in which the animals were tagged, seventeen of them in September and one as late as mid-October. Twenty tags were recovered between one and two years after tagging, four between two and three years, and one over three years. Several of the animals taken in September were taken late in that month in different years, and 15 or more miles north of the river. While there is no other evidence that such might be the case, it seems probable that some animals winter on the tundra, and perhaps join the group which regularly winters between the Thelon and Back Rivers (Banfield, 1954; Kelsall & Loughrey, 1955).

There are a few tag recoveries beyond the eastern limits of the range of the Beverly Lake calving group. Most notably number 6253 was tagged on the Thelon in 1963 and recovered a few miles northwest of Churchill 18 months later. Number 6255 was tagged in 1963 and recovered in June two years later at Ferguson Lake. Three animals (7807, 7956 and 8279) were tagged in 1964 and recovered eight months later in the general area of Lac Brochet. Number 5673 was tagged in 1963 and recovered six months later in the same area. All of these, when taken, were among those animals which calve at Kaminuriak Lake.

In summary, the distribution pattern of recoveries of Thelon River tagged animals shows regular range limits very much as they were known to be before tagging. Less than four per cent of recoveries are from outside regular range limits. It is worth noting in passing that very much the same might be said of Manitoba tagged animals. Where tag returns do not indicate range limits it is generally in areas where there are known to be few if any regular hunters.

Returns from animals tagged at Mary Frances Lake, while few in number, are so widespread as to make one wish that a great many more returns were available to clarify matters. One third of the returns are from well outside the regular limits of the animals, and three out of four of the balance are on the margins of the range. While the Contwoyto Lake tag returns are also few in number (4 only), two of those are from opposite sides of the range extremities.

Longevity and tag returns.

It is early to analyze ear tag returns as they relate to longevity, and unresolved questions of tag retention suggest caution at present in accepting mortality rates from the data. However, it is interesting to look at what is available.

Table 6 shows the temporal spacing of returns received from caribou tagged from 1959 to 1962 inclusive. More returns will doubtless be received for some of those years, but not enough to make great difference in the results, judging from present rates of return. Cumulative mortality percentages are also shown on the table. It appears that the average caribou lives between one and two years after tagging. Seventy-five per cent are dead within a short period after two years from tagging. However, at least two thirds of the animals (if mature and female) live long enough to produce one calf, and over 25 per cent live long enough to produce two. It is unfortunate that this sort of data cannot yet be analyzed by age and sex of the animals tagged.

Recommendations.

1. People should be stimulated to turn in caribou ear tags, particularly in the west where there is a suspect lack of returns in some areas. To effect this, and to improve the quality of data given with tag returns, it is recommended that:

- (a) the incentive reward be raised, perhaps to \$5.00, for a tag return,

- (b) there be a concurrent publicity drive throughout the north, and
- (c) special effort be made to gain cooperation among natives in the Great Slave Lake area, perhaps by hiring special non-government personnel to visit and talk with them.

2. In the east, where large numbers of caribou are now carrying tags, quality rather than quantity tagging should be conducted from now on. Taggers should systematically and accurately assign sex to animals tagged, if necessary at the expense of more personnel and fewer animals tagged.

3. In the west the need is for quantity tagging until at least 2,000 animals are tagged. Tagging in the west should have priority over tagging in the east until this is achieved.

References

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YEAR	MANITOBA	N. W. T.	TOTAL
1959	112		112
1960	226	215	441
1961	530	N11	530
1962	478	618	1,096
1963	N11	1,641	1,641
1964	543	1,692	2,235
1965	550	1,800*	2,350
	2,439	5,966	8,405

TABLE 1. The numbers of barren-ground caribou tagged by the Canadian Wildlife Service (N. W. T.), by the Manitoba Game Branch (Manitoba), and in total since 1959.

* Approximate figure from oral report only.

POINT OF TAGGING	YEAR	NUMBER TAGGED	NUMBER RETURNED	% RETURNED
Mary Franacea Lake	1960	69	6	8.7
Contwoyto Lake	1960	94	2	2.1
	1964	21	Nil	Nil
	1965	250*	2	0.8
Sub-total		365	4	1.1
Thelon River	1960	52	2	3.8
	1962	618	23	3.7
	1963	1,641	108	6.6
	1964	1,671	51	3.1
	1965	1,550*	14	0.9
Sub-total		5,532	198	3.6

TABLE 2. Per cent of caribou ear tags returned by year, and by point of tagging in the Northwest Territories.

* Approximate numbers from oral report.

PLACE TAGGED	NO. CARIBOU TAGGED	RETURNS RECEIVED	% RETURNED
Manitoba	2,439	85	3.5
N. W. T.	5,966	208	3.5
TOTAL	8,405	293	3.5

TABLE 3. Caribou ear tags returned, and per cent returned, from caribou tagged in Manitoba, in the N. W. T. and in total, as per returns filed with the Canadian Wildlife Service, Edmonton on February 8, 1966.

	TOTAL RETURNED	% RETURNED	USEFUL RETURNED	% RETURNED
1960	2	3.8	2	3.8
1962	23	3.7	22	3.6
1963	108	6.6	67	4.1
1964	51	3.1	25	1.5
TOTALS	184	4.3	116	2.9

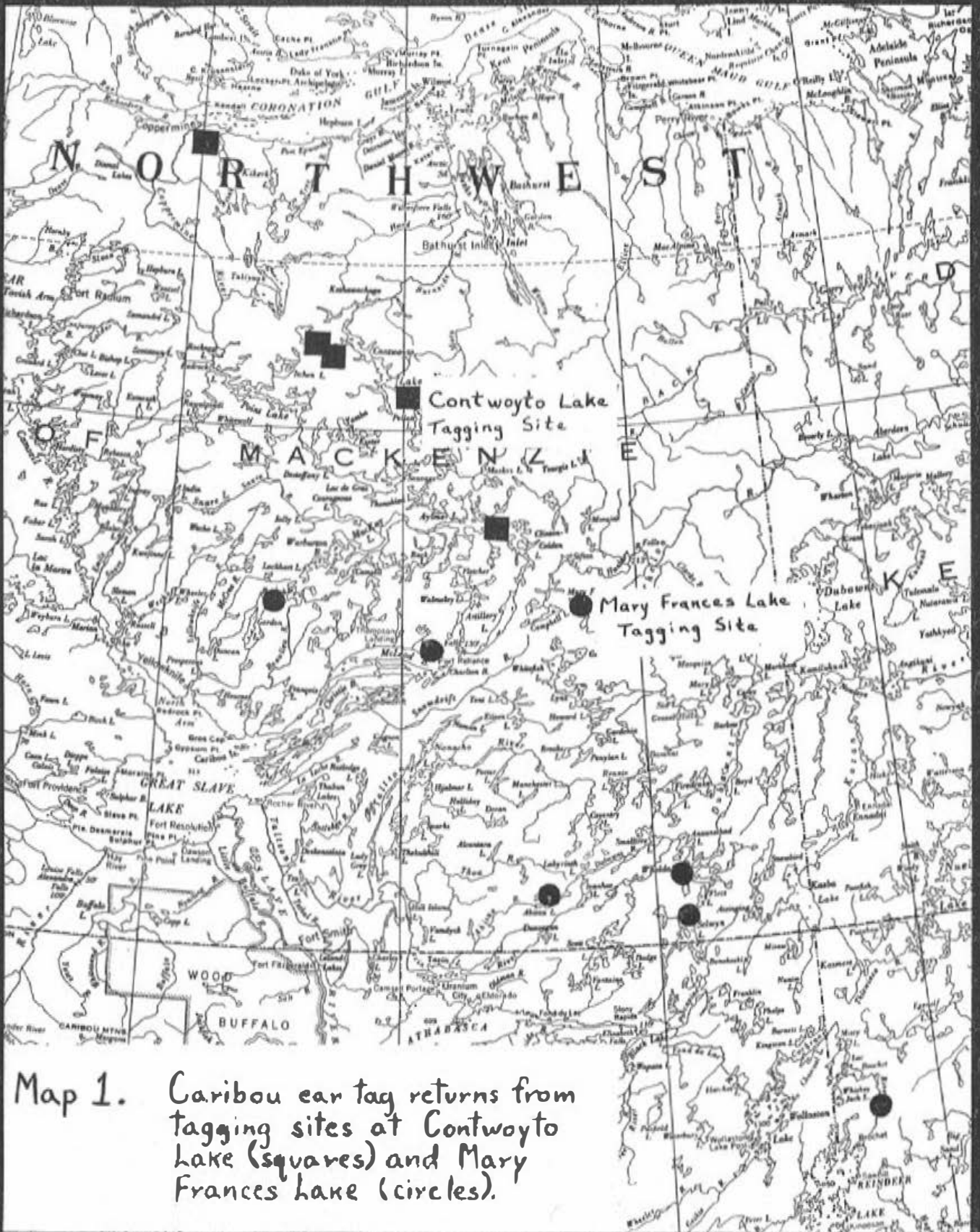
TABLE 4. Caribou ear tag returns from animals tagged on the Thelon River showing total returns, and "useful" returns where animals killed near tagging sites within two months have been subtracted.

PLACE OF TAGGING	AGREED MALE	AGREED FEMALE	DISCREPANCY	SEX NOT REPORTED
Northwest Territories	27	17	27	138
Nanitoba	2	2	9	72
TOTALS	29	19	36	195

TABLE 5. The number of instances where taggers and returners agreed on the sex of individual caribou, the number of cases where there was discrepancy, and the number of cases where there was no sex given by one or both parties.

	0-6 mos.	7-12 mos.	1-2 yrs.	2-3 yrs.	3-4 yrs.	4-5 yrs.	5+ yrs.
1959		1	1	1	3		
1960	4	1	9	3	2	2	1
1961	4	8	13	4	3		
1962	8	8	19	8	3		
TOTALS	16	18	42	16	11	2	1
Cumulative Mortality	15.1%	32.1%	71.7%	86.8%	97.2%	99.1%	100%

TABLE 6. Temporal distribution of caribou ear tag returns from animals tagged from 1959 to 1962 inclusive, at half yearly (1st two data columns) and yearly intervals and as cumulative mortality percentages.



Map 1. Caribou ear tag returns from tagging sites at Contwoyto Lake (squares) and Mary Frances Lake (circles).

Map 2. Caribou ear tag returns from tagging on the Thelon River.

