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Experiment in poisoning wolves on the Arctic tundra. Edmonton, 1956.

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AN EXPERIMENT IN POISONING WOLVES ON THE ARCTIC TUNDRA

By

Donald H. Flook

Edmonton, Alta.
1956.

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CONTENTS

AN EXPERIMENT IN POISONING WOLVES ON THE ARCTIC TUNDRA

PART A

I. Instructions:

The writer was instructed by The Chief, Canadian Wildlife Service to carry out an experimental wolf control project in the Eskimo Point area, N.W.T., in order to develop methods of selectively poisoning wolves on the arctic tundra. These instructions were received in memoranda dated October 19th and 25th, November 17th and 25th, December 5th and 22nd, 1955 under file W.LT.266.

II. Introduction:

Recent aerial counts have revealed a critical decline in the barren land caribou of the Canadian mainland east of the MacKenzie River system. The causes of this decline are not fully understood. However, wolf predation is considered one of the major factors in the environmental resistance tending to depress the caribou population. It is believed that by reducing the wolf population on the caribou winter ranges the loss in caribou due to wolf predation can be reduced.

In recent years a satisfactory method of poisoning wolves in the boreal forest has been developed and used by the Manitoba and Saskatchewan Game Branches, and by the Department of Northern Affairs and National Resources on Barren Land Caribou winter ranges in Northern Manitoba and Saskatchewan and in the MacKenzie District.

This method consists of distributing strychninne in a bait of caribou or buffalo meat. A hole is cut in the ice of a lake and the bait is frozen in. The location is marked with a warning sign and two spruce trees.

In certain parts of the tundra, barren land caribou winter; and are usually accompanied by wolves which prey on them.

As well as preying upon the caribou, the wolves devour caribou carcasses poorly cached on the tundra by Eskimos, and destroy trapped arctic foxes before they can be picked up by the trappers. For these reasons it is desirable to reduce the wolf numbers in certain tundra areas.

There are certain differences between conditions on the tundra and in the timbered region which affect the planning of a large scale wolf control program on the tundra:

1. In the timber, wolves are restricted in their movements, to following mainly the major waterways whereas on the tundra they are not restricted by deep snow and travel at large on land or ice.

2. The valuable furbearers of the timbered region seldom venture far from shore on lake ice whereas the arctic fox of the tundra travels widely on ice as well as on land.

3. Very difficult weather conditions limit flying over the tundra in the early winter when bait setting should be carried on.

4. Map reading is very difficult from aircraft on the tundra in winter due to similar appearance of land and snow covered water bodies.

5. No spruce trees are available on the tundra for marking bait locations.

In view of these considerations certain questions need to be answered concerning poisoning wolves on the tundra:

1. Can the wolf population be reduced effectively by the use of poison baits?

2. What intensity of baiting is necessary for adequate wolf control?

3. Will intensity of baiting necessary to control wolves, seriously deplete the arctic fox population?

4. What preferences do wolves and arctic foxes exhibit for various types of baits, methods of setting baits, and

types of locations of baits?

5. What methods of bait setting, types of bait, and means of transportation can be practically and economically used on the tundra?

III. Purpose

The purpose of this work was to answer as many of the above questions as possible, as well as to obtain the approval and cooperation of the Padlemuit Eskimos in a wolf control program and caution them in the danger of poison baits.

IV. Description of Area

The experiment was carried out in the Eskimo Point area, in the N.W.T. By February 27th thirty poison stations had been set out, and locations proposed for an additional twenty-two stations. These will form a pattern extending from the west coast of Hudson's Bay inland about fifty miles and from the Thasne River north to Pistol Bay, a distance of about one hundred and fifty miles. Also three poison stations were to be set out near Padlei which lies one hundred miles north-west of Eskimo Point.

Geologically this area lies in the Hudsonian Province of the Precambrian Shield. The highest elevations encountered in the coastal area was at Term Point where rocks rise to about 150 feet above the sea. At Padlei rocky hills rise to an estimated 500 feet above sea level. The area is characterized by numerous boulder strewn ridges of rock outcrop, and frequent eskers. Rock outcrop is more extensive in the northern part of the area whereas deposits of sediment are more extensive in the southern part. Lakes are numerous and cover a large proportion of the land area. These tend to be very shallow near the coast and deeper inland. There is considerable marshy country near Eskimo Point.

The soil is apparently mostly gravelly or sandy and very meagre.

Vegetation cover is a sparse growth of Arctic tundra. At Padlei there are stunted black spruce scattered in limited favorable sites on the tundra.

V. Bait-Setting Methods

Strychninne was the poison used in all baits. The form used in most baits was two-grain cubes. These were handled with forceps. In meat which was not frozen, parallel slashes about two inches apart were cut, and the cubes dropped in these. In frozen meat, holes were drilled with a brace and 3/8 inch steel drill, the cubes dropped in these and the meat tapped with pliers or an axe to close the holes. Some of the strychninne used was in fine crystalline form. This was either scattered directly from the bottle into the slashes in the meat, or in the case of frozen meat, ladled into the drill holes with a long handled, 2 grain capacity ladle made from a bottle cap.

The thirty-three baits set by February 27th were prepared from caribou carcasses, but Voisey was to use mostly wolf carcasses for baits in the trips to be made after the writer left Eskimo Point. Six or seven baits were obtained from each caribou carcass and about three from each wolf carcass.

Thirty to eighty grains of strychninne was used in each bait depending on size, with fifty grains most common. The strychninne was distributed as uniformly as possible through the bait.

Although holes were drilled ahead of time in frozen baits, to save time, the strychninne was never put in a bait until it was anchored at the station. This was to safeguard against poisoning sled dogs which occasionally break loose during the night, and the possibility of confusing prepared baits with meat to be used for food for dogs or men.

Some baits were frozen directly to rocks, soil, or lake ice. Others were anchored to rocks by means of #9 wire passed through a hole drilled in the largest bone of the bait.

Some baits were elevated on green spruce posts. These posts were 7 feet long and 2 inches thick at the small end, and bore the warning sign on the top one foot. Of the elevated baits, a few were hung on the posts by three links of 3/16 inch passing link chain wired to the post and to the bait. Others were wired solidly to the posts by means of two wires passed through holes in the bones.

The posts were wedged in cracks in rocks or else frozen in lake, river, or sea ice. At first a six foot long 1½ inch diameter ice auger was used to drill holes through the ice to reach water, and the hole cut larger with an ice chisel to freeze in the posts. Difficulty was encountered from hitting bottom with the auger in shallow lakes as the ice was five feet or more thick. This was overcome by chiseling a small hole and freezing in the post with urine.

In order to anchor non elevated baits on shallow lakes, oak pegs, 1½ inches square, 15 inches long were cut. Voisey was to try them on his later trips freezing them into 12 inch deep auger holes and wiring the baits to them.

VI. Itinerary of Bait-Setting

January 23 - View Churchill to Eskimo Point via Arctic Wings Norseman. Met Const. Gallagher and Const. Mascotto of R.C.M.P.; Father Ducharme, Roman Catholic Missionary; Mr. J. Stanners, H.B.C. Post Manager; and Mr. Lewis Voisey, trapper.

Reports indicate only caribou in area are in fair sized herd scattered north from Tavanni.

Wolves reported numerous in Tavanni area, in area southwest of Eskimo Point, and in vicinity of Dunalla on Manitoba boundary.

January 24 - Hired L. Voisey as guide and assistant. Purchased 5 autumn-killed caribou, cut them up and skinned them for baits.

January 25 - Clear, -15°, mostly calm. Travelled 30 mile circuit southwest of Eskimo Point with L. Voisey and his dogteam, setting 5 poison stations.

E-1 - Caribou backbone and ribs frozen to rock on southeast end of esker. Location reported favorite haunt of wolves.

E-2 - Caribou thigh frozen to rock in northwest end of low esker. Location reported favorite haunt of wolves.

K-3 - Caribou thigh hanging by chain on post, 40 inches above glare ice. Part frozen in ice of small lake, on slant.

Observed three seperate single wolves, numerous wolf tracks and a few fox tracks. Large numbers of carcasses of unskinned, autumn-shot caribou scattered over area travelled. Most of these have meat completely or partly eaten by wolves. Several fox trapsets seen, mostly at caribou carcasses.

January 26 - Prepared for trip tomorrow.

January 27 - Overcast, -10°, wind N.W. mod. Travelled from Eskimo Point north along coast 45 miles with L. Voisey and his dogteam, Cst. Mascotto and Special Cst. Karetak and their dogteam. Camped in Baldy Turner's deserted cabin.

Obs. 1 wolf track, 1 caribou track, and 2 fox tracks.

January 28 - Mostly clear, mod. cold, wind N.W. strong. Continued north along coast 35 miles and camped in snow house.

Obs. 7 wolf tracks all day, seven caribou plus tracks of a few more, just north of Turner's cabin.

January 29 - Clear, mod. cold, wind W. mod. Travelled 40 miles, and reached S. Voisey's deserted house at Term Point.

Obs. about 40 caribou near deserted H.B.C. buildings at Tavani. These feeding on lichens on rocky peninsula. Shot three and set poison station;

K-4 - entrails of 2 caribou, strychninne through intestines, livers, and hearts. Obs. 1 wolf track at K-4 and 4 wolf tracks between Tavani and Term Point. Fair number of caribou tracks on sea ice between Tavani and Term Point.

January 30 - Clear, cold, fairly calm. L. Voisey and Karetak travelled to flow edge and hunted seal for dog food. Obtained two harbor seal. Mascotto and I set poison station one half mile east of Term Point house.

January 30 (cont'd)

K-5 - Caribou shoulder wired solid to post 28 inches above ~~general~~ ground level. Post wedged in crack in high rocky location. Near station observed 1 arctic hare, old tracks of a few caribou and 1 wolf.

January 31 - Mostly clear, cold, wind N.W. moderate. Karetak left for Eskimo Point with R.C.M.P. team. Mascotto, Voisey, and writer travelled 15 miles N.NW. from Term Point. Set two poison stations.

K-6 - Caribou thigh wired solid to post about 28 inches above ice, located on sea ice in Wilson Bay.

K-7 - Caribou body section and entrails frozen to large rock. Strychninne through muscle and entrails.

At location of K-7 encountered about 250 caribou scattered feeding on ridges and shot one. Dogs broke bridle on komatik and ran away chasing caribou. Voisey tracked and recovered eight dogs which were O.K. but remaining one had been killed by others. Camped there in snow house.

February 1 - Clear, very cold, wind W. NW strong. Travelled 20 miles in A.M. with L. Voisey and Mascotto reaching J. Voisey's deserted cabin at mouth of Wilson R. setting 2 poison stations en route;

K-8 - Caribou rib basket with heart, wired to rock on end of esker.

K-9 - Caribou shoulder wired solid to post about 28 inches above ice. Post upright in sea ice on Wilson Bay, one mile east of J. Voisey's cabin. and travelled 20 mile circuit ENE of cabin.
Cached load at cabin. Shot 6 caribou and set 2 stations;

K-10 - Caribou head and neck wired solid on post about 28 inches above ground. Post wedged in crack on rock outcrop ridge.

K-11 - Entrails of two caribou, frozen to ground on low hill. Strychninne through intestines, livers, hearts, kidneys.

Hauled six caribou carcasses to cabin. Obs. total about 40 caribou.

As cabin is in center of caribou concentration decided to base operation here for a few days.

February 2 - Clear, cold, wind N.W. strong. With Voisey and Mascotto travelled 35 miles circuit south of cabin, visiting Eskimo camp on Mistake Bay, and setting 5 poison stations:

K-12 - Calf shoulder wired solid to post 30 inches above ice on small lake.

K-13 - Caribou rib basket and entrails frozen to rock on end of low rock outcrop ridge.

K-14 - Caribou head and neck wired solid to post about 30 inches above ice on lake.

K-15 - Caribou shoulder wired to a rock on beach of small lake.

K-16 - Caribou shoulder wired solid to post 32 inches above ground. Post wedged upright in crack in rock plateau.

Obs. about 150 caribou today and occasional wolf tracks.

February 3 - Clear, cold, wind N.W. strong. Rested dogs as they were slowing up yesterday.

February 4 - Overcast, very cold, N.W. gale. Ground drift too heavy to travel.

February 5 - Clear, very cold, wind N.W. strong. With Voisey and Mascotto travelled 50 mile circuit W. NW of cabin, setting 5 poison stations.

K-17 - Caribou thigh hanging on chain from post about 34 inches above ice on Wilson River.

K-18 - Caribou thigh set same as above on small lake.

K-19 - Caribou body section and entrails frozen to ground on slope of sandy hill on bank of Wilson River. Wolf den on top of hill with recent digging.

K-20 - Caribou liver frozen to shoulder. Shoulder wired to rock on rocky ridge. Strychnine in liver only.

K-21 - Shoulder hanging on chain from post about 34 inches above wind packed snow on small lake.

February 6 - With Voisey and Mascotto travelled from Wilson River to Term Point, 30 miles, following land route north of Wilson Bay. Checked two stations.

K-10 - not disturbed.

K-11 - 1 white fox dead three feet from bait. It apparently consumed a small amount of mesenteric fat from bait.

One half mile east of K-11 obs. head and bones of recently killed caribou. Three white fox near caribou remains and three wolves running on hill nearby.

Obs. about 15 caribou today. Fox scats numerous.

Karetak was to meet us at Term Point today for return trip to Eskimo Point. No sign of him.

February 7 - Clear, cold, wind N. moderate. Cst. Mascotto had police business requiring a visit to camp of Congashengnak on Mistake Bay. Flook remained at Term Point to meet Karetak. Mascotto and Voisey travelled 35 miles to Congashengnak's camp. No sign of Karetak.

February 8 - Overcast, cold, NW gale. Mascotto and Voisey continued to Tavani and hunted caribou - 20 miles. No sign of Karetak at Term Point.

February 9 - Clear, cold, NW gale. Ground drift too heavy for travel. Mascotto and Voisey camped in snowhouse at Tavani, Flook at Term Point. No sign of Karetak.

February 10 - Clear, cold, wind NW very strong. Ground drift less heavy than yesterday. Mascotto and Voisey travelled 20 mile circuit west of Tavani setting poison

station.

K-24 - Caribou head and neck wired solid to post about 30 inches above ice on Fishery Lake.

Mascotto and Voisey returned to camp at Tavani. Still no sign of Karetak.

February 11 - Clear, cold, calm

Mascotto and Voisey travelled Term Point to Tavani, 25 miles. No sign of Karetak.

February 12 - Cloudy, moderate temp., wind NW, strong. With Voisey and Mascotto hunted seal on flow edge. Obs. 3 seal but unable to kill any. Obs. 1 snowy owl. Travelled about 15 miles. Karetak arrived from Eskimo Point.

February 13 - Foggy, intermittent snow, mild, wind S. mod. Travelled total of 35 miles Term Point to Tavani and hunting caribou at Tavani. Checked one poison station.

K-4 - found 6 dead wolves. Baited one carcass with strychninne. Voisey cached 5 other carcasses in snow house.

Obs. about 50 caribou. Shot four. Also given two livers by an Eskimo, Buckshot. Prepared six liver baits to set en route to Eskimo Point. Camped in snowhouse at Tavani. Several Eskimo hunters camped at Tavani hunting caribou. Some of them have come from as far as McConnell River.

February 14 - Clear, mod. temp., wind NW strong, ground drift. With Voisey, Mascotto, Karetak, and Buckshot, travelled 30 miles south from Tavani setting two poison stations en route.

K-25 - Caribou liver and intestines frozen to sternum, strychninne in liver only. Sternum wired to rock on low hill.

K-26 - Caribou liver and intestines frozen to tarsus, strychninne in liver only. Tarsus wired to rock on peninsula near Big Island. Camped in snow house at Buckshot's camp.

February 15 - Clear, very cold, wind west strong. With Voisey, Massotto and Karetak travelled 55 miles south along coast setting 3 stations.

K-27 - liver and intestine frozen to caribou head, strychninne in liver only. Head wired to rock on east end of esker.

K-28 - liver and intestine frozen to tarsus, strychninne in liver only. Tarsus wired to rock on slight rise.

K-29 - liver and intestine frozen to sternum, strychninne in liver only. Sternum wired to rock on slight rise. Obs. a few old caribou tracks and 1 wolf track today.

February 16 - Clear, cold, wind NW. moderate. Travelled 20 miles to Eskimo Point. Set one station.

K-30 - liver and intestine frozen to caribou neck, strychninne in liver only. Neck wired to rock on low rocky ridge.

February 17, 18, 19 & 20 - Too stormy to travel by dogs or aircraft. Worked in Eskimo Point on correspondence. Voisey prepared signs, baits, syllabics data cards and skull tags, and built plywood box for carrying baits and poisoning equipment on komatik.

February 21 - Clear, cold, wind NW moderate. Flew to Padlei and Yathkyed Lake by R.C.M.P. Otter with Cst. Gallagher who had police work at Yathkyed Lake Eskimo village. Total mileage 370 miles.

At Yathkyed Lake, discussed wolf control and caribou conservation with Eskimos and distributed poison warning notices to the seven families there.

Discussed wolf control work with Mr. M. Voisey, H.B.C. Post Manager at Padlei, who accompanied the trip Padlei to Yathkyed Lake and return. As Mr. Voisey expressed willingness to set out a few baits near Padlei, check them and dispose of them in the spring, I left him three large caribou meat baits with holes drilled, signs, sign posts, and 100 cubes of strychninne. He had been informed by the H.B.Co. of the plans for wolf control so had warned the Padlei Eskimos earlier in the

season. Left 20 poison warning notices with him for distribution.

H. Voisey reported that caribou migrated southward through Padlei area in autumn and Eskimos made a large kill. However Yathkyed Lake Eskimos report their supply now low. A few wolves are remaining in area feeding on caribou carcasses. Wolverine reported numerous and stealing caches.

Lewis Voisey made visit today by dog team to three stations as follows:

K-1 - picked up carcasses of 3 wolves, and added caribou meat bait to station wiring it to a rock.

K-2 - found remains of one wolf carcass eaten by other wolves.

K-3 - He reported that there were numerous wolf tracks around this station which consists of a caribou thigh hanging by chain from a slanting post on a small lake. Wolves had urinated on the post but not touched the bait. While watching it Voisey noticed the bait swinging slightly on the chain due to wind. Perhaps this is making wolves alarmed.

February 22 - 20 - Intermittent snow, gale from NW. Very heavy ground drift preventing travel by aircraft or dog team.

Remained in Eskimo Point and worked on office work. Voisey prepared baits from wolf carcasses, fleshed wolf and caribou skulls, cut oak pegs for anchoring baits in ice, and assisted R.C.M.P. in carpentry work.

February 27 - Clear, -20°, Wind NW. strong. With L. Voisey travelled 16 miles NE of Eskimo camp and cached a load of supplies. Checked two stations.

K-1 - not disturbed

K-2 - not disturbed.

Returned to Eskimo Point.

February 28 - Clear, cold, wind NW moderate.
Flew Eskimo Point to Churchill by Arctic Wings Norseman, thence The Pas by C.P.A.

L. Voisey commenced trip south west of Eskimo Point over an 125 mile circuit to set twelve poison stations.

The mileage travelled by the writer in the bait setting was 490 by dog team and 720 by light aircraft.

Donald R. Flook
Donald R. Flook
Mammalogist.

Edmonton, Alta.
March 15, 1956.

An Experiment in Poisoning Wolves On The Arctic Tundra

Part A. (continued)

VI. Completion of Bait Setting

In addition to the thirty stations set out between January 25 and February 16, L. Voisey set out 11 poison stations south of Eskimo Point, February 28 to March 2.

These were as follows:

Number	Type of Bait	Type of Location
K-31	caribou meat	flat marshy area
K-32	part of wolf carcass	esker
K-33	part of wolf carcass	esker
K-34	part of wolf carcass	lake
K-35	part of wolf carcass	esker
K-36	part of wolf carcass	Hyde Lake
K-37	caribou meat	inlet of small river
K-38	part of wolf carcass	esker
K-39	part of wolf carcass	rocky flat
K-40	caribou meat	esker
K-41	part of wolf carcass	edge of esker

H. Voisey, Hudson's Bay Post Manager at Padlei, kindly set out the three baits which were left with him. These were set near Padlei as follows:

K-42	caribou meat	lake ice 10 miles north of Padlei
K-43	caribou meat	lake ice 15 miles north of Padlei
K-44	caribou meat	lake ice 1 mile south west of Padlei

Part B

by
D.R. Flook and N.S. Novakowski

I. Mid-season Bait Check

A mid season check of baits No. K-1 to K-30 was made by L. Voisey travelling by dog team, March 15 - April 1. On this trip he tallied all dead animals found, on Eskimo syllabics record cards. This information was later transcribed by the R.C.M.P. at Eskimo Point on English record cards. On this trip baits which had been mostly or entirely eaten were replaced.

II. Bait Pickup

The final visit to baits K-1 to K-41 was made by N.S. Novakowski accompanied by L. Voisey, travelling by dog team, April 29 to May 15. On this trip dead animals were tallied using the record cards, field examinations of the wolves were made, skulls were collected for taxonomic study, and the baits and carcasses of poisoned animals were disposed off.

The field examinations included: pelage color, measurements, weight, sex, age, reproductive condition, stomach contents, and fat deposition.

H. Voisey advised by letter concerning the results of the three baits which he set out near Padlei. These were left on the lake ice, as were the carcasses of the poisoned animals.

III. Results

The total positive kills on the project were as follows: 87 wolves, 14 arctic foxes, 2 colored foxes, 1 wolverine, and 1 stray dog. This includes 1 wolf shot by Lewis Voisey at station K-40, south of Eskimo Point.

The distribution of the kills was: Eskimo Point north to Pistol Bay (27 baits) - 52 wolves, 11 arctic fox, 1 colored fox, 1 wolverine, and 1 dog.

Eskimo Point south to Hyde Lake (14 baits) - 29 wolves, Padlei (3 baits) - 5 wolves, 1 colored fox.

IV. Discussion and Conclusions

In table 1, the numbers of wolves and arctic foxes killed in the Keewatin District in elevated baits of caribou meat are compared with those killed on caribou meat baits anchored on the ground or ice.

Table 1. Comparison of elevated and non-elevated baits (Keewatin District)

Type of bait	No. of baits set	No. of wolves taken	Wolves per bait	Artic foxes taken	Arctic foxes per bait
Elevated	13	1	0.1	3	0.2
Non-elevated	16	71	4.4	4	0.2

In the cooperative wolf control programme in the Brochet section of northern Manitoba, ten elevated baits were set out on a caribou wintering area, alternating them with ten standard sets frozen in the ice. The latter were to provide a basis for comparison. Mr. J.D. Robertson kindly provided the results of this experiment which are presented in table 2.

Table 2. Comparison of elevated and non-elevated baits (Northern Manitoba)

Type of bait	No. of baits set	No. of wolves taken	Wolves per bait	No. of foxes taken	Foxes per bait
Elevated	10	5(1)	0.5	7(2)	0.7
Non-elevated	10	37	3.7	15(3)	1.5

(1) Pole supporting one bait fell before freezing. This took 4 wolves.
(2) 6 colored fox, 1 white
(3) 14 colored fox, 1 white

The results from the two areas show conclusively that baits elevated on poles are of no use for taking wolves, either on the

tundra or in the taiga.

Tracks frequently showed where wolves had approached the elevated baits but not touched them, indicating that they were wary of this type of bait.

Arctic foxes were taken in equal numbers from elevated and non elevated baits, while colored foxes were taken in the taiga in much larger numbers on elevated baits than on non-elevated baits.

It is of interest that both arctic and colored foxes and wolverine were quite unwary of the elevated baits. At some of the Manitoba baits, tracks showed where colored foxes, and a wolverine had jumped to reach baits, and had been poisoned, and both arctic and colored foxes reached up three feet or more to take bait.

In table 3, a comparison is made of the kill from baits in which strychninne was contained in caribou liver only, with that of similarily set baits in which the strychninne was placed throughout the entire bait of caribou meat or entrails.

Table 3. Comparison of liver baits and standard caribou baits

Kind of bait	No. of baits set	No. of wolves taken	Wolves per bait	No. of arctic foxes taken	Arctic foxes per bait
Liver	7	6	0.8	4	0.6
Caribou	16	71	4.4	4	0.2

It is quite apparent from these data that the use of liver as bait did not reduce the arctic fox kill on poison stations. It was of interest that on the liver baits where white foxes were taken, they had apparently fed only upon the liver, and there were no teeth marks on the other parts of the bait such as muscle, intestines, etc. This suggests that, where there was a choice the arctic foxes actually preferred the liver. That the wolf kill per liver bait is lower than that for standard baits, is probably explained by the smaller size of the liver baits and the fact that none

of the liver baits were located in the main area of caribou concentration.

Halves of wolf carcasses were used for bait at eight stations south of Eskimo Point. Eight wolves were taken on these for an average of one wolf per station. There were no caribou wintering in the area, and the wolves which stayed in the area were apparently held there by the wasted caribou carcasses left by the Eskimos on their autumn hunt. Only three standard type baits of caribou meat were set in the same area, so they are all that can be used as a basis for comparison. Four wolves were taken on them. This sample although small would indicate that, when available, wolf carcasses may be equally good bait for killing wolves, as are caribou carcasses. Since no arctic fox were taken on either the wolf carcass baits or the caribou meat baits in this area, nothing can be concluded regarding the palatability of wolf flesh to arctic foxes.

In table 4, the results of standard type baits set on eskers are compared with similar sets made on other sites including river or lake ice, plateaus, or low rocky ridges.

Table 4. Results of baits set on eskers compared with sets on other sites

Site	No. of baits	No. wolves taken	Wolves per bait	No. arctic foxes taken	Arctic foxes per bait
Eskers	10	33	3.3	1	.1
Other	11	40	3.6	6	.5

These results show that baits set on eskers were not any more productive of wolf kills than the baits on other sites. Fewer arctic foxes were taken on eskers than other sites. However, the number of arctic foxes taken was not great enough to justify restricting future bait-setting to eskers.

If a five mile margin is allowed beyond the outside baits in each section in which poison stations were set, the land area from which the animals were removed can be estimated by planimeter measurement. The area per animal taken can then be calculated. This is shown in table 5, along with animals taken

per poison station.

Table 5. Intensity of removal of wolves and arctic foxes by poison baits

Section	Area	Wolves Taken	Sq.Mi.per Wolf Taken	Arctic foxes taken	Sq. Mi. per Arctic fox taken
Eskimo Pt. North to Pistol Bay	920 Sq.Mi.	52	17.7	11	83.6
Eskimo Pt. South to Hyde Lake	905 Sq.Mi.	29	31.2	0	-

Track observations and wolf observations on the mopup indicated that there were still large numbers of wolves ranging in the area. Probably at least half of the number of wolves present in January, remained. If this were the case, the wolf population density in January would have been about 9 square miles per wolf in the area north of Eskimo Point. During the period January to May there was a herd of caribou in the Tavanni area. Flook's estimate of the size of this herd, based only on ground observations was about 5,000. Those familiar with the limitations of ground estimates will appreciate that this is very approximate.

The bait-setting was not begun until January 25, and the last bait was not set until March 2. It seems probable that if the bait setting was begun as soon as winter travel commenced, probably about November 1, that the wolf population in the Eskimo Point area could be effectively controlled by the same intensity of bait setting as was done last winter.

The probable effect of a wolf poisoning programme on the arctic fox population might be predicted by comparing the results of the poison baits with the catch made by Lewis Voisey on his line of traps for foxes.

Voisey had approximately 200 miles of trapline in the Eskimo Point area, with an interval of 4 to 10 miles between traps. These were set out in November and serviced continuously until the wolf control work began January 24th. They were then not visited until the end of the trapping season. For this reason the catch was somewhat reduced and the loss of the

trapped fur to carnivores was increased. The total number of arctic foxes taken in Voisey's traps was 84. Of these, 48 pelts were obtained, and 36 foxes were destroyed in the traps, as follows: 28 by wolves, 5 by foxes, 2 by wolverine, and 1 by a dog. The number of foxes caught per mile of trapline was 0.4. The percent of the trapped fox which were lost to carnivores was 43%. Voisey has followed a similar trapping procedure for several years and reports that his fox catch holds up fairly well and is usually higher than it was this year. His catch fluctuates with fox abundance, but he feels that this reflects overall changes in the fox population and is little affected by his trapping activities.

In the wolf poisoning programme, 41 poison stations were set out in the Eskimo Point district or approximately 310 miles of line. Thus, the average interval between baits was 7.5 miles. The number of foxes found, poisoned at the baits, was 14. The number of foxes known, taken per mile of line, was therefore .04. Even if we recognize that some white foxes were poisoned and not found, it is apparent that the kill of arctic fox per mile of line of poison baits was only a small fraction of the kill per mile of trapline.

Voisey's trapping appears to be on a sustained yield basis. If this is the case, then in the Eskimo Point area at least, and probably anywhere on the tundra, a wolf poisoning programme could be carried out without appreciably affecting the arctic fox population. That is, provided that the baits are set with a view to killing wolves, and the interval between baits is at least 5 miles. Of the 14 arctic fox taken on poison baits, Voisey was able to salvage the pelts of 9. Thus, foxes taken on poison baits need not necessarily constitute a waste. In fact, only 36% of the foxes known killed on poison baits, were lost to carnivores, a smaller proportion than that which occurred on the trapline.

V. Recommendations:

1. It is recommended, that a large scale wolf control programme be initiated in the fall of 1956, in the Keewatin District, to cover all areas where caribou winter.

It is also recommended, that lines of baits be set out on the tundra, to intercept the usual routes of caribou herds which migrate into the taiga in the fall and early winter.

2. It is recommended, that the standard method of bait setting be followed, using large baits of caribou, buffalo, or wolf meat, impregnated with strychninne. These should be anchored either by wiring them to rocks or by freezing them to ice. They should be marked with large orange and black warning signs.

3. Notices should be circulated among all the mainland eskimos to acquaint them with the wolf control programme and warn them of the dangers of poison baits. Even although this was done at Eskimo Point and Padlei last winter, it should be repeated as soon as possible, as repetition is very important in acquainting native people with new developments. Awareness of the poison programme among the native people, is essential before a large scale wolf control programme can be started with any degree of safety.

4. Lewis Voisey has had enough experience in bait setting techniques, to conduct wolf control work by dog team in the Eskimo Point district. It is recommended that he be engaged as a year round employee of the Canadian Wildlife Service, to carry out wolf control work through the winter, and the rest of the year to work as assistant to biologists of the Service engaged in field studies in the Keewatin District.

5. It is recommended, that in other areas on the tundra where caribou winter, efforts be made to locate competent young men who are good travellers and have good dog teams, and train them in poisoning techniques. One possible way of training a man might be to send him to Eskimo Point and have him work with Voisey for a while setting baits in that area. It is important that only very reliable natives be hired to carry out bait setting, and they be closely directed. Otherwise they might do more harm than good.

6. In areas on the tundra where bait-setting operations cannot feasibly be done by natives with dog teams, the baits could be set by aircraft. It is suggested, that a trial operation be conducted, setting out lines of baits prior

to freeze-up, by float aircraft. These baits could be set on islands or lake shores, wiring them to large rocks. This procedure would overcome the difficulty encountered in map-reading on the tundra in winter. It would be especially well adapted to setting line of baits to intercept the routes of caribou herds which migrate into the taiga in the autumn. W.A. Fuller tried this procedure east of Fort Smith three years ago. He advises that although the results of that work were not conclusive, he feels it warrants further trial.

7. According to information available in January, there was a warehouse full of buffalo meat at Ennadai Lake. This was flown there for Eskimo relief some time ago, but the Eskimos did not use it due to superstition. If still available, this could be used to excellent advantage in preparing poison baits to be set out by aircraft working from that base.

8. Wolf predation is an important factor controlling the caribou herds, and reduction in wolf numbers can be expected to slow the downward trend in caribou numbers. However, no amount of wolf control can be expected to arrest the caribou decline, as long as the flagrant waste of caribou continues such as was observed during the past season in the Eskimo Point area.

It is recommended that a policy be adopted of enforcement, among the Eskimos, of the regulations prohibiting the waste of caribou.

Education of the Eskimos in conservation can be expected to gradually improve the efficiency of utilization of game, by these people. However, at the current rate of decline, and waste of caribou, without law enforcement the herds can be expected to decline to a pitiful remnant before efficient utilization by the Eskimos is attained by education.

Among the Eskimos as in the white race there are individuals who will waste the resource wilfully to the detriment of all. An Eskimo, who in spite of repeated instructions from the R.C.M.P., shoots large numbers of

caribou and leaves them wherever they happen to die on the tundra, to rot or feed the wolverines, etc., could justly be punished by a month of hard labour at the local R.C.M.P. detachment. The other Eskimos could be expected to listen with greater respect to the pleas of the R.C.M.P., and other government representatives, to use the caribou properly, when they see the most flagrant violator punished.

Having observed caribou utilization by the Indians of the MacKenzie District, it is the opinion of Flook that while there is still waste of caribou in that District, it is much less serious than that which occurs in the Keewatin District.

It is Flook's opinion that waste of caribou by the Indians of the MacKenzie District has been greatly reduced by law enforcement by the R.C.M.P. and Warden Service.

Respectfully submitted:

D.R. Flook. N.S. Novakowski

D.R. Flook and N.S. Novakowski

July 4, 1956.

APPENDIX 1 - PHOTOGRAPHS

1. L. Voisey drilling hole in lake ice to "freeze-in" bait

2. Bait placed in water-filled basin in ice.

3. Slashing fresh caribou thigh to insert strychninne

4. Using forceps to insert strychninne cubes in slashed caribou thigh

5. Drilling 3/8" holes in frozen caribou thigh to insert strychninne cubes

6. Dropping strychninne cubes in drill holes in caribou thigh (note wire through hole in tibia)

7. Wiring bait to rock.

8. Poison station on ~~ground~~ gravel ridge, sign post supported by rocks.

9. Elevated caribou thigh bait hanging by chain wired to post and to tibia.

10. Elevated caribou thigh bait wired solid to post.

11. Elevated caribou head wired solid to post on lake ice at tea stop

12. Six wolves taken on station K-4 (entrails of two caribou), set January 29, checked February 13.

Northern Manitoba
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Set January 4 - 15, 1956
J. D. Robertson & D. R. Flook

Flook, Donald R.
An experiment in poisoning wolves on the arctic tundra.

TITLE

DATE LOANED	BORROWER'S NAME