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BEAVER STUDIES IN THE NORTHERN MACKENZIE DISTRICT

by
E.H. McEwen

The following topics are discussed in this report: the success of the five beaver transplants of 1953, the results of the beaver live-trapping studies of 1954, and beaver observations in the recently-opened part of the Mackenzie Delta Beaver Sanctuary, west of Arctic Red River. Analysis of beaver pelt measurements from Fort Good Hope, Traviar River, Arctic Red River and Fort McPherson will be included in a separate report.

Success of the Five Beaver Transplants of 1953

A report, describing the beaver live-trapping and transplanting program, conducted in August 1953, was submitted in a report, dated December 17, 1953. For reference, beaver were transplanted on the following five sites: 1 - A. Stewart (#196), 2 - S. Anuktuk (#39), 3 - Big Jim Angasuk (#82) 4 - Alfred Kendi (#19), and 5 - A. Headpoint (#260). These sites were checked in September 1953, and on August 6 and 7, 1954.

In September 1953, A/Chief Warden Rees visited the transplant sites of 1, 3, and 4. No beaver were found at sites 1 and 4. At site 3, Angasuk reported that one beaver was seen before freeze-up. No 'feed-bed', or lodge had been established. On August 6 and 7, Otto Binder, patrolman, and Sam Arey, labourer-guide, thoroughly investigated four transplant sites: 1, 5, 2 and 3, respectively. At site 1, no beaver were found. A lodge was partly constructed, but left unfinished. Beaver cuttings of 1953, including poplar, willow and alder were found. It appeared that the beaver had moved from this lake into the Schooner Channel, by travelling across a short portage. At site 5, a number of lakes, connected to the lake on which the beaver were released, were checked. No beaver, or lodge were found. The beaver could have travelled from the lake, down the creek, to the channel connecting the Taylor and Schooner Channels. At sites 2 and 3, no beaver, or lodges were found. The lakes were connected to the Napoyak Channel. At site 4, Alfred Kendi reported no beaver were seen at the site of release, during the spring trapping season. In September 1954, Kendi reported a beaver was seen in the lake, but this observation was not verified. This lake is a short distance from the Hudson Bay Channel on which beaver were seen in September 1953.

Considerable time and effort would be required to search other lakes and areas near the transplant sites for the tagged beaver. The five holders reported that there were no new lodges on their areas which could have been built by the transplanted beaver. The apparent failure of the transplanted beaver to establish themselves in the lakes into which they were released, is not positive evidence that the beaver did not survive. The results of this project appear unsuccessful and discouraging. One consoling feature is that some of the beaver may have established themselves elsewhere. Beaver were seen by myself and others on the Schooner Channel, near the junction of the Napoyak Channel and the Mackenzie River, and on the Napoyak Channel opposite the sites on the areas of 39 and 82. It seems likely that some of the beaver survived because of the increase in the number of beaver seen in these channels. The chance that the transplanted beaver would remain at the site of release were slim because of their common characteristic of shifting to another location about every two, or three years. The results of this project are difficult to evaluate, because none of the beaver were found the following year. It is evident that it is not a practical method to obtain data on survival, reproduction and growth. The value of distributing beaver to vacant areas could not be determined.

The Results of the Beaver Live-trapping Studies of 1954

In 1954, live-trapping studies were continued, but no transplants were made. The purposes of these studies were: to collect information on reproduction and survival; an ageing method for the classification of kits, yearlings, two-year-olds, and adults; and to investigate the abundance of beaver on certain areas in the East Branch area so that recommendations on the value of the present regulations could be submitted for consideration.

Live-trapping studies were conducted by S. Arey and myself, from August 10th to 29th. Of the seven beaver trapped, six were measured, tagged, sexed and released. One beaver was accidentally drowned. Data on the live-trapped beaver are listed in Table I. Prior to live-trapping, Warden K. Cooper, Aklavik, assisted by the trappers, plotted the location of beaver lodges on different areas in the East Branch district, on a map of three miles to one inch. In addition, a patrol in the East Branch district was

carried out by Warden Cooper and R. Baynes. Six trappers reported to them the number, location and accessibility of beaver lodges on their areas. Using this method, a number of difficulties were encountered trying to interrupt the plotted locations. Either the lodges were plotted on the wrong lake, or the wrong part of the lake, or the beaver had moved since the observation was made. Also, it is difficult to find the portages from the channels to the lakes. Assistance from the trappers was not possible because, after the completion of the trapping season, they return to Aklavik, or to the whaling stations on the coast. Next year, greater care should be exercised in plotting the lodges and portages so that errors and difficulties in locating the lodges are reduced. Either the patrolman, or the Warden should visit certain areas during the spring trapping season to locate accessible beaver lodges for future live-trapping. The use of an aircraft, although more expensive, would result in greater efficiency in observing the location and state of the plotted lodges. The Mackenzie Delta, being divided into individual registered areas, is ideal for live-trapping studies because accessible lodges can be determined prior to the field work.

Table 1 - List of Beaver Live-trapped in 1954.

Tag No.	Location	Date	Tail Length	Tail Width	Weight	Sex	Age
1192	T. Trone (Area #189)	Aug 14	230mm	95mm	23 lbs	Female	Yearling Class
----	T. Trone (Area #189)	Aug 16	219	94	26	Male	Yearling Class
1193	E. Arey (Area #83)	Aug 25	248	108	29	Male	Yearling Class
1194	E. Arey (Area# 83)	Aug 25	294	156	60	Female	Adult
1196	E. Arey (Area #83)	Aug 27	256	107	28	Male	Yearling Class
1195	J. Adams (Area #68)	Aug 26	234	110	25	Female	Yearling Class
1197	A. Norris (Area #13)	Aug 29	287	143	42	Male	Adult

Of the four beaver colonies live-trapped, no kits were trapped. In 1953, four of the five colonies contained kits. One lodge, which was not trapped, contained a single beaver, probably a male. The composition of the three beaver colonies completely live-trapped in 1954, were as follows: (2) one adult female and two male 'yearlings'; (3) one female 'yearling'; and (4) one adult male. Number (1) was not completely trapped. Besides the two

'yearlings' tagged, two large beaver, one small-sized beaver and two animals, possibly kits, were seen. The colony size of the beaver colonies completely live-trapped, averaged three beaver per colony. The average number of kits per colony was 2.5 . About half the colonies contained kits, giving an annual increase of about one beaver per colony.

An average of 19 trap units per beaver were required. At a lake on E. Merander's area, nine traps were expended without return. The lodge appeared to be occupied, but no beaver were observed. The beaver may have moved temporarily to a new location. At two lodges on T. Trone's creek, after 17 and 34 trap units, none and two beaver, were caught, repectively. At the second lodge, five sets were faulty and one muskrat was trapped. On Arey's lake, after 32 trap units, three beaver were trapped. Three times a live-trap was sprung, either by a willow, or by a poplar stick, preventing the trap from closing securely and allowing the beaver to escape. On Jim Adams' creek, four trap units, without success were spent on a lodge recently occupied. Twenty-nine trap units were required to catch one beaver at a site further down the creek. At this site, a lodge, two completed and one partly-finished dam had been built during the summer. From the amount of work which had been done, more than the one live-trapped beaver must have performed this work. After thoroughly searching the immediate area, no beaver were observed. At two other sites, seven and five trap units were required to trap one beaver.

The live-trapping results were not as productive as in 1953. Two factors influencing the results were the difficulty of live-trapping beaver in creeks and the large number of vacant lodges. In 1954, three lakes and three creeks were live-trapped. In 1953, the live-trapping was conducted entirely on lakes.

In 1955, the four sites will be retrapped. By releasing the beaver at the site of capture, the chances of relive-trapping some of the tagged beaver should be greater than by the method used in 1953. Observations will be made at the four sites before break-up, eliminating the possibility of movement during the high-water stage. By recapturing the tagged animals, measurements and weights of known age classes would be available to correlate the data on hand. Without known age classes, it is difficult to separate yearling and two-year-old animals.

From observations made throughout the East Branch area, a change of the present regulations is not recommended. Only a few areas have a large number of beaver lodges. On these areas there is no evidence of over-utilization, or disease. The number of lodges reported on areas varies greatly from year to year. In May 1954, 10 'occupied' lodges were reported by a trapper. Seven of these lodges were checked during the live-trapping studies. Six lodges were vacant and one non-existant. Out of a total of 20 lodges, 14 had been occupied during the spring, but vacated during the summer. By leaving the season closed in the East Branch area, part of the Mackenzie Delta Beaver Sanctuary, a more uniform distribution rather than the present spotty distribution might result.

Beaver Observations in the Area West of Arctic Red River

Field studies were conducted from May 16 to 23, 1954, in the area, which was included in the Mackenzie Delta Beaver Sanctuary, until 1953. The purpose of this phase of the studies was to obtain first-hand information on population density, trapping pressure, disease, body measurements, and habitat conditions.

On May 16, the camping equipment which was cached at Arctic Red River, was transported to a lake ("Island" Lake), six miles west of Arctic Red River. Two trappers, N. Norbert and E. Norbert, were hunting beaver from their camp on this lake. Only two beaver were shot by the trappers. The poor results were caused by a late spring. During the period, freezing temperatures prevailed, in addition to, three snowstorms. Thus the lakes remained frozen, and beaver were not found on the ice. According to the trappers, in 1953, open water was found in front of the lodges by the middle of May. Instead of trapping, they preferred to wait until it would be possible to shoot beaver.

In spite of the unusual weather conditions, travelling on snowshoes was excellent. Three trips were made and the lodges were plotted on a map of one inch to one ~~square~~ mile (Fig. 1). Five 'vacant' and four 'occupied' lodges were located on a twelve-mile strip, 11 'vacant' and three 'occupied' lodges on a twelve-mile strip and seven 'vacant' and two 'occupied' on a five-mile strip. Besides these observations, on May 16 and 17, the trappers checked 14 'occupied' lodges, of which only one was open. Seven 'vacant' and 11 'occupied' lodges were reported by Norbert, but were not visited or plotted on

the map. If the 34 'occupied' lodges were the total number in about a 70 square-mile section, there would be about .5 lodges per square mile. This is an approximate estimate as the section was not thoroughly checked. It agrees fairly closely with the average of .3 lodges per square mile, determined on an aerial survey, flown on September 15, 1953. The ground observations were made in an area considered to be the best beaver habitat. The results of field observations were to be checked on an aerial flight, but this part of the study could not be carried out.

According to the trapping returns, about 15 to 20 beaver were harvested from the area, west of the Arctic Red River, formerly part of the Mackenzie Delta Beaver Sanctuary. The size of this part is about 560 square miles. Using the minimum estimate of 0.3 lodges per square mile, the area should contain about 180 (178) lodges. It is evident that only a fraction of the resource was utilized. A better method of management would be to divide the area into registered areas.

The area between Arctic Red River and Fort McPherson, similar to the Delta, is fairly flat, dotted with innumerable lakes and creeks. The forest type is predominately stunted, black spruce mixed with white birch, poplar and larch (Fig. 2). A pure stand of white birch, regenerated on a burnt-over area, occurred on the north shore of 'Island' Lake (Fig. 3). Dense willow growth, commonly found in abundance along the edges of lakes in the Delta, was not characteristic of the lakes in the Arctic Red River region (Fig. 4 and 5).

The region between the Arctic Red and Peel Rivers was found to be inferior to the beaver habitat in the Ramparts area (Fig. 6). A greater amount of preferred beaver food, poplar and birch, were found in the Ramparts area. The amount of aquatic vegetation and the lake characteristics could not be compared for the two areas because the observations were made at different seasons of the year.

A report on the analysis of pelt measurements into age classes for the district is being prepared.

E.H. McEwen,
Mammalogist.

Fig. 2 Mixed forest type consisting predominately of black spruce with occassional white birch and larch.

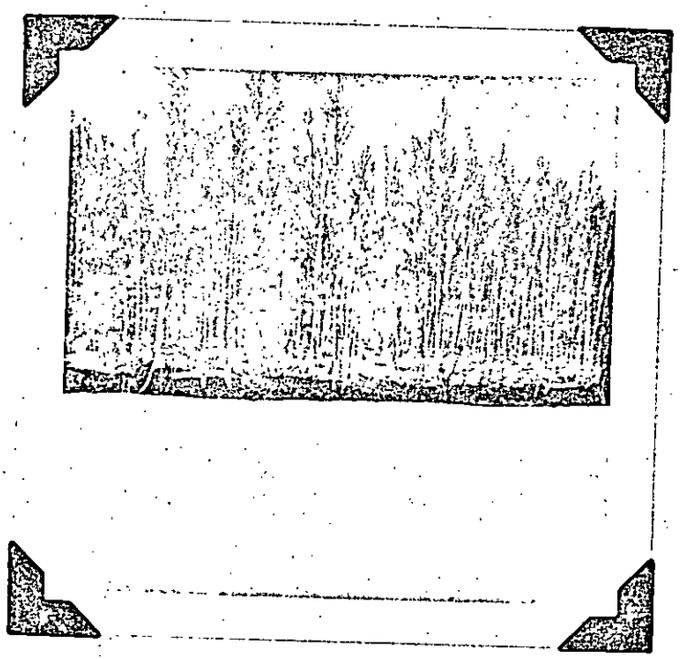

Fig. 3 A pure stand of white birch between 24 to 30 feet in height.

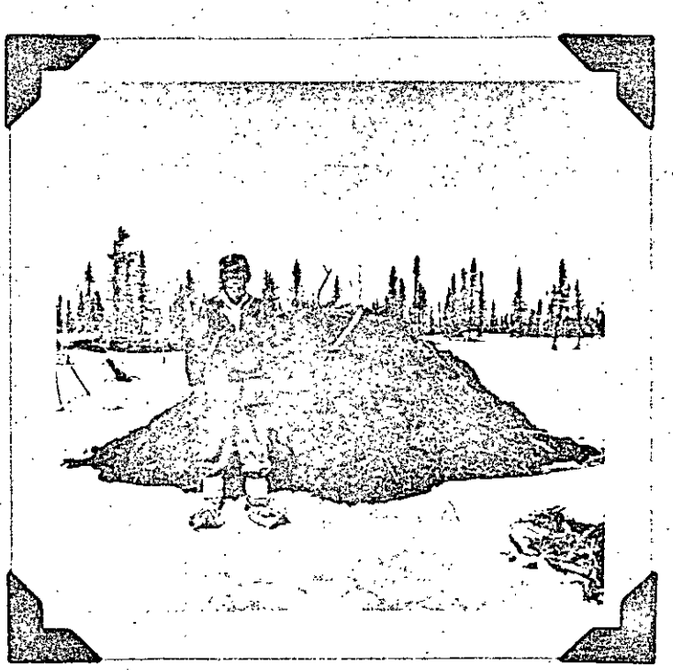

Fig. 4 A dense stand of poplar with willows growing on the shore of a lake in the East Branch area.

Fig. 5 An 'occupied' beaver lodge near the shore of a lake in the Arctic Red River area.

Fig. 6 Mixed forest type of spruce, poplar and birch, with willows growing on the shore of a lake in the Ramparts area. Pond lilies were found in large quantities in the lake.

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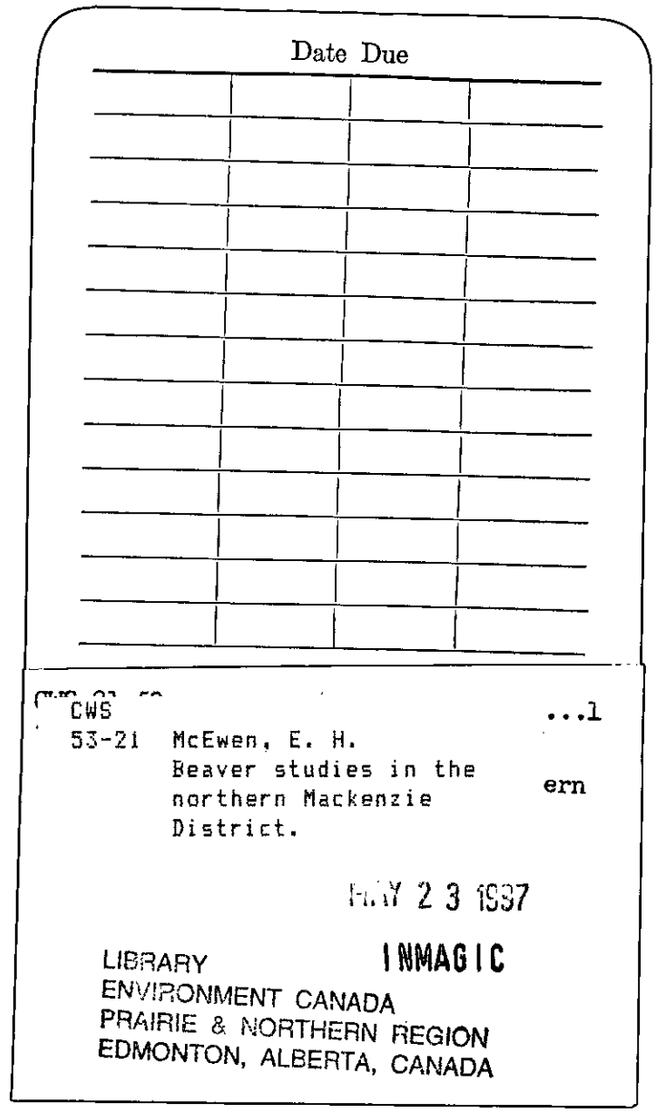
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