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CWS-20-53

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McEwen, E.H.

Aerial beaver survey - Upper Mackenzie
Delta beaver sanctuary. [n.p., Canadian
Wildlife Service, 1953]

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1. Beaver - Aerial surveys - Upper Mac-
kenzie Delta I. Title

CWSC 108

WLT 272

Wildlife Service

OCT 30 1953

Department of Resources

Aerial Beaver Survey -- Upper Mackenzie Delta Beaver Sanctuary

CHIEF	<i>[initials]</i>
ADM 1	<i>[initials]</i>
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ADM 2	<i>[initials]</i>

WLT 272

On September 15, a second aerial beaver survey was conducted by W.E. Stevens and myself, assisted by Warden Sprue, Fort McPherson, in that portion of the Sanctuary enclosed by the Arctic Red River, Peel River, and the Yukon Boundary. This survey was a continuation of the investigation on the reported occurrence of disease in the beaver population. The survey was flown under ideal weather conditions with a fairly high ceiling, although low stratus clouds were flown through in a few places. As there was an overcast, there was no interference from the sun in making observations.

A total of 211 miles was flown between 1306 and 1455 hours, at a fairly constant altitude of 500 feet. This altitude was found to be the most satisfactory for making observations. The same method of recording the observations was used on this survey, as on the July survey. Each observer recorded his observations (active, or vacant lodges, feed beds and dams) within a quarter-mile strip by checking his observations in the appropriate columns of prepared field sheets. The map reading on the transects was done by the pilot, M. Zubko.

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The transects flown on this survey were the same as those used on the first survey, except that an additional transect was flown along the Peel River on the second survey, instead of returning to Fort McPherson by "Nigger Lake" (see Fig. 1). The strip method which was used in this area in 1952, as described by Fuller in his report, "Aerial Surveys for Beaver in Mackenzie District, Northwest Territories", were not used on this investigation. Since an estimate of the density of the species in this area was required, the quarter-mile-wide strip method was used.

The results of the survey are recorded in Table 1. The length of the transect was determined by measuring its length using a map measurer on a map with a scale of eight miles to one inch.

Distribution

TABLE I

Active Beaver Lodges Observed on Transects in Upper Sanctuary

<u>Length of Transect</u>	<u>Width of Strip</u>	<u>Area</u>	<u>Occupied Lodges</u>	<u>Lodges per Sq.Mi.</u>
60 miles	$\frac{1}{2}$ mile	30 Sq.mi.	9	0.3
43 "	" "	21.5 " "	6	0.3
40 "	" "	20 " "	8	0.4
18 "	" "	9 " "	5	0.6
50 "	" "	25 " "	5	0.2
211 miles		105.5 Sq.mi.	33	Av. 0.3

The total area of the sector between the Arctic Red and Peel Rivers, determined by the use of a planimeter, was found to be approximately 1,400 (1,434) square miles. From our sample of 8 per cent coverage the estimated number of beaver lodges in this area was 420. Allowing an average of four beaver per lodge, there should be about 1,680 beaver in this area.

The results of this survey are not comparable with those obtained on the July survey. On the July survey 59 active and 14 vacant lodges were observed, as compared with 28 active and 37 vacant lodges observed on the September survey. The transects flown on both surveys were identical, except for the last transect on the September survey, which has not been included in this comparison. The difference of 31 active lodges, a reduction of 34.5 per cent, observed on the two surveys is considered to be due partly to the difficulty of differentiating active from dead beaver lodges in July. In September, the beaver lodges which are occupied usually have a large feed-bed in front of them and are freshly mudded. Thus active and inactive lodges can be distinguished with relative certainty. In July there is no feed bed of fresh vegetation in front of the lodge so that it is difficult to determine accurately on an aerial survey whether the lodge is active or dead. There were also different observers, Supt. Stevens replacing Warden Sprue on the September survey. The quantitative effect resulting from this cannot be determined, but it should not have affected the final results to any great

extent. The reduction in the number of active lodges is not the result of a disease in the population, as no evidence of disease could be found. Error in distinguishing active beaver lodges in July is believed to be the greatest factor.

In a previous report, on the Mackenzie Delta Beaver Sanctuary, dated March 11, 1953, it was recommended that that part of the Sanctuary contained in the Fort McPherson District and Arctic Red River Group Area and the portion of Arctic Red River Group Area north of the Mackenzie River, should be opened for controlled beaver trapping, to prevent over-trapping.

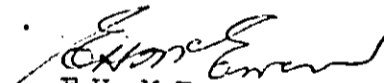
The portion of the Sanctuary between the Arctic Red and Peel Rivers, is divided unevenly between the Fort McPherson District and Arctic Red River Group Area. In the Fort McPherson District 518 square miles has been divided into individual registered areas and 334 square miles is open (unregistered) area. I would recommend that the unregistered portion, the northern half of which contains a greater density of beaver than the southern half, should be registered into individual areas to persons of Fort McPherson without registered areas, or with low productive areas.

Two portions of the Arctic Red Group Area are included in the Sanctuary. One part between the Arctic Red and Peel Rivers, has an area of 557 square miles, and another part north of the Mackenzie River is 455 square miles in area. On the September aerial survey, 40 square miles of transects were flown in the part between the Arctic Red and Peel Rivers. Nine active beaver lodges were counted. An estimate of the beaver lodges in this part were calculated to be 123. However, it is not all optimum beaver habitat. The southern half is much inferior to the northern half and is characterized by muskeg habitat, supporting sparse, coniferous growth and willows. The lakes are shallow and are in the process of "silting up" rapidly. The estimate of the total number of active beaver lodges is lower than anticipated from aerial observations. The sample is small and the estimate based upon it may not be significant. Further surveys, with a larger sample, may support the assumption that the

estimate is too low. Based on this figure of 123 lodges, there would be .2 active beaver colonies per square mile. If this part of the Sanctuary is opened to beaver trapping, a limited number of trappers from Arctic Red River should be allowed to trap in it to prevent over-trapping.

Data on the population density of the beaver in the part north of the Mackenzie River is scanty. From observations, certain portions of it contain good beaver habitat and could support trapping. Since there is less danger of over-trapping occurring in this part than in the part near the settlement of Arctic Red River, control under the present regulations should be sufficient. An alternative plan would be to retain this part in the Sanctuary together with the Mackenzie Delta. According to reliable reports from the trappers near Point Separation and along the East Branch Channel, beaver travel from this area by the creeks into the Delta. If beaver move into the Delta from this area, it would be advantageous to retain it to serve as a reservoir for beaver.

Respectfully submitted,


E.H. McEwen,
Mammalogist.

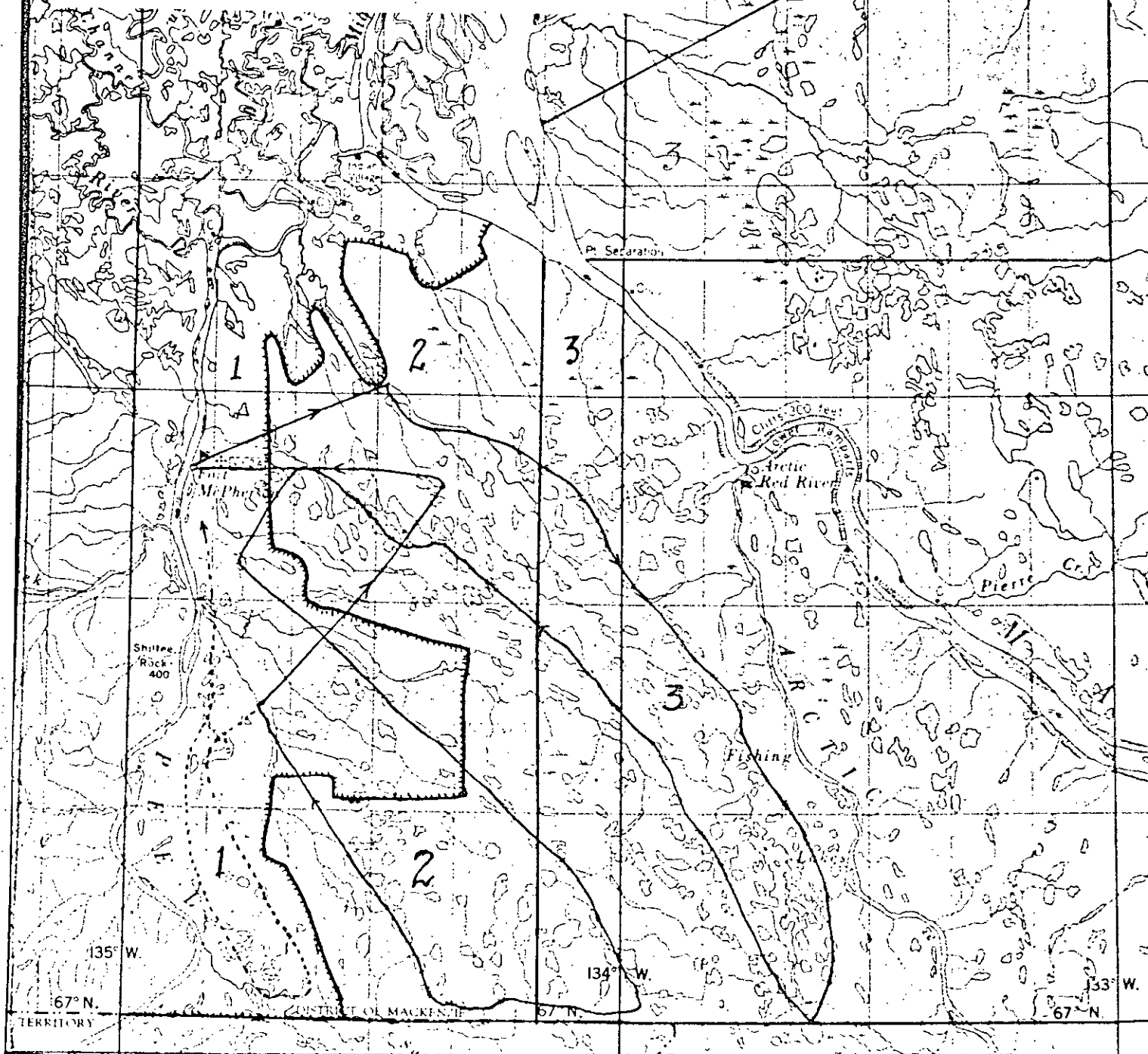
I concur in Mr. McEwen's recommendations.
Distribution to Northern Admin.

A.W.F. Banfield

Fig. 1. Transsects Flown on Beaver Surveys.

1. - Individual registered areas of Fort McPherson residents.
2. - Fort McPherson Group Area.
3. - Arctic Red River Group Area.

— Flight line, July 6, 1953
- - - Flight line, Sept. 15, 1953



LWS

53-20 McEwen, E. H.

Aerial beaver survey,

Upper Mackenzie Delta

Beaver Sanctuary.

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