

CANADIAN WILDLIFE SERVICE
WESTERN REGIONAL LIBRARY

CANADIAN WILDLIFE SERVICE
WESTERN REGIONAL LIBRARY

Aerial Beaver Survey, Fort Simpson,
Fort Laird, and Wrigley Districts,
September, 1953.

By: Flook, D.R.

AERIAL BEAVER SURVEY, FORT SIMPSON, FORT LIARD,
AND WRIGLEY DISTRICTS, SEPTEMBER, 1953.

by
Donald R. Flook,
Mammalogist.

June, 1954.

C O N T E N T S

	<u>Page</u>
Introduction	1
Procedure.	1
Results and Discussion	4
Table 1 - Population Densities of Rivers and Creeks and Percentage of Lakes Occupied, by Sections	5
Liard River Drainage and Trout Lake	5
Western Simpson Section	6
South Eastern Simpson Section	7
Northern Simpson Section and Wrigley.	8
Beaver Activity of Note	10
Ground Checks on Observing Efficiency	11
Moose Observations.	13
Table 2 - Distribution of Moose Observed.	13
Table 3 - Groups in which Moose were Observed . . .	14
Other Mammals and Birds	15
Summary.	15
Recommendations.	15
Appendix	At back
Table - Observations of Active Colonies and Abandoned Beaver Structures for Rivers, Creeks and Lakes Surveyed.	
Map - Survey Route	

AERIAL BEAVER SURVEY, FORT SIMPSON, FORT LIARD,
AND WRIGLEY DISTRICTS, SEPTEMBER, 1953.

Introduction

The survey described herein was carried out so as to obtain information regarding the density of the beaver population and the extent and quality of the beaver habitat in the districts surveyed. Some attempt was also made to evaluate the accuracy of the aerial survey technique which has been developed in the MacKenzie District for censusing beaver.

Portions of the Fort Franklin area were surveyed September 24, 1952 and the results of that survey were reported by Mr. W.A. Fuller in his report of March 24, 1953.

The survey conducted in September 1953 and reported herein sampled the Fort Liard district, and the Fort Simpson district including the Wrigley band registered group trapping area. Thus, in the Central MacKenzie District, the only area remaining to be surveyed for beaver for the first time is part of the Fort Norman warden's district.

It is fortunate that a large area was covered in this beaver survey as the data collected when compared to the results of future surveys will provide some basis for studying the effect of the change in the N.W.T. Game Regulations to permit the shooting of beaver.

Procedure

As it has been recognized that some beaver colonies on the transects flown were not observed from the aircraft, counts of beaver colonies were obtained on a few creeks by exploring them on foot or by canoe prior to the aerial counts. It was hoped that in this way a better estimate might be obtained of the proportion of the active colonies on a creek which are overlooked. The check data of this type obtained although very inadequate are indicative.

Morrisey Creek empties into the MacKenzie River from the south about 70 miles upstream from Fort Simpson. The lower 10 miles of this creek was explored on July 11, 1952, and J. Browning who traps the area reported that there was little or no change in the number of colonies on this creek during the year 1952-53.

July 14, 1952 the lower 4 miles of the Rabbitskin River was explored by canoe, and July 15, the lower 4 miles of the south tributary creek of this river was explored on foot.

The lower 3 miles of the Grainger River, a tributary of the Liard 96 miles above Fort Simpson was explored August 28, 1953, and the lower 7 miles of the Blackstone River another tributary of the Liard 102 miles above Fort Simpson was explored on September 1, 1953.

For the survey, a Stinson aircraft was chartered from Associated Airways, Yellowknife. This was piloted by J. Lunan. J.P. Kelsall accompanied the aircraft from Yellowknife and worked as co-observer throughout the survey. The method used in surveying was identical to that described in the report on the 1951 aerial beaver survey of the Fort Providence area submitted by Fuller and Flock¹.

The aircraft arrived from Yellowknife September 25 with Kelsall, and the first leg of the survey was flown from Fort Simpson to Nahanni Butte via the Marten and Grainger Rivers.

September 26, a circuit was flown beginning and ending at Nahanni Butte. It had been planned to fly this circuit up the Blackstone River after leaving Nahanni Butte. However a zero ceiling at the mouth of the Blackstone necessitated a rapid change in plans and this circuit was flown in the reverse direction

¹

Fuller, W.A. and D.R. Flock, 1951. Report on an aerial survey for beaver in the Fort Providence Registered trapping areas, October, 1951.

beginning instead at the mouth of the Netla River. At the headwaters of the Blackstone River a zero ceiling was again encountered, so the Birch River was followed to its mouth from where a direct route was flown to Nahanni Butte.

September 27, a route was flown from the South Nahanni River northward along the valley lying west of the Nahanni Range as far north as the outlet of Little Doctor Lake. Here the route turned east through the Little Doctor Lake pass to the east side of the Nahanni Range. This route continued as is shown on the map to Camsell Bend where another change in plans was necessitated. It had been planned to follow the system of creeks including Ward Lake which lies west of the first prominent escarpment west of the MacKenzie as shown on the map, in green, as those creeks were suspected to be beaver habitat. However, a low ceiling made it impossible to cross a 1500 foot saddle to reach Ward Lake. The Root River was then followed as an alternative although the previous belief of the writer was confirmed; that except for occasional oxbow lakes this river was not suitable as beaver habitat due to its braided nature. From the Root River, the Wrigley River was followed to its mouth and a landing made at the Wrigley airport.

After fueling, a circuit was flown including the Ochre River, the southern part of the Blackwater Lake drainage, the Fish Lake drainage, and ending at Wrigley airport.

In the morning of September 28, a route was flown beginning at Wrigley airport and including a southern feeder creek of Fish Lake, six tributaries of the Willowlake River, and ending at Fort Simpson.

After fueling at Fort Simpson, a circuit was flown westward including the Spence River, Trout River, and Jean Marie River.

September 29 the aircraft returned to Yellowknife. On this trip Kelsall surveyed the Rabbitskin River from its mouth to its source and thus completed the operation.

Results and Discussion

A table in the appendix summarizes the observations of active colonies and also abandoned beaver structures for each river or creek followed in the survey, and for all lakes surveyed. The mileage given in each case represents the length of the route flown as measured on the map and checked against the distance estimated from the flying time and speed of the aircraft. The estimate of the number of colonies observed per mile is based on the distance flown. The actual length of a creek, including all the meanders, would be considerably more than the distance flown.

Although the number of abandoned lodges and dams were not presented in the results of earlier beaver surveys, the writer feels that these are a significant indication of the past history of beaver in an area and they are, therefore, included in this report.

On the accompanying map on which the route followed in the survey is shown, each watercourse or overland route is marked with the number by which it is designated in the table in the appendix.

For purposes of discussion, the territory surveyed will be considered in this report as four sections: the Liard River drainage and Trout Lake, the Western Simpson section, the South-Eastern Simpson section, and the Northern Simpson section, including Wrigley.

The average population density of beaver in rivers and creeks and the percentage of lakes occupied by beaver in these sections are summarized in Table 1.

Table 1 - Average Beaver Population Densities on Rivers and Creeks, and Percentage of Lakes Occupied, by Sections.

Section	Colonies per mile on rivers and creeks	Percentage of lakes occupied
Liard River Drainage and Trout Lake	0.6	31%
Western Simpson Section	0.4	53%
South-Eastern Simpson Section	0.6	64%
Northern Simpson Section and Wrigley	0.1	24%

Liard River Drainage and Trout Lake

Rivers and creeks sampled in this section included the following: Grainger River, No. 6; Netla River, No. 9; Muskeg River, No. 11; Island River, No. 12; an unnamed creek feeding Trout Lake from the west, No. 13; Blackstone River, No. 15; Birch River, No. 16; and Fishtrap Creek, No. 18.

The overall population density of beaver in these rivers and creeks was 0.6 colonies per mile surveyed and, in addition, of 92 lakes surveyed, 30 were occupied, or 31%.

In general this section is favourable for beaver and the population was at what the writer considers probably an optimum level. Much of the area was burned in the fires of 1943-44 and now carries a heavy cover of poplar, willow, alder, and birch, providing an abundance of food for beaver. Since good beaver habitat is widespread in this area, overutilization is not a problem, and some of the habitat is not hunted at all currently.

The only part of this section where beaver colonies were not observed in as high numbers as one would expect the habitat could readily support was the lower part of the Netla River. This probably reflects overtrapping by the Indians of the village at the mouth of the Netla River as they have been very inactive in their hunting the last few years, over-hunting the country near to the village. The upper Netla River was found to be well stocked with beaver.

Only three beaver colonies were observed on the Grainger River. Most of this river is swift, shallow, and rocky, and the colonies seen were located in three of the few deep calm pools in the meanders of the stream. This river has not been hunted for several years and no amount of protection would bring about a heavy beaver population in the river itself although several of the small lakes in the headwaters slightly west of the survey route were observed to contain beaver colonies during a flight made over the area in August, 1953, courtesy of Gulf Oil.

Western Simpson Section

This area lies west of the Liard River and is drained into the Mackenzie River and the south fork of the North Nahanni River. Rivers, creeks, and overland routes surveyed here were numbers 1, 2, 3, 4, 5, 19 and 20.

The population density of beaver observed on the creeks surveyed in this section was 0.4 colonies per survey mile, and of 53 lakes surveyed, 28 were occupied by beaver, or 53%.

The country surveyed in this section was observed to contain excellent beaver habitat. Similarly to the Liard River drainage, much of it was burned in 1943 and carries dense stands of deciduous growth bordering the creeks. The Marten River is particularly heavily stocked with beaver. Difficulty was encountered in observing beaver structures on this stream due to its meandering nature and the heavy tree cover on its banks.

The creek designated as No. 19, flowing northward on the west side of the Nahanni Range, flows through burned country also. This creek itself was found to contain few beaver colonies, probably because it is rather large and subject to flooding and in many places too swift and shallow. However, there were many ponds dammed up, adjacent to the river containing active beaver colonies. On both this creek and the Marten River, the beaver have been harvested only in the more accessible lower parts in recent years as the fire-killed spruce continually produces windfalls and makes winter travel impractical.

South-Eastern Simpson Section

Rivers and creeks surveyed in this section include Rabbitskin River, No. 39; Spence River, No. 41; Morrisey Creek, No. 42; Trout River, Nos. 43, 44 and 45; and Jean Marie River, No. 46.

The overall density of the beaver population observed on these creeks was 0.6 colonies per mile flown. Of 11 lakes surveyed in this section, 7 were occupied, or 64%. This does not include the abundance of lakes traversed between Jean Marie River and Fort Simpson, at least 12 of which were identified as occupied. This part of the route was flown at dusk, precluding accurate observing. Many of these lakes contained pond lilies, and the proportion of lakes occupied was certainly high.

Most of the beaver habitat surveyed in this section was judged by the writer to be stocked to its capacity. The conditions of flooding by dams on the Spence River, resulting in killing of much of the available poplars and the cutting of a large proportion of food trees adjacent to the ponds, would indicate that unless the beaver on this stream are not harvested heavily soon the population will decline from natural causes.

Both tributaries of the Trout River surveyed were well stocked with beaver and two colonies were seen on the main fork of the Trout River itself although this is swift and rocky and the sites occupied were marginal, one feedbed being in shallow swift water held in place apparently by its own weight as it was piled high above the water level.

Both observers felt that their observing efficiency was poor on Jean Marie River due to poor light conditions and fatigue. Probably several lodges and feedbeds were missed on this creek.

North Simpson Section and Wrigley

Rivers and creeks surveyed in this section included: Root River, No. 24; Wrigley River, No. 25; Ochre River, No. 26; creeks feeding Elackwater Lake, Nos. 27 and 28; creeks feeding Fish Lake, No. 29; a tributary of river between two mountains, No. 30; and six tributaries of Willowlake River, Nos. 31, 32, 33, 34, 35, 36 and 37.

The general picture regarding beaver in this section was much less favourable than in the previous three discussed. The average population density on the rivers and creeks surveyed in this section was 0.1 colony per mile flown, and of 150 lakes surveyed 36 were occupied, or 24%. Beaver habitat was found to be limited in extent. With the exception of two small creeks, the good beaver habitat surveyed in this section was found to be very poorly stocked with beaver.

The small creek emptying into the Mackenzie River east of Camsell Bend and designated as No. 21 was fairly well stocked, having 0.6 colonies per mile. The creek feeding Eulmer Lake from the north-east and designated as number 35 was found to be fairly well stocked, having 0.4 colonies per mile, and 8 of the 10 lakes adjacent to the creek were occupied.

The Root River is quite a large swift stream with braided channels and contains no suitable sites for beaver colonies. A few oxbow lakes adjacent to this river appear suitable, and one active and one

abandoned lodge were seen on these lakes. The north tributary creek of this river is small and slow-flowing. There were several old dams holding back ponds on this creek and in the flooded areas the trees appeared to be drowned out. Only one active colony was observed on this creek.

The upper part of the Wrigley River is slow-flowing and appeared suitable for beaver but the only colonies seen were in ponds dammed off on either side of the river. Perhaps the river itself is subject to flooding, preventing beaver from becoming established there.

Several of the creeks on the east side of the Mackenzie have a steep gradient and are a series of shallow, stony rapids, providing no suitable sites for beaver colonies. In most instances these creeks were bordered by black spruce and lacked food for beaver. Creeks which fell into this category were as follows: that part of the Ochre River (No. 26) west of the Franklin Mountains; the creek feeding Blackwater Lake from the south-west, No. 27; the creek feeding Fish Lake from the north-west, No. 29 in part; the lower part of the south tributary of River-between-two-mountains, No. 30; Wilson's lower creek tributary to Willowlake River, No. 32; and the lower part of Thomason's Creek tributary to the Willowlake River, No. 34.

A few sections of creeks surveyed here were intermittently swift and stony with frequent slow meanders and occasional oxbow lakes, both of which provide sites suitable for beaver. Rivers and creeks which fell into this category were: that part of the Ochre River, No. 26, lying east of the Franklin Mountains; Wilson's upper creek tributary to Willowlake River, No. 33, and George Modeste's creek tributary to Willowlake River, No. 37. On the Ochre River only two colonies were observed and these were on adjacent oxbow lakes. It is believed that the upper part of this river could carry several more colonies. Wilson's upper creek tributary to the Willowlake River was fairly well stocked with beaver although it could probably carry a few more without exhausting the food supply.

George Modeste's creek, tributary to the Willowlake River was found to carry a fair number of colonies, 0.4 per mile, but there were many unoccupied suitable sites on this creek.

There were also some rivers and creeks surveyed which are slow with a fair abundance of bordering deciduous cover, making them good beaver habitat throughout most of their length. The chain of creeks and lakes south-east of Blackwater Lake was of this type and it was apparent that it had been over-hunted as active colonies were very scarce, 0.07 having been observed per survey mile, and 15 abandoned lodges were counted and a great many suitable sites with no sign of recent beaver activity. The creek feeding Fish Lake from the east (No. 29 in part) displayed a similar situation. The creek feeding Bulmer Lake from the north-west, No. 35, provides good beaver habitat both on the creek itself and in adjacent ponds, and this habitat appeared to be fairly well stocked with beaver, reflecting wise use by the holder of the registered area, Moise Antoine. The absence of beaver on the slow-flowing creek, No. 36, emptying Bulmer Lake into Willowlake River could not be explained by the writer unless it is due to poaching as the holder of that registered area, Albert Champlain, has not hunted his area heavily in recent years and not hunted it at all the past two years. The situation in creek No. 31 and the upper part of No. 34 could not be well judged. These creeks, although they have willows on their banks, are bordered by dense stands of tall spruce making reliable observing impossible. Only a few colonies were seen on each of these creeks.

Beaver Activity of Note

On September 25, 1953, 3 beaver were seen from the plane, swimming in ponds on the Marten River and similarly 6 beaver were seen swimming in the Muskeg River on September 26. One of these was towing a sapling in a pond where no feed bed was yet visible. Apparently the beaver

had not all completed caching their winter food supply at this time and were working at this in broad daylight.

In two small lakes east of Sibbeston Lake, freshly mudded lodges built of small black spruce were observed with no feed beds. These lakes contained an abundance of pond lilies, Nuphar variegatum Engelm., the large floating leaves of which are evident from the air. There were no woody food plants near these lakes. This would substantiate the frequent report of trappers that beaver subsist entirely on the starchy rhizomes of these pond lilies in lakes where no deciduous woody species are available, and that these beaver may have no feedbeds. When live trapping beaver on the Upper Kakisa River in July, 1952, the writer fed pond lily rhizomes to captive beavers along with branches of aspen poplar and willow, and the beaver selected the rhizomes in preference to the other foods. On September 18, 1953, a small lake was visited on foot about 2 miles south of the mouth of the North Nahanni River. Although this lake was surrounded mostly by floating bog, there were some aspen poplars and also willows available on the shoreline. A feedbed adjacent to a large beaver lodge on this lake consisted of poplar and willows with 2 large pond lily rhizomes floating on the surface. It is not known whether the beaver had attempted to anchor these in the feed bed or whether they had just been left there during recent feeding activity, although the latter seems more probable.

Ground Checks on Observing Efficiency

On the lower 8 miles of Morrissey Creek on July 11, 1952, there were 6 active colonies and several abandoned sites of old colonies. In flying along this creek on September 28, 1953, within what was estimated to be the same distance on the creek, 6 active colonies were counted by the two observers. This was probably an accurate count as Browning who traps

this creek reported no apparent change in the beaver population on the creek during the year.

On July 15, 1952, there was one beaver colony on the Rabbitskin River about $1\frac{1}{2}$ miles from its mouth. In flying over this colony on September 28 it was observed by the writer who was familiar with its location. However, when Kelsall surveyed the Rabbitskin River alone on the following day this colony was missed.

In exploring the lower four miles of the tributary creek south of the Rabbitskin River on July 16, 1952, 4 active colonies and 2 additional lodges, the occupancy of which was doubtful, were located. In flying what was estimated to be the same distance on September 28, the two observers counted 2 active colonies and 6 lodges recorded as abandoned. Little can be concluded from this comparison as the difference between the two counts could be due to actual population change during the intervening year; and it is not known how intensively the Indian holder of this trapping area hunted the creek.

On the lower 3 miles of Grainger River on August 28, 1953, there were 3 active beaver colonies. Only one of these was observed in the aerial survey. It is thought that the others were missed due to the meanders in the river, and tall trees bordering it.

On the lower 7 miles of Blackstone River on September 1, 1953, there were 3 active beaver colonies. Unfortunately heavy fog prevented the aerial surveying of this creek as planned on September 26. When the plane turned back at the mouth of this river, one bank lodge was observed after close scrutiny. It would certainly have been missed had not the writer already known its exact location, as no feedbed was present and the lodge was built well up on the bank. This lodge had definitely been occupied on September 1 as two beaver were seen near it at that time.

The results of the few ground checks on efficiency of aerial observing are not conclusive as the samples are very small. It is

apparent that the efficiency varies greatly among creeks of different characteristics. It is hoped that the proportion of colonies missed will be approximately equal on the same creek from one survey to another so that differences in observing efficiency will not be confounded with actual changes in the beaver population.

Moose Observations

The total number of moose observed during the survey was 35. There were 15 bulls, 16 cows, 2 calves, and 2 of unidentified class. The low proportion of calves is quite alarming although it may be that the calves were less readily observed at this season of the year than the adults, introducing a bias to the ratio of calves to adults observed. Where a bull and cow or cows were observed together, the bull was usually seen first as the light coloured, freshly polished, antlers showed quite prominently.

The distribution of the moose observed as to sections is shown in Table 2.

Table 2 - Distribution of Moose Observed

<u>Section</u>	<u>No. of Moose Observed</u>	<u>Moose Observed Per Mile Flown</u>
Western Simpson	8	.063
South-Eastern Simpson	8	.036
Liard River Drainage and Trout Lake	13	.032
Northern Simpson and Wrigley	6	.013

Of significance is the much lower frequency of moose observed in the northern part of the Simpson district and the Wrigley area as compared to the country to the south. This is explained in part at least by the vegetative conditions as the northern area carries mostly a uniform taiga climax with black spruce dominant whereas the southern area has a more heterogeneous plant cover, there being swales and deciduous brakes interspersed in the coniferous type. It also has a greater proportion of brulé with hardwood regeneration than is the case in the country farther north.

It is interesting to note that both moose and beaver are least numerous in the Northern Simpson and Wrigley section, neither species being favored by the climax spruce type vegetation currently occurring over most of the area.

The groups in which the moose observed were associated are of interest as they indicate something of the social behavior of the species in the rutting season. These are presented in Table 3.

Table 3 - Groups in which Moose were Observed.

Groups	No. of Times Observed
One lone bull	6
One lone cow	5
One lone unidentified moose	1
One bull and one cow	4
One cow and calf or calves	0
Two bulls	0
Two cows	0
One Bull and Two cows	2
One bull, one cow and one calf	2
One bull, one cow, and one unidentified	1

Other Mammals and Birds

Other mammals observed during the survey were one black bear on the edge of a slough near the mouth of Grainger River, and one red fox on Marten River.

Birds of note observed were one bald eagle near Sibbeston Lake; one great grey owl west of Trout Lake; and a flock of about 700 white fronted geese flying south over the Wrigley airport.

Summary

1. An aerial beaver survey of the Fort Liard and Fort Simpson warden districts and the Wrigley area was conducted September 25, 26, 27 and 28, 1953, in which a total of 1,600 miles was flown, sampling rivers, creeks, and lakes to obtain data concerning the density of the beaver population, and the extent and quality of the beaver habitat.

2. The Liard River drainage and Trout Lake area, the Western Simpson section, and the South Eastern Simpson section were found in general to contain extensive favorable beaver habitat which was well stocked with beaver.

Favorable beaver habitat in the Northern Simpson section and Wrigley area was found to be quite limited in extent, and with the exception of two short creeks, the good beaver habitat surveyed in this section was found to be poorly stocked with beaver. Evidence observed indicated that beaver in this area have been overhunted.

Recommendations

1. Strict enforcement of the one beaver per colony restriction is required in the Northern Simpson and Wrigley section, particularly the Wrigley group registered area, No. 356, and the Tonka group registered area, No. 354, as the beaver population in these areas is low in relation to the number of hunters, and beaver have been overharvested in these areas.

2. In the Liard River drainage and Trout Lake area, the Western Simpson section, and the South-Eastern Simpson section, it should be attempted to attain better distribution of beaver hunting activity so as to harvest beaver from remote country where they are not currently utilized.

3. Zone 2, where the closing date of the beaver season is currently May 15, should be extended eastward from the Liard River to the Redknife River. This will make the beaver season uniform throughout the Simpson and Liard districts, simplifying law enforcement and will encourage utilization of beaver in the area east of the Liard River which is well stocked with beaver and at present only partially utilized.

4. The routes flown in the survey reported here should be re-flown in 1956 to determine trends in the beaver population and the effect of utilization under the 1954 change in the regulations permitting the shooting of beaver. This survey should be flown shortly after the aspen poplars shed their leaves as visibility along creek and lake margins is good at that time and most beaver have completed their feed-beds. This will be about the end of September but varies somewhat.

Respectfully submitted,

Donald R. Flook.

Donald R. Flook,
Mammalogist.

No.	Route, Watercourse, or Drainage	Miles flown	Rivers & Creeks						Lakes						Total		Remarks			
			Active			Disused			Active			Disused			C	C/M				
			L	F	D	L	D	I	F	D	C	L	O	I				D		
1	Simpson to Antoine L.	15									1					1	.1			
2	Creek feeding Antoine L.	7.5	1	2	8	4											4	.5		
3	Marten R.	30	4	12	44	32	1.			1							32	1.0	Several beaver obs. swimming. Creek meanders thru spruce. Est. 50% missed.	
4	Marten R. to Sibbeston L.	12			1	1			1	1	5	3	2	6	6/11	2	7	.6	2 fresh-mudded spruce lodges in pond Lilly lakes, no feedbeds.	
5	Creek feeding Sibbeston L. from West	25	4	9	29	27	1.1			5						1	27	1.1	Good habitat.	
6	Granger R.	27	1	3		3	.1		1	1							5	.1	River meanders thru spruce. Est. 50% missed. Mostly too swift and shallow, gravel and boulders.	
7	Mouth of Granger to Nahanni Butte	12			1	1	.1		1	1							1	.1	Colony on small creek crossed.	
8	Mouth of Blackstone to mouth of Netla R.	18			2	2	.1		1	1							2	.1	On snyes.	
9	Netla R.	25	8	11	19	17	.7		1	20+							17	.7	Lower part river fair habitat. Upper part burned good habitat. Est. 35% missed.	
10	Source of Netla R. to Muskeg R.	14	2	1	4	2	.1		1	1	5	4	4	5	5/12		7	.5	Small lakes.	
11	Muskeg R.	105	9	25	75	50	.5		4	15	3	2	3	6	6/19	6	3	.5	Mostly brule. Several beaver seen working. Est. 40% missed.	
12	Island R.	30	6	12	17	17	.6		1	2							17	.6	Similar to above.	
13	Unnamed Creek feeding west side Trout L.	8	2	7	6	7	.9		2	5					0/2		7	.9	Similar to above.	
14	Ht. of land between Mart R. & Trout L.	60									13	12	1	14	14/41	13	1	14	.2	Many of vacant lakes marginal habitat.
15	Upper Blackstone R.	3.5	3	6	8	8	2.3		3	4							8	2.3		

L = Lodge
 F = Feedbed
 D = Dam
 C = Active colony

 C/M = Colonies per mile
 L O = No. lakes occupied/No. examined
 Total = Active colonies both rivers and creeks

No.	Route, Watercourse, or Drainage	Miles Flown	Rivers & Creeks						Lakes						Total		Remarks					
			Active			Disused			Active			Disused			C	C/M						
			L	F	D	L	D	L	F	D	L	D	L	D								
16	Birch R.	19	8	14	30	22	1.2		5							22	1.2	Upper river good habitat. Est. 25% colonies missed. Lower part river rocky gorge.				
17	Birch R. to Nahanni Butte	50	5	6	4	8	.2									8	.2	Colonies in dammed ponds off Liard R., 5 on east side, 3 on west.				
18	Fishtrap Creek	26	3	6	19	12	.5		7							17	.7	All burned. Small poplar.				
19	South fork of North Nahanni R.	27		1		1	.04					11	14	4	19	19/37	4	1	20	.7	River too swift, gravel. Runways on lakes indicate colonies not seen. In some lakes feed eaten out or drowned out.	
20	Creek feeding Little Doctor L.	11	5	4		5	.4					3	3	3	3/5				8	.7	Mostly too swift and strong. Sites in slow water occupied.	
21	Andrew Le Noir's Creek above Camsell Bend	12	2	3	11	7	.6		5										7	.6		
22	Lakes east of Mackenzie at Camsell Bend	16										3	3	2	4	4/14		2	1	4	.2	Several lakes have no feed available. Others may contain beaver as traces of runways noted. Poles stuck in abandoned lodges indicate trapping activity.
23	Lakes west of Mackenzie, Camsell Bend to Root R.	20			2	1						9	13	2	16	16/48		4		17	.8	
24	Root R. and north tributary creek	40	1	1	1	1						1	1	1	1			2	3	2	.05	Root River unsuitable - swift, gravel bed. Active colony & old sign in oxbow lakes. Poplars on north tributary appear drowned out by old dams.
25	Wrigley R.	24										3	3	2	3					3	.1	Upper part of river appears fair habitat. Perhaps subject to flooding. Colonies seen were on sloughs dammed off from river.
26	Ochre R.	40							1			2	2	1	2	2/16		2		2	.05	West of Franklin Mtns. river is too swift and stony for beaver. East of mountains are several favourable sites on river and oxbow lakes.

No.	Route, Watercourse, or Drainage	Miles flown	Rivers & Creeks						Lakes						Total		Remarks						
			Active			Disused			Active			Disused			C	C/M							
			L	F	D	L	D	C/M	L	D	L	F	D	L				D	C	C/M			
27	S.W. Creek feeding Blackwater L.	14																			Swift and stony, spruce cover, not suitable for beaver.		
28	Chain of creeks and lakes S.E. of Black- water L.	80	4	4	7	6																Much unused favourable habitat on lakes & creeks. Presence of many abandoned lodges indicates overtrapping.	
29	Fish L. and tributary creeks from E. and N.	35																					Several unused favourable sites east of Fish Lake. Creek followed north west of Fish Lake is too swift.
30	South tributary creek of River between Two Mtns.	17																					Lower part of creek is too swift and shallow for beaver. Upper portions slower and favourable habitat.
31	Tonka's creek tributary to Willowlake R.	8																					Very poor visibility on creek due to tall spruce and meanders. Probably more colonies
32	Wilson's lower creek tributary of Willowlake R.	8																					Shallow, swift, and stony, spruce cover, un- suitable for beaver.
33	Wilson's upper creek tributary of Willowlake R.	19	3	4	6	7																	Creek intermittently swift. Beaver colonies in slow bends of creek.
34	Thomson's creek tributary of Willowlake R.	39	3	3	2	4																	Lower 20 miles of creek too swift and stony for beaver. Upper part thru tall spruce poor visibility.
35	Creek feeding Bulmer L.	24	7	9	7	10																	Creek and lakes adjacent are good beaver habitat.
36	River draining Bulmer L.	10																					Slow, wide and deep, willow margin. Absence of beaver signs not explained.
37	George Modeste's tributary creek of Willowlake R.	17																					Creek intermittently swift with scattered sites suitable for beaver, not all occupied.

No.	Route, Watercourse, or Drainage	Miles flown	Rivers & Creeks						Lakes						Total		Remarks		
			Active			Disused			Active			Disused			C	C/M			
			L	F	D	L	D	C	L	F	D	L	D	C				L	D
38	Overland Horn Mtn. to Simpson	48	4	6	6	6	6	.1	4	4	2	2	2	2	1/7	1	8	.2	Creek colonies observed on parts of Harris R. surveyed for short distance.
39	Rabbit skin R.	56	17	26	33	29	.5										29	.5	
40	South tributary of Rabbit skin R.	14	3	5	10	10	.7	6	4								10	.7	Part of creek bordered by spruce, poor visibility.
41	Spence R.	26	13	17	19	20	.8	1	1								20	.8	Creek straight and bordered by open plant cover. This count believed 90 to 100% & is most accurate of survey.
42	Morrissey Creek	11	7	8	9	12	1.1	1	1								12	1.1	Poor visibility on parts of creek due to winding course thru tall dense spruce.
43	First south fork of Trout R.	19	4	10	15	15	.8	3	3	3	3	3	3/6				18	1	Lakes occupied are oxbow lakes. River is slow, meandering.
44	Second south fork of Trout R.	24	5	12	20	20	.8	1	1	1	1	1	1 oxbow L.				21	.9	
45	Main fork of Trout R.	13	2	2			.2	1	2	1	1	1				1	3	.2	River mostly too shallow, swift & gravel.
46	Jean Marie R.	19	3	4	14	7	.4	1	1	2	1		2/3				9	.5	Observing efficiency declining due to darkness.
47	Lakes Jean Marie R. to Simpson									12	7	12	?				12	.3	Due to darkness & low efficiency count not accurate. Many lakes favourable habitat with pond lilies. Many occupied by beavers.