RELATIVE ABUNDANCE AND HABITAT UTILIZATION OF FURBEARERS IN THE FRENCHMAN-TATCHUN AREA, YUKON TERRITORY, AS EVIDENCED FROM WINTER TRACK-COUNT SURVEYS (MARCH 1984).

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ABSTRACT

Presented are the results of winter track-count surveys of furbearers in the Frenchman-Tatchun area, Yukon Territory, March 5-7 1984. Fur harvest data from the period 1950/51 to 1982/83 are also presented. Five furbearer species were encountered (red squirrel, Tamiasciurus hudsonicus; snowshoe hare, Lepus americanus; coyote, Canis latrans; marten, Martes americana; red fox, Vulpes vulpes).The most abundant tracks recorded were those of red squirrel. A moderately abundant species was snowshoe hare. Coyote, marten and red fox were less common. Ermine, mink, otter, wolverine, lynx and wolf were not encountered, although are known to be present in the area from fur harvest records. Distinct habitat preferences were shown by red squirrel (white spruce), snowshoe hare (aspen-willow and white spruce-black spruce), mice (aspen) and grouse (willow). All species avoided lake ice, especially the larger Frenchman and Tatchun lakes. Red squirrels constituted the major part of the fur harvest. Lynx harvest declined in 1982/83 after a peak in the winters 1980/81 and 1981/82. There was a sharp increase in the wolverine harvest in 1982/83. Beaver and muskrat are trapped in moderate numbers on the study area. The results are discussed in view of Slough and Jessup's (1984) data.

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INTRODUCTION

A territorial park has been proposed for the Frenchman-Tatchun Lakes area, Yukon Territory (Land Planning Branch, Yukon Department of Renewable Resources). An inventory of furbearers was decided upon to facilitate the planning process. Winter track-count surveys were chosen as the principle technique. The limitations of this technique have been discussed by Slough and Jessup (1984). They concluded that track counts provide an acceptable index of relative abundance and of relative use of habitats by furbearers.

In the following report the track count results are presented and discussed against those of other areas in Yukon Territory. The fur harvest statistics of the area are also discussed.

The study was jointly funded by the Yukon Wildlife Management and Land Planning Branches at a total cost of about $1,000, not including 8 man-days spent in the field, and 7 in the office.

STUDY AREAS

Surveys were carried out in the proposed Frenchman-Tatchun Park Corridor (Figure 1, attached). The physiography, geology and climate of the area were described by Oswald and Senyk (1977). A general description of the vegetation can be found in Rowe (1972) and Oswald and Senk (1977). A more detailed vegetation analysis is provided in Oswald et al. (1983).

METHODS

The track-count methodology followed Slough and Jessup (1984). Habitat units were classified on the basis of gross tree composition. They often did not correspond with the vegetation communities of Oswald et al (1983). The results were analyzed according to the procedure outlined by Neu, Byers and Peek (1974).

RESULTS AND DISCUSSION

Winter track count

The total distance sampled was 87.2 km, representing 2352.3 km days. Figure 1 (attached) gives the transect locations within the study area. Five furbearer species were encountered (red squirrel, Tamiasciurus hudsonicus; snowshoe hare, Lepus americanus; coyote, Canis latrans; marten, Martes americana; red fox, Vulpes vulpes). Tracks of caribou (Rangifer tarandus), moose (Alces alces), mouse species (up to 10 species might be represented here), grouse (Canachites canadensis and/or Bonasa umbellus), horse and dog were also noted. A number of furbearer species' tracks occurred too infrequently for statistical analysis.

Table 1 reveals the relative abundance indices of furbearers and utilization-availability of the study area (raw data are appended). The most abundant tracks recorded during the surveys were those of red squirrel (>.5 tracks/km day). A moderately abundant species (from 0.1 to 0.5 tracks/km day) was snowshoe hare. Coyote, marten, red fox, grouse and mouse species were uncommon.

It is acknowledged that the observer's criteria to divide the animals' habitat into units does not necessarily correspond to the animals' selection criteria (see Wiens 1976). Nevertheless, the forest classification presented here can be useful for management purposes.

The results of the track counts and preference-avoidance tests analyszed by species are as follows:

Red squirrel

The abundance index of this species was more than twice as high as the average for the Kluane, Southern Lakes and North Canol study area for 1982 and 1983 (Slough and Jessup 1984). Squirrels avoided open water (frozen) and showed preference for white spruce stands (often mixed with pine or aspen).The population is apparently responding to outstanding spruce cone crops for the past 2 years.

Snowshoe Hare

Track densities declined significantly between 1982 and 1983 in the Kluane and Southern Lakes areas (Slough and Jessup 1984). Densities in the Frenchman-Tatchun area were substantially lower than the 1983 low values for the Kluane, Southern Lakes and North Canol areas. Snowshoe hares avoided lake ice but were associated with aspen-willow stands and white spruce stands which are mixed with black spruce. Hare populations are near the bottom of their cycle over much of the Yukon.

Grouse

Grouse densities wre similar to those found in the combined (1982 + 1983) Kluane, Southern Lakes and North Canol study areas by Slough and Jessup (1984). Grouse avoided lake ice and preferred willow thickets. Grouse are also cyclic and have been uncommon for the past 4 years.

Mouse Species

Mouse species (voles, deer mice, lemmings) densities appeared to be lower than those found in the combined (1982 + 1983) Kluane, Southern Lakes and North Canol study areas by Slough and Jessup (1984). They avoided open water and preferred aspen stands.

Muskrat Survey

The corridor was censused for muskrat pushups on the 14th of May, 1982 during Yukon River Basin studies (Slough and Jessup 1984). Pushups were not observed on Frenchman and Tatchun Lakes, however, low numbers were recorded on several other small lakes and potholes within the study corridor.

FUR HARVEST

Four trapping concession (Figure 2) overlap the study corridor. All recorded fur harvests from these concessions are presented in Table 2 (1950/51 to 1976/77) and 3 (1977/78 to 1982/83).

Red squirrels constitute the major part of the fur harvest in the area in seasons for which harvest statistics are available (Table 2, Table 3). Discrepancies in harvest statistics of both red squirrel and muskrat (Ondatra zibethicus) are presumably a result of fluctuations in trapping effort rather than fluctuations in their population densities (compare the harvest of these species between years and between trapping concessions, Table 2 and Table 3).

The lynx (Felis canadensis) harvest declined in 1982/83 following a peak in the winters 1980/81 and 1981/82 (Table 3). This decline coincides with a lynx decline in the Kluane area (Slough and Jessup 1984).

There was a sharp increase in the wolverine (Gulo gulo) harvest in 1982/83. Slough and Jessup (1984) documented an increase in wolverine track densities in the Kluane and Southern Lakes areas in 1983. They view this increased density as a shift in habitat and/or activity patterns, attributable to prey scarcity.

Harvest data of 1982/83 compare well with the track-count statistics of 1983/84. The absence of lynx tracks in the track counts presumably reflects a further cyclic decline of this species in the area.

Ermine, mink, otter, wolverine and wolf are trapped in the area in low numbers although their tracks were not encountered on the surveys.

Beaver and muskrat are trapped in moderate numbers on the study area.

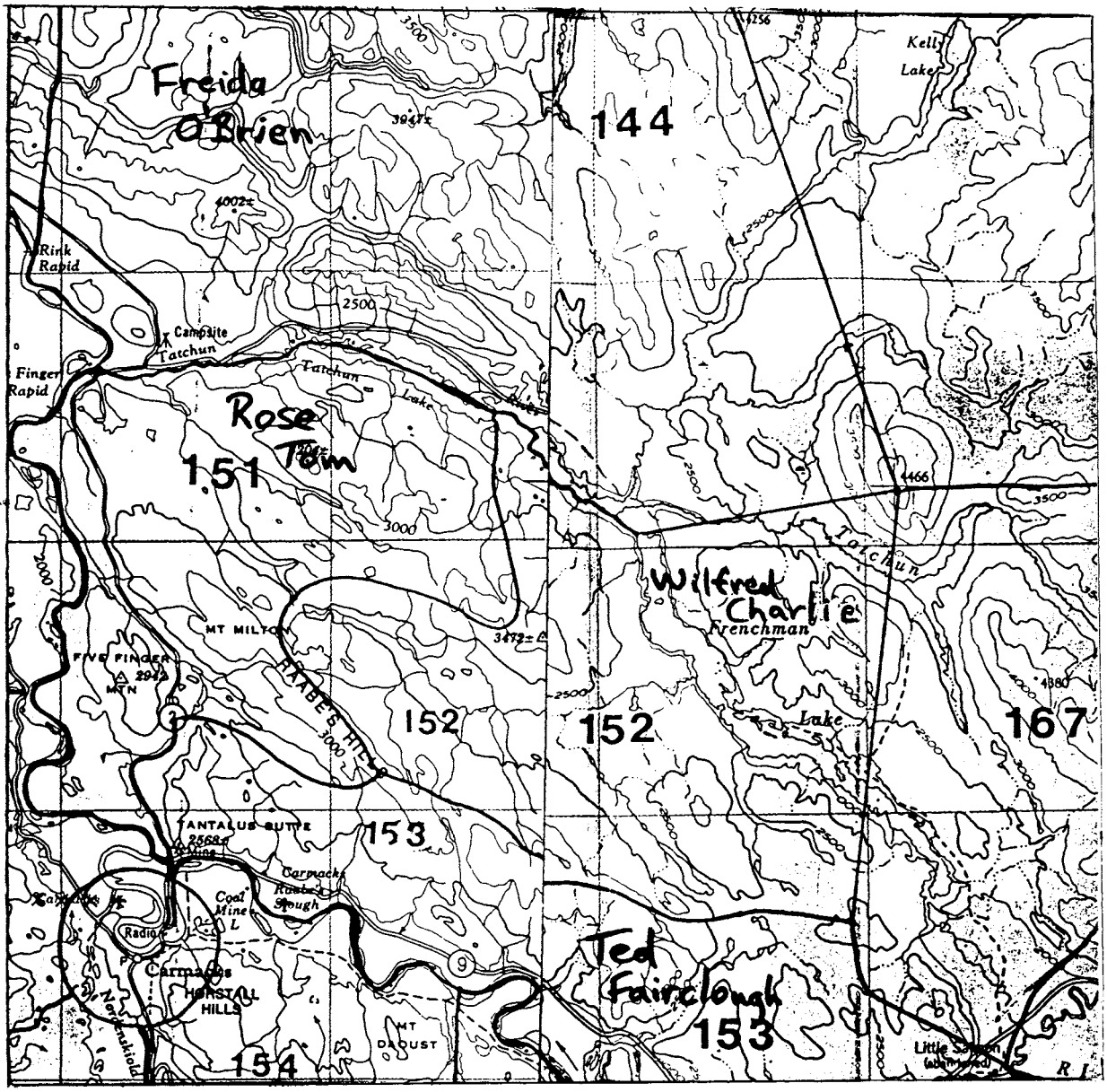

Figure 2: Locations of trapping concessions in the study area (see Table 4).

Table 1. Relative Abundance Indices of Furbearers and Utilization-Availability of the Study Area

	HABITAT UNIT										COMBINED UNITS		
	A	B	C	D	E	F	G	H	I		B+D+E+F+H	C + G	F + I
	Lake Ice	Ws(Wi)	Ta	Ws(Lp-Ta)	Wi(Ws)(Ta)	bCot-Ws	Ta-Wi	Ws-Lp-Bs	Wi-Ws-bCot	TOTAL	Ws	Ta	bCot
SPECIES	Tracks / Tracks/km-day / Util.	Tracks / Tracks/km-day / Util.	Tracks / Tracks/km-day / Util.	Tracks / Tracks/km-day / Util.	Tracks / Tracks/km-day / Util.	Tracks / Tracks/km-day / Util.	Tracks / Tracks/km-day / Util.	Tracks / Tracks/km-day / Util.	Tracks / Tracks/km-day / Util.	Tracks / Tracks/km-day / Util.	Tracks / Tracks/km-day / Util.	Tracks / Tracks/km-day / Util.	Tracks / Tracks/km-day / Util.
Red Squirrel	2 0.002 –	17 1.518 –	624 2.786 –	3369 3.619 +	58 1.080 –	86 4.236 =	0 0 –	0 0 –	152 1.357 =	4308 1.831	3444 3.206	624 2.384	238 1.803
Caribou	2 0.002									2 0.001			
Moose	2 0.002			2 0.002						4 0.002	2 0.002		
Coyote	1 0.001		1 0.004	18 0.019				1 0.017		21 0.009	19 0.018	1 0.004	
Snowshoe Hare	0 0 –	12 1.071 =	167 0.746 =	221 0.237 –	48 0.894 =	4 0.197 –	59 1.565 +	300 5.172 +	45 0.402 =	856 0.364	581 0.541	226 0.864	49 0.371
Mouse spp.		1 0.089	66 0.295	78 0.084	2 0.037				18 0.161	165 0.070	81 0.075 –	66 0.252+	18 0.136 =
Grouse			10 0.045	15 0.016		2 0.099	1 0.027		13 0.116	41 0.017	15 0.014 –	11 0.042=	15 0.114 +
Marten				1 0.001						1 0.004	1 0.001		
Red Fox			5 0.022	2 0.002		1 0.049			2 0.018	10 0.004	2 0.002	5 0.019	3 0.023
Horse				17 0.018						17 0.007	17 0.016		
Dog				1 0.001						1 0.004	1 0.001		
Total Transect Length (km)	31.5	0.4	8.0	37.4	1.9	0.7	1.3	2.0	4.0	87.2	42.4	9.3	4.7
Total km-days	904.5	11.2	224.0	930.9	53.7	20.3	37.7	58.0	112.0	2352.3	1074.1	261.7	132.0

Utilization: blank: X^2 not calculated
ns X^2 not significant (α =0.05)
— avoided
\+ preferred
= utilized proportional to occurrence

Analyses are presented in Appendix I.

Ws: White spruce
Wi: Willow
Ta: Trembling Aspen
Lp: Lodgepole Pine
bCot: Black cottonwood
Bs: Black Spruce

Table 2. Frenchman - Tatchun Fur Harvest, 1950/51 to 1976/77.

Season	1950/51	1951/52	1952/53	1953/54	1954/55	1963/64	1964/65	1965/66	1973/74	1974/75
No. Trapping Concessions Reporting	2	2	2	4	1	3	2	2	1	2
Beaver	10	8	4	13	7	25	5	27	2	35
Muskrat	40	1309	50	478	300	57	60			5
Squirrel	150	153	300	1743	340	550	495	100		150
Lynx	1	8	1	15	10	62	24	8		20
Red Fox						16	3		1	1
Coyote									1	
Wolf								1		1
Weasel	1	12		19		2	6	1		8
Mink		4		2		11	2			
Marten										
Otter				1		2		2		
Wolverine								1		

Notes:

1. Concessions 144, 151, 152, 167

2. There was no record of harvest for the 17 seasons not tabulated.

3. The returns are based on trapper affidavits.

Table 3. Frenchman-Tatchun Fur Harvest and Dollar Value, 1977/78 to 1982/83.

Season	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83
No. Trapping Concessions with Harvest	2	3	4	2	4	4
No. Licensed Trappers					7	8
Beaver	8	10	16	4	3	
Muskrat	35	20	401	3	5	1
Squirrel	375	63	174	233		609
Lynx	13	15	28	33	35	18
Red Fox	1	5	4	2	11	14
Coyote	1			1	1	1
Wolf				1	1	2
Weasel	2		1	2		
Mink	4	5	2		12	
Marten	3	4	7	1	1	9
Otter		2	2		2	1
Wolverine	1	1				8
Nominal Value of Harvest	$4282	$6653	$12,080	$9298	$12,950	$11,516

Note:

1. The returns are based on fur export records and fur dealer records.

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APPENDIX I

UTILIZATION-AVAILABILITY ANALYSES

(Abbreviations as in Table 1)

Table 4. Utilization - Availability Analysis

Species: Red Squirrel

Vegetation type	Km-days	Proportion Km-days	Tracks Observed	Tracks Expected	Proportion Observed	Lower Limit	Upper Limit	Utilization
Ws(Wi)	11.2	0.008	17	34.7	0.004	0.001	0.007	-
Ta	224.0	0.161	624	693.0	0.145	0.130	0.160	-
Ws(Lp)(Ta)	930.9	0.669	3369	2880.1	0.782	0.765	0.800	+
Wi(Ws)(Ta)	53.7	0.039	58	166.1	0.013	0.009	0.018	-
bCot-Ws	20.3	0.015	86	62.8	0.020	0.014	0.026	=
Ta-Wi	37.7	0.027	0	116.6	0.000	0.000	0.000	-
Ws-Lp-bSpr	58.0	0.042	0	179.4	0.000	0.000	0.000	-
Wi-Ws-bCot	56.0	0.040	152	173.3	0.035	0.028	0.043	=

Utilization: $X^2 = 476.515$ d.f. = 7 Tabular X^2 ($\alpha = 0.05$) = 14.067

X^2 is significant. Therefore, confidence limits were calculated on proportion of tracks observed in each category. This is compared with proportion of km-days in each category (after Neu et al. 1974)

- avoided (utilized less than expected; = utilized proportional to occurrence;

+ preferred (utilized more than expected)

Table 5. Utilization - Availability Analysis

Species: Snowshoe Hare

Vegetation Type	Km-days	Proportion Km-days	Tracks Observed	Tracks Expected	Proportion Observed	Lower Limit	Upper Limit	Utilization
Ws(Wi)	11.2	0.008	12	6.9	0.014	0.003	0.025	=
Ta	224.0	0.161	167	137.8	0.195	0.158	0.232	=
Ws(Lp)(Ta)	930.9	0.669	221	572.5	0.258	0.217	0.299	-
Wi(Ws)(Ta)	53.7	0.039	48	33.0	0.056	0.035	0.078	=
bCot-Ws	20.3	0.015	4	12.5	0.005	0.002	0.011	-
Ta-Wi	37.7	0.027	59	23.2	0.069	0.045	0.093	+
Ws-Lp-bSpr	58.0	0.042	300	35.7	0.350	0.306	0.395	+
Wi-Ws-bCot	56.0	0.040	45	34.4	0.053	0.032	0.073	=

Utilization: $X^2 = 2255.613$ d.f. = 7 Tabular X^2 ($\alpha = 0.05$) = 14.067

Table 6. Utilization - Availability Analysis

Species: Mouse spp.

Vegetation type	Km-days	Proportion Km-days	Tracks Observed	Tracks Expected	Proportions Observed	Lower Limit	Upper Limit	Utilization
Ws(Wi)(Lp)(Ta) (bCot)(bSpru)	1020.4	0.733	79	121.0	0.479	0.386	0.572	-
Ta(Ws)(Lp)(Wi)	261.7	0.188	66	31.0	0.400	0.309	0.491	+
Wi(Ws)(Ta)(bCot)	109.7	0.079	20	13.0	0.121	0.060	0.182	=

$X^2 = 57.752$ d.f. = 2 Tabular X^2 ($\alpha = 0.05$) = 5.991

Table 7. Utilization - Availability Analysis

Species: Grouse

Vegetation type	Km-days	Proportion Km-days	Tracks Observed	Tracks Expected	Proportions Observed	Lower Limit	Upper Limit	Utilization
Ws(Wi)(Lp)(Ta) (bCot)(bSpr)	1020.4	0.733	17	30.1	0.415	0.231	0.599	-
Ta(Ws)(Lp)(Wi)	261.7	0.188	11	7.7	0.268	0.103	0.434	=
Wi(Ws)(Ta)(bCot)	109.7	0.079	13	3.2	0.317	0.143	0.491	+

X^2 = 36.606 d.f. = 2 Tabular X^2 (α = 0.05) = 5.991