REFUGE NARRATIVE REPORT

January - April, 1956

KENAI NATIONAL MOOSE RANGE

Kenai Alaska

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Staff:

D. L. Spencer, Refuge Supervisor

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U. S. DEPT. OF THE INTERIOR
Fish & Wildlife Service
Kenai, Alaska

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I GENERAL

A. Weather Conditions

Snowfall, depth of snow on ground, and minimum temperatures as recorded at the Kenai CAA Station appear on Table I. The record shows prolonged periods of below zero weather. Snow depth and duration in timber and other areas protected from winds was greater than normal and of longer duration. Although mild thaws came in late winter, no severe crusting conditions were noted. The winter was more severe than normal on wintering moose.

B. Water Conditions

Normal for the period.

Ice went out of Skilak Lake from April 29-May 5, 1956.

C. Fires

None during the period.

II WILDLIFE

A. Migratory Birds

Migrating waterfowl were first noted April 18, when pintails, mallards and swan appeared in the Kenai River below Skilak Lake. During the week following, flights of white-fronted geese, cackling geese, snow geese, pintails, mallards, and crane appeared on Kenai River and Kasilof River Flats. The majority of these birds only remain a few days. The estimated total migratory populations on the Refuge probably does not exceed 5,000 birds at any one time.

TABLE I

Snowfall - Snow Depth - Minimum Temperature

	January			February			March			April		
Day	Snow-fall	Depth	Min. T.	Snow-fall	Depth	Min. T.	Snow-fall	Depth	Min. T.	Snow-fall	Depth	Min. T.
1		22	-16		17	30		24	-38	1.9	16	28
2		22	-23	T	14	13		22	-32	1.7	18	29
3		22	-17		13	9		22	-38	T	16	26
4		20	5	.3	13	16		22	-26	T	15	23
5		20	-16	.3	13	19		22	-31	T	14	12
6		20	-16		13	16	T	22	-14	.2	12	2
7	.1	20	-14	1.	13	20		21	-26	.3	12	8
8		20	-21	5.2	14	12	T	20	-23	4.	12	20
9		20	-24	T	19	- 7		20	-19	T	15	29
10		20	-28		19	-29	T	20	17		12	25
11		20	-28		19	-35		19	26	T	12	19
12		20	-20		19	-37		19	18	T	12	29
13		20	-10		19	-31	2.7	18	28	T	11	22
14		19	- 9	8.	19	-17	1.	16	29	T	11	24
15		19	-16	4.7	29	15	.6	16	30	T	10	25
16	T	19	-20		31	21	.2	15	31		10	31
17	.5	19	-23	T	31	10	.1	15	24		10	34
18	.1	19	8		31	4		15	8		8	29
19	T	19	8		31	- 2	T	15	20		7	24
20		19	-13		31	-13		14	20		6	19
21	1.6	18	- 4		31	-20 WIND		14	20		5	25
22	.2	19	-12	T	16	- 4		14	19		3	28
23		19	-17		16	- 3		14	19		3	32
24		19	-20	2.	16	- 6		14	10		3	27
25		19	-16	4.	19	- 8		14	16		1	32
26	T	19	-18	T	21	- 9		14	9		1	31
27		19	13	3.1	22	- 3		14	6		1	28
28	.6	18	24		24	-31		14	4		T	27
29	1.3	20	25		24	-44		13	8		T	28
30	1.3	21	25					13	1		T	33
31							2.8	13	5			

*Snow measurements in sites exposed to wind action on airfield. Snow accumulated to greater depth in woods.

B. Upland Game Birds

No report.

C. Big Game

Moose:

a. Inventory: The annual aerial moose inventory was made January 10-25, Branson, Wardleigh, Watson, Bloomquist, Hoffman, Henman and Spencer participating.

Table II summarizes the moose tally by units for the survey area during the period 1950-1954. In addition to the overall population decrease recorded, this table shows a concentration of moose in the Skilak area greater than during previous inventories. Figure I shows the trend in population for the same period, illustrating the build up in population and subsequent decline.

b. Range Surveys and Movements: Early heavy snow this winter over the Peninsula made much low browse unavailable, resulting in an overall reduction in available browse and in early concentration of moose in the best feeding areas. This concentration was noted during the January inventory when a high moose population was noted north of Skilak Lake. In previous years, this 1947 burn area of heavy browse was not utilized until late winter and occasionally received only light use.

Reconnaissance in late winter showed uniformly heavy use on all wintering areas.

Table III presents the results of measurements of permanent forage plots for 1953-1954. Average utilization for all species measured was about 85%.

c. Winter Mortality: Table IV records winter mortality in the area west of the Kenai mountains.

Due to heavy snows early in the winter extending through the winter and prolonged cold weather, winter loss was higher than normal. Most loss of which we have record was in the coastal area around Kenai, Kasilof, Cohoe, Ninilchik and Homer. Most kills were found in settled areas and reported. There are no means to determine the percentage of the total winter kill that is represented by these records. There seems to have been a loss of a substantial part of the year's calf crop over much of the Range. Only slight loss was noted in a heavily populated wintering area around Skilak Lake where forage conditions are the best on the Peninsula.

An additional winter loss of about forty was recorded in the mountain area. Many of these were highway or railroad kills.

TABLE II

KENAI MOOSE INVENTORY BY UNITS 1950 - 1956

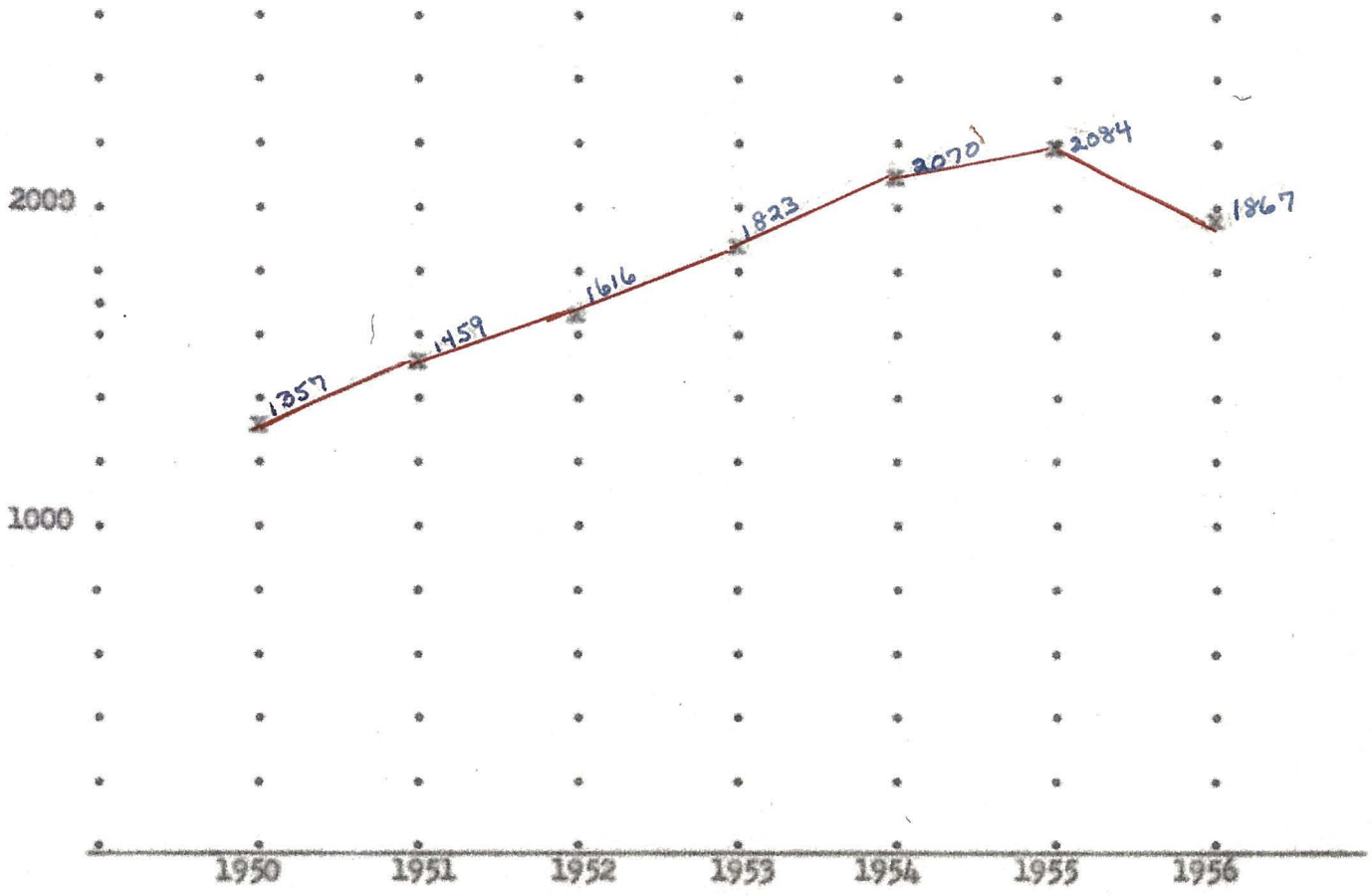
		1950	1951	1952	1953	1954	1955	1956
1.	N. Slopes Caribou Hills to Lk. Tustumena; Fox R. to Sterling Hiway	112	113	135	69	107	152	133
2.	Kenai R. to Kasilof R.; Sterling Hiway to Inlet.	328	275	267	300	289	267	124
3.	Kasilof R. to Clam Gulch; Sterling Hiway to Inlet.	110	63	76	94	171	154	95
4.	Kasilof to Tustumena Lake.	163	138	140	125	149	149	97
5, 10 & 17.	Plateau N. Tustumena Lk.; Killey R. to Funny R., Kenai R. to Mts.; N. Slopes Tustumena Lake.	189	477	371	406	430	401	460
6.	Tustumena Glacier Flats	34	3	74	8			52
7.	W. Funny R. to Sterling Hiway; S. Kenai R.	32	32	15	15	14	33	14
8.	Kenai to Soldotna; N. Kenai R.	128	99	113	155	157	133	123
9. & 11.	Soldotna to Hills; N. Kenai R. & Skilak Lake to Sterling Hiway	52	45	107	107	234	98	346
12.	Moose R. To Mountains; N. Sterling Hiway to Mystery Creek.	209	244	318	544	519	697	423
	Comparison Totals for five (5) years.	1357	1459	1616	1823	2070	2084	1867
	Area of above units - 932 square miles.							
15.	King County Cr. to Killey R.; Mts. to Skilak Lk.		31	167	174	175	159	76
16.	King County Cr. to Mts.; S. Skilak Lake.		8	16	16	13	9	18
18.	1947 Burn area N. & W. Moose R.; N. Sterling Hiway Soldotna to Moose R.			105	102	206	244	96
	Totals all areas	[illegible]	[illegible]	1904	2115	2464	2496	2057
	Area of Units 15, 16 & 18 - 288 square miles.							
	Total inventory area - 1220 square miles.							

Moose Population within 1947 burn area:
1950 - 273, 1951 - 344, 1952 - 618, 1953 - 1111, 1954 - 1223, 1955 - 1271, 1956 - 940.

FIGURE I

MOOSE COUNT

Sample Area



Trend in Moose Population

TABLE III

FORAGE UTILIZATION 1955 - 1956 on PERMANENT FORAGE PLOTS

Length of Annual Growth in Inches

Plot No.	Location	~~Type of Cut~~ Species	December	May	Percentage Use
1.	Kasilof	Willow	720	512	29
2.			544	76	86
3.			956	314	67
4.			1,760	184	91
5.			2,244	290	87
6.			846	34	96
9.	Kenai		480	148	69
8.	Skilak		3,448	158	95
10.			1,180	356	68
4.	Kasilof	Kenai Birch	1,902	420	78
5.			1,808	206	77
6.			1,840	278	85
9.	Kenai	Kenai Birch	194	92	53
9.		Dwarf Birch	384	86	78
1.	Kasilof	Aspen	32	44	-0-
5.			140	42	70
7.	Skilak		3,374	80	97
8.			2,124	404	81
10.			2,014	184	91
11.			2,800	418	85
12.			2,207	484	78
1.	Kasilof	Cottonwood	-0-	-0-	-0-
2.			178	28	84

TABLE IV

WINTER MORTALITY 1955-1956

	Calf			Adult				
	M	F	Unk.	M	F	Unk.	Unk.	Total
Natural Winter Kill	11	15	14	3	3	1	1	48
Accidental Death		2		4		1	1	8
Illegal Kill					4			4
Other (Including Unk.)	1	2	1	4	8	—	2	18
Totals:	12	19	15	11	15	2	4	78

D. Other Mammals

Beaver:

During the open season February 1 - March 31, 263 beaver were known to be taken on the west side of the Kenai Peninsula. Approximately 152 of these taken on the Moose Range by 19 trappers.

Coyote:

Forty-seven coyotes were certified for bounty at Kenai. Of these, approximately 41 were taken within the Moose Range.

Wolverine:

Nine wolverine were known to have been taken in the Indian Creek and Fox River area.

III REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

Habitat Improvement:

A cooperative habitat improvement program was carried on during the period February 28 - March 20, 1956. This work was conducted by Rex Williams, Biological Aid, with the cooperation of a large number of local residents. It consisted of the cutting of out-of-reach hardwood stands with the use of power saws. Plots were cut in areas as follows:

Kenai (3) Soldotna (1) Naptowne (3) Kasilof (2)
Quartz Creek (1)

A total of approximately forty man days was devoted to this work. In addition, quite a number of other residents of the western side of the Kenai Peninsula did some cutting work.

In the course of other work, the CAA ran through an acre of out-of-reach aspen with a bulldozer. This may be considerably more efficient than cutting by hand as in some cases trees were merely pushed over and may continue to grow and furnish feed at a height available to the moose.

IV ECONOMIC USE OF REFUGE

D. Timber Removal

Timber permits issued during the period were as follows:

Permit No.	Date	Charges	Material
20646	4/ 5/56	$7.50	1500 ft. 8-12" butts
20657	4/ 3/56	$4.50	3000 bd. ft. saw timber
28601	3/28/56	Free Use	200 fire killed poles

VI PUBLIC RELATIONS

A. Recreational Use

A minor amount of ice fishing was done on Hidden Lake and a few of the lakes on the northern part of the Refuge.

C. Refuge Participation

Conservation talks and film showings were made by Enforcement and Refuge personnel at Homer, Ninilchik and Kenai Schools and The Peninsula Sportsmen Club. Spencer attended Alaska Game Commission meeting in Juneau during February.

D. Hunting

Moose:

In an effort to secure more accurate kill data, appraise the effectiveness of the reporting system, and to secure related information, a questionnaire (p. 10) was sent out to 1,000 hunting license holders on the Kenai Peninsula (estimated 60% of total number of license holders). To date, 623 questionnaires have been returned. This survey has not been completed. None of the data has been subjected to a statistical analysis. A preliminary summary of the returns so far is as follows:

Of questionnaires returned, 68.5% hunted moose.
172 kills were reported of which 89 or 51.7% had been reported by post cards received at Kenai.
40.3% of hunters returning questionnaires were successful in getting a moose.

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Kenai, Alaska

December 15, 1955

Dear Sir:

In an effort to obtain more accurate hunting data for the purpose of managing the Kenai Moose Herd, we request your cooperation in filling out and returning this questionnaire. An addressed, stamped return envelope is enclosed for your convenience.

Did you hunt moose this year?_____
Early season?_____How many days?_____
Late (November) season?_____How many days?_____
Means of access to hunting grounds - Car_____
Plane_____
Boat_____
Foot_____
Horse_____
Tractor_____

Did you shoot a moose?_____
If so, please complete the following:
Date of Kill_____
Location of Kill_____
Have you reported your kill by postcard?_____
If not, the above questionnaire will serve as your report as required by Sec. 46.58 of the Alaska Game Law.

Even if you have reported your kill before this, please complete and return this form. The data is necessary to check the accuracy of the postcard form returns.

Your comments on moose hunting on the Kenai Peninsula would be appreciated. Such things as number of moose observed, how many cows, with calves and without, that you saw, signs of predation, crippled animals, etc.

_____ _____

_____

_____

Thank you for your help in obtaining this information.

Very truly yours,

David L. Spencer

Fish and Wildlife Service
Kenai, Alaska

The 427 hunters reportedly spent 1,979 days hunting in the early season and 1,173 days in the late season. This figures as an average of 7 days per hunter and 18 days per bull killed - rather an astonishing total. Table V shows number of moose killed per day. Days hunting should be more properly described as time hunting since days reported often consist of only an hour or two in the morning or evening. This reported hunting time evidently includes packing in the moose.

The reported method of access to hunting grounds was as follows:

Car	-	43 percent
Plane	-	13 "
Boat	-	55 "
Foot	-	37 "
Horse	-	3 "
Tractor	-	11 "

Three hundred four (304) of the hunters made comments on observations, regulations and management. In the effort to reduce to assimilated form this wholesale expression of public opinion, we have summarized the comments as follows:

Comments based on 496 questionnaires.

Regulations:	No. of Comments
Comment on poor hunting	4
" on good hunting	4
Favor more restricted seasons	3
" " liberalized "	3
Present season satisfactory	2
Favor November season	4
Against " "	13
Suggest cow season	17
Against " "	4
Against road closure	5
Clarify road closure	1
Restrict plane hunting	6
" tractor "	2
Open Moose Range to tractors	1
Request tag system	2

Management:

Comment on herd increase	7
" on herd decrease	15
" on excess cows	59
" on good herd ratio	3
" on lack of calves	48
" on good calf crop	21

TABLE V

REPORTED MOOSE KILLS PER DAY

Early Season:		Total
August	20	20
	21	13
	22	4
	23	6
	24	3
	25	4
	26	2
	27	5
	28	5
	29	3
	30	0
	31	3
Sept.	1	6
	2	1
	3	4
	4	4
	5	2
	6	2
	7	5
	8	2
	9	2
	10	4
	11	7
	12	3
	13	1
	14	4
	15	11
	16	5
	17	5
	18	13
	19	11
	20	22
		182

Late Season		Total
November	20	50
	21	14
	22	10
	23	14
	24	5
	25	14
	26	12
	27	10
	28	20
	29	19
	30	20
		188

	No. of Comments
Notes on predation, wounded moose, illegal kill.	24
Comment on winter loss and poor winter feed.	14

Sight records - hunting season:

	Moose Seen			
	1-5	5-15	15-30	30 plus
Bulls	70	13	3	-0-
Cows	63	65	28	13
Calves	72	23	8	1

F. Violations

Two cases of mining claim trespass occurred during the period. These were contested by the locators and the cases were turned over to the Dept. of the Interior Field Solicitor for prosecution. The lands involved were at the outlet of Skilak Lake.

VII OTHER ITEMS

A. Items of Interest

The barracks at the former military recreational camp at Skilak Lake was sold on bid March 23, 1956. The building is to be removed from the site.

The public hearing for the proposed Kuskokwim National Wildlife Management area was held in Bethel on March 1, 1956. This Refuge office was concerned with preparation of material relating to this withdrawal.

Submitted by: D L Spencer
David L. Spencer

May 16, 1956

Approved by: _____

3 -1750a
Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Hamel National Moose Range MONTHS OF January TO April, 19 46

(1) Species	(2) Weeks of reporting period: 11	12	13	14	15	16	17	18	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:											
Whistling ? Trumpeter	April 18 arrival of resident population. Approximately 50										
Geese:											
Canada											
Cackling	April 20 arrival.		Estimated total migrants			500					
Brant							Duration - maximum one week.				
White-fronted	April 20 arrival.		Estimated total migrants			500					
Snow	April 20 arrival.		"		"	300					
Blue											
Other											
Ducks:											
Mallard	April 18										
Black											
Gadwall			Total migrant duck population estimated at 1-3000.								
Baldpate											
Pintail	April 18										
Green-winged teal	April 30										
Blue-winged teal											
Cinnamon teal											
Shoveler											
Wood											
Redhead											
Ring-necked											
Canvasback											
Scaup											
Goldeneye											
Bufflehead											
Ruddy											
Other											
Crane	May 3 - - ~200 on Kasilof flats										
Coot:											

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese			
Ducks			
Coots			

SUMMARY

Principal feeding areas _____

_____

Principal nesting areas _____

_____

Reported by _____

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C. 37944
1953

3-1752
Form NR-
(April 1946)

UPLAND GAME [illegible]DS

Refuge Kenai National Moose Range Months of January to April, 194[illegible]

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Spruce Grouse	Low population									
Ptarmigan	Low population									

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge [redacted] Year ending April 30, 1956

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5) Total Population
								Share Trapping						
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	
Coyote	(by trappers & hunters)				42									
Beaver				152										
Wolverine	(also bounty)			9										
Land otter	(estimated take)			15										
Lynx	(numbers unknown)			Low										
Mink	(numbers unknown)			Low										

* List removals by Predator Animal Hunter

REMARKS:

Reported by _____

INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

(1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)

(2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headingslisted.

(4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.

(5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.

REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.