

LOUISA-KEITHSBURG

NARRATIVE REPORTS

JANUARY-DECEMBER 1948

ROUTING SLIP

DIVISION OF WILDLIFE REFUGES

DATE: May 24, 1948

____ MR. SALYER

____ MR. KRUMHOLZ

✓ ____ MR. DUMONT

____ MISS BAUM

W.S.

PAD 7-20

SECTION OF HABITAT IMPROVEMENT:

~~Mr. Griffith~~ REG 5-27

~~Dr. Bourn~~ WSB 7-6

~~Miss Cook~~ WMC 7-13

____ SECTION OF OPERATIONS:

Mr. Ball

✓ ~~Mr. Regan~~ WPR 7/21/48

____ SECTION OF LAND MANAGEMENT:

~~Mr. Kent~~

WLC 7/22

~~Mr. Ackerman~~ WAC

____ SECTION OF STRUCTURES:

~~Mr. Taylor~~

WVT 10/25

Mr. Johnston

____ STENOGRAPHERS:

REMARKS:

KEITHSBURG and LOUISA NATIONAL WILDLIFE REFUGES

NARRATIVE REPORT

JANUARY--APRIL 1948

Return to: _____

Summarization of Activities on
Keithsburg and Louisa Refuges
May 1, 1947 to April 30, 1948

The two refuges, Keithsburg and Louisa, had extremely variable water levels during the year.

During June, 1947, the levees on the Iowa and Mississippi Rivers were broken at Louisa, and the refuge was inundated almost 9 feet as a result of the flood. Through local and State cooperation, water levels were partially restored on the area, by means of temporary repairs made on the levee breaks. During the winter, Louisa was almost dry, because of Pool drawdowns on the Mississippi River, together with the fact that the dikes were broken. Spring floods again flooded the area with almost 7 feet of water.

The Keithsburg levee is in bad condition, and was nearly lost during high water. Temporary repairs prevented the levee from going out, however. Draw downs on the Mississippi River affected levels inside the refuge area, however, and there was at least 12 foot variations in water stages.

An estimated 75,000 ducks and 8,000 geese used Louisa during the fall of 1947, as compared to 50,000 ducks and a few geese the previous year. Keithsburg had a thousand ducks most of the fall season, with a peak of 60,000 at one time. About 1,000 geese used the Keithsburg Refuge this spring.

Ample food and cover were present on both refuges.

Upland game populations were very low, and neither area has any big game animals present.

Fur bearers decreased considerably on both area. Louisa lost almost all fur animals due to drowning out, and the beaver which had become established from State plantings were almost wiped out.

Several days were spent at the Keithsburg Refuge, making temporary repairs to the dikes, and as a result, the badly weakened structure did not go out during high water.

Sport fishing was popular on both areas. No commercial fishing was permitted on either Refuge.

Both of these refuges are important units in the refuge system on the Mississippi River, and are used extensively by waterfowl when water conditions are right. An all out effort should be made to accomplish the much needed repairs to levees before the areas are seriously damaged by repeated inundation by floods, and the remaining structures damaged even further.

KEITHSBURG AND LOUISA REFUGES
NARRATIVE REPORT
JANUARY, FEBRUARY, MARCH, APRIL, 1948

I. GENERAL

A. Weather Conditions:

See Upper Mississippi Report

B. Water Conditions:

Keithsburg

Water levels were far below normal, due for the most part, to the drawdown in Pool 18. Fluctuations varied from 2.7' to 14.5'.

Louisa

Water levels were far below normal, because of the breaks in the levees on the Iowa and Mississippi Rivers. The drawdown in Pool 17 was thus immediately reflected by lower water within the old drainage district. When the Mississippi River rise came this spring, Louisa Refuge was flooded badly, with almost seven feet of water covering portions of the area which are normally exposed.

C. Fires:

There were no fires on either Refuge, other than some controlled burning done by the lessee on Keithsburg Refuge this spring to clean off some of his fields.

II. WILDLIFE

A. Migratory Birds

1. Populations and Behavior
 - (a) Waterfowl

Keithsburg

Keithsburg held a fair number of ducks, with an estimated total use of 28,000 birds, compared to 10,000 in 1947. It should be pointed out, however, that because of the fact that there is no one stationed in the immediate vicinity of either Keithsburg or Louisa Refuge, checking by Refuge personnel is spotty at best. The estimates are thus based largely on hearsay, and the totals are

not deemed to be too accurate.

Louisa

Few birds used this area during the early part of the flight, but later in the spring it was used to a considerable extent. Ducks peaked on the area about April 16, where they were using flooded agricultural lands as the water levels receded. As the water levels dropped, more and more birds came into the area, until the peak was reached. It was estimated that 125,000 ducks used the Refuge compared to 10,000 in the spring of 1947. Mallards were present in numbers and there was a heavy concentration of blue-winged teal.

2. Food and Cover

Food and cover conditions on both area were good to excellent. Cut-grass, millet, smartweed, and flooded agricultural crops supplied more than enough food for the ducks that used the areas.

B. Upland Game Birds

Keithsburg and Louisa

Upland game birds were driven out of the Louisa Refuge by high water, while unusually wet conditions on Keithsburg militated against these species.

C. Big Game

There is no big game present on either area.

D. Fur Bearers:

Keithsburg

1. Muskrats: very common in banks of sloughs and ditches
2. Minks: common
3. Beaver: none
4. Skunk: rare
5. Raccoon: common

Louisa

1. Muskrats: very few; drowned out
2. Minks: drowned out
3. Beaver: drowned out, even where they used to exist as a result of State plantings.
4. Skunk: rare
5. Raccoon: forced to adjacent highlands by high water.

E. Predaceous Birds:

Common on both areas. Species present include bald eagle during the winter; and several of the hawks. Hawks include marsh hawk, sparrow hawk, and red-tailed hawk. Barn owls and barred owls are present on both areas.

F. Fish:

Keithsburg

All fish might have been lost due to the rapid drawdown of Pool 18 this winter, if the area had not been fed by springs and seepage water. Even so, many small crappie and shad were killed.

Louisa

Normal fish population trends were upset on the area as a result of the floods caused by the breaks in the levees. No data are available on present fish conditions in this area.

III. REFUGE DEVELOPMENT

C. Construction:

Several days were spent at Keithsburg saving the dike from being topped by high waters this spring.

IV. PUBLIC RELATIONS

A. Recreational Use:

Fishermen used both areas extensively during the last two weeks in April. There was little recreational use of either area during the winter months. At Keithsburg, good catches of crappie, bass, bluegills, and bullheads were made.

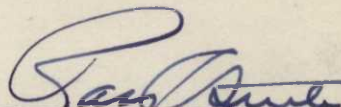
F. Violations:

No violation cases were made on either Refuge this spring.

VII. OTHER ITEMS

B. Photographs:

See attached sheets.



Superintendent, Upper Mississippi
River Wildlife and Fish Refuge

May 5, 1948

APPROVED: MAY 10 1948



Acting Regional Director



Louisa Refuge--Spring 1948
General view of flooded conditions from just south
of Izaak Walton trap field.



Louisa Refuge--Spring 1948
Flooded due to breaks in levee. West Port Louisa
school house in background.



Keithsburg Refuge--Spring 1948
 Typical field pond with baldies above it. Wild millet
 surrounding water area.



Keithsburg Refuge--Spring 1948
 Wild millet seed shattered out on ground.



Keithsburg Refuge--Spring 1948
Controlled burning by lessee to clear field of trash
and wild millet growth of year before--no particular
harm.



Keithsburg Refuge--Spring 1948
Sandbagging out flood near Keithsburg
railroad bridge.



Keithsburg Refuge--Spring 1948
Notice narrow crown and shallowness on stream side.
This is a good section but still below par.

3-1750
Form NR-1
(Nov. 1945)

WATERFOWL

Refuge Keithsburg Months of January to April 1948

(1) Species Common Name	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Young Produced		(6) Total
	Number	Date	Number	Date	Number	Date	Broods Seen	Estimated Total	Estimated for Period
I. <u>Swans:</u>									
Whistling swan	NONE								
II. <u>Geese:</u>									
Canada goose	NONE								
Cackling goose	NONE								
Brant	NONE								
White-fronted goose	NONE								
Snow goose	NONE								
Blue goose	NONE								
III. <u>Ducks:</u>									
Mallard	500*	1 Feb.	3000	17 April	3000	17 Apr.			10000
Black duck	50*	ditto	500*	10 April	500*	10 Apr.			1000
Gadwall	100*	10 Apr.	100*	10 April	100	10 Apr.			500
Baldpate	100*	10 Apr.	100*	10 Apr.	2000	17 Apr.			3000
Pintail	25*	1 Feb.	500	17 Apr.	500	17 Apr.			1000
Green-winged teal	25*	30 Mar.	525	17 Apr.	500	17 Apr.			1000
Blue-winged teal	25	ditto	4000	ditto	4000	ditto			10000
Cinnamon teal	NONE								
Wood duck	50*	ditto	100	ditto	100	ditto			500
Red head	NONE								
Ring-necked duck	↑		10	ditto	10	ditto			50
Canvas-back	NONE								
Scaup	NONE								
Golden-eye	NONE								
Buffle-head	NONE								
Ruddy duck	NONE								
IV. <u>Coot:</u>	100*	1 Apr.	500	17 Apr.	500	17 Apr.			1000

(over)

SUMMARIES

Total Production:

Geese.....

Total waterfowl usage during period 23,050

Ducks.....

Peak waterfowl numbers 9,335

Coots.....

Areas used by concentrations.....

* NOTE estimates marked with star furnished by
lessee.

Upper end of refuge in shallow water areas

Principal nesting areas this season.....

Reported by Harry E. Adams

INSTRUCTIONS

- (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) First Seen: The first refuge record for the species during the season concerned in the reporting period, and the number seen. This column does not apply to resident species.
- (3) Peak Concentration: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned in the reporting period.
- (5) Young Produced: 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.
- (6) Total: Estimated total number of the species using the refuge during the period. This figure may or may not be more than that used for peak concentrations, depending upon the nature of the migrational movement.

Note: Only columns applicable to the reporting period should be used. It is desirable that the Summaries receive careful attention since these data are necessarily based on an analysis of the rest of the form.

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Keithsburg

Months of January

to April

1945

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Virginia rail	3	17 April	3	17 April	3	17 April				25
Sora rail	1	ditto	1	ditto	1	ditto				25
Great Blue heron	20	ditto	20	ditto	20	ditto				50
Black crowned Night Heron	10	ditto	10	ditto	10	ditto				25
Green heron	8	ditto	8	ditto	8	ditto				10
Great Bittern	4	ditto	4	ditto	4	ditto				25
Least bittern	1	ditto	1	ditto	1	ditto				10
II. <u>Shorebirds, Gulls and Terns:</u>										
Killdeer	5	17 Apr.	5	17 Apr.	5	17 April				50
Herring gull	25	ditto	25	ditto	25	ditto				100
Least sandpiper	2	ditto	2	ditto	2	ditto				10
Lesser yellow legs	100	ditto	100	ditto	100	ditto				200

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u>					
Mourning dove	Present all year	100	17 April	100	17 April
White-winged dove	NONE				
IV. <u>Predaceous Birds:</u>					
Golden eagle	NONE				
Duck hawk	NONE				
Horned owl	NONE				
Magpie	NONE				
Raven	NONE				
Crow	present all year	1000	17 April	1000	17 April
<p>Note: Due to only two field trips to this refuge this report period satisfactory notes are not available.</p>					
Reported by..... <u>Harry E. Adams</u>					

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. 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. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

Form NR-2
(April 1946)

1613

Months of January to April, 1944

[illegible]

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.

Refuge KoitzenburgApril 30, 1948

(1) Species	(2) Density		(3) Removals					(4) Disposition of Fur						(5) Total	
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control	For Re- stocking	For Research	Share Trapping			Total Refuge Furs Shipped	Refuge Income	Furs Donated	Furs Destroyed	Popula- tion
								Permit Number	Trappers' Share	Refuge Share					
Masked Mink Raccoon Red fox	ditch and slough banks ditto timber areas ditto	2 40 40 200													2000 40 40 ?

REMARKS:

Little or no trapping occurred this last season. Although not patrolled during season--when it was possible to patrol area no sign of trapping appeared.

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. "List of North American Recent Mammals" by G. S. Miller, Jr., a very good reference, is now out of print, although a revision is scheduled for publication in the near future.)
- (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, 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. Also show any removals not falling under heading listed.
- (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 and the total income to the refuge by species, including share-trapped furs and 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.

3-1750

Form NR-1

(Nov. 1945)

WATERFOWL

Refuge Louisa Months of January to April 1948

(1) Species Common Name	(2) First Seen Number Date		(3) Peak Concentration Number Date		(4) Last Seen Number Date		(5) Young Produced Broods Seen Estimated Total		(6) Total Estimated for Period
	Number	Date	Number	Date	Number	Date	Broods Seen	Estimated Total	Estimated for Period
I. <u>Swans:</u>									
Whistling swan	NONE								
II. <u>Geese:</u>									
Canada goose	500*	15 March	1000*	20 March	500*	5 April			2000
Cackling goose	NONE								
Brant	NONE								
White-fronted goose	NONE								
Snow goose	10000*	15 March	25000	16 March	500*	18 March			20000
Blue goose	10000*	ditto	25000	ditto	500*	ditto			20000
III. <u>Ducks:</u>									
Mallard	present all	winter	8,000	16 Apr.	8000	16 April			25000
Black duck	ditto		200	ditto	2000	ditto			1000
Gadwall	100*	25 Mar.	500*	1 Apr.	100	ditto			1000
Baldpate	100*	ditto	1500*	10 Apr.	1000	ditto			10000
Pintail	50*	10 Mar.	1000	16 April	1000	16 April			2000
Green-winged teal	10*	30 Mar.	1000	ditto	1000	ditto			5000
Blue-winged teal	2*	ditto	12000	ditto	12000	ditto			25000
Cinnamon teal	NONE								
Wood duck	2*	31 Mar.	500	ditto	500	ditto			2000
Red head	50*	23 Mar.	100*	1 Apr.	10*	10 Apr.			500
Ring-necked duck	10*	20 Mar.	2000*	ditto	500	16 Apr.			5000
Canvas-back	10*	ditto	500*	ditto	200	16 Apr.			3000
Scaup (lesser)	50*	ditto	3000*	25 Mar.	300	ditto			10000
Golden-eye	present all	winter	200*	1 Apr.	2*	15 Apr.			1000
Buffle-head	Present all	winter	50*	2 Apr.	1*	15 Apr.			50
Ruddy duck	10*	1 Apr.	100*	15 Apr.	50	16 Apr.			200
IV. <u>Coot:</u>	2000*	1 Apr.	5000*	15 Apr.	2000	16 Apr.			10000

(over)

SUMMARIES

Total Production:

Geese..... Total waterfowl usage during period 200,250Ducks..... Peak waterfowl numbers 125,000Coots..... Areas used by concentrations As water receded fromrefuge more ducks used farm land areas.

NOTE: All figures marked by stars are estimates
furnish me by local wardens.

Principal nesting areas this season.....

Reported by Harry E. Adams

INSTRUCTIONS

- (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) First Seen: The first refuge record for the species during the season concerned in the reporting period, and the number seen. This column does not apply to resident species.
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- (6) Total: Estimated total number of the species using the refuge during the period. This figure may or may not be more than that used for peak concentrations, depending upon the nature of the migrational movement.

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3-1751

Form NR-1A

(Nov. 1945)

MIGRATORY BIRDS

(other than waterfowl)

Refuge LouisaMonths of Jan. to April 1948

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Virginia rail	2	16 Apr.	2	16 Apr.	2	16 Apr				10
Sora rail	1	"	1	"	1	"				10
Great Blue Heron	15	"	15	"	15	"				50
Black Crowned Night Heron	20	"	20	"	20	"				100
Green Heron	2	"	2	"	2	"				10
Great Bittern	1	"	1	"	1	"				10
Least Bittern	1	"	1	"	1	"				10
II. <u>Shorebirds, Gulls and Terns:</u>										
Killdeer	100	16 Apr.	100	16 Apr.	100	16 Apr				500
Herring Gull	250	"	200	"	200	"				1000
Least Sandpiper	1	"	1	"	1	"				1
Greater yellow legs	150	"	150	"	150	"				500
Lesser yellow legs	1000	"	1000	"	1000	"				3000

(over)

[illegible]

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. 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. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned..
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

Form NR-2
(April 1946)

1613

Refuge LOUISA Months of January to April, 1948

[illegible]

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.
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- (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.

Refuge LouisaApril 30, 1948

(1) Species	(2) Density		(3) Removals					(4) Disposition of Fur						(5) Total Popula- tion
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control	For Re- stocking	For Research	Share Trapping			Total Refuge Furs Shipped	Refuge Income	Furs Donated	Furs Destroyed
								Permit Number	Trappers' Share	Refuge Share				
Practically none an area due to inundated conditions.														

REMARKS:

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. "List of North American Recent Mammals" by G. S. Miller, Jr., a very good reference, is now out of print, although a revision is scheduled for publication in the near future.)
- (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, 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. Also show any removals not falling under heading listed.
- (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 and the total income to the refuge by species, including share-trapped furs and furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimness 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.