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ROUTING SLIP	DIVISION OF WILL	DLIFE REFUGES	DATE: M	ay 24,	1948
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KEI	THSBURG and LOUIS	A NATIONAL WILDLI	FE REFUGE	S	
	NARR	ATIVE REPORT			
	JANUAR	Y-APRIL 1948			
		Return to:			
		MELLING GO:			

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, FEBRUARK, 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 buring 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

IV. Coot:

100*

1 Apr.

500

WATERFOWL (Nov: 1945) Refuge Keithsburg Months of James to 194.8 (1) words (3) (2) (4)(5)(6)Young Produced Total Species First Seen Peak Concentration Last Seen Broods Estimated Estimated Common Name Seen Total Number Date Number Date Number Date for Period I. Swans: NONE Whistling swan Principal nesting areas II. Geese: NOHE Canada goose Cackling goose NONE Reported by ... Brant ROTE White-fronted goose NONE Snow goose NONE NSTRUCTIONS NONE Blue goose In addition to the birds listed on form, other species (1) Species: courring or refuge during the reporting period should be added in appropriate spaces. Special attention should be III. Ducks: bas Isoc National at 500* 17 April 17 Apr. Mallard 1 Feb. 3000 3000 10000 Black duck 50 500* 10 April 500* 10 Apr. 1000 ditto 100* 10 Apr. 100 10 April 100 10 Apr. 500 Gadwall 2000 10 Apr. 100* 10 Apr. 100* 17 Apr. 5000 Baldpate 17 Apr. 25* 1 Feb. 500 17 Apr. 500 1000 Pintail The er 251 525 17 Apr. 500 17 Apr. 1000 30 Mar. Green-winged teal 4000 ditto 4000 ditto ditto 10000 Blue-winged teal 25 Cinnamon teal NORE record for The last refuge (4) Last Seen: the species during he seaso Wood duck 500 50 ditto 100 ditto 100 ditto neriod. Red head NONE Ring-necked duck to bas another and 10 best ditto a 10 to ditto be sential of southout south 50 (5) Canvas-back Brood counts should be made o sentative breeding areas. NONE Scaup to ++ too ed binode NONE Estimates having no basis 10% of the breeding habitat. Golden-eye NONE Buffle-head (6) Total: NONE Estimated total number of the species using the refuge of Ruddy duck NONE may or may not be more than that used for peak concentra .inemevom Isnoijsrgim edi lo eruisn Note: Only columns applicable to the reporting period should be used. It is degirable that the Summaries receive careful attention since df to feer edf to giev

17 Apr.

(over)

500

17 Apr.

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3-1750

Form NR-1

Total Production:

form.

Geese	11	Total waterfowl usage during period 23,050
(a) Ducks (a)	(4) Last Seen Young	Peak waterfowl numbers 9,335
befamileCootsulamifeH	Broods Number Date Seen	Areas used by concentrations
* NOTE estimated lesses.	marked with star furnished by	Principal nesting areas this season
		Reported by Adams 1000 Spanishood 1000 Spanish
		INSTRUCTIONS GOOD WORLD
(1) Species:	reporting period should be	isted on form, other species occurring on refuge during the added in appropriate spaces. Special attention should be local and National significance.
(2) First Seen:		r the species during the season concerned in the reporting n. This column does not apply to resident species.
(3) Peak Concentra	- The greatest number of the	species present in a limited interval of time.
(4) Last Seen:	The last refuge record for period.	the species during the season concerned in the reporting
(5) Young Produced	sentative breeding areas.	produced based on observations and actual counts on repre- Brood counts should be made on two or more areas aggregating t. Estimates having no basis in fact should be omitted.
(6) Total:		the species using the refuge <u>during the period</u> . This figure in that used for peak concentrations, depending upon the 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

3-175	1
Form	NR-1A
(Nov.	1945)

MIGRATORY BIRDS

(other than waterfowl)

Months of III. Doves and Pigraphic Mourning dove 191 Refuge... Kei theburg

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(1)	(:	2)	(3	3)		4)		(5)	44 44 944	(6)
Species	First	Seen	Peak Nu	umbers	Last	Seen		roduction		Total
							Number	Total #	Total	Estimated
Common Name	Number	Date	Number	Date	Number	Date	Colonies	Nests	Young	Number
I. Water and Marsh Birds: Typinia rail Croat Rice heren	3 1	17 April	3	17 April ditto	100	19 April	MONE MONE MONE MONE MONE MONE MONE MONE		fwo	Duck h Horned Magpie Raven Crow
Black cround Might					20	24.65			-	
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II. Shorebirds, Gulls and	ng period	ijroger e		n refuse	curring o	pecies oc	other s	form		
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confiformes and Gruilformes)		(Gavilior	sh Birds			Groups:	lficance.			
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(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons</u> : Mourning dove White-winged dove	Prosect all you	100 17 April	100 17 April	Refuge management	ALSO VOW)
isjoT noijoubg	nen Pr	(4) Ders Last S	(3) Peak Num	1) (2) oies First S	
IV. <u>Predaceous Birds</u> : Golden eagle	Date C SIONS	Date Number	Date Number	oies First S	
Duck hawk Horned owl Magpie	NOME NOME HOME			Marsh Sirds:	
Raven	present all year	1000 17 April	1000 17 April	E S Line and Sine Starting	1000
	0.00	20 20 0	20	\$ 05. \$42.23 leasure	a seed
Note: Due to only to not svailable		this refuge this :	eport period satis	factory notes are	
			Reported	d by B. Adams	

(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 Gruiiformes)

II. Shorebirds, Gulls and Terns (Charadriiformes)

III. Doves and Pigeons (Columbiformes)

IV. <u>Predaceous Birds</u> (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.

Refuge Keithsburg Months of January to April , 194_8

(1) Species	(2) Density		Your Produc	ng ced	(4) Sex Ratio	Re	(5) emoval	ls	(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 Restocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
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	con Anglion Sale San's	ravenso edupana			et ibresheng Distriket Mile-ut vij				y bedanita messiqui m dallon suc	innie m (4)
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Form NR-2 - UPLAND GAME BIRDS.*

(1) S	PECIES:	Use	correct	common	name.
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- 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 Keitaburg

April 30, 194

(1) Species	(2) Density	noo ni	-202	(Remo	3) vals	100x 1	Control of	Di	sposi	(4) tion	of Fur	1208			(5)
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Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control	For Restocking	For Research	Permit Number	Trappers' Share	Refuge Share	Total Refuge Furs Shipped	Refuge Income	Furs Donated	Furs Destroyed	tion
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REMARKS:

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

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.

REMARKSL

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

Total Production: Months of January Louisa April wolfet (3) (1)(2) (4)(5)(6) Young Produced Peak Concentration Last Seen Total Species First Seen Broods Estimated Estimated Seen Total for Period Common Name Number Date Number Date Number Date I. Swans: furnish no by local Whistling swan Principal nesting areas NONE and II. Geese: Canada goose 500* 15 Marca1000* 500 5 April 2000 20 March Cackling goose NONE Reported by Brant HOME White-fronted goose MONE 500* 18 March 20000 10000 15 March 25000 16 March Snow goose 500* ditto 20000 10000 25000 ditto Blue goose di t to In addition to no bedell strde on :seised refuge during the courring or form, other reperting period Special a tention should be should be added in III. Ducks: esodt o bus isool lo seles National s Mallard 25000 present all 8,000 16 Apr. 8000 16 April winter ditto Black duck ditto 1000 ditto 200 2000 Gadwall 100 1 ADE. 100 1000 500* ditto 25 Mar. Baldpate 10 Apr. 10000 1500* 1000 ditto 100* ditto Pintail 50* 10 Mar. 1000 16 April 1000 16 April 2000 ak Concentr 5000 Green-winged teal 10* 1000 ditto 30 Mar. 1000 ditto 25000 Blue-winged teal 2* 12000 ditte 12000 ditto ditto Cinnamon teal NONE The last refuge ditte 2000 Wood duck 500 2 31 Mar. 500 ditte 1 Ap. 10* 500 50* 100* 10 Apr. Red head 25Mar. Ring-necked duck 10* 5 bas ng Produced: 20 Mar. 2000* ditto 500 16 Apr. 5000 Canvas-back 500* ditto 16 Apr. 3000 10* ditto 200 Scaup (lesser) 10000 50* ditto 3000* 25 Mar. 300 ditto . 10% of 15 Apr. 1000 Golden-eye 2 present all winter 200* 1 Apr. 50 1* 15 Apr. Buffle-head 50* 2 Apr. Present all winter Ruddy duck 15 Apr. 16 Apr. 10* 100* 50 1 Apr. m edf lo Note: Only columns applicable to the reporting period should be used : It is desirable that the Sugmaries receive careful attention since 5000* 15 Apr. 2000 16 Apra 2000* 1 Apr. IV. Coot:

(over)

SUMMARIES

(6) Tota	Ducks	(4) Last Seen Young	Peak waterfowl numbers	125,000	Species (1)
	***	Number Date Seen	Areas used by concentration	s As water rec	eeded from
or Pe	lajoT	Number Date Seen	refuge more ducks used farm	land areas.	SHEM OURS
		marked by stars are estimate	8		:2
	furnish me	by local wardens.	Principal nesting areas thi	s season	tling swan
					10
- 00	nos I	Ibrga 8 7 003 de	tall 03 POOÖLAPTON AL	2000	da goose
			Reported by	Harry E. Adams	ling goose-
				iose Mons	e-fronted go
- 00	N/N/	THE RESERVE OF THE PARTY OF THE			goose
		名名名名	NSTRUCTIONS	Annual	04049
(1)	Species:	In addition to the birds li reporting period should be	sted on form, other species occ added in appropriate spaces. S	Special attents	uge during th
00	obels .	In addition to the birds li reporting period should be given to those species of l	sted on form, other species occadded in appropriate spaces. Socal and National significance.	Special attent	uge during to
00	Species: First Seen:	In addition to the birds li reporting period should be given to those species of l. The first refuge record for	sted on form, other species occ added in appropriate spaces. S	Special attents concerned in	age during the should be the reporting ecies.
(2)	First Seen: Peak Concentration:	In addition to the birds li reporting period should be given to those species of I The first refuge record for period, and the number seen The greatest number of the	sted on form, other species occadded in appropriate spaces. Socal and National significance. the species during the season. This column does not apply tespecies present in a limited in	concerned in to resident spectations to resident spectations.	uge during the ion should be the reporting ecies.
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(2) (3) (4)	First Seen: Peak Concentration: Last Seen: Young Produced:	In addition to the birds li reporting period should be given to those species of l. The first refuge record for period, and the number seem. The greatest number of the The last refuge record for period. Estimated number of young period. Estimated number of young period areas. 10% of the breeding habitat	sted on form, other species occadded in appropriate spaces. Socal and National significance. the species during the season. This column does not apply tespecies present in a limited in the species during the season conduced based on observations a	concerned in to resident special attention to resident special attention to resident special concerned in the special actual count two or more and actual count a	age during the ion should be the reporting ecies. The reporting the reporting the reporting eas aggregate omitted.

receive careful attention since these data are necessarily based on an analysis of the rest of the

cood form.

3-1751 MIGRATORY BIRDS Form NR-1A (Nov. 1945) (other than waterfowl) Louisa Months of Jan. to April 1948 (1) (2) (5) (3)(4)(6)Peak Numbers First Seen Species Last Seen Production Total Number | Total # Total Estimated Common Name Number Colonies Young Date Number Number Nests Number Date Date Duck hawk I. Water and Marsh Birds: Horned owl 10 Virginia rail 16 Apr. 16 Apr. 16 Apr 1 Sora rail 10 50 Great Blue Heron 15 15 200 Black Crowned Night 20 20 100 Heren Green Heron 2 10 1 Great Bittern 10 Least Bittern 10 Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. : seloen 2' (I) ste. In addition to the birds listed on order. Avoid general terms as "searull" II. Shorebirds, Gulls and form, other species occurring on refuge furing the reporting period Terns: all bas isoof to seloege boost of nevts ed bloods notinetts isloed? Killdeer 100 16 ADT. 100 16 Apr 100 significance 500 16 Apr Herring Gull 250 200 200 1000 Least Sandpiper 1 1 o l 1 Greater yellow legs 150 150 150 500 Lesser yellow legs 1000 1000 1000 3000 The first refuge record for the species for the season corcerned .. (2) Hirst Seen The greatest number of the species present in a limited interval of (3) - Feak Numbers: The last refige record for the species during the season concerned ast Seen: Estimated number of young produced based on observations and actual counts. roduction Estimated total number of the species using the seruge during the seried concerned.

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons</u> : Mourning dove White-winged dove	Presnet all re	(Iwolness water (Iwolness water (Iwolness water)) art period	(other	Refuge	Form NR-1,4 (Nóv: 1945)
(5) (6) oduction Total	Sen Pr	(4) Ders Last S	(3) sen Peak Num	(2) First S	(1) Specie
IV. Predaceous Birds: Golden eagle	Number T	Date Number	Date Number		Common N
Duck hawk Horned owl	None None			ursh Birds:	I. Water and Ma
Magpie Raven	Hone To all	A . TEL AL	3 .ma a	I I I I I	The stell
Crow	about 2,000 ere	prosnet in area	non-some stayed a		Sore reil Greet Eluc Mack Grov
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10 10			1 1 1		tile teest
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		INSTRUCT			

(1) Species:

OBOR

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 Gruiiformes)

- II. Shorebirds, Gulls and Terns (Charadriiformes)
- III. Doves and Pigeons (Columbiformes)
- IV. <u>Predaceous Birds</u> (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.

Refuge Months of January to April , 1948

			(3	1	(1)			and the		AND
(1) Species	(2) Density		You	ng ced	(4) Sex Ratio	R	(5) emova:	ls	(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 Restocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
NONE	escontrar Profesto Supposition of Sign to Desped on District Mr. Bullion operant Jantanesco									
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				Sant	ejes oleona	erica.			elli de ati	intro minima affin

Form NR-2 - UPLAND GAME BIRDS.*

(1)	SPECIES:	Use	correct	common	name.

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 Louisa	April 30,	1948
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(1) Species	(2) Density	2) (3) sity Removals			(4) Disposition of Fur							(5)			
, oth ,	Sidemina belief en	sentimed; for equipmen; and		AND SE	Share Trapping			e pe	per	oyed.	Total Popula-				
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator	Før Re- stocking	For Research	Permit Number	Trappers' Share	Refuge Share	Total Refuge Furs Shipped	Refuge Income	Furs Donated	Furs Destroyed	tion
Practically none on as	ea due to inundated	onditio	a .	poqq	ezod		Frank.	oldung d				111	DESIGNATION OF THE PERSON OF T	1	3
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PERMARES

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.