Narrative Report Routing Slip

Mr. Salyer _____ Mr. Ackerknecht _____

Mr. Crawford _____

Administrative Services

Miss Baum _____

Operations

~~Mr. Germanich~~ _____ Mr. Regan _____

Public Use

~~Mr. Dubient~~ _____ Mr. Kubichek _____

~~Mr. Stollberg~~ _____

Resource Management

Dr. Morley _____ Mr. Hickok _____

Wildlife Management

Mr. Banko _____ Mr. Stiles _____

Mr. Goldman _____

Refuge DESOTO Period Jan. - Apr. 1960

DESOTO NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

FOR

JANUARY, FEBRUARY, MARCH, APRIL

1960

PERSONNEL

Kermit D. Dybsetter.....Refuge Manager

UNITED STATES DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

BLAIR, NEBRASKA

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I. GENERAL

A. Weather Conditions. Winter weather conditions in Eastern Nebraska diviated considerably form the normal, a situation to which the writer was accustomed after seven years in North Dakota. New minimum temperature records were set on several dates in February and March, and an all time record for snow cover on the ground was set at 33 inches in mid March. The number of days with continuous heavy snow cover also set a new record for this area, and the total snowfall was one of the heaviest.

The spring thaw and breakup of ice in the Missouri River at this point did not occur until the last week in March. Lack of frost in the ground in this area permitted most of the local snow water to be absorbed. Streams tributary to the Missouri River in central and northeastern Nebraska caused some severe flooding in those areas. The Missouri River in this area was at its highest since the flood of 1952 and some lowland flooding did occur.

The weather records tabulated below are taken from the Weather Bureau station at Blair, Nebraska, five miles northwest of the refuge.

	Precipitation			Temperature			
				Means		Extremes	
	Snowfall	1960	Normal	1960	Normal	Max.	Min.
Jan.	19.0	1.83	.65	19	23	44	-13
Feb.	17.5	1.46	1.01	21	26	49	-10
Mar.	17.5	2.04	1.48	23	37	56	-16
Apr.		1.36	2.56	53	50	93	25
	54.0	6.69	5.70				

B. Habitat Conditions.

1. Water. The new channel cut-off was not in operation at the time of run-off this spring, so the river continued to flow around the loop that will form the future lake. River elevation at the upper control tube reached a peak level of about 1001. The levee at this point is 1005. The future operating level will be 987 to 988.5.

The high water created a number of changes in the channel area that will become the refuge lake. Silt and sand were deposited in some new areas; banks were cut back considerably in places; and old piling and trash were cleaned out at some points and deposited at others.

2. Food and Cover. Deep snow cover the first three months made movement and feeding difficult for resident wildlife.

Waste grain was available in most corn fields on and near the refuge this spring. Standing water from snow melt and river flooding created an ideal feeding situation for waterfowl in early April.

Cover is adequate for resident wildlife populations.

II. WILDLIFE

A. Migratory Birds. Habitat conditions on the refuge area this spring were essentially the same as they have been for years under private ownership. The refuge lake is not yet established and cropland management has not yet begun. Changes in useage of the area will be noted with interest during the coming years of development.

1. Waterfowl. Swan. No swan were observed during the spring migration.

Geese. The first goose migration was noted on March 28. During the balance of the week flocks of geese were commonly seen scattered about the flooded cropland in the Missouri River bottomlands both north and south of the refuge. On April 3 many of the small flocks congregated on a flooded cornfield near what will be the northwest corner of the refuge. This group totaled about 20,000 Blues and Snows, 500 Canadas (mostly small races) and 100 White-fronts.

A major goose movement occurred on April 7, and the local flock built up to about 35,000 that day. The evening of the following day the flock began moving out, and by April 9 only 1,000 remained. All geese were gone by April 15.

Ducks. Ducks began moving through with the geese the last few days in March. Flooded croplands provided ideal feeding conditions throughout the river bottomlands. In the refuge area most of the birds were found on the Welch tract on the east side, and near the northwest corner.

Most of the ducks were Mallards, but a surprising number (2,500) of Scaup stayed about a week on the flooded areas.

Coot. A peak population of about 150 Coot used the refuge and adjacent flooded areas this spring.

2. Other Waterbirds. No cranes were observed in migration. Great

Blue Herons were first noted March 31; several remain on the area. A Common Egret was observed on April 27. A few small flocks of D.-c. Cormorants were noted moving thru in mid-April. A few Pied-billed Grebes were the only grebes noted.

3. Shorebirds. The number of shorebirds using the area to date has been low.

4. Doves. Mourning doves are commonly seen throughout the area; no estimate as to numbers has yet been made.

B. Upland Game Birds. The Bob-white quail population, which was at a relatively high level last fall, apparently succumbed in large part to the extreme weather conditions the past winter. Only a few reports on surviving birds have been received.

Ring-necked pheasants apparently fared better, as they have been observed and heard about as frequently as last fall.

C. Big Game Animals. White-tailed deer are quite abundant on the refuge. An aerial census on March 19 revealed a total of 160 animals. One Mule deer was observed with the White-tails.

Heavy snow cover restricted the availability of waste corn in the fields, and groups of up to 50 animals raided neighboring livestock feeding yards and corn cribs. Some natural mortality and some predation did occur, as a number of carcasses have been found. Running of deer by dogs was also reported on and near the refuge.

The population will probably attain new highs in the next few years. Predation by the three or more pairs of coyotes on the refuge may provide some removals but certainly the main effort in population control will have to be made through public hunting.

D. Fur Animals, Predators, Rodents and Other Mammals. Mink, muskrat and beaver are present in small numbers. Habitat improvement created by establishment of the new lake will probably increase their population potential.

The main predator on the area is the coyote; seven animals were counted on the area during the aerial deer census.

The Red fox, skunk and raccoon are present in small numbers.

The opossum is rarely observed on the area.

Cottontail rabbits were very abundant last fall, but are not now commonly observed. Predation probably accounts for a good share of the population over the winter. None of the individuals with

black pelage has been observed since last summer.

Fox squirrels are quite abundant.

E. Hawks, Eagles, Owls, Crows, Ravens and Magpies. Hawks were noted moving through most of the month of April; Red-tailed and Rough-legged appeared to be the most numerous.

Only one observation was made of a Bald eagle in April.

There is at least one pair of great horned owls present; they brought off two young in a nest along the levee on the east side of the refuge.

A few crows were present most of the winter. Not more than 150 stopped at any one time during migration, and the movement through here was rather light and scattered. There are perhaps 25 resident birds remaining.

F. Other Birds. The initial bird list for the refuge will require another year or two of observations. One interesting addition to the list this spring was a common egret observed April 27.

G. Fish. Data on fish will require investigation after the new lake is established.

H. Reptiles. Further familiarization with the area will be necessary to determine the reptilian species present.

I. Disease. A "sick" skunk was disposed of in the farmyard of a refuge neighbor near the southeast boundary in April. The animal had a mangy appearance and could move only by dragging along on its stomach. A second skunk in this condition was observed by the permittee on the McCampbell tract.

No other cases of diseased animals have been noted.

III. REFUGE DEVELOPMENT AND MAINTENANCE.

A. Land Acquistion Status. The acreage acquired for the refuge to date totals 6,029; this includes 697 acres in the existing river bed. The major portion of the acquired land is in Nebraska(4214 acres); the balance is in Iowa (1815 acres). About 1,800 acres of land remains to be acquired--mostly in Iowa.

B. Physical Development. Dredge work in the pilot canal of the new river cut-off began the first week in April. An addition ten feet in depth, below the cut made by draglines, was pumped into the paralleling revetment tow trench. On April 27, a day ahead of schedule, the river cut through the plug at the north end and

started through the new channel. The eight foot head of water in the river soon cut a sizeable opening into the canal, and by the end of the period more than half of the river flow was going through the cut-off channel. Piling and rock fill were being placed, at the end of the period, to shut the flow off from the future lake area and force the entire river flow through the new channel.

C. Plantings.

1. Aquatics and Marsh Plants. None.

2. Trees and Shrubs. None.

3. Upland Herbaceous Plants. None.

4. Cultivated Crops. Four cooperative farming agreements were prepared for share-cropping on 1,677 acres. The refuge share will be taken in corn, sorghum and clover.

D. Collections and Receipts. None.

E. Control of Vegetation. None.

F. Planned Burning. None.

G. Fires. None.

IV. RESOURCE MANAGEMENT

A. Grazing. One permit is being prepared for summer and fall use of a wooded area on the McCampbell tract. This is primarily for vegetation control on an area that will later be developed as a picnic grounds.

B. Haying. None.

C. Fur Harvest. None.

D. Timber Removal. None.

E. Commercial Fishing. Normal small operator activities continued as in the past. These will be curtailed when we have full jurisdiction on the water area.

F. Other Uses. None.

V. FIELD INVESTIGATION OR APPLIED RESEARCH.

A. Progress Report. There are no active projects at present.

VI. PUBLIC RELATIONS

A. Recreational Uses. The only recreational use involved this period was the viewing of waterfowl concentrated near U. S. Highway 30.

B. Refuge Visitors.

Date	Name	Affiliation - Purpose
1/19	B. Meier	Clerk, Snake Creek Refuge - Transfer Jeep to DeSoto
1/22	J. Nutt	Supr., Western Contracting Co. - Discuss dredge work for closure levee
2/11	J. Flood	F.B.I., Omaha - Investigate case on Fed. Warden impersonation
2/15	D. Robinson	Iowa Fish. Biol. - Discuss fish mgt. on refuge
2/16	G. Jauron Vaurio	Iowa Cons. Off. - Visit R.O., Engr. Br.
2/17	R. Jorgensen R. Wells	R.O., Realty - Negotiation and look over U.S. Attorney, DesMoines Rand tract
2/19,26	J. Umberger	R.O., Br. of Eng. Super. - Negotiation on levee realignment
3/10	G. Jauron	Iowa Cons. Off. - Discuss fishing & hunting proposals
3/16	Messrs. Utman & Rochrohr & wives	Land owners - Discuss acquisition of property for refuge
3/25	K. Pence	Blair, Nebr. - Apply for Maint. position
4/2	H. Burgess & family	Union Slough Refuge - Visit
4/4	G. Jauron	Iowa Cons. Off. - Discuss river flooding damages
4/12-15	R. Jorgensen	R.O., Realty - Land negotiations
4/15	A. Nielsen	Blair, Nebr. - Apply for maint. position
4/27	E. Hawkins	Logan, Iowa - " " " "

C. Refuge Participation. The manager attended the Region III conference in Minneapolis January 23-30.

The following meetings were attended by the manager on the dates shown:

January 4 - Sioux City Bird Club, Sioux City, Ia. Showed slides and discussed refuge objectives and development proposals. (40 members present)

January 20 - Conservation Incorporated, Council Bluffs, Iowa. Showed slides and discussed refuge objectives and development proposals. (80 members present)

February 25- Council Bluffs Boat Club, Council Bluffs, Iowa. Showed slides and discussed refuge objectives and development proposals. (60 members present)

April 6 - Engineers Club, Omaha, Nebraska. Discussed refuge objectives and development proposals. (Noon luncheon - 100 members present)

April 19 - Tribe of Yessirs, Chamber of Commerce, Omaha, Nebr. Discussed refuge objectives and development proposals. (Noon luncheon - 90 members present)

April 25 - Treynor Conservation Club, Treynor, Ia. Showed slides and discussed refuge objectives and development proposals. (80 members present)

Jan.-Apr. - Attended, as member, twice-a-month meetings of Blair Lions Club, Blair, Nebr.

D. Hunting. None.

E. Violations. None observed.

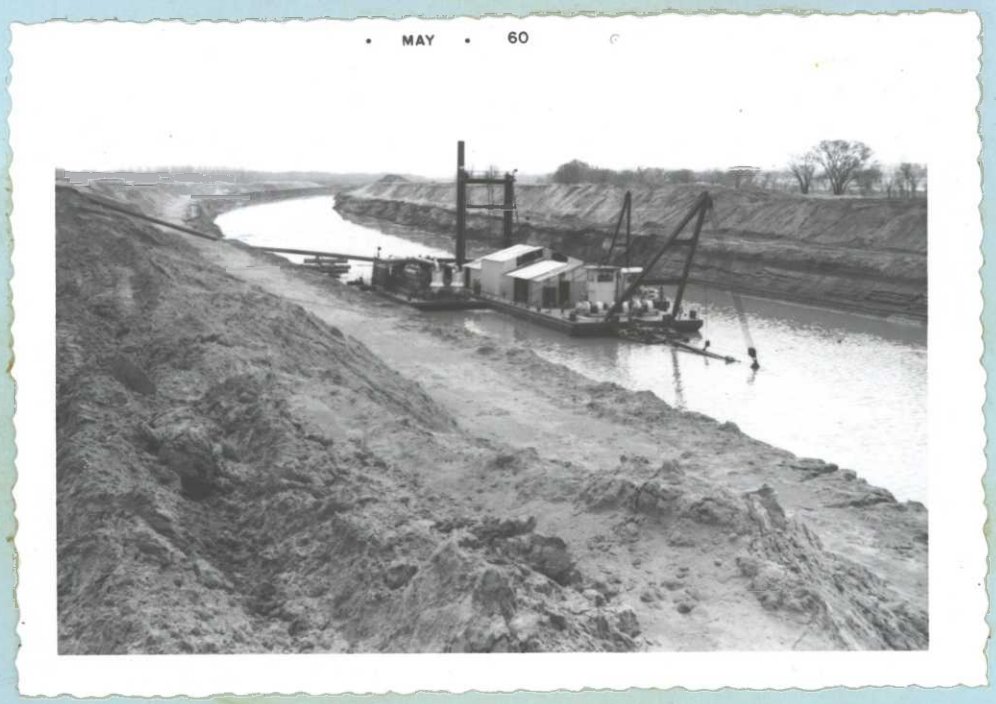
VII. OTHER ITEMS.

A. Items of Interest. An activity of long standing in the refuge area is that of mushroom picking in the spring. Since future plans will provide for the opening of the recreation area on May 1, the refuge was opened for mushroom picking during the month of May this year. On Sundays during the month pickers have probably outnumbered the mushrooms. The avid interest in this activity seems a bit weird, but is understandable when you also consider that palates of the local populace prefer carp to Walleyed pike or trout.

B. Photographs. Some of the photos taken during the period are included at the close of the report.

R-5-59,60,61,62 (April 11, 1960) Panoramic view looking north over the DeSoto Bend in the Missouri River, following the spring flood which crested about April 1. The main channel is in the upper part of the picture. The flow at the lower right is in the revetment toe trench, along the future east bank of the river. The pilot canal for the new channel is on the left. The piling will be extended across the main channel and filled with rock to force the river in the pilot canal when it is opened. The vertical tube housing controls for the inlet water structure is shown at right; a horizontal tube below will connect the river with the ditch to the future lake beyond. Flood levels topped the piling and the revetment at this point.

8



R-5-64 (April 15, 1960) Contractor's dredge (Western Scout of Western Contracting Company, Sioux City, Iowa) operating in pilot canal. Initial excavation was done by dragline; dredge is being used to deepen canal ten feet. This dredge has a 30 inch suction and a 22 inch outlet; the pump is powered by four 1,000 h.p. electric motors, which in turn are powered by a generator driven by two 1,400 h.p. diesel engines. This dredge has now been transferred to the Big Bend dam site in South Dakota.

R-5-65 (April 15, 1960) Dredge outlet, 22 inch pipe; pumping from pilot canal into paralleling revetment toe trench.

R-5-75,76,77 (April 27, 1960) Dredge in operation at north end of pilot canal. Pictures were taken at noon; four hours later an eight foot head of water in the river broke through the plug and the river was started on its new course. Note piling in center background that was sheared off by ice this spring.

R-5-79 (April 28, 1960) This was the first boat through the new channel the morning after the flow was started. Velocity of the flow is high; the river now drops about two feet per mile, instead of the nine-tenths foot per mile around the old channel.

R-5-80 (April 28, 1960) Corps of Engineer and Contractor personnel looking over the new channel the morning after opening. Note how banks and spoil piles are beginning to erode away; the channel will eventually widen itself to 700 feet.

SIGNATURE PAGE

Submitted by:

Kermit D. Dybsetter
(Signature)

Kermit D. Dybsetter

Refuge Manager
(Title)

Date: June 1, 1960

Approved, Regional Office:

Date: 6-21-60

(Signature)

Regional Refuge Supervisor

~~Chief, Division of Wildlife~~

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE DeSoto MONTHS OF January TO April, 1960

(1) Species	(2) Weeks of reporting period: Jan. 2 (1)	Jan. 9 (2)	Jan. 16 (3)	Jan. 23 (4)	Jan. 30 (5)	Feb. 6 (6)	Feb. 13 (7)	Feb. 20 (8)	Feb. 27 (9)	Mar. 5 (10)
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada										
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	600	200	70	70						
Black										
Gadwall										
Baldpate										
Pintail										
Green-winged teal										
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
Coot:										

Int. Dup. Sec.,
Wash., D. C. 37944

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

WATERFOWL
(Continuation Sheet)

REFUGE DeSoto MONTHS OF January TO April, 1960

(1) Species	(2) Weeks of reporting period: Mar. 12 11	Mar. 19 12	Mar. 26 13	Apr. 2 14	Apr. 9 15	Apr. 17 16	Apr. 23 17	Apr. 30 18	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada				50	50	10			750		
Cackling (Small Canadas)				400	500				6,000		
Brant											
White-fronted				50	100				1,000		
Snow				3000	8000	40			77,000		
Blue				4000	12000	60			112,000		
Other											
Ducks:											
Mallard				500	5000	500	100	40	49,500		
Black					10				50		
Gadwall				20	50	20	10	5	700		
Baldpate				30	50	20	10	5	800		
Pintail				300	500	80	20		6,300		
Green-winged teal				30	50	30	20	5	900		
Blue-winged teal					30	100	150	70	2,400		
Cinnamon teal											
Shoveler					100	70	50	30	1,700		
Wood					40	40	30	20	900		
Redhead					20				100		
Ring-necked					30	20			350		
Canvasback				20	10				200		
Scaup				150	2500	500	40		22,300		
Goldeneye											
Bufflehead											
Ruddy											
Other											
Coot:				50	150	50	20	10	1,900		

(over)

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	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese	196,750	35,000	
Ducks	86,200	9,000	
Coots			

SUMMARY

Principal feeding areas Cornfields on Iowa side both east and west of the Ipoo.

Principal nesting areas

Reported by Kermit D. Dybsetter

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

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge DeSoto Months of January to April 1960

(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. Water and Marsh Birds:										
P.-b. Grebe	2	4/11								20
G.-b. Heron	4	3/31								20
Common Egret	1	4/27								1
II. Shorebirds, Gulls and Terns:										
Killdeer										30
Franklin's Gull										200
R.-b. Gull										75

(over)

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(1)	(2)	(3)	(4)	(5)	(6)
III. Doves and Pigeons:					
Mourning dove					150
White-winged dove					
IV. Predaceous Birds:					
Golden eagle					
Duck hawk					
Horned owl					8
Magpie					
Raven					
Crow					150

Reported by Kermit D. Dybsetter

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 Gruiiformes)
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 range during the period concerned.

INT.-DUP. SEC., WASH., D.C.

79858

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge DeSoto Months of January to April, 19 60

(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.
Ringnecked Pheasant									50	
Bob-white Quail									10	

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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 DeSoto Year ending April 30, 1960

(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	
Mink														20
Beaver														15
Muskrat														25
Weasel, sp.														15
Striped Skunk														15
Red fox														5
Coyote														10
Opossum														10
Fox Squirrel														50
Cottontail Rabbit														1500

* List removals by Predator Animal Hunter

REMARKS:

Reported by Kermit D. Dybsetter

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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.

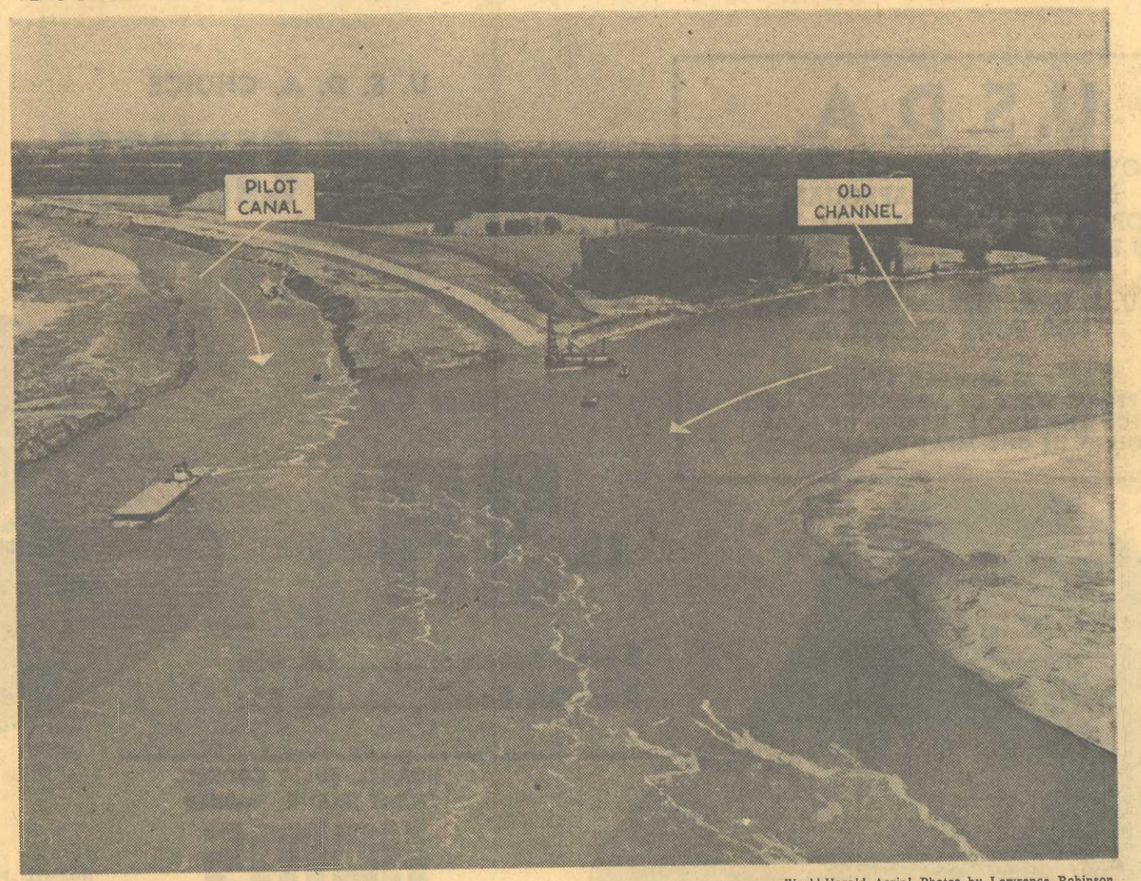
(4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated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

32715

Stubborn Missouri River Frustrates Efforts to Steer It Into New Channel at De Soto Bend



—World-Herald Aerial Photos by Lawrence Robinson.

The De Soto Bend Wildlife Refuge, a multimillion-dollar recreational and wildlife mecca for an area shorted by nature in both recreation and wildlife facilities, is beginning to assume its final shape. Principal features are shown in the aerial photo at left. A new channel for the Missouri River is being gouged through the pilot canal. The old loop of the river will become a 7½-mile long oxbow lake enclosing a four-thousand acre "island" to be used for public recreation. Land surrounding the loop, bringing total acreage to 81 hundred, will be planted to corn and other grains to feed migrating geese. Showing its traditional orneriness, however, the Missouri is resisting man's efforts to shove it from its old channel into a new man-made one. Two weeks ago when the river was turned into an 80-foot wide pilot canal it was in the expectation that the water would rapidly widen the canal until it carried all of the river. A tough gumbo formation thwarted this. At present only 15,800 cubic second feet, or 56 per cent of the river's total flow of 28,400 cubic second feet, is going through the canal; the balance is flowing the long way around through the old course. Contractors now are in the process of blocking the old channel with a dam of piles and rock to force all of the river into the canal. The photo at right shows the lower end of the pilot canal.