

BRANCH OF WILDLIFE REFUGES

Narrative Report Routing Slip

Date Oct. 22 , 1953

Mr. Salyer _____

Mr. ~~Dumont~~ PAJ

Mr. Krummes _____

Miss Baum _____

Section of Operations

Mr. Ball _____

~~Mr. Hall~~ Row

Mr. Regan _____

Section of Habitat Improvement

~~Mr. Griffith~~ GRG

Mr. Kubichek _____

Dr. Bourn _____

Mr. Stiles _____

Section of Land Management

~~Mr. Lankford~~ LOA

~~Mr. Davis~~ DDP

Stenographers

Refuge SWAN LAKE

Period May-August, 1953

Swan Lake National Wildlife Refuge

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Narrative Report
Swan Lake National Wildlife Refuge
May - August, 1953

PERMANENT PERSONNEL

Robert F. Russell	Refuge Manager
Marvin F. Lentz	Clerk-Typist
William H. Thornsberry	Maint. Man, Equipment

TEMPORARY AND INDEFINITE EMPLOYEES

Mark D. Clark	Operator General
Floyd A. Holland.....	Dragline Oiler
Benny N. Howerton	Operator General
Kenneth F. McKee	Laborer
Clyde C. Seifert	Dragline Operator
Roy T. Warren	Tractor Operator Light
Ervin Windsor	Tractor Operator Light
Glen C. Zorn	Operator General

United States Department of Interior
Fish and Wildlife Service
Sumner, Missouri

Narrative Report
Swan Lake National Wildlife Refuge
May - August, 1953

I GENERAL

A. WEATHER CONDITIONS

The following weather data was obtained from the U. S. Weather Station at St. Joseph, Missouri.

<u>Month</u>	<u>Precipitation</u>	<u>Maximum Temperature</u>	<u>Minimum Temperature</u>
May	2.71	95	39
June	2.61	104	56
July	2.28	101	53
August	<u>.88</u>	<u>100</u>	<u>55</u>
	8.48	Extremes 104	39

Precipitation of 8.48 inches for the four months was less than half of the average for this period. Near drought conditions prevailed June through August.

By late July cracks began to appear in levees 1, 3 and 4 along the outside wheeltrack. Many of the cracks reached four and five inches across and three to four feet in depth. See photograph exposure number 40. Others split to the bottom of the levee and the outside shoulder dropped from one to three feet. Our explanation is that the levees are finally drying out - but do so faster from the off-lake side with it's steeper slope (2 or 3:1) than from the lake side (6:1) and the fractures are occurring as the outside shoulder dries and shrinks away from the remainder of the levee which still retains some moisture.

B. WATER CONDITIONS

Swan Lake went into the period at elevation 657.20'; .80' below operating level. On June 16 draw-down to 656' was commenced and was completed by June 21. There was very little inflow into the lake and the lake fell steadily thereafter through evaporation loss reaching elevation 655' August 31.

It was necessary to hold Silver Lake at a low elevation (662.50') this summer to prevent washing of levee repairs made the previous year. Silver Lake went into May considerably above this height as a result of heavy rains in late April. Draw-down to operating level was finally accomplished May 25. As a result of the continued dry weather this pool gradually declined in elevation the remainder of the period. By August 31 Silver Lake stood at elevation 661.20'.

F. FIRES

The 1949 Reo dump truck caught fire the evening of August 12 while parked in a stall of the Service Building. The fire was discovered and extinguished before damage occurred to the building. Damages to the cab of the vehicle amounted to \$215.67. Cause of the fire could not be determined.

II WILDLIFE

A. MIGRATORY BIRDS

1. Populations and Behavior

Ducks

The summer resident population was estimated at 125 waterfowl. This year, as last, only three Mallard broods were observed on the refuge. Our other resident duck, the "Woody" was little in evidence. A very few were noted by squirrel hunters west of us along Elk and Yellow creeks and a small number were believed to have occupied timbered areas along these streams within our boundaries.

For the first time in several years migrant Blue-winged Teal were not seen on the refuge in August although a few small flocks stopped off on farm ponds in the vicinity.

Geese

Fifty spring migrant Snow and 450 Blue Geese occupied the refuge May 1. These finally departed around the middle of the month.

From 33 to 39 Canada Geese remained with us through the summer. During most of the period they utilized the remote eastern shore of Silver Lake where they were undisturbed by fishermen and farming activities. It is believed that at least some of these birds were casualties of the previous hunting season which survived the winter. So far as could be determined none nested.

Water and Marsh Birds, Shorebirds, etc.

A small number of White Pelicans lingered on the refuge until the end of May. None remained with us through the summer as was the case the previous year. The late summer movement of pelicans into the refuge had not occurred by August 31.

A few Green Herons visited us briefly in May. Like the pelicans they had not returned to the refuge at the close of the period.

American Egrets arrived August 1 and by late August were present in unusually large numbers. Flocks of 75 to 100 came in each morning from the north. Apparently these birds roosted in the large trees bordering the Grand River some distance up stream.

Killdeer numbers increased somewhat from last year. Ring-billed Gulls were less numerous while Black Terns showed a substantial increase.

Mourning Doves

The refuge Mourning Dove population was again high with numbers approximating those of a year ago. There was an influx of birds the last few days of August; apparently birds moving down from the north.

2. Food and Cover

The dry summer was not favorable for the production of aquatic plants. Very little smartweed was produced either on or off the refuge. Wild millet occurred in a narrow fringe around the border of Swan Lake and along levees No. 1 and 3 on Silver Lake. There was also a good stand of wild millet in a band 200 - 300 yards wide around the east side of Silver Lake. Total production of both smartweed and wild millet was far below that of an average year.

Chufa made a fair stand along the west and south shores of Silver Lake. Rice cutgrass was exceedingly scarce.

Approximately 50 acres of shoreline on Swan and Silver Lake and 100 acres east of Silver Lake (disked for this purpose) was broadcast to Japanese millet with the Service aircraft July 3. A two and a half inch downpour that night "set" the seed in the ground and brought it up in a beautiful stand within a few days. Unfortunately the drought settled in earnest and no additional moisture fell during the ensuing 30 days. As a result our Japanese millet curled up and died.

Millet plantings made on cultivated lands will be discussed under the heading Cultivated Crops.

3. Lead Poisoning and Other Diseases

There was no evidence of lead poisoning or other diseases during the period.

B. UPLAND GAME BIRDS

1. Population and Behavior

Bobwhite Quail

Dispite the dearth of moisture, indications point toward a good quail year. At least as many, if not more, broods have been observed this year as in the year past. This is not the case in the state as a whole, however. Apparently quail have been hard hit in the drouth stricken southern portion of Missouri and the Missouri Conservation Commission has accordingly reduced the limit by two birds and the length of the season by 15 days.

Prairie Chickens

No Prairie Chickens were seen on the refuge this period. A few birds were reported to have nested in the bottoms north of Sumner but their numbers are quite low.

2. Food and Cover

Food for upland game birds is adequate. Cover is somewhat short due to the limited precipitation. The lack of more adequate protective cover will probably result in higher predation loss and hunter's kill in the area surrounding the refuge.

3. Disease

There was no evidence of disease.

C. BIG GAME ANIMALS

1. Populations and Behavior

The Chariton county White-tailed Deer population is quite evidently on the increase. This year we received no less than five reports of "lost" fawns found by farmers or fishermen. The temptation to take home these lost Bambi's of the woods appears to be overwhelming to these people many of whom have never seen a deer before. We endeavored to contact those who had picked up fawns to tell them the fawn's best chance of survival lay in their freeing them in the vicinity where found. It is our observation that captive fawns are usually killed with kindness.

A three day deer season, November 5-7, on bucks only will again be held this fall.

2. Food and Cover

Food and cover appear to be entirely adequate.

D. FUR ANIMALS, PREDATORS, RODENTS AND OTHER MAMMALS

There was no appreciable change in the refuge Raccoon, Muskrat, Mink, Rabbit or Skunk population.

Coyotes are becoming more numerous and it appears advisable to attempt to reduce their numbers by a trapping season this winter.

E. PREDACEOUS BIRDS, INCLUDING CROWS, RAVENS AND MAGPIES

Predaceous birds occupied the refuge in usual numbers. There was no change in their migration pattern over past years.

F. FISH

The low elevation of Swan and Silver Lake had no deleterious effect upon fish populations.

Fishery management biologist, Robert W. Sharp and his assistant, Mr. Howell, made a fishery investigation of Swan Lake refuge waters April 26 - 30. Their preliminary report is as follows:

Physical-Chemical Data

Swan Lake Refuge has a total area of 11,000 acres, situated in Chariton County, north-central Missouri. Water areas total 4,150 acres, in two separate units, Swan Lake, 1,100 acres and Silver Lake, 3,050 acres. Water supply is derived from eastern tributaries of the Grand River and controlled by a system of dikes and gates. The waters of the refuge are rather soft and moderately fertile. A laboratory analysis of a sample from Silver Lake, collected on April 28, gave the following results:

Sulfates	16.0 p.p.m.
Total phosphorus	0.00 p.p.m.
Ammonia nitrogen	1.12 p.p.m.
Total Kjeldahl nitrogen	2.11 p.p.m.
Total nitrogen	2.61 p.p.m.
CO ₂	5.0 p.p.m.
Total alkalinity	32.5 p.p.m.

A separate laboratory analysis was not made for Swan Lake; however, field analysis gave a total alkalinity reading of 25.0 p.p.m., quite similar to that of Silver Lake. It is reasonable to assume that the fertility of the two pools is generally similar.

The turbidity of both lakes is extremely high, caused by suspended inorganic matter that appears to be almost colloidal in nature. Secchi disc visibility is limited to two inches or less in both lakes. This extreme turbidity must be considered as a limiting factor in fishery management, limiting the production of food organisms and interfering with the feeding of sight-feeding fish. For fishery management purposes the two lakes must be considered as separate units, and fish population data are presented separately below.

Swan Lake

The use of experimental gill nets and seines in Swan Lake indicates the presence of a rather diversified fish population, apparently originating in the Grand River and its tributaries. The following species were taken:

White crappie	moderate population
German carp	moderate population
Buffalofish	light population
Mooneye	light population

Species taken from Swan Lake continued -

Shortnose gar	moderate population
Channel catfish	light population
Quillback	light population
Drum	moderate population
Shiner minnow, <u>Notropis l. lutrensis</u>	- light population

The lake is open to boat and bank angling from May 1 to September 15 each season. Actually little fishing of any kind has been carried on during the past two seasons because of the poor quality of the fishing. Swan Lake must be considered somewhat marginal for fish management purposes. The shallow water, the extreme turbidity, and the dominant rough fish population make a poor habitat for game fishes. The turbidity problem is closely related to the shallowness, maximum depth is approximately five feet, and the mean depth no more than three feet. Even moderate wind action agitates much of the bottom. The presence of rough fish, particularly carp and buffalofish, probably contributes to the high turbidity. However, it is believed that the same condition would exist if these species were absent.

Management Measures

The most feasible fish management would be to concentrate the crappies by attracting devices so that they can be more readily taken by anglers. Cover is almost completely lacking, and brush shelters might be of considerable value.

Another management measure would be to provide a species more suitable to this adverse habitat. Bullheads do not appear to be present and an introductory planting of bullhead adults, preferably black bullhead, appears advisable.

Rough fish species appear to be sufficiently abundant to warrant removal by large scale seining operations. Several species, particularly carp, buffalofish, and drum, have considerable commercial value, and arrangements might be made for removal by a commercial operator.

Recommendations

It is recommended that:

1. From six to ten brush attractors be installed on an experimental basis in the deeper portion of the pool and marked for easy location by fishermen.
2. An introductory planting of adult black bullheads be made soon as possible.
3. Consideration be given to large scale seining operations for removal of rough fish.

Silver Lake

Netting operations in Silver Lake indicate a fish population generally similar to that of Swan Lake and apparently derived from the same source. The following species were taken:

White crappie	light population
German carp	heavy population
Buffalofish	light population
Gizzard shad	light population
Quillback	light population
Black bullhead	light population
Channel catfish	light population
Shiner minnow, <i>Notropis l. lutrensis</i> ,	- moderate population

Three additional species were taken by seining in the outlet channel below the Silver Lake control structure. These were, golden shiner, tadpole catfish, and green sunfish. All of these species may be present in Silver Lake.

Silver Lake is open to bank angling only from the west and south dikes. Anglers find the catches here more satisfactory than in Swan Lake, and most of the fishing pressure is concentrated here. Catches are composed mainly of carp, bullhead, and crappie. Similar to Swan Lake, Silver Lake must be considered somewhat marginal for fish management, having the same problems of shallowness, severe turbidity, and heavy rough fish population. Maximum and mean depths are similar to those of Swan Lake.

Management Measures

It is believed that management measures in Silver Lake should follow those set up for Swan Lake, except that no stocking of any kind is recommended at this time.

Recommendations

It is recommended that:

1. A number of brush fish attractors be installed adjacent to the west and south dikes. These structures should be marked so that they can be located easily by fishermen.
2. Consideration be given to large scale seining operations for removal of rough fish. It would appear to be feasible to combine this operation with that in Swan Lake.

Four thousand black bullhead fry were received from the Fish and Wildlife Service hatchery at Neosho, Missouri and stocked in Swan Lake.

III REFUGE DEVELOPMENT, MAINTENANCE

A. Physical Development

Construction of levee No. 2 around the South Pool Unit was not resumed until June 15 because our dragline operator suddenly decided not to return to work this spring and it was some time before another operator could be found and his appointment affected. During the remainder of the period 17,951 cubic yards of material was placed in levee No. 2 bringing the machine down to station 65 + 50. Construction has been hampered by frequent equipment failures. It was necessary to raise the dragline cab and replace the center pin bushing, collar and dowell pins. The Feather Touch Control Units for both the drag and hoist sides have been a constant source of trouble.

Working conditions were excellent.

Approximately 5-1/8 miles of ditch was built or rehabilitated along the east boundary in Section 3 & 4, T55N, R20W and Section 33 and 34, T56N, R20W. Three-quarters of a mile of this was accomplished under cooperative agreement with permittees at no cost to the Service. The remaining 4-3/8 miles was done with the D-7 tractor and angledozer. Two and one-half miles of this work was new ditch construction and the rest merely cleaning, widening and deepening existing ditches. All ditches were made with an 8' bottom and 8 or 10:1 slope on both sides. Fifty acres ditched on four sides was cleared of brush and plowed. See photograph exposure number 42.

The improved drainage resulting from this project should substantially increase crop yields on 370 acres of refuge farmland.

Two terraces totalling one-half mile with small waterways were built with the R-5 tractor and grader, in farming unit 23A

The following maintenance jobs were accomplished during the period:

D-7 Tractor

1. Midland Machinery Company installed new fiber links, new seals in pilot bearing, new bevel gear bearings and shaft, relined brakes, installed new bull gear in right final drive, new bearings both final drives, new seals on bevel gear shafts and pinions, all new bellows seals, new sprockett shaft, built up and machined cases for pinion bearings in transmission case, installed clutch and brake lining on one clutch in power control unit.

We pulled the left swing clutch, repaired and replaced, replaced clutch lining in power control unit and made numerous repairs to the track rails and pins.

This is a pre-war tractor that has been through the war. We obtained it as surplus in 1951 and since that time have spent \$8,243.55 on repairs to this machine.

We over-hauled the transmission of R-5 tractor.

Made minor repairs to combine and put it in condition for the fall milo harvest.

Holmes Motor Company repaired fire damage to the cab of the Reo Dump truck.

We serviced and made minor repairs to other vehicles and farm tractors as required.

Accepted 1942 Ford Sedan from GMA Maltby in Des Moines, Iowa and towed back to refuge.

Pulled headquarters well pipes. Replaced one pipe and both sandpoints. Purchased and installed new well pump.

Mowed eight miles of levee slope and headquarters and secondary headquarters area twice. Mowed headquarters pasture once.

Made three refuge fishing signs and erected. See photograph exposure Number 47.

Four and two tenths (4.2) tons of rock phosphate and 147.4 tons of lime were purchased and spread on fields farmed by the refuge staff.

B. PLANTINGS

1. Aquatic and Marsh Plants

Approximately 50 acres of shoreline on Swan and Silver Lake and 100 acres east of Silver Lake which were disked were broadcast by the Service aircraft July 3. Survival was poor due to the dry weather in July and August.

2. Trees and Shrubs

Thirty-three hundred pin oak seedlings (1-0 stock) were set out in pasture 1-G. This was a continuation of the planting done in this area in April. Five thousand seedlings were put in by hand in all.

Twelve hundred multiflora rose plants were put out as a border around the headquarters area early in May. Most of the plants succumbed to the drouth and it will be necessary to replant them this fall.

April multiflora rose plantings along the south side of pasture 1-H and around the parking space of the Recreational Area fared much better and survival is estimated at 80%.

3. Upland Herbaceous Plants

Seventy acres of Pasture 1-G was seeded back to grasses after having been farmed to corn and soybeans for three years to eliminate encroaching woody species. Five pecks of wheat as a cover crop was used with 5 pounds

of timothy, 3 lbs. of alsike clover, 3 lbs of alta fescue and 5 lbs. of brome grass.

4. Cultivated Crops

The farming season got off to a wet start. In May the weather turned dry and remained dry for the duration of the growing season. This was an exceedingly difficult year to get a "stand". Many of the permittees, and refuge personnel farming as well, plowed when it was too wet in April, and consequently, when it turned off dry were unable to work the ground down properly. The result was a poor stand on the first planting. By the time the second planting was in the ground the dearth of moisture was beginning to make itself felt and again many stands were poor. Cutworms and Army worms were very abundant this year and took their toll in tender corn and milo shoots. Oats were a "bust" for the second straight year and grass and legume plantings which survived the dry weather were a rarity. Corn and bean yields were medium to fair. Milo, however did very well. All in all it was a very difficult farm year and one wonders how crops came through as well as they did.

The following acreages of crops listed below were put in by refuge personnel and represent a substantial increase over any previous year:

Corn	57	Acres	
Milo	180	Acres	
Wheat, Rye & other grains for browse	237	Acres	Includes 70 acres planted to wheat and
Oats and Clover	8	Acres	pasture mix.
	482	Acres	

In addition 15 acres of milo, 12 acres of Jap millet, 5 acres of Early Fortune Millet and 5 acres of White Proso Millet were planted but failed to survive the dry weather. One hundred acres was disked and aerial broadcast to Japanese millet but also succumbed to the drouth.

We are proud to report that crops grown by refuge personnel produced approximately 8,900 bushels and represent 35% of the grain crop available for waterfowl this year. In addition the 237 acres of browse ~~was~~ 66% of the browse crop grown on the refuge. The total crop produced for waterfowl, i.e. that grown by refuge personnel and the 40% share of the permittee's crop, is estimated at 25,365 bushel. This is slightly higher than the bumper crop of 1952 and the largest produced to date for waterfowl at Swan Lake. We feel that our 35% of the grain crop and 66% of the browse shows what we can accomplish given the equipment and funds with which to operate.

Of the 57 acres of corn put in by refuge personnel 45 acres ~~was~~ planted in rows spaced 84" apart instead of the normal spacing of 42". See photograph exposure No. 43. Two bushels of wheat, 3 lbs. of alsike

one-half pound of ladino clover and 5 lbs of timothy per acre were sown between the corn rows. The theory behind this system of cropping is that by drilling the corn somewhat thicker in the rows the yield is not reduced substantially from that of a field planted in the standard manner. In addition it is possible to start a winter wheat crop and a legume-grass planting without waiting until the ensuing spring to plant the legumes and grasses in oats (always a poor bet in this locality) and of course the wheat crop obtained is considerably more valuable than would be the oat crop.

From our standpoint this appears to be an excellent means of putting in an early goose browse and obtaining a corn crop in addition. Heretofore it has been necessary to plant our early wheat browse following an oat crop or let the field lie fallow all summer so that it will be available for wheat in the early fall. This two cropping system strikes us as a way of having our cake and eating it too.

Twenty acres of milo was also planted in 84" rows with a wheat planting between the rows. See photograph exposure No. 44.

Browse plantings by refuge personnel represent 66% of all browse grown on the refuge this year. This increase follows our policy of increasing our browse production and reducing the acreages of browse grown by permittees for the refuge share of the crop in order to obtain more grain crops from the permittees.

Wheat, rye and vetch plantings are up and in excellent shape. Some of our rye was killed out by dry weather but these patches were re-drilled to wheat. Rye appears to be quite vulnerable to hot dry weather for a few days after it sprouts. We believe, however, that a good stand of rye will provide more browse than on of wheat - providing it is acceptable to the geese. See photograph exposure No. 45 of a field of rye planted by permittee Shoner.

Most of our rye and wheat plantings were made at the rate of two bushel per acre this year with the thought that this would increase the quantity of browse and possibly the geese would leave sufficient grain for it to go on and make a crop next spring.

Our ace in the hole this year is our 180 acres of milo. Dispite the dry weather the crop is excellent and an average of 40 bushel per acre is expected. See photograph exposure number 46. We took advantage of the low level of Silver Lake to plant 50 acres of milo on land east of the lake which is normally under water. This did especially well on the fertile lake bed and we believe this is an excellent means of supplementing our food supply when Silver Lake is low and the crop of wild millet and smartweed poor.

C. Collections

1. Seed and Other Propagules

Approximately 200 bushels of wheat and 50 bushels of oats were combined from refuge fields.

The wild millet and smartweed crop is quite poor this year and it is not planned to harvest any seed this fall.

D. Receipts of Seed and Nursery Stock

None

IV ECONOMIC USE OF REFUGE

A. Grazing

The following grazing permits were in force during the period covering the grazing of mixed cattle:

<u>Permit Number</u>	<u>Name</u>	<u>Period of Use</u>	<u>AUM's</u>	<u>Grazing Unit</u>
40	Arch McGilvray	May 1 - August 31	140	2-G

By mid-summer pastures were in poor condition and AUM's were reduced accordingly.

There was no indication that grazing conflicted with wildlife.

B. Haying

One cutting of timothy-lespedeza hay was taken off Unit 1-H and 30 acres of Alsike clover from Unit 7A. There were no second cuttings of hay because of the shortage of rainfall.

V FIELD INVESTIGATIONS OR APPLIED RESEARCH

The Canada Goose browse study initiated in 1950 was continued. Our five acre plot of birdsfoot trefoil succumbed to the dry weather and was plowed under and put back in rye. The ladino clover plot, also planted this spring, survived but made such little growth that it is doubtful whether it will withstand goose browsing this fall. A hay crop was taken off the plot of hairy vetch and the plot replanted to a mixture of rye and vetch to determine whether heavier utilization could be obtained from this combination than from the vetch alone.

Ten acres was planted to rye and timothy. Much of the rye killed out and was replanted to wheat. The fate of the timothy has not been determined.

The old one acre plots of p. ryegrass and alta fescue were beginning to die out and were plowed up.

For several years we have noticed an early movement of Canadas

through the refuge. These birds stop for a few days utilizing the more inaccessible portions of the refuge and then, apparently, continue their migration southward. It is our thought that this particular group of birds may constitute a separate flock of which we have no knowledge. Efforts to date to band these birds have met with indifferent success. We propose to make a concerted effort to capture, band and mark with yellow plastic neck markers a sample of these birds this fall. Neck bands are being used to assist in determining the movements of the birds prior to the hunting season.

The Canada Goose study being carried out jointly with the Missouri Conservation Commission will be continued. We hope to place our bands on 2,000 Canadas this fall.

Mr. Thornsberry's new solenoid cannon described in our January - April Narrative will be used on one and possibly two net traps this fall. A 40' x 60' nylon net purchased by the Missouri Conservation Commission will also be tested.

The following band returns were received during the period:

<u>Species</u>	<u>Number of Returns</u>	<u>Locality</u>
Canada Goose	13	Manitoba
Canada Goose	2	Louisiana
Canada Goose	1	Missouri
Canada Goose	1	Minnesota
Canada Goose	1	Ontario
Canada Goose	1	Wisconsin
Snow Goose	1	Ontario
Blue Goose	1	Ontario
Mallard	1	Illinois
American Coot	1	Arkansas
American Coot	1	Missouri
American Coot	1	Iowa

VI PUBLIC USES

A. Public Uses

2. Fishing Use

Fishing pressure dropped appreciably on Swan Lake and to some extent on Silver Lake. An estimated 3,000 visitor-days were spent fishing on the refuge.

3. Miscellaneous Uses

Approximately 4,000 visitor-days were spent picnicing and sight-seeing on the refuge.

B. Refuge Visitors

Following is a list of visitors during the period:

<u>Name</u>	<u>Title</u>	<u>Date</u>
J. D. Smith	Pilot-Biologist, FWS	5/1-5/6
Claud Alexander	Game Management Agent, FWS	5-10
Smoky Irwin	Advisor, SCS	5-11
Kenneth Krumm	Refuge Manager, Lacreek	6-30
J. D. Smith	Pilot-Biologist, FWS	7/2-7/4
Lewis G. Helm	Biologist, MCC	Numerous
Charles E. Shanks	Biologist, MCC	Numerous
Harris White	Conservation Agent, MCC	Numerous
Howard Wight	Biologist, MCC	8-31
Harold Terrill	Assistant Chief Game Section MCC	8-31
Don Christenson	Biologist, MCC	8-31
Howard Lovrien	Graduate Student, Univ of Mo.	8-31
Tom Martin	Graduate Student, Univ of Mo.	8-31
Hamlet B. Clark	Manager, Fountain Grove Area	Numerous

C. Refuge Participation

On May 26 the refuge manager showed the film, "The Sea Lamprey" to the Swan Lake Sportsmen's Club.

The refuge manager supervised a seining party on the refuge July 31 by the members of the local American Legion Post and Swan Lake Sportsmen's club. A fish fry was held that evening at the Swan Lake Refuge Recreational Area by the above groups.

D. Hunting

None

E. Fishing

The fishing season was opened on the refuge from May 1 to September 15. Fishing success was somewhat lower than last year probably because of the hot dry weather and unusually low water levels in both pools. Fishing was confined almost exclusively to Silver Lake. Those few who did try Swan Lake had little to show for it. Carp made up 80% of the catch and black bullheads another 15%. The remaining 5% was comprised of crappie, channel catfish, drum and buffalo.

During the state seining season which extended from July 15 to August 15 a number of parties seined refuge waters under supervision of refuge personnel. The take was approximately 1500 pounds of rough fish.

F. Violations

None

VII OTHER ITEMS

B. Photographs

A number of photographs are appended to this report.

Respectfully submitted,

Robert F. Russell
Robert F. Russell

October 13, 1953

Approved SA Janner.
Regional Director



Crack in Levee No. 1. In some places levee shoulder has dropped 1 - 3 feet. (Exp 41 - 10-4-53)



Portion of 50 acres ditched on four sides, cleared and plowed in Sec. 33, T56N, R20W. Ditch in foreground is primary ditch emptying into Silver Lake. Ditch at right angles to it for field drainage. (Exp 42 - 10-4-53)



Forty five acres of corn in rows spaced 84" apart. Wheat and grass-legume seeding between rows for goose browse and to put field back in pasture. (Exp. 43 - 10-4-53)



Twenty acres of Dwarf Milo in rows spaced 84" apart. Wheat sown between rows for goose browse. (Exp. 44 - 10-4-53)



Thirty acres of rye planted at rate of 2 bushel per acre for goose browse. (Exp. 45 - 10-4-53)



Portion of 180 acres of Dwarf Milo grown by refuge personnel. (Exp. 46 - 10-4-53)



One of three fishing regulations signs built
and erected at entrances to refuge.
(Exp 47 - 10-4-53)

WATERFOWL

Refuge Swan Lake Months of May to August 1945

(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									
II. <u>Geese:</u> Canada goose Cackling goose Brant White-fronted goose Snow goose Blue goose	9	5-1	39	Summer residents	31	8-31			10,187
	50	5-1	50	5/1-4	25	5-11			460
	450	5-1	450	5/1-4	10	5-17			4,110
III. <u>Ducks:</u> Mallard Black duck Gadwall Baldpate Pintail Green-winged teal Blue-winged teal Cinnamon teal Shoveller Wood duck Redhead Ring-necked duck Canvas-back Scaup Golden-eye Buffle-head Ruddy duck	100	5-1	100	Summer residents	100	8-31	3	75	12,300
	500	5-1	500	5-1	50	5-11			2,275
	100	5-1	100	5-1	25	5-11			559
			25	Summer residents				25	4,625
IV. <u>Coot:</u>	500	5-1	500	5-1	10	6-22			3,548

SUMMARIES

Total Production:

Geese -
Ducks 100
Coots -

Total waterfowl usage during period 34,496
Peak waterfowl numbers 1,264
Areas used by concentrations -
-
Principal nesting areas this season -
-

Reported by Robert F. Russell

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 Swan Lake Months of May to August 1953

(1) Species Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total Estimated
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Number
I. Water and Marsh Birds:										
White Pelicans	100	5/1	100	5-1	25	5-30				1860
Great Blue Herons	8	5-1	100	8-51	100	8-31				1,500
Green Herons	10	5-6	10	5-16						100
American Egrets	5	8-1	350	8/21-31	350	8-31				5,010
II. Shorebirds, Gulls and Terns:										
Killdeer	30	5-1	Common summer resident							3,600
Spotted Sandpiper	10	6-15	Common summer resident							1,500
Ring Billed Gull	1	8-2	50	8/15-31	50	8-31				1,175
Black Tern	1,000	8-15	1000	8/15-31	1,000	8-31				15,000

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u>					
Mourning dove	1500	5-1	2,500	8/27-31	2,500
White-winged dove				8/31	190,000
IV. <u>Predaceous Birds:</u>					
Golden eagle					
Duck hawk					
Horned owl	Common	summer resident			6,000
Magpie					
Raven					
Crow	Common	summer resident			12,000
Sparrow Hawk					50
Marsh Hawk					1,500
Reported by.....					Robert F. Russell

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.

Refuge Swan LakeMonths of May to August, 194

(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'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Bob White Quail		5	6	400					700	
Prairie Chickens									Unknown	None observed on the refuge during the period.

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 GRAIN REPORT

Refuge Swan LakeMonths of May through August, 1955

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Corn	120	-	120		27		0	120		120	0
Dwarf Milo Maize	27	-	27		27		27	0			
Wheat	0	200	200		200		200	0			
Oats (Andrew)	0	50	50				0	50		50	0

(8) Indicate shipping or collection points _____

(9) Grain is stored at _____

(10) Remarks _____

*See instructions on back.

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.
- (4) A total of columns 2 and 3.
- (6) Column 4 less column 5.
- (7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.