

SAND LAKE NATIONAL WILDLIFE REFUGE  
COLUMBIA, SOUTH DAKOTA

NARRATIVE REPORT

September 1, 1945 to December 31, 1945

REFUGE PERSONNEL

Jerome H. Stoudt  
Refuge Manager

John H. Nowak  
Clerk-patrolman

Elmer Podoll  
Mechanic-patrolman

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SAND LAKE NATIONAL WILDLIFE REFUGE  
September 1, 1945 to December 31, 1945

I. GENERAL

A. Weather Conditions

The weather during September and October was quite mild but the freeze-up came much earlier in 1945 than in 1944. In 1945 the entire water area froze over on November 9 while in 1944 it stayed open until November 27.

December was an exceedingly cold month with 15 days of below zero temperatures.

Although at the present time we have 5 or 6 inches of snow on the ground there has not been the usual South Dakota wind to blow it off of the plowed fields and into drifts. Even Sand Lake has 3 or 4 inches of snow with no evidence of drifts as yet.

Month	Snowfall		Precipitation		Max. Temp.		Min. Temp.	
	'44	'45	'44	'45	'44	'45	'44	'45
September	-	-	1.61	2.75	86	102	36	27
October	-	-	3.24	.25	80	84	25	17
November	0.2	0.9	1.73	.10	65	70	-1	0
December	3.8	4.8	.11	.48	47	50	-8	-21
Totals	4.0	5.7	6.69	3.58	86	102	-8	-21

B. Water Conditions

Due to practically no precipitation during the months of October and November water levels dropped very low and at present are two feet or more below spillway elevation. There was not water spilling over the Dakota lake dam all fall.

Mud Lake has reverted to about its normal size before the dam was put in and most of the lake bed was a barren mud flat during the fall season. Several large mud flats also appeared in Sand Lake and the river dried up completely south of the Columbia dam.

C. Fires

Again this fall we were fortunate that in spite of a tremendous number of hunters along the refuge boundary, no fires were started which burned in the refuge. One fire started north of the Necla Grade on the east side of the refuge but when Patrolman Podoll reached the fire several farmers and townspeople were already combating the fire and it was soon put under control due mainly to a favorable wind which blew towards the highway and away from the refuge.

A. II. WILDLIFE

A. Migratory Birds

1. Population and Behavior

a. Waterfowl

The waterfowl population on the Sand Lake Refuge at the beginning of the hunting season (September 20) was practically the same as in 1944. Ducks numbered between 20,000 and 30,000 with a few more geese than in 1944 but less than 100 in all. A few straggling Hutchins' and White-fronted geese appeared as early as September 21 and four Lesser Snow geese were observed on October 1. The big flight of Hutchins and White-fronts arrived early in October with a few thousand White-fronts coming September 28 but very few Hutchins until October 5 when a big flight arrived. Saturday and Sunday mornings, October 6 and 7 there was a heavy kill of newly arrived Hutchins geese which hadn't learned to break up into small flocks and were coming out low over the refuge fence in large flocks. The peak of the goose population was reached about October 20.

Ducks were far below the 1944 level and at no time did we have anywhere near the number of ducks which we had for example around November 15, 1944. Everyone kept waiting for the "northern flight" but it just never came and there were no more ducks on the refuge just prior to freeze up than in late October.

In spite of a very good crop of Sago Pondweed in Sand Lake proper there were very, very few diving ducks on the area. There was also much more natural food over the entire area than in 1944 and also more small grain on the neighboring agricultural land but still the duck population did not meet with expectations. The only apparent reason which we can suggest for this decrease in ducks was the fact that the corn crop was very poor and the majority of it was not picked until November.

The entire refuge froze over the night of November 8 and only a few small open holes remained open until the close of the hunting season on December 8 when there were still perhaps 50,000-75,000 mallards left on the refuge. Extreme and abnormally cold weather in December plus several inches of snow caused most of the mallards to leave so that there are now only 2500 or less ducks on the entire refuge as compared with 12-15,000 at this time last year.

Many of the smaller puddle ducks such as teal, gadwall, and shovelers appeared to be more numerous in 1945 than in 1944 and this can no doubt be traced directly to an increase in natural food in 1945 although there was considerable less water in the surrounding country side.



b. Other Water-birds

Shore birds were many, many times more numerous than in 1944 due no doubt to the large acreage of mud flats during the past season.

Franklin's gulls appeared to be less numerous by quite a margin than in 1944 and for no apparent reason. Pelicans and Cormorants showed an increase especially in breeding population.

2. Food and Cover

Due to a slow recession of water levels from July 1 on throughout the summer there was a good crop of aquatic food plants produced. Heavy rains and high water levels during July and August in 1944 drowned out or discouraged aquatic plants in that year but in 1945 the heavy rains ceased during June and water levels dropped from then on. Large beds of Sago appeared in Sand Lake proper and dense stands of smartweed (Polygonum Coccineum) appeared over the entire area with especially large patches in the northern end of Sand Lake near the Hoghton Grade. Giant bur-reed produced a considerable amount of seed also. Other species of food and cover were listed in the Narrative report for the previous period. Bulrushes in this area do not produce large crops of seeds annually but there was a fair crop in 1945.

3. Botulism

No botulism was noted during the period altho a few isolated cases may have been over looked.

4. Lead Poisoning

After the freeze-up on November 9 lead-poisoning became evident due to the appearance of sick and dying ducks around the open water holes. Enough ducks were collected and examined and examined from lowere Sand Lake to prove that at least 95% of all ducks dying there was the result of lead poisoning. The most shot found in any one duck was 9 but in several cases the shot were worn down to almost nothing so that most of the lead had been assimilated by the ducks.

Of the present population of 2500 mallards there is perhaps about an average of one duck dying per day which over the winter would only amount to 150 ducks. This would be a 6% loss which is not excessive and compares favorably with the loss during the winter of 1944-45.

## B. Upland Game Birds

### 1. Population and Behavior

The pheasant population is far below that of a year ago in areas adjacent to the refuge and naturally the refuge area was affected. It is hard to know exactly what caused the drop in pheasant population in this section of South Dakota but we believe it is safe to say that a combination of wet springs and heavy hunting pressure were the two main causes with emphasis on the latter. Predation no doubt took its take also with one of the heaviest red fox populations in South Dakota's history but just how serious a pheasant-destroyer the fox is, cannot be definitely know without exhaustive food habits studies during all months of the year. Pheasant and waterfowl feathers around a fox den do not prove anything as many of these came from dead birds or crippled birds which would have died anyway.

The hunter is never willing to shoulder his share in the lowering of game populations but is always anxious to blame it on the weather, predators, etc.

### 2. Food & Cover

Food and cover was ample throughout September, October and November, but with extreme cold and 5 or 6 inches of snow on the level in December pheasants appear to be working hard for their food and have to do a great deal of scratching.

Refuge areas containing weeds such as sunflower, ragweed, cockle-bur and standing corn are especially valuable now to the pheasant.

The refuge population is believed to be about right for a good, healthy, normal population altho the area can and has supported a much larger population.

Hungarian Partridge are still very rare on the refuge and quite scarce in surrounding fields.

Prairie Chickens are again in evidence in small numbers but seem to be mainly a winter population.

### 3. Disease

None Noted. Two hen pheasants were found on December 31 inside of the refuge. One was bleeding at the mouth and nostrils and was fluttering in the snow as I drove by. Before I got to her she was dead. About ten feet further on another hen was scooping out a hole in the snow and couldn't fly. I caught her and she died within a few hours. Examination revealed blood clots in body cavity but cause of death was not ascertained. Both pheasants had

full crops and were very fat. Barley was the main food in the crops.

C. Big Game Animals

1. Population and Behavior

Deer seem to be increasing throughout this section of South Dakota and in the refuge is no exception. 39 deer were seen in one day while on patrol. Out of 14 deer seen north of the Four-mile grade, 12 were bucks. This of course was during the rutting season. On December 31, 29 deer were seen at one time in the fields between agricultural units 20 and 21. The winter concentration areas appear to be the same as in 1944-45 with the addition of two areas, one around the Stehley Cabin and the other just south of the four-mile grade on the east side of Mud Lake.

We believe that there are very close to 200 deer on the refuge at the present time. Standing corn still appears to be their staple, winter food. At the present date of writing all deer appear to be in excellent physical condition.

D. Fur Animals, Predators, Rodents and Others

Fur Animals

Musk rats - The muskrat population was still lower in 1945 than in 1944. The house census is being taken by the trappers themselves as they go over the trapping units and will be included in the next report. A rough census of houses was taken prior to trapping and showed almost an absence of houses north of the 4-mile grade. There were more houses in the south end of Mud Lake and about the same number on Units 10, 11, and 12. Units 5, 6, 7 and 8 all had considerable less. This reduction in rats is hard to account for and certainly was not attributable to a lack of food. Lack of water caused the rats to move out of certain units but populations of other units should have increased proportionately. Many potholes adjacent to the refuge dried up during the late summer and fall and this should have caused more rats to move into the refuge. It is not believed that the catch of 4110 rats in 1944-45 hurt the 1945 breeding population.

Mink - Mink are increasing on the refuge but slowly. There are perhaps two or three times as many mink on the refuge at the present time as there were a year ago, but still less than 20 in all.

Raccoon - Raccoon are quite abundant and do cause considerable damage to neighboring poultry and gardens. The present low value of the fur makes their control impossible by share-trapping.

Skunk - Also abundant but probable can be controlled by share-trapping.

Red Fox and Coyote - Red fox were very abundant on the south end of the refuge but this year a family of coyotes has just about driven all of the fox out of the north end of the refuge from the four-mile grade north and the fox population is considerably lower in the Mud Lake Area than it was in 1944.

To date 45 or 50 red fox have been trapped in or immediately adjacent to the refuge and about the same number killed on fox hunts adjacent to the refuge. One coyote has been trapped. Weasel are very scarce this year. Jack rabbits are increasing slowly and show a fairly good increase over last year. Cotton-tails are still abundant but may have reached their peak.

E. Predaceous Birds, Crows and Ravens

In the early part of the winter we had a migration of snowy owls into this area and it was not uncommon to see 5 to 10 of these birds while driving on the refuge.

The hawk migration was not up to par this past fall. Predaceous birds are not a serious problem. A few eagles have been observed which evidently were feeding on crippled and lead-poisoned waterfowl.

F. Fish

A few hundred bullheads about 5 inches long and a hundred or so minnows were salvaged from a frozen over pool below the Columbia dam. These fish were transplanted into the display pond where the artesian well from the duck hospital maintains an open hole.

III. REFUGE DEVELOPMENT

A. Physical Development - none

Maintenance:

1. Remodeled interior of fur drying shed for better distribution of heat. Took skinning shack off wheels, set on ground and banked sides, put on new roof and wired for lighting.
2. Hauled and placed 2681 cu. yds. of dirt on fill on upstream side of Columbia dam. Broke down and repaired rubble masonry on both wing walls.
3. Hauled and placed 6 yards of one man rock, 12 yards oversized rock, and 36 yards of pit-run gravel on emergency spillway at Mud Lake dike. Also repaired both wing walls at Mud Lake dam.
4. Rebuilt and graded approach to boat house from lake with 12 yards of pit-run gravel.

5. Repaired patrol road running east of Headquarters to Harold Dennert farm. Laid a culvert and built an approach to Township road. (By this we greatly reduce the distance from Headquarters to Site No. 3.)

6. A total of 23 man days spent on maintenance of equipment during this period.

7. Installed water heater coils in furnaces at Headquarters and Site No. 3.

8. Installed hot water heater and tank at Site No. 2.

9. Approximately 702 man hours were spent in patrolling the refuge during the hunting season (September 20 - December 8).

10. All wooden refuge entrance and highway signs were sanded, refinished and given a coat of rubbed linseed oil.

11. Repaired and replaced over 50% of the boundary signs and posts at Lake Tewaukon Easement Refuge.

12. After the ground was frozen used bulldozer to break down and clean old weeds and vegetation off old patrol roads so as to make them passable during fall and winter.

#### B. Plantings

1. Aquatics and Marsh Plants - none

2. Treese and Shrubs - none

3. Upland Herbaceous Plants - none

4. Cultivated Crops

The government share of the refuge crops was for the most part left in the field with just enough grain harvested to provide winter feed and feed for next summers feeding program.

It was found in 1944 that the best method of leaving samll grain was to have it mowed or swathed, with the latter method the better of the two. Most of the grain was swathed during August and by the end of the hunting season there was very little if any kernels left on the ground.

Heaviest concentrations of waterfowl were in Units 3, 4, 5, 7, 14, 15, 20, and 32. Especially large concentrations of geese occurred in Units 5, 7, 14, 15, 20, and 32, with perhaps the heaviest concentration for the longest period at Unit 5. In Unit 5 there were from 10,000 to 15,000 geese during the peak concentration most of which were Hutchins geese with a good representation of Canada and white-fronted geese, also a few snow geese.



At the same time of the peak concentration at Unit 5 (October 23) there were also concentration of geese at Unit 7 and 32. The first geese to arrive in late september and early October hit Units 5 and 20 very hard and must have cleaned them out early as very few were seen in these units toward the latter part of the hunting season. Unit 14 received its heaviest use from geese and ducks during the 10 days just previous to the freeze-up.

It appeared that when Unit 5 and 7 and 32 became cleaned up and there was only Unit 14 left that most of the geese moved southward out of the refuge. There did not appear to be a big enough change in the weather to cause this emigration and indications are that when the refuge food played out the geese would no longer stay around. When they did leave the refuge to fly to adjacent fields the bombardment was terrific and they were driven from one feeding place to another by goose-crazy hunters who wouldn't allow them a moment's peace.

It is our recommendation that all the grain possible be left in the refuge fields so that the Sand Lake Refuge can provide food and resting areas and not become a slaughtering pen for geese.

It was planned to take most of the Government share of the corn in the harvested form but due to the fact that most of the corn was too wet and soft to pick and store this plan was abandoned. Most of the Government share was left unpicked and if there is enough left to harvest in the spring we will try to hire it done at that time. The permittees fed most of the corn they picked to their cattle and some of it was even too soft to pick.

There is considerable more snow now than last year and it hasn't blown off from the fields and roads as yet. As a result the standing corn will no doubt be pretty well cleaned up by spring by both deer and pheasants.

C. Collections - none

D. Receipts - none

#### IV. ECONOMIC USE OF REFUGE

##### A. Grazing

Grazing was carried on with no apparent conflict with wildlife. All indications are that controlled grazing is beneficial to wildlife.

##### B. Haying

Two new haying units were cut in 1945, both quite small in size.

When Mr. Salyer visited the refuge he recommended the reduction of wild areas on the refuge and we hope in 1946 to in-

crease the hayland as well as the agricultural land.

C. Fur Harvest

The fur harvest at Sand Lake will be the smallest in years due to a reduction in muskrat population. Due to unprecedented cold weather in December trappers were reluctant to start trapping and as a result we are way behind last years catch with only about 1,000 caught to date. Many of the houses in shallow water were frozen out early in December and even in November. The rats from these houses either moved out and will be caught in other houses or are down in the mud so far that they can't be caught. Some may have died. Units 1, 2, 3, and 4 had to be abandoned altogether due to an almost complete lack of houses.

Units 5 and 6 are not much better and Units 7 and 8 are also below the 1944 population.

Fur prices are again high this year. Permittees have already sold about 250 muskrat pelts for an average of \$2.25 per pelt.

Mink are selling for from \$20.00 to \$30.00 and were even higher in early December.

Raccoon are very poor and worth only about \$2.00. Skunks will average over \$2.00 in the round and \$2.25 to \$2.50 pelted. Red fox are lower than last year selling for about \$6.00 or even less, but the State pays a bounty of \$7.50 per fox which make fox trapping worthwhile.

Badger are practically worthless and not wanted by most fur buyers.

D. Timber removal - none

E. Other uses - none

V. FIELD INVESTIGATION

None

VI. PUBLIC RELATIONS

A. Recreational Uses

None other than fishing which was very poor in 1945 and did not attract many fishermen.

B. Refuge Visitors

<u>Name</u>	<u>Title</u>
Mr. Day	Asst. to the Director
Mr. Salyer	Wildlife Refuge Division
Mr. DuFresne	Division of Information
Mr. Johnson	Regional Director
Mr. Janzen	Asst. Regional Director
Mr. Gillett	Reg. Refuge Supervisor
Mr. Thompson	Game Management Division
Mr. Elkins	River Basin Studies
Mr. Huey	Regional Engineer
Mr. Wright	Engineer
Mr. Rysberg	Lands
Mr. Aldous	Biologist
Mr. Childers	Game Management Division
Mr. Jensen	Game Management Division
Mr. Richardson	State Warden
Mr. Ruhl	Mich. Conv. Dept.
Mr. Smith	State Ref. Mgr. (Horicon)
4,000,000 hunters	

C. Refuge Participation - none

D. Hunting

Hunting pressure adjacent to the refuge was again very heavy in 1945. Due to the heavy cover, late hatch and general lack of pheasants in this area the pheasant hunters were no where near as numerous as in 1944. However the number of goose hunters increased considerably. One morning while Mr. Nowak was on patrol he counted 93 hunters along the fence in about two miles. This was in the vicinity of the Tollefson farm.

There were about five areas where fence-line hunting was excellent and these are as follows:

1. Southeast corner from Weismantel Grade east and north to the Houghton Grade with "hot spots" on the Ben Tollefson and Ralph Herseth farms and in Section 24-126-62.

2. East side from four-mile grade north  $1\frac{1}{2}$  miles.

3. Section 30-128-61.

4. Section 14, 127-62 and 4-mile grade.

5. West fence from Houghton Grade south to the Harold Demmert farm.

Other areas were "hot" for shorter periods and on certain days.

The SE $\frac{1}{2}$  of the SW $\frac{1}{2}$  of Section 22-126-62 was about the best



"hot spot" for the longest period. This land belongs to Mr. Ben Tollefson and he was charging \$2.00 per person, per morning for hunting on this area. He Restricted the number of hunters and did not let them hunt after noon. As high as 31 geese were killed on this "eighty" in one morning. This land very definitely should be purchased and included in the refuge.

In section 30-128-61 along that part of the refuge fence which runs from the center of the section west for  $\frac{1}{4}$  mile as high as 30 geese were killed in one morning but this area did not hold up for more than a week or so. The Hecla Sand Lake Hunting Club leased this area on week-ends for \$25.00 per day.

The Harold Dennert farm was probably the second best area with as high as 26 geese killed in one day but it remained good from September 20 until freeze-up. Mr. Dennert did not charge for hunting but only let his friends hunt on the area and only hunted it two or three times a week.

Other areas bought by private individuals or clubs and used only by them were also good but not many geese were killed because in some cases the owners only hunted once or twice every two weeks or so and in some cases the area "fizzled" out in 1945.

A conservative estimate of the geese killed in 1945 within the "zone of influence" of the Sand Lake Refuge would be about 2500-3000. One family of brothers killed 96 geese west of the refuge and there are several local individuals around the refuge who are known to have killed over 25 geese apiece.

Duck hunting was very poor in 1945. Early shooting on teal, gadwall, and shovelers was quite good in potholes and once in awhile hunters would find a good millet or small grain field which was unharvested and would yield a few minutes good shooting. For the most part cornfield shooting was very poor due to the fact that most of the corn was too soft to pick before freeze up and the ducks just weren't on the area this past season.

From the above it can be seen that the goose hunting pressure was extremely heavy and duck hunters would have been more numerous had the ducks been here. Indications are that a lower bag limit and possession limit on both ducks and geese are in order. We would strongly recommend a bag limit of one Canada, Hutchins, and white-fronted goose per day with a possession limit of two or possible three in order to give the hunter who travels far to take home three geese. Too many local hunters shoot their limit of two birds and take them home or give them away and go out and shoot two more. Bag limit of one would cut this down somewhat.

Regarding ducks, most hunters are satisfied with their "limit" whether it is 5, 10 or 15 and we believe most hunters would rather go out and shoot 5 to 7 ducks and go home with their

limit early in the day rather than to stay out longer and hunt harder for 10 or 15.

If the ducks needed further reduction due to crop depredation increasing the hours of hunting from an hour before sunrise to  $\frac{1}{2}$  hour after sundown would accomplish the reduction. By reducing bag and possession limits there would be more ducks to go around to more hunters rather than having the few hunters who were lucky enough to hit a "hot" day or "hot" spot make a killing.

Shooting before sunrise or after sundown would not have an adverse effect on the goose because the great majority of geese do not go out to feed until about sunrise and are most always through feeding and back in the refuge before sundown.

The trend is still toward buying up land along the refuge fence, and also toward posting private lands and either leasing it, saving it for friends, or prohibiting hunting altogether. A reduction in bag limits might help to discourage the leasing and buying of private land for exclusive hunting rights.

On the opening day of September 20 there were still a considerable number of young ducks (mostly mallards, blue-winged teal and gadwall) that couldn't fly.

E. Fishing

(Discussed under II. Wildlife, F. Fish.)

F. Only one violation was taken to court for shooting 20 minutes after sundown and was fined \$25.00 plus court costs of \$3.75.

Several hunters were apprehended who were hunting in the refuge mostly in conspicuous places such as the Houghton Grade. Their professed ignorance of having been in the refuge seemed sincere in all cases and they were released after recording their name, license number and checking for duck stamp and plug in gun. They were also warned that a second offense would result in their being taken to court.

The patrolling job on the Sand Lake Refuge was extremely heavy in 1945 and about 700 man-hours was spent by refuge personnel on patrol. This was necessary due to the extremely heavy hunting pressure and the presence of so many out-of-state hunters who were unacquainted with refuge boundaries and refuge regulations.

VIII. OTHER ITEMS

A. Easement Refuges

Tewaukon - This refuge was visited during the hunting season but most of the patrol left to the local State Warden and Federal Game Management Agent Jensen. The first trip to Tewaukon was on September 26 and 27. Patrolman Podoll and the refuge manager made the trip. We checked entire boundary and all roads and replaced all missing and damaged signs.

We also took up a load of rock to rip-rap the southwest wing-wall of the dam.

Later on local farmers and Commissioner Loudon were contacted and a plan of work formulated for the construction of an emergency spillway just east and north of the present spillway.

During the hunting season there were several thousand ducks, mostly mallards and pintails on the lake above the bowl spillway but the main lake did not have the usual number of divers. All potholes in and surrounding the refuge were quite heavily populated with ducks however.

The interior of the cabin at Tewaukon was cleaned early in September and floors varnished. Also the basement was dry for the first time in three years and it was cleaned out.

Dakota Lake - Although very few ducks were noted in Dakota Lake all fall there were several hundred Hutchins and Canada geese which used the mud bars and points along the river for resting places.

No water was spilling over the dam on October 4 and at no time after that.

A few signs were replaced at Dakota lake also.

Ducks were quite abundant in the big slough and lake just east of Dakota Lake and at times these waterfowl may have flown to Dakota Lake for safety.

Lake Elsie, Cloud Lake, Storm Lake, and Maple River:

All of these refuges had ducks in them during the hunting season but not many more than other areas of similar size in the same region.

Hunting pressure was so heavy at Sand Lake on week-ends that we did not like to leave the area at that time. Perhaps if we had visited the easement refuges on week-ends we would have noted an influx of waterfowl from surrounding potholes and lakes but when we were in North Dakota hunting pressure was very low and most potholes were well populated with ducks and few hunters about.

QUARTERLY GRAIN REPORTStation Sand Lake RefugePeriod Sept. 1, 1945 to Dec. 31

This report should cover all grain received, or disposed of, during the quarterly periods ending January 31, April 30, July 31, and October 30. Reports in duplicate, clipped to, but not bound as a part of, the quarterly narrative report, should reach the Regional Office by the 10th of the month following the close of the period covered by the report. The Regional Director, after approval, will forward the original to Washington.

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 lbs., Corn (ear)--70 lbs., Wheat--60 lbs., Barley--50 lbs., Rye--55 lbs., Oats--30 lbs., and Mixed--50 lbs. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels. Report all grain received during period from all sources, such as transfer, share cropping, or harvest from feed patches.

Variety	On Hand Beginning of Period	Received During Period	Grain Disposed of				On Hand End of Period	Proposed Use	
			Trans- ferred	** Stored	Fed	Total		Seed	Feed Surplus
Corn	500	500					1000	1000	
Wheat	595	200	162	88	245	595	200	200	
Barley	753	265	200		553	753	265	265	
Rye									
Oats	1849	1005	350	200	1300	1850	1004		
Mixed*	0	288					288	288	
shelled corn	0	60				0	60	60	

1. Indicate shipping or collection points Shipped: 500 bu mixed grain to Lower

Sauris, 135 to Valentine, 80 to Waubay.

2. Grain is stored at Granary at Site No. 2.

3. Remarks \* This grain made up of oats and wheat taken from old grain in elevator.

\*\* Transferred to mixed bin.

Approved by:

Submitted by:

\_\_\_\_\_  
Regional Director

\_\_\_\_\_  
Signature and Title



Refuge Sand LakeMonths of September to December, 1945

1612

(1) Species	(2) First Observed		(3) Became Common	(4) Peak Concentration		(5) Last Observed		(6) Young Produced			(7) Total
Common Name	Number	Date	Date	Number	Date	Number	Date	No. Broods Obsvd.	Avg. Size	Esti- mated Total	Number Using Refuge
Canada Goose -	30	9/18	10/13	3000	10/20	few still here					5000
Hutchins Goose -	5	9/20	10/5	22,000	"	100	11/7				30000
White-fronted goose -	50	9/21	9/28	5000	10/5	8	11/4				5000
Lesser Snow goose -	4	10/1	-	200	10/20	-	-				200
Blue Goose -	-	-	-	50	"	-	-				50
Mallard	-	-	-	300,000	"	2500 still here					600,000
Black Duck	-	-	-	500	"	81	12/30				500
Gadwall	-	-	-	6,000	10/5	30	10/17				7,000
Baldpate	-	-	-	2,500	"	6	10/19				3,000
Pintail	-	-	-	30,000	10/20	1	12/15				40,000
Green-wing teal	-	-	-	6,000	10/20	1	11/1				6,000
Blue-wing teal	-	-	-	8,000	9/20	25	10/17				8,000
Shoveler	-	-	-	6,000	10/5	2	11/1				8,000
Redhead	-	-	-	100	10/5	-	-				100
Canvas Back	2	10/15	-	50	10/15	-	-				50
Lesser Scaup	10	"	-	200	"	-	-				200
Ruddy Duck	-	-	-	100	10/5	-	-				100
				359,900							

REMARKS: (Pertinent information not specifically requested)

No wood ducks, ring-necked ducks, golden-eye or buffle-head seen during period.

## INSTRUCTIONS

Form NR-1 - MIGRATORY BIRDS (Include species in families Gaviidae through Strigidae; also doves and woodcocks)\*

In case a resident form occurs, such as mottled duck on the Gulf Coast, use only the columns that apply.

- (1) SPECIES: Use correct common names as found in the A.O.U. Check List, 1931 Edition, and list in A.O.U. order. General terms are to be avoided, such as "scaup", "teal", etc.; use "green-winged teal" or "lesser scaup".
- (2) FIRST OBSERVED: The first refuge record for the species during spring migration, fall migration, wintering, or summering, and the number observed. In the case of resident species this column may be disregarded.
- (3) BECAME COMMON: The date the species became common on the refuge.
- (4) PEAK CONCENTRATION: The greatest number of the species present on any one date or limited interval of time.
- (5) LAST OBSERVED: The last refuge record for the species during the spring or fall migration, wintering, or summering, and the numbers observed exclusive of obvious cripples or non-migrants.
- (6) YOUNG PRODUCED: Estimated number of young produced based upon 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 are to be omitted.
- (7) 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 manner in which birds come through; i.e., in waves or all at once. On refuges representing the terminus of the flight lane, the figures would probably be the same in many cases.

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

Refuge Sand LakeMonths of September to December, 1945

(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.
Ring-necked pheasant	12,000	0.34							35,000	
Prairie Chicken	1,000	10							100	
European Partridge	1,000	40							25	

## 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

Sand LakeYear 1945

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population as of Dec. 31	(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Losses	Number	Source		Percentage
White-tailed deer	12,000	50										200	60 male 40 female

## INSTRUCTIONS

### Form NR-3 - BIG GAME

- (1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.) exclusive of fenced herds. 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 total number of young produced on refuge.
- (4) REMOVALS: Indicate total number in each category removed during the year.
- (5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.
- (6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.
- (7) TOTAL REFUGE POPULATION: Give the estimated population of each species on the refuge as of December 31.
- (8) SEX RATION: Indicate the percentage of males and females of each species as determined from field observations or through removals.

Refuge Sand LakeYear 1945

## Botulism

Period of outbreak nonePeriod of heaviest losses none

## Losses:

	Actual Count	Estimated
(a) Waterfowl	<u>          </u>	<u>50</u>
(b) Shorebirds	<u>          </u>	<u>50-</u>
(c) Other	<u>          </u>	<u>-</u>

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl	<u>          </u>	<u>          </u>
(b) Shorebirds	<u>          </u>	<u>          </u>
(c) Other	<u>          </u>	<u>          </u>

Areas affected (location and approximate acreage)             
Mud Lake Area

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.)

Water levels receding from July 1 throughout summer and fall.

Condition of vegetation and invertebrate life O.K.Remarks No heavy summer rains to raise water levels

## Lead Poisoning or other Disease

Kind of disease Lead PoisoningSpecies affected mostly mallards, some baldpate

Number Affected Species	Actual Count	Estimated
<u>Mallard</u>	<u>200</u>	<u>1500</u>
<u>Baldpate</u>	<u>5</u>	<u>100</u>
<u>all others</u>	<u>-</u>	<u>500</u>

Number Recovered           Number lost           Source of infection not known

Water conditions Levels much lower than in 1944.  
Level 18 to 24 inches below spillway elevations throughout period

Food conditions goodRemarks

Refuge Sand LakeYear 1945

Species	Relative Abundance	Sport Fishing		Commercial Fishing		Restocking		Number removed for Restocking
		Man days Fishing	Number Taken	No. of Permits	Pounds Taken	Number Stocked	Area Stocked	
Large-mouth Black Bass	scarce	300	100					
Yellow Perch	"	300	100					
Northern Pike	rare	300	10					
Bullhead	Abundant	300	3000					
Carp	Abundant	-	-					

REMARKS: Fishing was very poor in 1945. Very few bass and perch caught and bullheads ran mostly 5 inches or smaller. Heavy suffocation-kill during past winter no doubt caused the poor fishing.

PLANTINGS  
(Marsh - Aquatic - Upland)

Refuge Sand Lake Year 1945

Species	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount & Nature of Propagules	Date of Planting	Survival	Cause of Loss	Remarks
				<u>NONE</u>				

## TOTAL ACREAGE PLANTED:

Marsh and aquatic \_\_\_\_\_  
 Hedgerows, cover patches \_\_\_\_\_  
 Food strips, food patches \_\_\_\_\_  
 Forest plantings \_\_\_\_\_

Refuge

Sand Lake

Year 1945

Permittee (If Farmed by Refuge, Indicate)	Permit No.	Unit or Location	Actual Acreage Cropped	Crops Grown	Permittee share		Acre Left Stand- ing	Government Share		Cash Receipts to Refuge
					acre	bu.		harvested acre	bu.	unharvested acre bu.
Jones, Wm.	11017	1	20	barley	15	345		5	115	
			25	oats	19	1200		6	320	
			20	corn	15	---		5	200	
Eichler, H.	12334	2	15	corn	-	-		-	-	5
Seiber, W.	13242	3	40	barley	30	750				10*
Wilke, Geo.	13249	4	80	barley	60	1900				20*
			100	corn	75	--				25
Tollefson, B.	11093	5	50	barley	50	1000				-
			25	millet	-	-				25*
			115	corn	100	700				15*
			80	oats	50	1500				30*
Herseth, R.	13221	29	80	wheat	60	1200				20*
		30	6	corn	2	360		4	120	
		31	24	barley	18	450		6	150	
Richardson, A.	13246	36	7	oats	5.25	180		1.75	60	
Spurr, C.	13239	25	15	oats	10	not harv.				5
Hinderks, J.	12016	26 & 27	20	corn	15	not harv.				5*
Soverin, A.	11993	35	15	oats	11	330				4*
			15	corn	10	poor				5
Kimball, M.	13213	6	30	oats	23	460				7*
			38	corn	25	500				13
			12	millet	8	not harv.				4
Scott, A.	13220	32	60	corn	40	800				20
			20	oats	16	480		4	100	Total

Summary of Crops Grown:

Crops

Acreage

Refuge Share  
Bu. HarvestedAcres left  
Standing


1065-253



Refuge

Sand Lake

Year 1945

Permittee (If Farmed by Refuge, Indicate)	Permit No.	Unit or Location	Actual Acreage Cropped	Crops Grown	Permittee share		Acres left Stand- ing	Government Share		Cash Receipts to Refuge
					acre	bu		harvested	unharvested	
					Avg. Yield Per Acre	No. Bu. Har- vested		acre	bu.	
								Compensatory Services		
Kinney, J.	13245	32a	40	oats	30	600				10*
Lahman, F.	13238	33 & 7	15	buckwheat	10	?				5*
			60	oats	45	1000				15*
Erickson, A.	13241	7 & 8	100	oats	75	1500				25*
Koch, W.	11725	9, 10, 11, 12 & 14	20	oats	15	450				5*
			28	oats	21	840				7*
			60	oats	45	2700				15*
			30	corn	20	400				10*
			60	wheat	45	675				15*
			30	corn	22.5	450				7.5*
			20	millet	7	not harv.				3
Dinger, R.	11718	15	85	barley	85	2500		Govt. share out		of Unit 20
Dinger G.	11719	20 & 34	40	corn	40	600		" " "		" " "
			36	oats	30	1500				6
			25	corn				10	100	15
			6	barley						6*
			7	speltz				7	214	
Dennert, S.	11745	20	45	wheat				10	200	35
		21	65	wheat	65	650				
		22	60	oats	60	3000				
Pfutzenreuter, G.	13243	16 to 19	50	oats	37	1436		13	525	530
			40	corn	32			8	60**	25
Wells, Harold	11166	23	Summer fallow							783
										Total

Summary of Crops Grown:

Crops

Acreage

Refuge Share  
Bu. HarvestedAcres left  
Standing


1779  
1065  
2844

\*Government share mowed or swathed and left in field. \*\* Shelled corn - all other measured on ear.

COLLECTIONS AND RECEIPTS OF PLANTING STOCK  
(Seeds, rootstocks, trees, shrubs)Refuge Sand Lake Year 1945

Species	Collections				Receipts		Total Amounts on Hand	Amount Surplus
	Amount	Date or Period or Collection	Method	Unit Cost	Amount	Source		
			NONE					



Refuge Sand Lake Year 1945

Permittee	Permit No.	Unit or Location	Actual Acreage Utilized	Animal Use Months	Tons of Hay Harvested	Period of Use From - To	Rate	Total Income	Remarks
<u>GRAZING</u>									
Eichler, H.	13314	Sec. 21	40	35		7/16 to 11/15	.50	17.50	
Crawford	12336	3	175	30		8/1 to 10/31	.50	15.00	
Scott, P.	12337	4	200	30		7/16 to 11/30	.50	15.00	
Kimball, M.	13263	1	320	156		5/16 to 10/30	.40	62.40	
				149½		" " "	.30	44.85	
Tollefson, B.	13472	2 & 2a	260	50		6/16 to 8/15	.50	25.00	
<u>HAYING</u>									
Herseth, R.	12333	2	80		19.5	7/16 to 2/28/46	1.00	19.50	
					9.6	"	.50	4.60	
Tunby Bros.	12329	5	160		27.8	"	1.00	27.80	
Herseth, A.	13217	6	225		92.0	"	1.00	92.00	
Scott, A.	13215	10	200		64.9	"	1.00	64.90	
Peters, E.	12332	16	200		63.7	"	1.00	63.70	
Bruns, W.	12331	15	370		56.7	"	1.00	56.70	
Koch, R.	13313	12	130		86.1	"	1.00	86.10	
Kimball, M.	12335	7	40		NO HAY CUT OR HARVESTED				
Dinger, G.	12338	18	70		13.2	"	.75	9.90	
Jones, R.	12339	19	80		No hay cut or harvested				

Totals:

Acreage grazed 995Animal use months 450½Total income Grazing 179.75Acreage cut for hay 1555Tons of hay cut 433.5Total income Haying 425.20

Refuge Sand Lake Yea. 1945

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B.F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
				<u>NONE</u>				

Total acreage cut over \_\_\_\_\_ Total income \_\_\_\_\_

No. of units removed B. F. \_\_\_\_\_ Method of slash disposal \_\_\_\_\_

Cords \_\_\_\_\_

Ties \_\_\_\_\_

\_\_\_\_\_