

SAND LAKE NATIONAL WILDLIFE REFUGE  
Columbia, South Dakota

NARRATIVE REPORT

January 1, 1946 to April 30, 1946

REFUGE PERSONNEL

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## I. GENERAL

### A. Weather Conditions

After an extremely cold December the month of January moderated somewhat but the weather was exceedingly variable. Wind changes from south to north and back again were almost daily and it was seldom that the wind stayed in the same quarter for more than two days at a time.

There was little snow until February 5 when a severe blizzard occurred, blocking all side roads for the remainder of the winter. Many pheasants were killed by this storm but the loss on the refuge was not believed to be more than 5 or 10%.

Ducks trying to keep an open hole in the display pond were covered with slush which froze into balls on their feet and rendered many unable to fly.

The month of March was quite mild and April was about normal.

	Snowfall		Precipitation		Max Temp.		Min Temp.	
	45	46	45	46	45	46	45	46
January	4.4	.8	.54	.05	44	41	-9	-21
February	8.1	12.3	.97	1.13	42	50	-31	-21
March	2.0	1.2	1.59	1.56	78	87	-8	6
April	--	5.0	2.27	2.01	85	84	17	25
TOTAL	16.5	19.3	5.37	4.75	85	87	-31	-21

### B. Water Conditions

There was very little run-off in this area and less than normal run-off from North Dakota. Mud Lake did not fill up until about March 27 and by April 28 the water level was back almost to spillway elevation. The Mud Lake level was never over .4 feet above spillway elevation except when strong north winds would push more water over the dam.

Sand Lake did not fill up until about April 10 and has still not spilled much water due to the earth fill up against the spillway which is about 10 inches higher than the original spillway elevation due to the heaving of the spillway over most of the middle section.

Strong winds the latter part of April have done some damage to the Weismantel grade and also to the road up to Secondary Headquarters.

Not so much complaint has come from farmers on the east side

this spring although there still is plenty of agitation for lower water levels and petition has been signed and forwarded by Elmer Lund of the Soil Conservation Service to his Headquarters at Huron, South Dakota.

## II. WILDLIFE

### A. Migratory Birds

#### 1. Populations and Behavior.

Only about 2,000 mallards and 30 Canada geese wintered over on the refuge this year. Cold weather in December froze up all of their open holes except the one in the display pond immediately below the artesian well in the duck hospital. Two other small wells were used to a lesser extent by the ducks. One was up north of the Secondary about two miles and the other over by the silo two miles east of Headquarters. It is believed that a large percentage of these mallards were affected by lead poisoning. This belief is based on the prevalence of green colored feces on the ice and the fact that at least one or two ducks died every day throughout the winter from this disease.

The first flock of spring migrants was a flock of 56 pintails seen on March 2 but no more were observed until March 14 when a very heavy flight took place all day long. The day was cloudy and the ducks could be seen flying northward almost continuously all day. Whereas there were very, very few pintails in the area on March 13 by the night of March 14 the country side was teeming with them.

Due to the lack of surface water in grain fields and low spots this spring more ducks used the refuge than usual while on upland areas adjacent to the refuge it appeared to observers that there were less ducks than usual.

The snow and blue goose flight was again very heavy and whereas last year only 50,000 or so used the refuge this year there were at least 200,000 geese on the refuge during the peak of their migration. On the morning of March 27 we estimated 100,000 geese flew into the south end of the refuge after feeding in the grain fields to the west. These were all south of the Houston Grade and came in flocks of from several hundred up to one large flock a mile wide which contained 15,000 to 20,000 birds.

It is believed that there was an over-all gain in blue and snow geese over last spring over the County as a whole. Canada Hutchins and white-fronted geese are very much in the minority during the spring migration and it is too bad that the snows and the blues don't stop this way in the fall to help absorb some of the hunting pressure concentrated on the other species.

Most of the ducks appear to occur in about the same comparative abundance as last year with noticeable gains in both the lesser scaup and the shoveler.



S Shorebirds are a little early this year with fair numbers of Avocet, Willet, Godwit, Yellow-legs, and least Sandpipers already present.

2. Food and Cover

The fact that there are still several thousand snow and blue geese in the refuge indicate that there was plenty of spring food for all waterfowl that would feed in the fields. The much greater concentration of ducks in the refuge this spring would indicate that last years aquatic seed crop was better than usual or the ducks would not have lingered long.

3. Botulism - none noted

4. Lead Poisoning - discussed under II-A-1, paragraph 1.

B. Upland Game Birds

1. Population and Behavior

In spite of poor pheasant hunting last fall and the evident lack of birds on areas adjacent to the refuge there seemed to be about as many pheasants in the the refuge during the winter of 1945-46 as there were the previous winter. The blizzard of February 5 killed 5 to 10% but there appeared to be a good supply of pheasants left to populate the surrounding area if a good breeding season is encountered. The birds at present are scattered considerably so that many of the birds which wintered in the refuge are now in the surrounding farmland and our spring population is probably only 1/3 of that during the winter.

2. Food and Cover

Share crop left standing last fall and also the permittees share which was too soft to pick last fall provided plenty of food for wintering pheasants. Fields inspected this spring showed almost 100% utilization by pheasants, ducks and deer, and what corn was left consisted of only a few kernels up near the butt of the ear where the husks were too tight and thick to allow the birds to get at the kernels.

3. Disease - none noted

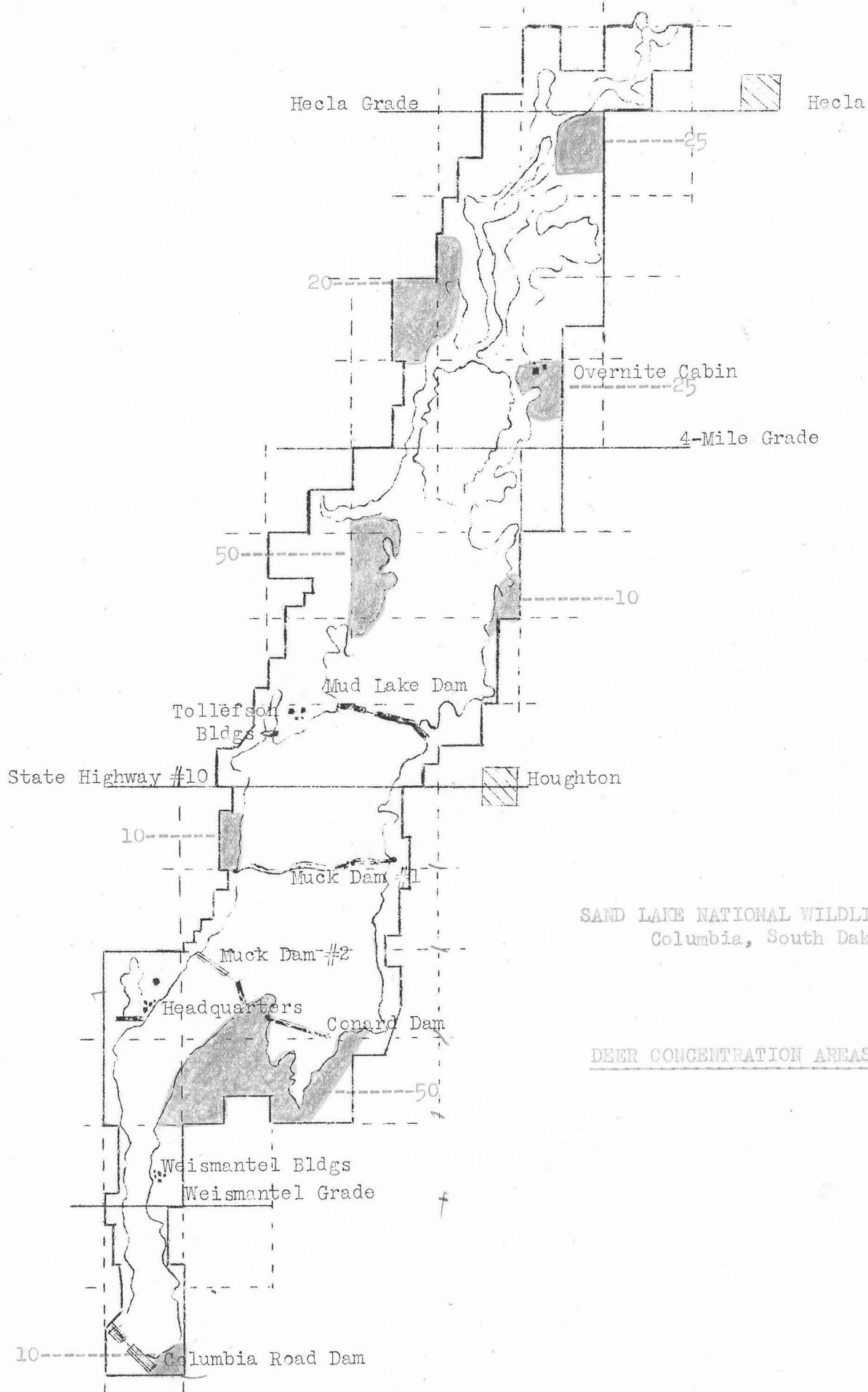
C. Big Game

1. Population and Behavior

The population of deer as estimated in the last report as of December 31, 1945 was 200. Winter observations tend to increase this estimate of anything. One herd of 44 were counted within a half section and another time 39 were seen together in a plowed field in the same vicinity. Winter concentrations and approximate numbers are indicated in the accompanying map.

2. Food and Cover

All deer observed were in excellent condition and even during the late spring and early winter they appeared fat and sleek. Evidently the diet of corn is a good one for deer.



### 3. Disease.

No disease was noted but during controlled burning operations this spring 5 deer carcasses were found. All of these had died last fall and all but one were nearly eaten up by foxes, etc. so that examination was impossible. The fifth one a big buck had evidently been covered with snow and when found on April 26 was well rotten and alive with maggots. Its teeth were in good shape and couldn't have been over 5 or 6 years old so it didn't die of old age.

Due to the fact that four of these deer were found within a few yards of the boundary fence we are quite sure that all died as the result of shotgun wounds. The fact that all were found close to the fence, and all had died last fall is too much coincidence to attribute their death to anything but shotguns and fence-line goose hunters. Needless to say this type of killing is the most disgusting but also the hardest to apprehend. When a hunter shoots at a deer through the fence and then just leaves it for the fox and coyotes to eat he is indulging in the lowest form of game outlawry but also is quite safe in doing so as long as he is sure no one is near him.

### D. Fur Animals, Predators, Rodents, and other Mammals.

Estimates of fur animals, etc. are based on another winters experience and as numerous trips were made over the ice and up the river as far as the Hecla Grade we feel that the estimates are fairly accurate. The Red Fox population has been reduced considerable on the refuge especially south of the Houghton Grade where we believe we took off most of last summers' reproduction plus a few of the old ones. North of Mud Lake dam there are still plenty of fox and a few coyote but we will concentrate on them next fall and winter.

During controlled burning operations several skunk and coon were shot but of course it was too late in the spring to salvage the hides.

Cottontails are still too abundant on the area as a whole but have been thinned out considerably around shelterbelts and shrubbery in the vicinity of headquarters and secondary headquarters.

Altho badgers do a good service in the control of pocket badgers they are doing considerable damage to certain patrol roads. Summer trapping may have to be done if the damage to roads continues. Their fur is of such little value that trappers are not interested in taking them during the regular season.

### E Predaceous Birds

Snowy owls invaded the refuge last November but by spring had thinned out considerably. They did take a few pheasants especially after the bad blizzard of February 5 drifted full many of the ragweed cover patches.

A few great horned owls are present and are desirable for cotton-tail control.

F. Fish

Another exceedingly heavy winter kill of fish occurred during the past winter. A large majority was again carp, but considerable numbers of bullheads and black bass were also found with a few perch and crappie and suckers also observed.

Lower water levels and thick ice were responsible for the heavy winter kill.

III REFUGE DEVELOPMENT & MAINTENANCE

A. Physical Development

Jobs done during the period are listed as follows:

1. Hauling gravel for filling holes and ruts in patrol roads, entrance roads to Headquarters and secondary sites and dike roads on Mud Lake and Columbia dams.
2. Painted northwest bedroom of Headquarters residence.
3. Built skid out of high line poles, moved Stehley Cabin from foundation on to skid and hauled across Mud Lake and flats to west side of river.
4. Burned off approximately 3500 acres of land. Part of this in the Sand Lake Controlled Burning Plan and the rest on new agricultural and hay units.
5. Drafting up plot plans for the location of the Clerk's Quarters and new house at Headquarters.
6. Blading patrol roads north of Houghton Grade.
7. Placed culvert in low spot on patrol road north of four-mile Grade.
8. A total of 95 man hours spent on maintenance of equipment by Refuge Mechanic.
9. Two new large Martin houses constructed, mounted on poles and set up.

Considerable time was spent by all personnel on the controlled burning operations. Reasons for burning were four-fold.

1. To eliminate weeds and accumulation of vegetative material on new areas set up for haying and cultivation in 1946. This was necessary in order to facilitate plowing and mowing.

2. To eliminate weeds from nesting areas where the "dead and down" material was so dense as to make nesting almost impossible especially by waterfowl.
3. To provide fire protection around buildings.
4. To eliminate weeds and vegetative accumulation along road shoulders.

In many cases much time had to be spent back-firing, plowing fire-lines, etc. due to the presence of shelterbelts in the burning units.

We burned over a long period of time from the early spring when there was still snow in the shelterbelts and frost in the ground up until the end of April after most of the weed seeds had germinated. In another year we should be able to determine whether early or late burning is best for weed control and what effect each has on grass roots. It is felt that early burning does not injure grass roots whatever but neither does it do much to control the coming seasons growth of weeds. Late burning after the weeds are germinated and above ground kills off much of the seasons growth but may also injure the grass.

- B. Plantings - none
- C. Collections - none
- D. Receipts of Seed - none

#### IV. ECONOMIC USE OF REFUGE

- A. Grazing - none
- B. Haying - none
- C. Fur Harvest

##### 1. Trapping - General

The winter trapping season of 1945-46 was one of the worst from the standpoint of weather conditions. The season opened on December 1st and was less than a week old when extremely cold weather set-in and below zero temperatures prevailed during much of December so that very little trapping was done until late in the month. Then during January and the first part of February the weather was extremely changeable. One day it would be 15 to 25 above zero and the next 10 to 20 below. It is doubtful if the wind stayed in one direction more than two days at a time during the entire six weeks.

As a result trappers who did not take advantage of the short periods of good weather during the later part of December and the first week or so of January were unable to trap their units thoroughly.

The Wright Brothers, Pence and Lippe were the only trappers to really do a good job of trapping.

## 2. Predator Trapping

Considerable difficulty was encountered in obtaining predator trappers but finally after getting red fox put on a trapper-take-all basis Arnold Yeske was signed up for the south unit and Bob Pence agreed to take the north unit again.

However Pence did very little trapping and only caught a few red fox. Arnold Yeske with his brother Art were on the job consistently and turned in a good catch of fox and skunk. A record of the predator catch follows:

	North unit	South Unit	Total
Coyote	2	0	2
Red Fox	7	37	44
Skunk	0	28	28
Raccoon	0	5	5

In addition to the above catch we know of at least 16 red fox and 16 skunk which were trapped with one mile of the refuge boundary. Also fox hunts by farmers yielded between 20 and 30 fox within 3 miles of the refuge boundary and which no doubt included a good percentage of fox which use the refuge cover.

The lack of interest in trapping skunk and raccoon this year was due mainly to a poor market both skunk and raccoon selling for about \$2.00.

Red fox pelts averaged between \$5.00 and \$7.00 unless they were badly rubbed when the value might drop to \$1.00. Coyote pelts were only worth \$.00 or \$3.00. A \$7.50 bounty on fox and \$10.00 on coyote plus \$1.00 from the County for coyote made trapping these animals quite profitable.

Average prices received for predators trapped on the refuge are as follows:

Trapper	Species	Total Sold	Value	Ave. Profit	Highest	Sold to
Yeske	Fox	37	\$199.80	\$5.40	\$12.00	Hill Bros.
"	Skunk	28	70.00	2.50	2.50	Pence
"	Raccoon	5	17.50	3.50	3.50	Pence
Pence	Fox	7	47.25	6.75	--	Oschman
	Coyote	2	6.00	3.00	--	Oschman

## 3. Muskrat Trapping - December 1, 1945 to February 15, 1946

Twelve units were originally set up for trapping in 1945-46. However by freeze-up most of the water area on the northern 6 units had dried up. Units 1 and 2 were combined and also Units 3 and 4. Even so there were very few houses on the combined units.

Units 1 and 2 was assigned to a new trapper, Mr. Spencer Bradner of Hecla. Mr. Bradner was sick with the flue and other complications during most of December and January and due to the



very few houses on this unit we did not assign the unit to a new permittee. Units 3 and 4 were assigned to Mr. John Forsting but here again muskrats were so scarce that Mr. Forsting agreed to abandon the unit until another season.

Unit 5 was assigned to Mr. Mart Reed who also relinquished the unit this year. He could have taken a few rats from shallow areas early in December but had rheumatism so bad that he couldn't start at once and the shallow houses froze up.

Unit 7 was to be trapped by Frank Hinderks who has always been a good trapper. His small catch was due also to ill health which kept him in the hospital for a time and unable to stand the cold weather for most of the season. This unit, one of the better units was finally turned over to Lorenz Thelen to be trapped in conjunction with Unit 6 which was very poor this year. Thelen did not work hard enough and does not seem to be able to handle a heavily populated unit.

Unit 8 had only 40 houses this year but many more rats could have been trapped had Mr. Hirleman tried harder. On the basis of this year's trapping Hirleman should be deprived future permits but because of his all-around good work in both trapping and preparing hides in former years we are inclined to give him another chance.

Wilke was too busy with farmwork in December and when he finally started he had only a few days of good weather, thus the low catch.

The Wright Brothers, Pence and Lippe all trapped their units very satisfactorily and really put up with some miserable weather in order to do the job right.

All trappers should have been willing to put up with a lot with rats as high as they are. The last batch of pelts sold went for ceiling price of \$2.30 each.

Quotas set in our management plan dated September 21 were too high. At that time there was still water in many bays and sloughs which later dried up and as houses were just beginning to show up we had no accurate method of determining populations. The following table shows population data, recommended catch and actual catch for the season of 1945-46.

Our quotas set in September were based on house counts during the previous winter minus actual catch and allowing for natural reproduction.

Reduction in water levels and the resultant loss of habitat and possible other factors combined to again make our September estimate too high.

MUSKRAT TRAPPING DATA

<u>UNIT NO.</u>	<u>RECOMMENDED CATCH</u>	<u>ACTUAL NO. HOUSES</u>	<u>TOTAL TRAPPED</u>	<u>RATS TRAPPED PER HOUSE</u>
1	250	20	0	--
2	250	15	0	--
3	250	15	0	--
4	250	20	0	--
5	300	30	0	--
6	300	35	32	0.9
7	500	130	119	0.9
8	500	40	40	1.0
9	500	125	104	0.8
10	500	200	504	2.5
11	500	275*	391	1.4
12	500	200*	377	1.9
TOTALS	5600	1105	1567	1.4

\* Include about 35% push-ups.



We believe that we could have taken another 1000 muskrats from Units 7, 8 and 9 without overtrapping them but between the weather, sickness and indisposition of the trappers this removal was not accomplished.

Due to the general reduction of muskrats over the refuge as a whole we do not recommend a special spring season but would rather leave the rats present as breeding stock for another year.

We certainly did not over-trap the area this year and by the time another season rolls around we will be able to better evaluate the results of heavy versus light trapping.

Units 10, 11, and 12 were all trapped quite hard and about the way all the units were trapped in 1944-45. With much lighter trapping on Units 7, 8, and 9 this season there should be a noticeable difference in population next fall, unless factors other than trapping regulate the rat population.

Another year we believe we will include a statement on all trapping permits making it mandatory that the trapper begin trapping within 10 days of the day the season opens or relinquish his permit to someone else. In case of mild weather throughout December this ruling might seem unnecessary but if another December like that of 1945 occurs it would certainly get the trappers out on the job and at least get a good share of the rats trapped before cold weather. This is also essential in order that houses in shallow water be trapped before they freeze up.

We notified the indifferent trappers several times this past winter about trapping their units and were given to understand that they would begin each time. Another year we will have a definite understanding in the permittees contract. Letters have been sent to all permittees with whom we were dissatisfied, advising that another year we would not tolerate any procrastination whatever and that trapping will have to be started on the shallow areas, not later than one week or 10 days after the season opens.

MUSKRAT SALES DATA

TRAPPER	TOTAL SOLD	VALUE RECVD	AVERAGE PRICE PER FELT	HIGHEST PRICE	SOLD TO
R. Wright	196	\$450.80	\$2.30	\$2.30	S. Roe, Watertown, S. D.
H. Wright	188	423.00	2.25	2.25	R. Pence, Frederick, S. D.
R. Pence	126	289.80	2.30	2.30	H. Green, Huron, S. D.
A. Lippo	126	289.80	2.30	2.30	H. Green, Huron, S. D.
G. Wilke	52	119.60	2.30	2.30	S. Roe, Watertown, S. D.
L. Thelen	43	92.45	2.15	2.30	R. Pence, Frederick, S. D.
F. Hinderks	33	75.90	2.30	2.30	S. Falix, Columbia, S. D.
F. Hirleman	20	32.00	1.60	--	Western Hide, Aberdeen, S. D.

V. FIELD INVESTIGATION

(none)

VI. PUBLIC RELATIONS

A. Recreational Uses - none

<u>B. Refuge Visitors</u>	<u>Purpose</u>	<u>Days</u>
Johnson, O. H.	Waterfowl abundance	1
Gillett, F. C.	Inspection	1½
Elkins, W. A.	River Basin Study	2
Eustis, A.	River Basin Study	2
Kimball, J.	Pheasant census	1
Childers, L.	Game management	
Jensen, E.	Game management	
Richardson, L.	State warden	

C. Refuge Participation

One talk given by Refuge Manager at Hecla High School at banquet for basketball team given by Hecla Civic Association.

D. Hunting - none

E. Fishing - none

F. Violations - none

VII. Easement Refuges

1. Maple River - Not visited.

2. Dakota Lake

On January 22 the Dakota Lake Dam was inspected and it was found that all logs had been removed from the control structure. As we had intended to take them out ourselves before the spring run-off we did not bother to replace them as it would have meant an extra trip back to headquarters. All logs had been thrown in the river or hauled away.

During the spring run-off water levels never got above 8 or 10 inches above spillway elevation but still the farmers complain and want a new spillway installed a foot lower than the present one.

The road to the dam did not wash out this spring although some damage was done to it by a strong NW wind during the high water period. (On May 3 with an east wind only one inch of water was going over the spillway.)

There is a new man living on the Art Buro farm adjacent to the dam. His name is Maki and according to reports and personal observations is a big improvement over the man who previously rented this farm.

3. Lake Tewaukon

Numerous trips were made to this refuge during the winter and plans were all set and money appropriated to get rock hauled for the new emergency spillway. However the day the work was to begin the blizzard of February 5 blocked all roads and made hauling impossible.


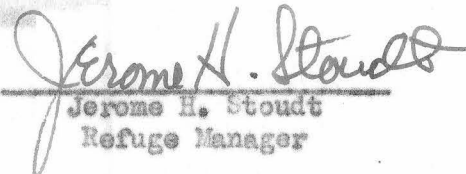
Now the job will have to be postponed until late summer when roads are dry and water levels low enough to allow us to work on the spillway.

4. Lake Elsie - not visited

5. Storm Lake - not visited

6. Clouds Lake

Not visited but rock will be hauled in road wash out at same time as the Lake Tewaukon job.

  
  
Jerome H. Stoudt  
Refuge Manager

April 6, 1946

SAND LAKE NATIONAL WILDLIFE REFUGE  
Columbia, South Dakota

ANNUAL REPORT  
1945 -- 1946

I. GENERAL

Water levels were very high during the spring of 1945 and water backed up over the Columbia dam from the south to cause a two foot flow over the spillway. In this way Sand Lake Filled up from the south before the James River broke up.

However by mid-summer levels were down below normal and before preeze-up had fallen to 18 inches below spillway elevation. Large mud flats were exposed and much muskrat habitat was dried up especially in Mud Lake.

Lower water levels did increase the production of duck food and many acres of sago and smartweed were present which were barren water areas in 1944.

II. WILDLIFE

The breeding season of 1945 was again very wet and cool and early hatches of both ducks and pheasants were very small. When the hunting season opened several broods of ducks were observed which were still unable to fly and early bags of pheasants contained many very small birds. The late hatch of ducks was quite successful but pheasants seemed to have suffered more.

Franklins' Gulls appeared less numerous than in 1944 but night herons, pelicans and cormorants occurred in about the same abundance as in 1944.

Coots were conspicuous by their small numbers. Shore birds were many times more abundant than in 1944 and this increase was without a doubt due to the large mud flats exposed by low water levels. Dowitchers were abundant throughout the summer and avocets, godwits, willet were very common.

The fall migration was again below that of 1944 with a surprising reduction in mallards. This may have been due to a lack of "picked cornfields" as the corn was too soft and wet to pick last fall. Due to the fact that mallards make up 80 or 90% of our fall migration in normal years the reduction was quite noticeable. However geese were just as abundant as in 1944 and maybe showed a slight increase. Hunters showed a big increase however and many more geese were killed in 1945. It is believed that about 3,000 or more geese were killed adjacent to the refuge. Hutchins goose again made up the biggest share of the hunters bag with white fronts and Canada goose next. Very few snow or blue geese were present and only a very few were shot.

Pheasant hunting was poor most of the season until after the waterfowl season was over. Then pheasant hunters were far and few between and the birds started to come out of the refuge in numbers. Most of the pheasant hunters had to move west from 30 to 100 miles to get good shooting.

In spite of the bad blizzard of February 5 there appear to be a good brood stock of pheasants left to go into the nesting season.

Deer are still on the increase and although many no doubt are moving out in the surrounding country side we had an encrease of about 30% bringing our total to around 200 deer on the refuge. One concentration of 44 deer was observed during the past winter.

Muskrats were again down in population and trapping may have to be greatly curtailed in 1946-47 unless a heavy crop is produced this summer.

The spring migration of 1946 showed an increase in both ducks and geese for the refuge area. However we believe this was due to the fact that we had a very dry spring and waterfowl which sat around in flooded grain fields and wet meadows last spring had to use the refuge water this year.

Our goose population was almost 4 times as great in 1946 with about 200,000 blue and snow geese using the refuge as compared to 75,000 in 1945.

Pintails, shovelers and bluebills showed a decided gain over last spring but this was not true over the County as a whole altho shoveler do appear to be more abundant than in 1945.

### III. REFUGE DEVELOPMENT

Major jobs completed during the year are as follows:

1. Completed exterior painting of residence at Site No. 3.
2. Remodeled large building acquired from NYA into equipment storage shed and shop.
3. In cooperation with Brown County Highway Department raised and rebuilt the Weismantel Grade which was washed out during the high water of 1945. The Service placed approximately 2500 cubic yards of dirt in fill using RD-7 and Model M. Carryall and 40 bulldozer.
4. Completed repairs to boathouse started last fall. Broke up concrete apron, poured new one and constructed new set of doors.

5. Participated in duck feeding program.
6. Hauled and placed approximately 4100 cubic yards of dirt on fill on upstream side of Columbia dam. Broke down and repaired rubble masonry on both wing wall.
7. Hauled and placed 6 yards of one man rock, 12 yards over-sized rock and 36 yards of pit run gravel on emergency spillway at Mud Lake Dike. Also repaired both wing walls at Mud Lake dam.
8. Approximately 702 man hours were spent in patrolling the refuge during the hunting season of 1945.
9. All wooden refuge entrance and highway signs were sanded, refinished and given a coat of rubbed linseed oil.
10. Built skid out of high line pñles, moved Stehley Cabin from foundation on to skid and hauled across Mud Lake and flats to west side of river.
11. Burned off approximately 3500 acres of land. Part of this in the Sand Lake Controlled Burning Plan and the rest on new agricultural and hay units.

#### IV. ECONOMIC USE

Receipts for refuge products and permits:

Haying	425.00
Grazing	180.00
Share-trapping*	1780.00
	<u>2385.00</u>

\*Estimate based on prices received by trappers.

About 2300 acres were share cropped during 1945 with an estimated yield of 45,000 bushels of small grain and corn. The refuge share amounted to 2318 bushels put in elevator and the remainder an estimated 12,000 bushel was left in the field for wildlife. All of this latter was used by wildlife during the fall and winter plus an additional several hundred acres of corn too wet to pick last fall, which was left by the permittees. By spring the pheasants, deer and ducks had taken 90% of the kernels off of the ears of standing corn.

#### V. PUBLIC RELATIONS

The area was not used so much in 1945 for fishing as in 1944 due to the fact that the fishing was very poor. This no doubt was due to the heavy winter kill during the previous winter.



As stated previously the hunting pressure was terrific during the goose flight. 93 hunters were checked along two miles of fence on one morning. The geese hardly had a chance to feed properly on the fields outside of the refuge and after all small grain in the refuge was cleaned up the geese departed with no apparent bad weather to drive them out.

No actual violations of the refuge were noted but several hunters had to be warned about shooting along the Houghton Grade and also about entering the refuge for crippled birds without prior approval from one of the refuge personnel.

Assistant Director Day, and Refuge Chief, Salyer were on the refuge during the hunting season and had a chance to see the goose concentration and a small part of the hunting pressure altho neither were here on a week-end when hunting was heaviest.

Plenty of complaints were raised about high water levels in the refuge and their effect on adjoining farmland to the eastward. Mr. Elmer Lund of the Soil Conservation Service at Hecla forwarded to his superior officer at Huron a petition signed by farmers to have the spillway elevation lowered.

However the farmers contention that high levels in Sand and Mud Lakes make their land too wet to farm through seepage is based on conjecture and they are not willing to admit that water tables are up all over due to a succession of wet years.

#### VI. EASEMENT REFUGES

The Dakota Lake Refuge on the James River in North Dakota caused us the most trouble in 1945. The town of Oakes wanted high water levels for sewage disposal and for fishing. The farmers wanted lower levels. Finally at a meeting in Oakes in July the farmers and townspeople got together and recommended a new spillway be built at a level 12 inches below the one there now.


Nothing has been done about this proposal to date and altho we had a dry fall and a fairly dry spring the farmers are still complaining altho there appears small claim for complaint this spring.

The area is not important for waterfowl altho it may help to hold water in a slough about onemile east which is a good waterfowl area.

Lake Tewaukon again produced a good crop of ducks. A small amount of work had to be done on the dam where high water from the spring of 1945 had washed around the spillway and undermined the wingwalls. A new emergency spillway is planned for this area with an elevation one foot above the present spillway.



Local sentiment around Lake Tewauken is for the Government to buy up this area, put a new dam downstream a few hundred yards and develop the area for wildlife. They are especially desirous of developing the lake for fishing and suggested the State might also help in this. The attitude of the local people in this area is very good and should be fostered at all costs. It is a good chance to put the Service program over in this section of North Dakota.

  
Jerome H. Stoudt  
Refuge Manager

May 6, 1946



Form NR-1

## MIGRATORY BIRDS

Refuge Sand Lake Months of January to April, 1946

1612

(1) Species  Common Name	(2) First Observed		(3) Became Common	(4) Peak Concentration		(5) Last Observed		(6) Young Produced			(7) Total
	Number	Date	Date	Number	Date	Number	Date	No. Broods Obsvd.	Avg. Size	Esti- mated Total	Number Using Refuge
Western Grebe	1	4/19	-	Haven't reach peak							-
Pied-billed Grebe	2	4/18	-	"	"						-
White Pelican	24	4/8	4/20	"	"						-
Double-cr. Cormorant	2	4/6	4/20	"	"						-
Great Blue Heron	1	4/6	4/15	"	"						-
Blk-crowned Night Heron	1	4/19	-	"	"						-
Whistling Swan	6	3/24	-	6	3/24						6
Canada Goose	40	3/2	3/11	2500	3/27						2500
Hutchin's Goose	20	3/14	3/22	5000	3/27						5000
White-fronted Goose	100	3/20	4/11	5000	3/27						5000
Lesser Snow Goose	100	3/14	3/22	80000	3/27						100,000
Blue Goose	500	3/14	3/22	120000	3/27						150,000
Mallard	50	3/14	3/14	30000	3/26						50,000
Black Duck	4	3/11	-	100	3/26						100
Gadwall	7	3/21	3/27	4,000	4/12						4,000
Baldpate	8	3/21	3/27	4,000	4/12						4,000
Pintail	56	3/2	3/14	100,000	3/26						150,000
Green-winged Teal	16	3/22	3/27	1,000	4/12						1,000
Blue-winged Teal	5	4/10	4/15	Haven't reach peak							-
Shoveler	2	3/23	4/1	5,000	4/12						5,000
Wood Duck	None observed yet this season										-
Redhead	7	3/18	3/27	1,000	4/12						1,000

REMARKS: (Pertinent information not specifically requested)

## 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 Lake Months of January to April, 1946

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
Ring-necked duck	6	3/22	3/27	50	4/12						50
Canvasback	40	3/26	3/27	500	4/12						500
Lesser Scaup	6	3/24	3/27	2,500	4/12						2,500
Golden eye	6	3/20	-	100	3/25						100
Buffle-head	1	3/29	-	50	4/12						50
Ruddy duck	None observed		yet								
Hooded Merganser	None observed		yet								
American Merganser	3	3/14	-	100							100
Turkey Vulture	1	4/19	-	1	-						1
Cooper's Hawk	1	4/15									rare
Red-tailed Hawk	3	4/18									few
Swainson's Hawk	2	4/18									few
Rough-legged Hawk	1	1/2	-	200	4/18						500
Bald Eagle	2	1/2	-	2/3	1/2						5
Marsh Hawk	2	2/25									common
Prairie Falcon	-	-									common
Duck Hawk	1	2/25									rare
Sparrow Hawk	1	3/15									few
Coot	3	4/6	4/15	2,000	4/25						2,000
Avocet	2	4/1	-	-	-						50
Killdeer	1	3/19									common
Willet	1	4/22									50

REMARKS: (Pertinent information not specifically requested)

Refuge Sand Lake Months of January to April, 1946

1612

(1) Species  Common Name	(2) First Observed		(3) Became Common	(4) Peak Concentration		(5) Last Observed		(6) Young Produced			(7) Total
	Number	Date	Date	Number	Date	Number	Date	No. Broods Obsvd.	Avg. Size	Esti- mated Total	Number Using Refuge
Lesser Yellow-legs	1	4/8									200
*Baird's Sandpiper	2	3/26									
Least Sandpiper	25	4/22									
Marbled Godwit	7	4/22									
Herring Gull	4	3/18									
Ring-billed Gull	1	3/12									
Franklin's Gull	1	4/2									
Common Tern	1	4/21									
Mourning Dove	1	4/8									
Great Horned Owl	1	1/2									
Burrowing Owl	1	4/6									
Short-eared Owl	2	4/1									
Snowy Owl	2	1/2									
Great Horned Owl	1	1/2									

REMARKS: (Pertinent information not specifically requested)

\* Exceptionally early but positive identification was made.



## 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.

(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	8,000	0.66				12,000	As of May 1, 1946
Prairie Chicken	1,000	20				50	" " " "
European Partridge	1,000	20				50	" " " "

## 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.



## SMALL MAMMALS

Refuge Sand Lake April 30, 1946

(1) Species	(2) Density		(3) Removals					(4) Disposition of Fur						(5)	
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control	For Re- stocking	For Research	Share Trapping			Total Refuge Furs Shipped	Refuge Income	Furs Donated	Furs Destroyed	Total  Popula-  tion
								Permit Number	Trappers' Share	Refuge Share					
Muskrat	7,000	2.3		1567				3468 3471 3474 3475 3470 3472 3469 3473 3476 3467 3464 3464 3461 3464	43 52 196 189 20 126 33 126 0 0 21 37 7 4	43 52 195 188 20 126 32 126 0 0 7 0 0 1				3,000	
Common Skunk	11,000	55		28	10										200
Red Fox	11,000	220		44	11*										50**
Raccoon	11,000	110		5	6										100
Weasel	11,000	110													100
Badger	5,000	100													50
Mink	11,000	550													20
Coyote	11,000	2750		2				3461	2	0					4
Cottontail	5,000	5			50										1000
Jackrabbit	8,000	160													50
Rusty Fox Squirrel	100	25 4													25

REMARKS: \* One female and ten pups from two dens. Allowed farmers to dig out dens which were very close to their chickens.

\*\* Adult fox only not including pups. To include pups add 100 to make a total of 150.

## INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i.e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

- (1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan. "List of North American Recent Mammals" by G. S. Miller, Jr., a very good reference, is now out of print, although a revision is scheduled for publication in the near future.)
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.) Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year. Also show any removals not falling under heading listed.
- (4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market and the total income to the refuge by species, including share-trapped furs and furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.
- (5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.
- REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

QUARTERLY GRAIN REPORTStation Sand Lake Refuge Period January 1 to April 30, 1946

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	Seeded	Fed	Total		Seed	Feed	Surplus
Corn	1000	0				0	1000			
Wheat	200	0			20	20	180			
Barley	265	0			15	15	250			
Rye										
Oats	1004	0			44	44	960			
Mixed *	288	0			18	18	270			
Shelled Corn	60	0			10	10	50			

## \* Oats and Wheat

1. Indicate shipping or collection points \_\_\_\_\_
2. Grain is stored at Granary at Site #2
3. Remarks Grain fed in duck hospital to crippled ducks and geese and after storm of February 5 to ducks and geese at Display pond.

Approved by:

Submitted by:

\_\_\_\_\_  
Regional Director\_\_\_\_\_  
Signature and Title