

SAND LAKE NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

MAY 1, 1953 to AUGUST 31, 1953

PERSONNEL

Herbert H. Dill - Refuge Manager in Charge

Dale E. Sutherland - Refuge Manager

Richard C. Pratt - Refuge Clerk

Elmer Podoll - Maintenance man (Equipment)

Albert W. Krege - Maintenance man (General)

## C O N T E N T S

### I GENERAL

Weather Conditions	1
Water Conditions	2

### II WILDLIFE

Population and Behavior	2
Geese	2
Ducks	3
Marsh and Shore Birds	5
Upland Game	7
Big Game Animals	7
Fur Bearers and other Animals	8

### III REFUGE DEVELOPMENT, MAINTENANCE

Physical Development	9
Plantings	9
Collections	10

### IV ECONOMIC USE OF REFUGE

Grazing	10
Haying	10
Other Uses	10

### V FIELD INVESTIGATIONS

Brood Counts	10
Experimental Fox Control	12
Alfalfa Nesting Study	12A

### VI PUBLIC RELATIONS

Recreational Uses	13
Refuge Participation	13

### VII OTHER ITEMS

Easement Refuges	14
Items of Interest	16
Photographs	17

## Sand Lake National Wildlife Refuge

May 1, 1953 to August 31, 1953

### 1. GENERAL

#### A. Weather Conditions:

A summary of weather data for the Sand Lake Refuge and vicinity as recorded at the official weather station maintained at Refuge Headquarters is given in Table No. 1.

TABLE NO. 1

Sand Lake Weather Data, May 1 - August 31, 1952 & 1953								
MONTH	SNOWFALL		PRECIPITATION		MAX TEMP		MIN TEMP	
	'52	'53	'52	'53	'52	'53	'52	'53
May	-	-	.82	3.18	90	86	28	25
June	-	-	2.76	7.93	95	95	39	38
July	-	-	1.11	.87	96	93	42	45
August	-	-	.72	2.03	104	95	40	47
TOTALS & EXTREMES	-	-	5.41	14.01	104	95	28	25

Rainfall for the period was greatly in excess of that received during the same period last year; 14.01 inches was received this year as compared to 5.41 inches in the same period last year.

Moderate rains in May, accompanied by cool temperatures gave the small grains a good early growth. It looked like a bumper crop would be harvested until rust hit. Most small grains in the area were affected and yields plummeted. Hardest hit was durham wheat with yields estimated at 40 bushels dropping to as little as 3 bushels! June temperatures were normal with 7.93 inches of rain falling. July and August temperatures were fine for the corn. With frequent showers and hot weather it has come along so that if we have two more weeks without a killing frost, one of the largest crops in several years will be harvested. All small grain in the area has been harvested at this writing except for a few fields of flax. Even tho the small grains were infested with rust the overall average was higher than last year when we had a drought!

#### B. Water Conditions:



As was anticipated this spring, a normal run-off was experienced, a rarity at Sand Lake. Then came the heavy June rains (7.93 inches during the month) filling the lake to capacity and flooding lowlands to the south of the refuge. On June 30 the peak was reached with a reading of 2 feet over the authorized level. Strong winds and rapid run-off gradually dropped the lake to the authorized level on August 31. The emergency spillway on the Weismantel Grade had 3 - 4 inches of water flowing over it. Minor erosion occurred around the bridge at Columbia Dam. The emergency spillway (100 feet) should be re-surfaced as it was channelled from six to ten inches by the flood waters going over it.

## II WILDLIFE

### A. Migratory Birds

#### 1. Population and Behavior

a. Swans. All whistling swans had migrated northward by the beginning of this period.

b. Geese. Approximately 8,000 remnants of the spring goose migration were present on May 1. Richardson's geese were here until May 12, when a small flock of 50 was seen for the last time. About 7,000 snow-blues were still here at the start of the period, but their numbers soon dwindled to flocks totaling a few hundred birds. They remained until mid-May.

Most of 200 common Canada geese present at the end of April were believed to be birds that breed in this area. At one time, on March 27, 21 pairs of big Canadas were seen on the refuge, and probably nested in the general vicinity.

The aerial breeding pair count made on May 21 revealed that at least 7 pairs of geese were on territory within the refuge boundary. Subsequently, five nests were located, all on islands out in the marsh. Two were found at the South end. One of these produced 4 young, and the other was flooded out. The other three nests were located on a single island of about one-half acre just south of the Houghton Grade. Two of these nests were successful, but the third had been disturbed, and the female was found incubating 2 eggs alongside the empty nest on May 19. These eggs were taken from her, and when the island was revisited on June 8 she was found incubating 5 eggs in the original nest. The female was visible from the Houghton grade, and could be seen from time to time until the end of June. This second nest attempt was believed to have been successful.

The first Canada goose brood, 4 young, was seen on May 19. A total of 6 broods have been observed averaging 3.5 young per brood.



During August counts were made that revealed 96 geese on the refuge. Of these, 24 were non-breeders. Assuming, then (for this is all we have to go by) that 3.5 is the true average brood size, the family size would be 5.5. Therefore, 12 broods or 42 geese were raised on the refuge or near by this past season, and apparently three pairs were unsuccessful. Two broods have been reported east of the refuge near Claremont.

This is fewer geese than in 1952, when 65 were produced. The goose population, then, has not increased for the past few years, and unless there has been a harvest of all of the surplus each year, we have been contributing geese to some other population.

None of the 29 common Canadas, 10 Richardson's geese, or 29 snow-blues kept in the display pool nested this year.

c. Ducks. At the beginning of the period the spring migration of ducks was, for the most part, completed, and there were 5,200 on the refuge. There still remained about 1,000 lesser scaup, but almost all of these had moved out by the end of the third week in May. There were some changes in later nesting species and there was a small movement of courting canvasbacks through the area on May 15. Shovellers that heretofore had all been seen in pairs, appeared in unpaired groups during mid-May.

Mallards and pintails were on territory and had begun nesting before May 1. The drakes of these two species were gathering in flocks of from 10 to 20 individuals by the middle of May. On May 22, when the aerial breeding pair count was made, waiting male blue-winged teal were seen. It appeared as if the nesting season was getting well underway. However, the first duck brood was not seen until June 19, and a preliminary check of some of the better brood areas near the end of June turned up only one other brood. Apparently the cool weather and heavy and frequent rains during May and much of June delayed nesting and in some instances caused the desertion of nests already established during May and June. These rains raised the water level almost 2 1/2 feet. Undoubtedly some nests on islands and others out in the marsh were flooded out. Partially moulting mallards were seen accompanying females, as pairs, during the last half of June and early July.

Brood counts conducted during July and August indicate that 4.63 broods were produced per mile of shoreline, and they averaged 6.8 young per brood. An estimate based on this data reveals that 2,360 ducks were produced on the refuge. Brood count data are found in Tables III, IV and V. The hatching peak occurred during the week of July 19 - 25. Further discussion of the brood season appears in Section V.

There was a notable increase in redhead and ruddy duck nesting this year.

TABLE NO. 2A

## WATERFOWL POPULATIONS - SAND LAKE REFUGE

AUGUST 26, 1953

Mallard	6800
Black	40
Gadwall	1400
Baldpate	250
Pintail	350
Bluewinged Teal	2900
Shoveller	710
Wood duck	3
Redhead	265
Canvasback	50
Ruddy	250
Coot	7300
TOTAL	20,300



More pairs of these two species were seen during the course of the summer, and a higher percentage occurred on the brood transects.

In mid-July, about 200 moulting canvasbacks were noted in the Mud Lake unit, and gadwalls and baldpates had moved into the refuge in large numbers. Early in August, mallards began to increase and on August 27 an aerial count found 13,000 ducks present. Table No. IIA shows duck populations at the end of the period.

It is of interest to note that 3 wood ducks were observed in the James River channel just south of the Hecla Grade on August 26. Three immature hooded mergansers were seen one mile north of Site # 3 on three different occasions during July.

Ducks have been feeding in small flocks of up to 100 birds on grainfields in the vicinity, and although the harvest was delayed, no serious damage was reported. The abundant growth of sage pondweed throughout the refuge has also provided many popular feeding areas.

TABLE No. II

RESIDENT WATERFOWL POPULATIONS - SAND LAKE REFUGE  
1953

	: MAY 1	: BREEDING POPULATION	: AUGUST 27
CANADA GOOSE	: 200	: 54	: 96
ALL DUCKS	: 5200	: 2000	: 13,000
COOTS	: 150	: 500	: 7,300

d. Coot. At the beginning of May, approximately 150 coots were on the area. By May 22, there were 500 present. These birds were considered the breeding population. Counts during June and early July revealed that there was about one young per adult. On this basis, then, about 500 coots were produced on the refuge. From late July and throughout August there was a large movement into the refuge and there were, at the end of the period, 7,300 coots present. They were commonly seen frequenting the rich sage beds.

e. Other water and marsh birds.

Pied-billed grebes were common, and adults with young were seen by the end of June.



Western Grebes appeared more numerous this year, although 100 pairs, the same number as last year were seen during May. On May 22, pairs were noted in their courtship dance. The first brood was seen on June 15. A sample count reveals that there was slightly over one young per adult during the first part of July. Near the end of July, the grebes disappeared, probably into the rushes to moult, and were reappearing at the end of the period.

White pelicans continued to move into the refuge during May, and by the end of the month there were about 400. In past years, they have nested on an island in the Mud Lake unit, but did not do so this year. A visit to the island on July 27 revealed no pelican nests. High water during the period of nest establishment covered all but the highest part of the island.

The same was true for double-crested cormorants, although a few cormorant nests were found. None of them contained any eggs. More than 50 cormorant eggs were found lying about in the mud on a loafing bar at the South End of the refuge.

During August there was an increase in pelicans. Approximately 1200 were present at the end of the period. Usually, though, there are fourtimes this many here at this time. There are five distinct loafing areas: one just south of the Hecla Grade in the James River channel; the nesting island; the east shore of Mud Lake; an island at the South End; the emergency spillway at the Columbia Dam.

Great-blue herons have been seen daily throughout the summer, and on August 27 there were about 60 present on the refuge. Black-crowned night herons were also common summer residents. No colonies of either species have been found on the refuge. Observations of American egrets have been made 6 times, beginning in mid July. The number of birds varying from one to four.

American bitterns have been seen frequently.

One colony of Forster's and black terns comprised of about 30 individuals was found in the phragmites marsh across from Site #2. Five nests were seen containing 2 eggs each. Common terns were also seen frequently.

Franklin's gulls were present in numbers equal to previous years, and are believed to have nested north of the Mud Lake Dyke. Ring-billed gulls were seen from time to time during May and June, and were seen more frequently later in the season.

Three sandhill cranes were reported seen 1/2 mile <sup>west</sup> east of the refuge by "Bud" Dinger, one of our permittees, on August 19.

f. Shorebirds, continued to migrate through the area during May.



Ruddy turnstones, solitary sandpipers, sanderlings, dowichers, and more peeps passed through in addition to the species listed in the January - April narrative report. There was a large movement of golden plovers on May 14. Fifty were counted on about 5 acres of refuge land that had burned during April. Franklin gulls were seen to wait close by a golden plover, and when the plover found something to eat, the gull would chase after the plover for a short distance and try to get the morsel. The plovers were present for about 2 days.

Wilson's phalarope, spotted sandpipers, killdeers, and western willets nested on the refuge. Two piping plovers with four young each were seen along the Houghton Grade.

Avocets and marbled godwits were seen during May and then again at the end of the period.

Lesser yellowlegs reappeared on July 7, greater yellowlegs on July 25, and dowichers were seen in mid-August on mud flats near the refuge.

2. Botulism. No botulism nor algae poisoning was noted this year. The water levels were much higher than they have been for a number of years, and there has been constant flow all summer long. A very close watch was kept for indications of these diseases.

3. Lead poisoning and other diseases. None noted.

4. Food and cover.

The small-grain harvest was completed at the end of the period. Barley and wheat totalling 226 acres were left in the field and will furnish about 4,100 bushels. Corn, which still needed at least 2 weeks to mature at the end of the period, should furnish an additional 11,440 bushels, for a grand total of 15,540 bushels. Based on an estimated 5 plus percent waste during corn picking operations, an additional 600 bushels of corn will be available for food.

Goose browse is abundant this year throughout the area as a result of volunteer small grain following the harvest.

It became evident early in July that there was a tremendous increase in the production of sago pondweed Potamogeton pectinatus and other submerged aquatics, apparently brought about by the low water levels in 1952. Coots and many dabblers were using this food source extensively, and it should prove to be attractive to divers that pass through the area.

Lower water levels have also stimulated the growth of roundstem



bullrush Scirpus spp? in different areas around the marsh, notably just south of the Weismantel Grade. To be sure, they are small growths, but have possibilities. There is an excellent stand of roundstem bullrush directly across from Site No. 2.

## B. Upland Game Birds

### 1. Population and Behavior

a. Ringnecked pheasant. Pheasant nesting this season was delayed somewhat by cool and wet weather during May and June. However, the rains did not appreciably affect brood survival, and the hatch turned out to be just as good as last year. The peak of hatching spanned a long period of time, as evidenced by many broods of all ages which appeared as harvest operations eliminated much cover. Alfalfa cutting was held up to some extent, and this may have allowed some nests to hatch that otherwise would have been destroyed.

The pheasant hunting season this year will be from October 17 to 31, with a limit of 3 cocks, and a possession limit of 12. Shooting hours will extend from noon until dark.

Hungarian partridge. Only one brood of "Huns" has been seen on the refuge this summer. However, the population is reported to be holding its own in this general area.

Pinnated grouse. One prairie chicken was seen on June 18 on the east side of the refuge near the Cy Spurr farm.

2. Food and Cover. Farmers in this area took advantage of the dry spring to plow up troublesome sloughs and potholes. However, the rains came during May and they had to be abandoned. There is the annual growth of weeds to provide some food and cover. Waste from small grains and from a good corn crop will provide considerable food. Heavy rainfall has helped produce an abundant growth of weeds and grass along roadsides and on other wasteland, and so cover and food conditions on the refuge are good.

## C. Big Game Animals.

### 1. Population and Behavior.

a. White-tailed deer. In February, 174 deer were counted by airplane on the refuge. Some were missed because of the lack of snow cover. Therefore, it was estimated that there was a breeding population of 225 deer this spring. Observations of does with fawns indicate that a high percentage bore twins. Out of 14 does seen with young, 9 were accompanied by twins. So, it seems highly unlikely that there are fewer than 350 deer on the refuge now. This is as high as



the population should be permitted to go - however, because the State Department wants to lure as many hunters as possible out to the Black Hills in order to reduce that herd (estimated at 150,000 animals) no season has been set for the East River Country. We can expect some damage to shelterbelts, and some deer damage complaints from farmers. Some damage to refuge corn has already been reported.

No reports of fawns being killed or injured during alfalfa harvest were received. Triplets were reported to have been seen near the Frank Wright farm east of Hecla. (Off refuge).

## 2. Food and Cover.

The deer feed largely on corn in this area, when available, as well as browse from shelterbelt trees. Last year 240 acres of corn were left standing, and much was left by waterfowl after the fall flight. The deer and pheasants ate all of it except about 250 bushels. This year there are 1440 bushels available now, but a high fall goose population will leave only shelterbelts for browse. There is also the possibility that more deer will move into the refuge to further aggravate the problem. At any rate, the extent of the fall goose flight and the severity of the winter will determine the amount of damage, and the possibility of mortality in the herd.

## 3. Diseases. None noted.

## D. Fur Bearers and other Animals.

Muskrat are exceedingly rare at Sand Lake. No one on the refuge staff has seen one since December of 1952. No doubt there are a few north of Mud Lake, and a census will be made in the future to find out what remains of the former population.

Mink, now the principal fur bearer from the economic standpoint, appear to be abundant. They have been seen from time to time along the different grades.

Raccoons and skunks are also abundant - more so than we like to have them.

Badgers are still a nuisance although a controlling factor in ground squirrel populations.

Red fox are seen quite often in the area.

Gray and fox squirrels inhabit many of the shelterbelts on the refuge.

There are at least three families of beavers present, one in the river channel north of the Hecla Grade, one at the Four-Mile Grade out in the marsh, and one at the South End.

E. Predaceous Birds.

Marsh hawks, Swainsons, red-tailed, and sparrow hawks have been the most abundant species during the summer months. Prairie falcons, rough-legged, Cooper's and sharp-shinned hawks have also been seen from time to time.

Great-horned owls and short eared owls have been present and have no doubt helped keep rodent populations within bounds. An owl believed to have been a barred owl was seen early in May near Silo Bay.

F. Fish.

Carp, bullheads, bigmouth buffalo, suckers and perch have provided plenty of food for cormorants and pelicans. Some northern pike are present. A northern estimated to weigh about four pounds was seen at the Columbia dam in May.

III Physical Development

1. The new addition (Tewaukon Cabin) on the house at quarters No. 4 was scraped and given a coat of paint and trim.
2. Two hundred ninety three yards of gravel were hauled and spread on roads at Headquarters and Sites No. 2 and 3.
3. Refuge trails and additional weed patches were mown during July and August.
4. All buildings with wood shingle roofs were stained a dark red as follows: Eight stall garage; Duck hospital & pen (frame); Aquatic storage cellar; Tewaukon boat house; Elevator, corn crib, barn, and two garages at Site #2; Barn and garage at Site #3.
5. Near Headquarters, 250 yards of the bank that had been seriously eroded was sloped with the dragline and rock rip-rap was placed two feet above the high water line. The slope was then fertilized, and seeded with alfalfa and brome grass.
6. Approximately 5,050 yards of dirt fill was placed over a 3/4 mile stretch for a dyke and patrol road near the Tollefson farm.
7. 2,000 yards of dirt fill was placed over a 1/4 mile of road to raise the patrol road near the Forseth Hunting Shack.
8. Minor repairs were made on Jeep pickup I-19062 and International I-19217.

B. Plantings.

1. Aquatic and marsh plantings. None



2. Trees and shrubs. Three thousand fifty Chinese elm, American elm, cottonwood, Russian olive, and honey suckle were planted to replace many of the trees and shrubs that died during the drouth in 1952. Very little mortality occurred this past summer because of excellent moisture conditions, and the trees should be well established now.

3. Upland and Herbaceous Plants. None

4. Cultivated Crops. A total of 2,555 acres of crops were raised on the refuge this year. Wheat yields were seriously reduced by black stem rust, but the other small grains yielded average or slightly above. The corn crop looks as if it will give excellent yields. Of the refuge share of 920 acres, approximately 127 acres of barley, 33 acres of oats, and 23 acres of wheat, were stored in the elevator. An additional 43 acres of corn will be delivered when it is harvested. Left in the field were 198 acres of barley, 28 acres of wheat and 467 acres of corn.

C. Collections

1. Seed and other Propagules. None

D. Receipt of Nursery Stock.

1. Three thousand fifty Chinese elm, American elm, cottonwood, Russian olive, and honey suckle were received during the period.

#### IV ECONOMIC USE OF REFUGE

A. Grazing.

Again this year we have three permits in effect covering 630 acres. Grazing is permitted on the refuge from July 15 - November 15 at the rate of one head per five acres at \$1.00 per head per month.

B. Haying.

Permits covering approximately 1,000 acres of hay land have been issued. A change of \$1.50 per ton is made for hay put up on the refuge.

C. Other uses.

Two permits were issued for placing 150 bee hives each on the refuge at the rate of \$.15 per hive. One permittee has his hives in the north end of the refuge, the other in the south end.

#### V FIELD INVESTIGATIONS

A. Brood Counts



Brood counts formed the basis for the refuge production estimate again this year. Data were collected in a manner similar to 1952. However, two brood series were made instead of three. Only two broods had appeared by the end of June, so no early count was made. The nesting season was characterized by an early flurry by mallards and pintails, and then a pause, so that only those very early successful hatches were missed, and is considered negligible.

A total of 4.63 broods were counted per mile of shoreline sampled. Brood sizes averaged 6.8. These figures when applied to 75 miles of duck - producing shoreline give a total production figure of 2,360 ducks, all species. This is a decrease of about 23 percent from 1952, but still close to the average number of ducks raised for past years. The decrease has resulted from a decrease in number of broods per mile. Another thing - there has been abundant water throughout the countryside all during June, July and August. Possibly fewer broods moved into Sand Lake. Tables III, IV and V summarize brood count data.

Five age classes were used, based on plumage variations recorded by Southwick\* and Blankenship, et al\*\*. By working back from the date the brood was seen and using the probable age of each brood, the approximate week of hatching was calculated. (Figure 1). Seventy broods, all species, were included.

TABLE III  
Series I July 6-16

SPECIES	I	CLASS	II	III	TOTAL BROODS
Mallard	3		2	3	8
Pintail	4		3	2	9
Gadwall	2		-	-	2
B.W. Teal	-		1	-	1
Shoveller	1		-	-	1
Unidentified	1		-	-	1
TOTALS	11		6	5	22

Miles of shoreline sampled = 12.6 - Broods per mile = 1.75

\* Southwick, Charles, 1953. A system of age classification for field studies of waterfowl broods. Jour. Wildl. Mgt. 17: 1-8.

\*\* Blankenship, L. H. C. D. Evans, M.H. Hammond, A. S. Hawkins, Wm. H. Marshall, 1953. Techniques for Brood Production Studies.

Series II August 10-20

SPECIES	CLASS			TOTAL BROODS
	I	II	III	
B.W. Teal	2	8	2	12
Mallard	4	3	4	11
Redhead	3	2	-	5
Gadwall	2	2	-	4
Pintail	2	1	-	3
Ruddy	2	1	-	3
Canvasback	-	2	-	2
Shoveller	1	-	-	1
Scaup	-	1	-	1
Unidentified:	1	3	-	4
TOTALS	17	23	6	46

Miles of shoreline sampled = 16.0 - Broods per mile = 2.88

TABLE NO. 4

## BROOD COUNT SUMMARY - SAND LAKE REFUGE-1953

I		II		III		ALL CLASSES	
SPECIES	NO.	AVE. SIZE	NO.	AVE SIZE	NO.	AVE SIZE	NO. AVE SIZE
Mallard	: 7	7.3	: 5	6.8	: 7	5.6	: 19 6.5
B.W.Teal	: 3	7.0	: 9	7.0	: 1	6.7	: 13 7.4
Pintail	: 6	8.0	: 3	7.2	: 3	5.0	: 12 7.0
Gadwall	: 3	8.7	: 3	7.3	: -	- -	: 6 8.0
• Redhead	: 3	4.0	: 2	7.0	: -	- -	: 5 5.2
Ruddy	: 2	8.0	: 1	6.0	: -	- -	: 3 7.3
Shoveller:	2	6.5	: -	- -	: -	- -	: 2 6.5
Canvasback	: -	- -	: -	- -	: 2	5.0	: 2 5.0
Scaup	: -	- -	: 1	2.0	: -	- -	: 1 2.0
Unidentified:	1	9.0	: 4	6.7	: -	- -	: 5 7.3
TOTALS	: 27		: 28		: 13		: 68 6.8

Broods per mile - Series I = 1.75

Broods per mile - Series II = 2.88

Total broods per mile 4.63



TABLE NO. 5  
SPECIES COMPOSITION OF BROODS - 1953

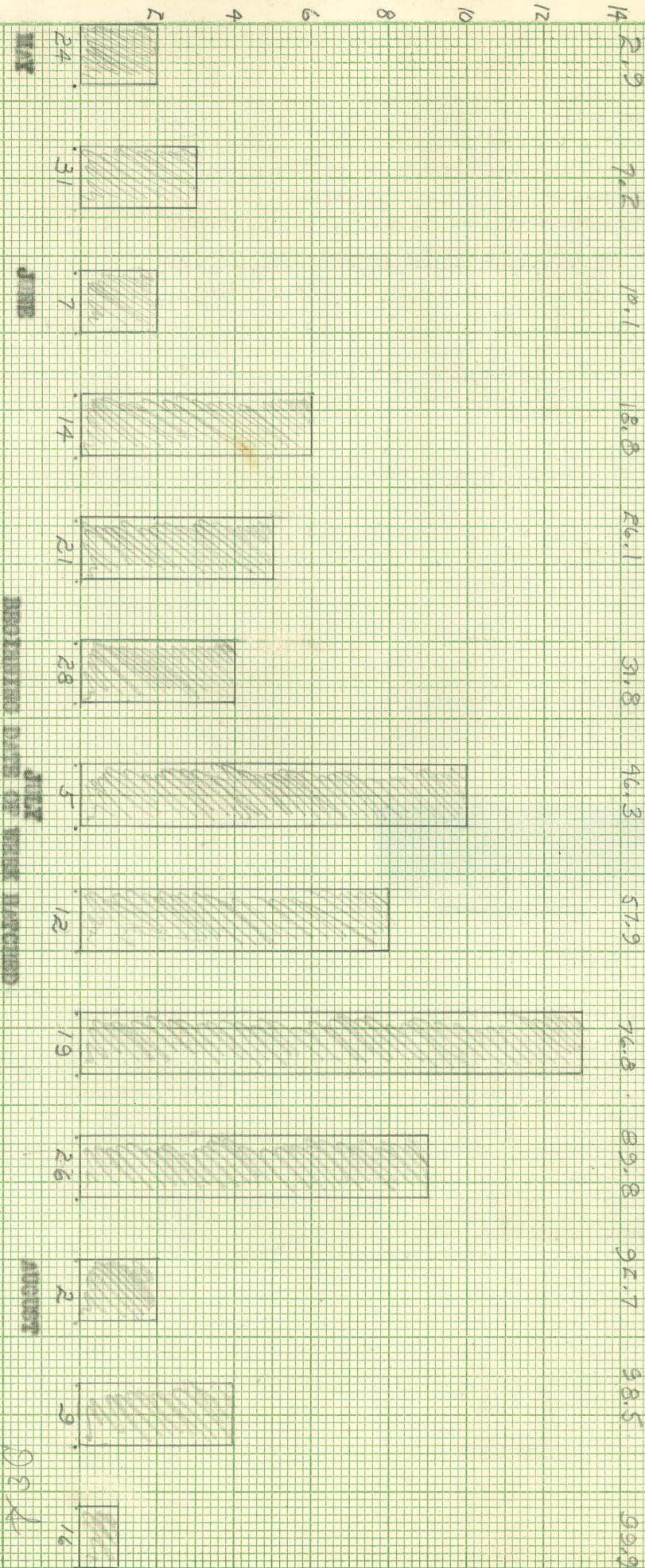
SPECIES	NO. OF BROODS	PERCENT
Mallard	19	27.8
B.W. Teal	13	19.1
Pintail	12	17.6
Gadwall	6	8.8
Redhead	5	7.5
Ruddy	3	4.4
Shoveller	2	7.9
Canvasback	2	2.9
Scaup	1	1.5
Unidentified	5	7.5
TOTALS	68	100.0



FIGURE 1

NUMBER OF BROODS HATCHED PER WEEK  
SAND LIPS REPTILES 1953

Percent of Hatch Completed



932



An aerial breeding pair count was made in 1952 and again in 1953. Data gathered this spring are discussed here. Only one count was made on May 21, because of budgetary limitations on use of the aircraft. It covered the part of the breeding cycle that included later nesting species. Mallards and pintails began nesting during the last half of April; so it was believed that by correcting the pair count figure from the numbers of these two species present on April 27 when a waterfowl census was made, a fairly accurate estimate of the breeding population would result. Because almost all lesser scaup appearing on the count moved out a few days later, they were eliminated.

The breeding population was then believed to be 2,000 ducks. This is only one-half of previous estimates, yet, does not necessarily mean a 50 percent decrease. Previous year's breeding populations were placed at about 4,000, but if this figure were compared with the estimated number of broods produced per mile of shoreline, it would mean that nest success was less than 20 percent. Of course, not all broods were seen, but there is still no reason to believe that nest success is so low; So, we believe that a corrected pair count provides a reasonably accurate breeding population.

The number of breeding pairs also shows a higher number of mallard and pintail pairs proportionately than appear in brood transects. The question is, then: How many of these mallards and pintails present during much of the period of nest establishment remain here? State Technicians have found that many pairs that appear on transects cannot be accounted for as broods. Many are believed to begin nesting in the State, and then abandon the nests and go elsewhere. Probably this happens on the refuge, as well.

At the same time more bluewinged teal appeared on brood transects than on the pair count. It has been found that the nest density at Sand Lake is very low, and the actual breeding population may be even lower than was estimated this year. Brood movement onto the refuge further distorts the production picture.

Aerial pair counts have given us valuable data about the beginning weeks of the nesting season, and further studies may help answer some of the production questions.

#### B. Experimental Fox Control - Pivalyn.

One dead fox was found on May 18 within 200 yards of the pivalyn station established on the refuge last January. The carcass had been lying there for at least one month, and was decomposed to such an extent that the cause of death could not be ascertained. It is believed, though, that it succumbed as a result of feeding on the pivalyn. A discussion of the experiment appeared in the 1953 January to April Narrative Report.

TABLE NO. 6

SPECIES	BREEDING PAIRS		BREEDING PAIRS, CORRECTED	
	PAIRS	UNPAIRED	PAIRS	UNPAIRED
Mallard	16	25	276	25
BW Teal	63	15	63	15
Pintail	8	16	218	16
Gadwall	27	5	27	5
Redhead	34	10	34	10
Ruddy	20	39	20	39
Shoveller	9	26	9	26
Baldpate	5	3	5	3
Canvasback	-	5	-	-
L. Scaup	22	99	-	-
Unidentified	6	350	6	350
TOTALS	210	593	658	489



C. Alfalfa Nesting Study.

The alfalfa nesting study began in 1952 and was continued this year. It was initiated to try to find out what effect the early hay harvest (necessary with alfalfa) had on nesting ducks and pheasant.

This year the same alfalfa tracts were covered as in 1952. Data concerning nest densities, hen mortality, and fate of surviving nests was obtained both by following mowers and swathers around during the cutting operation, and by interviewing the permittees. All permittees using mowers were required to use flushing bars furnished by the refuge this year, and more information concerning the bars effectiveness in saving birds was gathered. Nest densities were found to be lower than in 1952. It is believed that because the alfalfa this year was not the first vegetation to "green up", and was, in general heavier and thicker, it was not used as much. Furthermore, brome-grass planted with the alfalfa had taken over much of the stand in many cases, and may have been a factor.

The basic design of the flushing bar, developed by the Ohio Conservation Department, was modified so that one bar would fit on the A and B John Deere as well as the M, H, and Super C Farmalls. Ten bars were made in the refuge shop and distributed to the permittees.

On a total of 203 acres checked on the refuge, and 107 acres off refuge, 51 pheasants and 3 ducks were flushed. Seven pheasants were killed, or, 86 percent of the hen pheasants escaped.

Last year, swathers were found to produce no mortality. This year, on 78 acres of alfalfa swathed, four hen pheasants and four ducks were flushed. One pheasant was killed, it being on a dusting spot. It appears that the density of the alfalfa reduces somewhat the efficiency of the flushing bar. The weights do not sink down to the ground, but tend to ride more on top of the growth. Too, the bird, in the dense growth may have a more difficult time getting out in time to escape either mower or swather.

A complete report summarizing the two years work is forthcoming.

A. Recreational Uses.

The recreation area was again used extensively by picnics<sup>K</sup> this year. Some swimmers also used the sandy shore below the recreation area. At least 100 people visited refuge headquarters each weekend to observe waterfowl and to climb the tower.

B. Refuge Visitors.

<u>NAME</u>	<u>TITLE OR AFFILIATION</u>	<u>DATE</u>
Bert Laugen	Ass't. Reg. Admin. Officer	6/19/53
J. Clark Salyer II	Refuge Branches - Chief	6/26/53
F. C. Gillett	Reg. Refuge Supervisor	6/26/53
Mr. & Mrs M. Henz	Minneapolis, Minnesota	7/18/53
Bernard Fashingbauer	N. D. Game & Fish Dept.	7/21/53
James Sjordahl	" " " "	"
John Farley	Director, Fish & Wildlife Service	7/27/53
Dan Janzen	Regional, Director, Mpls. Minn.	7/27/53
Rev. & Mrs. Graves	Cedar Iowa	7/31/53
W. J. Vander Koai	Amherst, South Dakota.	7/31/53
Dr. & Mrs. Culp	Aberdeen, South Dakota.	8/16/53
Mr. Strom and members of Lennox Jr. Baseball team.	Lennox, S. Dak.	8/16/53
Geo. F. Kiefer	Cayuga, North Dakota	8/23/53
Malvin Wegener	Geneseo, North Dakota	"
G. Beron	Cayuga, North Dakota	"
C. J. Sugler	Cayuga, North Dakota	"
Jerome Stoudt	Flyway Biologist, Aberdeen, S. Dak.	Frequent
Ev. Sutton	G.M.A. Aberdeen, S. Dak.	"
L. C. Richardson	State Warden	"
Erling Podoll	S. D. Game Technician	"

C. Refuge Participation.

The following meetings were attended by refuge manager Dill during the period:

Cayuga, N. Dak.	: Lake Region Improvement Club
Detroit Lakes, Minn.	: Kiwanis Club
Aberdeen, S. Dak.	: Lions Club
Ellendale, N. Dak.	: Dickey County Wildlife Federation picnic held at Sand Lake.

The refuge manager was the principal speaker at each of these meetings and showed the refuge collection of kodachromes.

D. Hunting. None this period.

E. Fishing. Some fishing was done throughout the summer months in



the James River at the Hecla recreation area, almost 360 man days. Catches were limited to bullheads and perch, although there was a mild flurry of fair northern pike fishing during the last week in August. A few northernns weighing from 2 to 6 pounds were caught.

F. Violations. None this period.

## VII OTHER ITEMS

### A. Easement Refuges, District No. 5.

1. Dakota Lake was visited occasionally during the summer months. On May 29, all stoplogs in the spillway were removed, and have not been replaced as yet. Water levels have been high all summer long.

On May 21 there were 25 pelicans, 5 Western grebes, 1 crippled snow goose, a pair of mallards, 2 pairs of scaup and 1 pair of blue winged teal on the area. Brood counts were not made, but the area was covered during the aerial count of Sand Lake on August 27. A few great blue herons, 20 mallards and bluewinged teal, and 3 pelicans were seen. No broods were seen, and production as well as acutal waterfowl use was practically non-existent.

2. Storm Lake. On August 4 a brood count was made at Storm Lake. The following is a summary of broods seen: Pintail, 5 III; Pintail 5 III; Gadwall 4 II; Gadwall 3 III Gadwall 10 I; Gadwall 7 II; Gadwall 7 II; Unidentified 6 III.

Thus, 8 broods were seen along 1.5 miles of shoreline. There were also 25 black terns, about 100 Franklin's gulls, at least 20 ruddy ducks males, and 100 mallards, gadwalls and bluewinged teal as well as a few coots using the refuge. One moulting lesser scaup was noted. Most of the waterfowl were concentrated in the half of the lake east of the railroad grade.

Sago pondweed appeared quite abundant in many parts of the east one-half of the lake. Roundstem bullrush growing in the lake west of the railroad grade looked decidedly unhealthy. Much of it was pale and yellowed and the stand was very sparse.

3. Lake Elsie was visited on August 5 to make a brood survey. No broods were seen. Ten pied-billed grebes, 6 coots, 6 mallards, and 1 moulting lesser scaup were seen in the south end of the area.

4. Wild Rice refuge was visited by Forrest Carpenter and Manager Dill during mid-May. It was recommended that the area be abandoned because the expense of replacing the structure at the north end could not be justified on the basis of the area's value to waterfowl.

5. Maple River was visited on May 15. In the lake in the northern part of the refuge, there were about 150 mallards, bluewinged teal, pintails



redheads, a few canvasbacks, scaup and coot. Five snow-blues were seen along the river north of the dam.

Part of the bank below the dam on the west side had been eroded, and will have to be rip-rapped. The structure at the lower end of the lake carried about a 1 1/2 inch head of water. It's value is questionable.

#### 6. Tewaukon and Clouds Lake Basement Refuge.

This refuge was visited several times during the period in the course of routine administration. In addition, because of the newly awakened interest by local sportsmen in that area resulting in the organization of the Lake Region Improvement Club, several club meetings were attended by the refuge manager.

Representatives from the Regional Office were also present at these meetings, and the possibilities for refuge development for fish and waterfowl were thoroughly discussed. The State also sent a representative down to discuss the Tewaukon fishery prospect.

The outcome of these meetings was that funds were made available to replace the old bowl spillway inlet structure on Lake Tewaukon; and a fishery survey of Lake Tewaukon and adjoining White Lake and Cloud's Lake was made.

The results of the fishery survey have been reported separately. While not too encouraging because of relatively shallow water and an abundance of rough fish, there is a good possibility that fishing can be improved.

The greatest need at the present time is to rebuild the inlet structure (bowl spillway) so that the White Lake marsh may be rehabilitated for waterfowl. Also, control of water levels in White Lake is essential if the area is to be used for a spawning ground by northern pike and walleyes.

Water levels have been high at Tewaukon all summer long. Based on shoreline brood counts, waterfowl production is slightly below normal but above that of last year. A total of 8 broods were observed on 1 1/2 miles of shoreline for an average of 5.3 broods per mile of shoreline transect. This compares to 8.6 broods per mile in 1951 and 3.2 broods per mile in 1952. Broods seen were: 5 mallard, 2 pintail, and 1 gadwall.

In spite of an open season in 1952, a herd of 12 white-tails were staying in our tree plantation around the old cabin site. Deer habitat at Tewaukon is even more restricted than at Sand Lake and this situation should be closely watched.



Special use permits in force at Tewaukon are 3 share crop (180 acres), 2 haying and 1 grazing. Our share of the crop which was left in the field was: 33 acres millet, 3 acres corn, 10 acres wheat, and 20 acres of oats. The Soil Conservation Service is making a capability survey of refuge lands at Tewaukon and will make this available for our use in the near future.

B. Items of Interest.

Bambi. Bambi was a buck in the story book. But when a farmer from near Britton came carrying a tiny spotted doe into headquarters, the children immediately named it Bambi.

This happened back in July 1952 during haying season. "Bambi" had a partly severed back hoof and some deep cuts on her legs as a result of an entanglement with a tractor-mower. Surgery was necessary to remove one half of the hoof, but the cuts soon healed, and Bambi thrived on calf meal and milk brought from the store (at 22¢ per quart).

As winter came on her coat grew thicker and she lightened in color. Now her spots were gone, but she was still small for her age. When the snow came, she learned to feed with the geese in the hospital pen and often "knocked" at our doors for handouts of left over toast, crackers, or practically anything resembling food. Oddly enough she particularly relished cigarette butts! Best of all, though, was a handful of salt which she would eagerly lick to the last crystal.

Spring came at last and the geese came back 400,000 strong. With them came myr<sup>ad</sup> visitors to the headquarters, and these people were thrilled and delighted to discover Bambi, a real deer, that, for a cracker or two, would pose for a picture.

To children, who sometimes called her by name with no prompting, she often ran, nuzzling them and licking their fingers. She was leery of the older folks, however, and would usually run away from the men!

As the weather warmed up, the refuge people living at headquarters planted their gardens and there was much talk about what to do with Bambi. At last she was placed in the goose pen about 1/4 mile west of the buildings. There she seemed quite content and had plenty to eat.

After a week or so, two wild deer came to the pen and until mid July the three deer could be seen together. Then they disappeared.

Time passed and Bambi was assumed to be living a placid life in the wild with her newly discovered friends.

Early one morning in mid-August Hugo Pearson, a farmer living on the outskirts of Hecla, S. Dak. heard a noise at his door. When he opened it a small doe skittered timidly away. But when his little girl came along just then and called "Here Bambi", and the doe ran up to the child licking her hands and nuzzling her, Hugo's surprise and

amazement were colossal!

Hours later when Pearson called the refuge to tell us what happened he still seemed shaken by the incident, for he feared that Bambi would injure his youngster.

And so, as this is written, we are all wondering: Will Bambi come home this winter? Will she find a mate in the wild? With no hunting season in prospect, it seems likely that she will retrace her errant foot steps over the 18 mile trail from Hecla to headquarters.

C. Photographs.

All photographs used were taken by Dill and Sutherland.

Credits: Portions of VII & editing - H. Dill  
II, V - D. Sutherland.  
I, III, IV, VI R. C. Pratt

Submitted by \_\_\_\_\_

Herbert H. Dill

August 12, 1953

Approved: Regional Office



## WATERFOWL

 Refuge Sand Lake Months of May to August 19 53

(1) Species	(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			200				6	12	
II. <u>Geese</u> :									
Canada goose			200		Summer resident		6	12	
Rich. Cackling goose			1000	5/1	50	5/12			
Brant									
White-fronted goose			2100	5/1	100	5/13			
Snow goose			1600	5/1	200	5/13			
Blue goose									
III. <u>Ducks</u> :									
Mallard			6800	8/26			19		
Black duck			10	8/26					
Gadwall			1100	8/26			6		
Baldpate			500	8/10					
Pintail			165	5/1			12		
Green-winged teal			100	5/1					
Blue-winged teal			2900	8/26			13		
Cinnamon teal									
Shoveller			710	8/26			2		
Wood duck	3	8/27	3	8/27	3	8/27			
Redhead			265	8/26	Summer resident				
Ring-necked duck			20	5/1	7	5/26			
Canvas-back			200	7/14	summer resident		2		
Scaup									
Golden-eye			1000	5/1	summer resident		1		
Buffle-head									
Ruddy duck			250	8/26			3		
TOTAL								2360	
IV. <u>Coot</u> :			7300	8/26					



### SUMMARIES

Dates waterfowl counts made May 22 - August 26

Percent of waterfowl area covered 80 - 100%

Dates brood counts made 6/24-25, 7/6-16, 8/19-20

Percent of area covered in brood counts 20%

Total production:

Geese 12

Ducks 2195

Coots 700

Total waterfowl usage during period \_\_\_\_\_

Peak waterfowl numbers 13,000

Areas used by concentrations \_\_\_\_\_

Principal nesting areas this season \_\_\_\_\_

Reported by Dale E. Sutherland

### 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 the 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 Sand Lake Months of May to August 1953

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Western Grebe										
Pied-billed grebe										
Bareed grebe										
Double-crested cormorant			800	8/26						
White pelican			1200	8/26						
Great blue heron			60	8/26						
Black-crowned night heron										
American bittern	1	7/6	4	7/26	1	8/26				
American egret										
Sora rail										
Sand hill crane	3	8/19	Seen outside of refuge 1/2 mile west							
II. <u>Shorebirds, Gulls and Terns:</u>										
Killdeer										
Upland plover										
Greater yellowlegs										
Lesser yellowlegs										
Avocet										
willet										
Bairds Sandpiper										
Pectoral sandpiper										
Hudsonian Godwit										
Marbled Godwit										
Common Tern										
Forster's Tern										
Black tern										

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons</u> : Mourning dove White-winged dove					
IV. <u>Predaceous Birds</u> : Golden eagle Duck hawk Horned owl Magpie Raven Crow Swainson's hawk Red-tailed hawk Marsh hawk Rough-legged hawk Prairie falcon Cooper's hawk Sharp-shinned hawk Pigeon hawk					
Reported by..... Dale R. Sutherland					

#### 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.



UPLAND GAME BIRDS

1613

Refuge Sand Lake Months of May to August, 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'v'd. Estimated Total	Percentage	Hunting For Re- stocking For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ringnecked pheasant	Marsh edge adjacent upland 10,000 acres		Insufficient data				
Hungarian partridge	Upland meadow and fields 4,000 acres		Insufficient data				
Pinnated grouse	Grassland 1,000 acres						

## INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.\*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

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



3-1570  
NR-8a

REFUGE GRAIN REPORT

Refuge Sand Lake Refuge

Months of May thru August 19453

(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 USE		
				TRANS- FERRED	SEEDED	FED	TOTAL		SEED	FEED	SURP.
Wheat	390	220	610	100			100	510		300	210
Barley	2010	1575	3585					3585		2000	1585
Oats	100	615	715	100			100	615		300	315
Corn	100	200	300	30			30	270		270	
Rye	- -	20	20					20		20	

(8) Indicate shipping or collection points Columbia, South Dakota

(9) Grain is stored at Site #2, Grain Elevator

(10) Remarks

NR-8a

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 lbs., Corn (ear)—70 lbs., Wheat—60 lbs., Barley—50 lbs., Rye—55 lbs., Oats—30 lbs., Soy Beans—60 lbs., Millet—50 lbs., Cowpeas—60 lbs., and Mixed—50 lbs. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately: Corn, wheat, proso millet, etc. 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 breakdown by varieties of grain listed in Column 6.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters grainary", etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.





SD-SDL-592

Rapidly eroding lake bank north of Headquarters  
which threatens to encroach on refuge road.



SD-SDL-593

Loading rock for rip-rap



SD - SCL - 594

The Unit dragline is used for sloping the eroded bank; the rock is dumped and placed by hand.



SD - SCL - 543

The job is completed at last following several set-backs due to heavy rains. The slope was fertilized (12-20-0) and seeded with Brome, alfalfa and oats.





SD-SDL-596

As a result of heavy June rains, refuge alfalfa was succulent and rank. The hay harvest was late. But few duck nests were found in the 500 acres of alfalfa on Sand Lake.



SD-SDL-597

The two-year-old shelterbelt plantings in the foreground were cultivated and dressed with fertilizer. The 16-year-old plantings in the background (CCC) are approaching a climax. As time goes on and the understory decreases, evergreens should be planted to sustain windbreak and game cover values.



SD-SOL-542

Over 100 acres of sow thistle was sprayed from the Service Aircraft. In the picture follow-up work is done on foot.



SD-SOL-549

This device proved useful for transporting the canoe during brood counts. The apex of the frame slips in between the rear canoe seat and the thwart so that it must remain upright.





SO-SOL-600

There were no pelican nests on the island in Mud Lake this year. Mrs. Pat Castle inspects cormorant nests that show signs of having been re-built but that have no eggs inside.

This little fellow utterly refused to hold his head up for a photograph. Of 14 does seen with young, nine had twins; one had triplets!



SD - SDL - 601

Refuge Clerk, Dick Pratt, is distressed by wind damage to his garage. The entire side panel was blown out. However, it was put back with no difficulty.



SD - SDL - 602

Manager Dill with new nylon net for experimental work with the cannon trap.





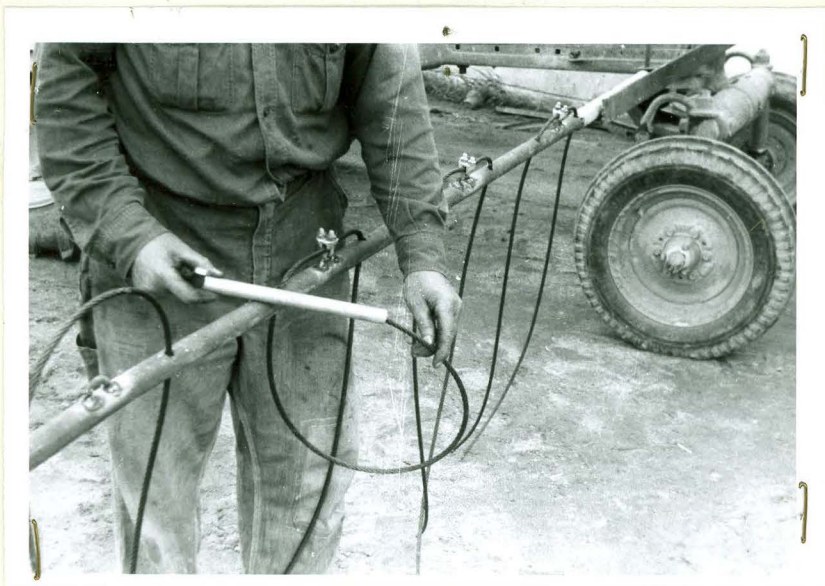
The 200' weighted rope drag used for finding nests is carried on the Jeep. It is pulled with the Jeep and a pickup and works well.

Below: Maintenance man Podoll fits flushing bar on John Deere "A". He came up with one bracket that fits 5 different tractors.

SD-SDC-603



SD-SDC-601



SD-SDC-605

The slithering action of these weights (35lbs) flushes the ducks and pheasants; noise is not effective. They must be heavy enough to strike down thru rank alfalfa such as we had this year.



SD-SDC-606

Ready to go. The weights do not drag the hay down or interfere in any way with operation of the tractor.





SD-SDL-102

At Lake Tewaukon we find the outlet structure in good shape. (i.e. good shape for rubble!). What was first thought to be a leak turned out to be a rock under the gate - a pleasant surprise.



SD-SDL-103



SD - SDC - 609

Forrest Carpenter (back to camera), Asst. Refuge Supervisor, assures some interested N. Dak. Sportsmen that we have their best interests at heart! Sportsmen living near Tewauckon are keenly interested in developing this area with its excellent potential.



SD - SDC - 610

In a swing around the easement refuges, we leave Tewauckon and pause for a moment at waterless Wild Rice. A WPA structure failed to withstand the pressure of floods. The cost of replacement is not justified from the standpoint of benefits to be gained.





SD - SOL - 11

Mr. Carpenter casts a critical eye over the fine Maple River easement which attracts thousands of geese in the spring and a goodly number of both ducks and geese in the fall. The outlet dam has stood up well over the years but now requires minor repairs.



SD - SOL - 12



SD-SDL-013

Situated practically in the lap of the town of Wilnor, the Storm Lake Refuge is still an excellent brood area and produces some divers. The vegetation is largely hard stemmed bulrush.



SD-SDL-014





SD-SDC-15

Lake Elsie, near Hankinson is relatively shallow barren lake. However, it often holds water when the large marsh areas to the west dry up thereby furnishing a good brood area. This area is heavily utilized by the public.



SD-SDC-16

This a typical view of the Dakota Lake Refuge which is really just a stretch of the James River. Its principal value is for a resting place for geese spring and fall. Both banks are heavily grazed in most places.



50-SD-1-17

Regional Director Janzen and Director Farley look  
the situation over at Columbia Dam, Sand Lake.