NARRATIVE REPORT

SAND LAKE NATIONAL WILDLIFE REFUGE

1972

UNITED STATES DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

BUREAU OF SPORT FISHERIES AND WILDLIFE

COLUMBIA, SOUTH DAKOTA 57433

SAND LAKE NATIONAL WILDLIFE REFUGE

COLUMBIA, SOUTH DAKOTA 57433

PERSONNEL

Lyle J. Schoonover, GS-12, Permanent	Ref. Manager
Sammy J. Waldstein, GS-9, Permanent	Ass't. Ref. Mgr.
Leo W. Lawhorn, GS-7, Permanent	Ass't. Ref. Mgr.
Donald J. Snider, GS-6, Permanent	Ref. Clerk
Loren F. Hemen, WG-9, Permanent	Maintenanceman
Albert W. Krege, WG-8, Permanent	Truck Driver
Marvin J. Elsen, WG-7, Permanent	Maintenanceman
John E. Cantwell, WG-7, Seasonal	Maintenanceman
Duane A. Huber, WG-3, Intermittent	Laborer
Herman A. Krage, WG-2, Temporary	Laborer
Dennis A. Christianson, WG-2, Temporary	Laborer
Berle L. Meyers, Jr., WG-2, Temporary	Laborer

C O N T E N T S

VI. PUBLIC RELATIONS

VII. OTHER ITEMS

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SAND LAKE NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

1972

I. GENERAL

A. Weather Conditions

	Precipitation			Temperature			
Month	1972	Normal	Snowfall	Avg. Max.	Ext. Max.	Avg. Min.	Ext. Min.
January	1.27	.41	12.7	15.4	39	6.9	-36
February	.77	.53	7.7	17.9	37	-3.8	-27
March	1.40	.79	12.0	35.3	55	16.2	-21
April	.89	2.31	.7	52.8	69	32.8	20
May	5.99	2.72		70.1	87	49.5	28
June	1.32	3.57		79.1	89	54.0	38
July	4.16	2.41		82.1	91	56.5	41
August	1.08	1.98		84.5	96	58.9	42
September	T	1.66		73.9	91	45.8	31
October	1.26	1.11	3.2	57.9	78	31.9	8
November	.73	.62	7.1	36.9	49	21.6	- 5
December	1.20	.40	13.0	17.3	46	-1.1	-32
TOTALS	20.07	18.51	56.4	52.0		30.7	

Highest Temperature - 96 on August 19, 20 and 21

Lowest Temperature - -36 on January 15

Last Frost in Spring - 31° on May 7

First Frost in Fall - 31° on September 16

Days of Frost-free Growing Season - 131

Ground Void of Snow in Spring - March 20

Spring Breakup - April 11

Earliest Spring Breakup - March 23, 1963

Latest Spring Breakup - April 23, 1956 and 1965

Snow Buildup Started in Fall - November 26

The above data were taken from the official records kept at refuge headquarters. The average precipitation and temperature data were extracted from records kept since the weather station was established in 1950.

As recorded in the above table, total precipitation for this year was above average. Monthly comparisons varied from minus 2.35 inches to plus 3.26 inches. Temperatures were generally below normal throughout the year.

Below are comments which summarize monthly weather patterns.

January

The year started with 6 inches of snow on the ground. Warm weather on the eighth, ninth and tenth decreased the snow cover to 4 inches. Snowfall totaled 12.7 inches the last 20 days and the month ended with 15 inches of snow cover. Total precipitation all in the form of snow was 1.27 inches with the largest 24 hour total of 5 inches. High temperatures were 5° below normal and low temperatures averaged 4° below normal.

February

The traditional "February Thaw" didn't materialize this year. Snowfall totaled 7.7 inches and the month ended with 14 inches of snow cover. Precipitation totaled .77 inches all snow and was received on 17 days. The heaviest snowfall 2.0 inches occurred on the first. High temperatures averaged 8.3 degrees below normal, while low temperatures averaged 7.8 degrees below normal.

March

Spring again! Although we started the month with 15 inches of snow cover and received 12 inches of snow during the month, the ground was clear by March 20. A storm on the twenty-sixth dropped 2.2 inches of snow but warm temperatures caused immediate melting. Total precipitation was 1.40 inches. High temperatures averaged 2.3 degrees below normal and lows averaged 1.1 degrees above normal. Soil moisture conditions were good and most farmers were plowing by the end of the month.

April

"Old Man Winter" was reluctant to release his grip and released another .7 inch of snow this month. Although total precipitation, .89 inch, was well below normal, late winter moisture provided the stimulant needed by small grain seedings. Plowing for corn had started by the end of the month and some "early birds" had started planting corn. The average high temperature was 2.9 degrees below normal and lows averaged 1.5 degrees above normal.

May

Precipitation measured a whopping 5.99 inches, 3.27 inches above normal. All small grain and corn is off to an excellent start. High temperatures averaged 1.2 degrees above normal and lows were 6.6 degrees above normal. The greatest 24 hour amount of rain was 1.37 inches on the first. Rain was recorded on 16 days.

June

Precipitation measured 1.32 inches, 2.25 inches below normal. Only .35 inch was received during the first half of the month and all crops were needing rain before .97 inch was received on the nineteenth and twentieth. Relief was short-lived, as only a trace was received during the rest of the month. High temperatures averaged .9 degree above normal and lows averaged 1 degree above normal.

July

The most significant factor weather-wise was a precipitation total of 4.16 inches, 1.75 inches above normal. Rain was received on 14 days and the greatest 24 hour total was 1.05 inches on the twenty-sixth. Small grain is filled and swathing has started. The corn crop still looks promising with adequate moisture to date. The high temperature for the month, 91 degrees, is below normal and both highs and lows averaged below normal.

August

Weather conditions the first part of the month were ideal for small grain harvest, with only .87 inch of rain the first 20 days. Most of the small grain was in the bin by August 15. The corn crop showed effects of the low precipitation, .90 inch below normal and some of the corn in the area has been cut for silage. The high temperatures averaged .6 degree below normal and lows averaged 2 degrees above normal.

September

Extremely dry! Corn on tight soil was damaged considerably by the month-long drought. However, the overall corn production was above normal with several reports of 100 bushels per acre. High temperatures averaged .9 degree below normal and lows averaged normal. The lack of rain influenced some farmers' unwillingness to have upland game hunters on their land. The month was traditional in that it was more or less an extension of summer.

October

The month-long drought ended on the fifth with the receipt of .76 inch of rain. Although too late to help corn, this shower provided enough moisture to germinate fall-sown rye and wheat. By the end of the month most of the corn had been harvested. The first measurable snowfall, 3 inches, was received on the thirtieth. High temperatures averaged 2.1 degrees below normal and lows averaged 1.6 degrees above normal.

November

Snow was received on 12 days during the month, with a total of 7.1 inches. Warm temperatures melted the snow until the twenty-sixth, when winter set in in earnest with freezing temperatures prevailing throughout the day. We ended the month with 2 inches of snow on the ground. The lakes were nearly covered with ice by the end of the month. High temperatures averaged 3.6 degrees below normal and lows averaged 3.1 degrees above normal.

December

Brrrrrr! The first half of the month was the coldest on record. The refuge weather station recorded 165 consecutive hours with below zero readings. The low during this period was 32 below on the sixth, with a close second of 31 below on the tenth. Temperatures moderated the remainder of the month and the month ended with highs averaging 11.3 degrees below normal and lows averaging 9.3 degrees below normal. The year closed with 8 inches of snow on the ground.

B. Habitat Conditions

1. Water

The spring runoff was above normal causing flooding in lowland areas. A crest of 1289.45 on March 28 at Hecla Grade was 1.22 feet above spillway crest.

A new pool was created in 1971 with the completion of a new flood control dike north of Hecla Grade. Flood waters were held behind the dike in the spring, flooding 350 acres from 6 to 18 inches deep. The area was drained on August 1 to allow revegetation and aeration of the mud flats.

A crest of 1288.00 was reached at the Sand Lake structure on March 21. This was .48 foot above spillway crest. The gates were closed on March 21. Sand Lake and Mud Lake remained full throughout the summer. One of the gates at the Sand Lake structure was opened in August to release the inflow from the Jamestown Reservoir.

A fall drawdown began on October 13, when one gate at the Sand Lake structure was opened 12 inches, the other gate was opened 18 inches on October 26.

2. Food and Cover

Although the winter of 1971-72 was not extremely severe, there was enough snow on the ground to hamper feeding by resident wildlife species. Deer and pheasants were able to dig through the loose snow in 400 acres of dense nesting cover and feed on weed seeds and rye. There were also 30 acres of corn left standing in small plots on the refuge. Supplemental feeding of shelled corn was done in high use areas. Winter loss of all wildlife species was minimal in 1971-72.

This corn was completely utilized by deer and pheasants during the winter. Schoonover SD_SDL_1202

An additional 400 acres of dense nesting cover were seeded in the fall of 1971 with rye as a cover crop. The dense nesting cover had excellent growth in the spring and will provide optimum food and cover during the winter of 1972-73. Seventy acres of corn, 10 acres of wild game feed sorghum and 5 acres of grain sorghum were left standing adjacent to dense nesting cover and marsh areas to provide winter food.

A total of 578 acres of dense nesting cover was seeded in 1972. Five hundred sixty acres were planted with rye as the cover crop during late summer. By using rye for the cover crop, green browse is provided for migrating geese in the fall. The mixture for the late summer planting consisted of 2 lbs. intermediate wheatgrass, 2 lbs. sweetclover, 1 lb. alfalfa and 45 lbs. rye per acre. The remaining 18 acres were planted in the spring, substituting barley for rye.

There will be 1,469 acres of dense nesting cover available for nesting ducks, pheasants and other wildlife species in the spring of 1973.

SD-SDL-1203

Does it not look predator resistant? Schoonover

II. WILDLIFE

A. Migratory Birds

1. Waterfowl

a. Whistling Swans

Swans were first observed on April 8, when 20 were observed. This was the peak spring population. The normal spring peak is 250 to 300.

Swans returned to Sand Lake the first week in October and gradually increased to 1,090 the third week in November. The 1,090 swans exceeds our previous peak by over 500.

b. Geese

(1) Spring Migration

Arrival dates; large Canadas, March 10; small Canadas, March 14; white-fronts, March 14; and snows and blues, March 14.

The first spring arrivals were 100 large Canadas. In the next few days 28,000 snow and blue geese, 1,500 small Canadas and 20 white-fronts became temporary residents. On April 1, the goose population peaked at 151,700. This included 400 large Canadas, 15,000 small Canadas, 300 white-fronts and 136,000 snows and blues. Another 150,000 to 200,000 were using potholes and small lakes within 30 miles of the refuge.

The geese began to move northward the second week in April and only 500 remained on April 20.

(2) Large Canada Goose Production

Optimum nesting habitat and stable water levels the past two years have increased the breeding flock from 180 to 230. It is estimated that 150 goslings reached flight stage. These estimates are made in late summer when the geese begin to flock up.

The following table shows productivity data for the last 20 years.

LARGE CANADA GOOSE PRODUCTION

Year	Adult Geese	Number of Broods	Number of Young
1972	230	37	150
1971	180	23	100
1970	200	17	100
1969	180	9	40
1968	160	6	25
1967	160	10	50
1966	150	6	30
1965	200	15	100
1964	150	15	75
1963	200	13	50
1962	170	16	75
1961	180	20	100
1960	160	7	35
1959	160	12	63
1958	150	12	64
1957	262	18	95
1956	150	14	54
1955	100	15	68
1954	130	9	46
1953	?	18	56

(3) Fall Migration

(a) Small Canada Geese

The first small Canada geese arrived at the refuge on September 16. There were 150 available for the opening of goose season on October 1. The population remained low throughout the fall, peaking at 5,000 on October 19. The small Canada goose flock continues to decline with this year's peak 2,000 less than in 1971.

(b) Snow and Blue Geese

Snow and blue geese began arriving on September 13. By the opening day of goose season, there were 10,000 using the refuge. The population built up steadily for the next three weeks: October 6, 38,000; October 15, 69,000; and October 19, a peak of 102,000 was censused by Region 3 Pilot Winship and Refuge Manager Schoonover.

State officials reported that on October 21 there were 30,000 geese using three newly established state refuges, all within 30 miles of Sand Lake. Establishment of these refuges helped disperse hunters and reduced the goose use-days on the refuge.

After October 15 many geese began feeding off the refuge even though several fields of grain on the refuge were not utilized by geese.

(c) White-fronted Geese

The first white-fronts arrived at the refuge on September 20. The population peaked at 200 birds in mid-October. They stayed about two weeks longer than in previous years, departing about October 22.

c. Ducks

(1) Spring Migration

The duck migration was not as spectacular as in 1971. The population peaked at 107,000 on April 1 which was 85,000 below the peak in 1971. Most of the ducks were concentrated on the south end of the Sand Lake Pool and on the flood control pool at the north end of the refuge.

The main factors influencing the distribution of ducks were the drawdown of the Sand Lake Pool in 1970 which created an abundant aquatic food supply, and the flood control pool at the north end was flooded for the first time and provided excellent food and nesting habitat.

Duck use on new flood control pool. Schoonover
SD-SDL-1204

(2) Duck Production

The following production data are projected from a direct count taken on a predetermined route.

DUCK PRODUCTION - SAND LAKE REFUGE, 1972

Area	Acres	Ducks Produced
Mud Lake Pool	2,880	4,130
Sand Lake Pool	3,440	12,605
Flood Control Pool #1	360	1,925
Potholes - No Expansion	18 Potholes	85
TOTAL PRODUCTION		18,745

FORMULA FOR PROJECTION

$$\frac{\text{Length of Route X 5,280' X Visibility}}{\text{Sq. Ft. per acre = 43,560}} = \text{Area}$$

$$\frac{\text{Area}}{\text{Number of Broods seen on Census Route}} = \text{Acres per Brood}$$

$$\frac{\text{Total Acres of Marsh}}{\text{Acres/Brood}} = \text{Total Broods}$$

Total Broods X Young per Brood = Total Projected Production

A total of 18,745 ducklings reached flight stage which exceeds the previous high set in 1969 by 3,767 ducks. Several factors contributed to the high production. They were: a 360 acre pool established at the north end of the refuge by installation of a flood control dike and screw gates; excellent production in 1969 and 1971 increasing the number of breeding pairs returning from the wintering areas; an additional 400 acres of dense nesting cover increasing the total available dense nesting cover to 800 acres; elimination of grazing permits in 1972 which increased the quality of nesting habitat in grazing units; and excellent aquatic food supplies (See Section II, 1 C (1), above).

(3) Fall Migration

Influx in late August and early September consisted primarily of mallards and pintails. However, there was an abundance of blue-winged teal, gadwall and shoveler. The duck population was high most of October. A cold front in late October initiated a movement of ducks into the area. The peak fall population was 151,970 ducks, of which 110,000 were mallards. Most of the mallards remained only 8 to 10 days before departing for a warmer climate.

2. Other Water Birds

The breeding populations of pelicans, cormorants and herons were approximately the same as in past years. Breeding populations were: pelicans 150; cormorants 90; great blue herons 30; and black-crowned night herons 50.

Increases were noted in the number of western grebes using the refuge with about 300 here most of the summer. There was a large migration of Franklin's gulls between September 15 and 25. The peak population of 250,000 gulls occurred on September 20.

3. Doves

Mourning doves were plentiful during late August and early September.

In 1972, a petition was circulated to ban dove hunting in South Dakota. Enough names were collected to put the issue on the ballot in the November election. The vote was 70% in favor of the ban. The State Legislature still has to take final action.

4. Shorebirds

An abundance of shorebirds was noted in June and July in the flood control pool. Fall populations were also high. The exposed mud flats in the Mud Lake Pool provided ideal shorebird habitat.

B. Upland Game Birds

1. Pheasants

A normal winter during 1971-72 plus an abundant supply of food and cover carried about 2,200 pheasants into the spring of 1972. The present mid-winter population is estimated at 3,000 birds.

During December the majority of the pheasants moved into the dense nesting cover or were using cattail areas adjacent to food plots. A substantial number of birds should be available for nesting in 1973.

2. Hungarian Partridge

Several coveys of partridge have been using the refuge for the past two years. There have been few spring and summer observations, indicating that partridge use the refuge sparingly during spring and summer.

3. Prairie Chicken and Sharp-tailed Grouse

Five to seven prairie chickens and 3 sharp-tails were observed during late fall.

Movement by prairie chickens and sharp-tails into the refuge during the winter months is normal, however, sightings have increased the past two years. The last sharp-tail seen on the refuge prior to 1971-72 was in 1954. Prairie chickens were observed in 1968 and again in 1971 and 1972.

C. Big Game

1. Deer

A roadside deer count was made on March 30. The count covered 10 miles of refuge roads from the Hecla Grade to Houghton along the east side of the refuge. This area has one of the highest concentrations of deer during the winter months. Three hundred thirteen deer were observed during the count. The deer population was estimated at 750 animals.

The 750 deer represent 250 to 300 more deer than the habitat should be supporting. In February and March, about 250 deer were feeding in an adjacent farmer's haystacks. Several feeding stations were set up in the area to divert the deer from the haystacks. Paths were made through the snow to the corn piles.

The feeding stations were well used but the deer continued to use the haystacks. Snider SD-SDL-1205

A beautiful sight any time. Schoonover? SD-SDL-1206

At fawning time many of the deer leave the refuge for adjacent farm land.

2. Antelope

One antelope was seen on several occasions between October, 1971 and April, 1972. It stayed in an area where there is considerable farming and was last observed on April 19. This was the first antelope seen on the refuge.

D. Fur Animals

1. Mink

One mink was caught in a live trap near the giant Canada goose pen. The mink was released in another area of the refuge. Few sightings were made in 1972.

2. Muskrat

Fall drawdowns of the two major pools cause the pools to freeze solid. This practice eliminates most of the muskrats. It also helps to control other problems, such as dike cave-ins and carp infestation.

3. Beaver

One beaver lodge is located on the refuge just south of the Hecla Grade. Most of the beaver in the James River Valley confine their activities to the river below the refuge.

E. Predators

1. Fox

Fox populations have increased considerably the past two years. Aerial hunting on the refuge was eliminated in 1972. Trapping was used satisfactorily to control the population in 1972. (See Section IV) The current population is estimated at 200.

2. Raccoon

Raccoon populations remained stable in 1972. No complaints were received, but duck nest searches indicated that a large number of nests were being destroyed by raccoon, fox and skunk. The current population is estimated at 125.

3. Skunk

Skunk observations occur quite frequently in all areas of the refuge. It is estimated that there are 350 skunks on the refuge.

4. Badger

Badgers are common on the refuge and cause extensive damage to refuge roads and dikes. Several were caught by refuge trappers and were worth five to six dollars each.

F. Predaceous Birds

1. Eagles

Ten bald eagles were observed on April 10. Most of the eagles roost in tall cottonwood trees on the southeast edge of the refuge.

2. Hawks

Hawks observed during the year were; marsh, rough-legged, sparrow, red-tailed, ferruginous, Harlan's and Swainson's. Marsh hawks are the most common on the refuge.

3. Owls

Great horned, short-eared, long-eared, burrowing and snowy owls were observed during the year. All of these species but the snowy nest in the area.

Long-eared owl nesting in refuge tree belt. Waldstein SD-SDL-1207

F. Rare, Endangered and Unusual Species

1. Falcons

One prairie falcon was seen on March 16. The prairie falcon is an uncommon visitor to the refuge.

2. Burrowing Owls

Burrowing owls have been seen at four different locations on and adjacent to the refuge.

3. Ferruginous Hawks

Ferruginous hawks are frequently observed on the refuge.

4. Common Egret

One common egret was observed during spring migration. These are rarely seen at Sand Lake.

5. Turkey Vulture

One turkey vulture was seen on March 10, also an uncommon visitor to the refuge.

G. Other Birds

Two species of birds were added to the refuge bird list in 1972. The first addition occurred on April 10 when Mr. and Mrs. Lloyd Smith observed a pair of European widgeon. European widgeon were also seen in 1970, but it was felt that one observation was not justification for adding it to the bird list at that time.

The other bird added to the list is a Harlan's hawk observed by Assistant Refuge Manager Waldstein during September and October.

The following is a list of arrival dates for migratory birds in the spring of 1972.

3/17	Robin
3/20	Yellow-headed Blackbird
3/20	Bobolink
3/20	Mourning Dove
3/27	Meadowlark
3/27	Yellow-shafted Flicker
4/1	Bald Eagle
4/1	American Widgeon
4/1	Marsh Hawk
4/2	Killdeer
4/2	Franklin's Gull
4/5	Gadwall
4/5	Shoveler
4/5	Black-crowned Night Heron
4/6	Ring-billed Gull
4/7	Ring-necked Duck
4/7	Red-tailed Hawk
4/9	Lesser Scaup
4/10	Hooded Merganser
4/11	White Pelican
4/12	Double-crested Cormorant
4/12	Herring Gull
4/12	Sparrow Hawk
4/12	Great Blue Heron
4/13	Common Merganser
4/13	Black-bellied Plover
4/15	Blue-winged Teal
4/16	Pied-billed Grebe
4/20	Black Tern
4/20	Common Tern
4/20	Redhead
4/22	Ruddy Duck
4/22	Western Grebe
5/2	American Bittern
5/2	Long-billed Dowitcher
5/7	Willet
5/7	Least Sandpiper
5/7	Red-breasted Nuthatch
5/12	Western Kingbird
5/20	Marbled Godwit
6/2	American Coot
7/6	Cattle Egret

H. Fish

Fishing success has been good throughout the year. The majority of the fish taken were pike, with a few bullheads and an occasional walleye. Fishing visits increased from 955 in 1971 to 1,287 in 1972.

I. Reptiles and Amphibians

Leopard frogs and tiger salamanders are the only amphibians observed on the refuge. Garter snakes and bullsnakes are listed as being common in this area, but garter snakes are the only snakes seen on the refuge.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development and Maintenance

1. A new radio antenna was mounted on the observation tower and the base set was moved into a new building at the base of the tower. The base set and eight mobil units were changed to a frequency of M34.83.

2. Two and one-half miles of old fence were removed and one-quarter mile of new fence was erected in Tract 5.

3. Two thousand feet of dike were constructed and a 36" pipe and screw gate installed to create a 60 acre brood marsh on Tract 3.

A short section of the new dike constructed on Tract 3 at the north end of the refuge. Lawhorn SD-SDL-1208

4. Four large nesting islands were dozed up in the Tract 5 flood control pool.

5. Foundations and building site remains were buried on Tract 32.

6. Two large nesting islands were dozed up in the Tract 3 flood control pool.

7. 350 cubic yards of gravel were hauled and graded.

8. The following buildings were painted:

Site 1 - 8-stall equipment storage building, office and shop building, residence, tire storage building and oil storage building

Site 2 - corn crib, elevator, two garages and barn

Site 3 - residence and garage

Site 4 - residence and garage

9. Shingles were stained on all wood shingle roofed buildings.

B. Farming

A total of 2,567 acres was farmed this year. Of this total, 522 acres were farmed by the refuge staff and the remaining 2,043 acres were farmed by cooperative farmers. The table below lists crops and yields.

Crop	Acres	Yield/ Acre	Total Yield	Left Standing
Corn	1,052.5	62	64,870	20,150
Barley	711	32.8	23,376	10,570
Millet	96	21.8	2,100	1,900
Wheat	311.5	30	9,345	510
Oats	234	60	14,040	-
Flax	16	10	160	-
Rye	30	32.3	969	-
TOTALS	2,451.0		114,860	33,130

In addition to the above, 104 acres of alfalfa and 12 acres of sorghum were grown on the refuge.

C. Biological Development

Dense Nesting Cover (See Section I-B).

The oldest dense nesting cover is two years old. Both dense nesting cover and non-use pastures were censused for production evaluation. A cable-chain drag (described in the 1971 Narrative Report for the Sand Lake WMD) was used for the search. The nesting success was 71 percent for 12 nests located in the dense nesting cover. Only a small acreage of dense nesting cover was searched because of wet spots. The nesting success in non-use grassland was 28 percent for 11 nests. One hundred eighty acres of grassland were searched.

Deer using DNC during fall of 1972. Schoonover

SD-SDL-1209

D. Collections

1. Dead Birds

a. 23 snow geese, 13 blue geese and 2 mallards to the Veteran's Hospital, Sioux Falls, South Dakota

b. 2 whistling swans, 2 snow geese, 1 blue goose, 1 ring-necked duck, 1 blue-winged teal and 1 ruddy duck to Valley City State College, Valley City, North Dakota

c. 5 mallards and 2 pintails to South Dakota Game, Fish and Parks Department, Aberdeen, South Dakota

d. One immature bald eagle remains in our possession at the end of the period.

2. Live Birds

One pair of giant Canadas, 1 pair of snows, 4 immature giant Canadas and 4 immature snows were loaned to the Madison Wetland District for display purposes.

6 canada geese to wood lake, minnesota
Snow & blue young went to audubon Refuge, N.D.

One eagle was turned over to the Lake Andes Refuge.
Schoonover

SD-SDL-1210

E. Control of Vegetation

1. Leafy Spurge

Spot spraying with Tordon has kept the leafy spurge from spreading, but every time one patch is controlled another is found.

2. Canada Thistle

Canada thistle is sprayed with 2,4-D in areas on and adjacent to farm land. No attempt has been made to control thistle on pasture and lowland areas. No complaints have been received.

Introduction of an aphid and beetle which feed exclusively on the Canada thistle will be experimented with in 1973 as a means of biological control.

F. Control Burning

In 1972 a plan was submitted to burn 112 acres of native grass remnants. However, press releases that indicated Sand Lake would be made unattractive to geese made it inadvisable to burn in 1972. Press releases on the goose controversy are at the back of this report.

The burning plan will be resubmitted in 1973 and hopefully the burn will take place.

G. Fires

None.

IV. RESOURCE MANAGEMENT

A. Grazing

At the close of the 1971 grazing season, all grazing permits were terminated. Grazing will be utilized in the future only when it will benefit wildlife or wildlife habitat.

Parts of 7 grazing units have been seeded to dense nesting cover. Two more of the units are scheduled for dense nesting cover in the late summer of 1973. One unit consisting of 112 acres is scheduled to be burned in the early spring of 1973.

Grazing may be allowed in the new flood control pool in late summer after it has been drained. This would be heavily grazed to reduce the growth of cattail.

B. Haying

No permits issued.

C. Fur Harvest

The 1971-72 trapping season was opened on December 15. Only 3 permits were issued for trapping. No units were designated and success was poor. Most refuge roads were drifted shut by the first of January. Blowing and drifting snow continually froze traps into the snow and made them inoperable. The total estimated catch was 10 fox.

In the summer and fall of 1972 it became quite evident that predator populations were on the increase. To increase trapping success it was determined that by opening the season early (November 11) the effects of weather (snow) would be reduced and early hibernators could be trapped.

The 1972 trapping season was opened on November 11 and closed on December 31. Ten trappers applied for the five permits that were available. A drawing was held at refuge headquarters to determine who would receive the permits. The refuge was divided into five units with each trapper assigned an unit. Snowmobiles were prohibited but automobiles were allowed on refuge roads and trails. The total catch for the 51 day season included 77 fox, 19 raccoon, 9 badger and 51 skunk. These removals should improve duck and pheasant nesting success.

D. Beekeeping

Two permits were issued for beekeeping on the refuge. Mr. Howard Taylor was issued a permit for 200 hives and Mr. Spencer Bradner was issued a permit for 100 hives. Revenue from this source totaled $45.00.

V. FIELD INVESTIGATIONS OR APPLIED RESEARCH

A. Goose Banding

The quota of 1,000 blue and snow geese was trapped with little difficulty. An attempt was not made to band small Canada geese. The Canada geese feed almost exclusively on green browse and did not frequent the banding site.

The trapping was done with four fine mesh nylon cannon nets, set on a permanent banding site.

SUMMARY OF GEESE BANDED AT SAND LAKE IN 1972

Species	AM No.	AM %	AF No.	AF %	IM No.	IM %	IF No.	IF %	Total
Blue	65	25.4	78	30.3	61	23.7	53	20.6	257
Snow	293	29.7	278	28.2	226	22.9	190	19.2	987
TOTAL									1,244

B. Age Ratios of Snow and Blue Geese

Reports received from the breeding grounds at McConnell River, Canada indicated that a major portion of the river was still frozen in early July.

Field age ratio data taken this fall on the refuge showed that the percentage of immatures was 14 percent lower than in 1971. However, trap samples were within 3 percent of the 1971 level and hunters' bag samples were 8 percent higher than in 1971. Trap samples and hunters' bag samples tend to favor young birds as they are more vulnerable than adult birds.

AGE RATIOS - SNOWS AND BLUES

		1967	1968	1969	1970	1971	1972
Field Count	Number Sampled	7,564	8,476	10,893	1,039	1,320	3,452
	Immatures	21%	24%	38%	56%	31%	17%
Trap Sample	Number Sampled	1,447	1,448	1,014	683	1,060	1,244
	Immatures	19%	34%	58%	59%	45%	43%
Hunters' Bag	Number Sampled	91	173	966	784	380	341
	Immatures	40%	46%	76%	69%	56%	64%

C. Dewline Duck Banding

Two cannon nets were used for duck banding. The same site was used for both duck and goose banding. Only three net shots were necessary to trap and band 1,030 mallards. Twenty-five immature mallards were banded with reward bands. The reward bands are worth $10.00 each to the person who returns them to the Bird Banding Laboratory. These bands are being used for a Mallard Band Reporting Rate Investigation.

MALLARD BANDING SUMMARY

AM		AF		IM		IF		
No.	%	No.	%	No.	%	No.	%	Total
385	37.4	327	31.7	177	17.2	141	13.7	1,030

D. Special Studies

The following band returns indicate that the harvest of snow and blue geese was lower in 1971 than in 1970. Data also indicates that the harvest of small Canada geese was higher in 1970 than in 1971. Data are not available for 1972.

LOCATION OF INDIRECT RECOVERIES OF FALL SHOT BLUE AND SNOW GEESE

	1970		1971	
Area	Number of Recoveries	Percent	Number of Recoveries	Percent
South Dakota	36	13.7	41	27.1
Texas	90	34.4	33	21.9
North Dakota	63	24.0	26	17.3
Louisiana	15	5.7	10	6.7
Iowa	15	5.7	13	8.6
Manitoba	3	1.1	7	4.6
Missouri	11	4.2	6	4.0
Minnesota	6	2.3	6	4.0
Nebraska	6	2.3	3	2.0
Ontario	12	4.6	3	2.0
Michigan	0	0	1	.6
Saskatchewan	0	0	1	.6
Kansas	2	.8	1	.6
Arkansas	1	.4	0	0
Wisconsin	1	.4	0	0
NW Territories	1	.4	0	0
TOTALS	262	100.0	151	100.0

LOCATION OF INDIRECT RECOVERIES OF FALL SHOT SMALL CANADA GEESE

Area	1970 Number of Recoveries	1970 Percent	1971 Number of Recoveries	1971 Percent
North Dakota	122	35.4	45	24.7
South Dakota	34	9.9	32	17.6
Manitoba	38	11.0	24	13.3
Texas	72	20.9	25	13.7
Kansas	19	5.5	23	12.6
Oklahoma	13	3.8	14	7.7
Nebraska	10	2.9	9	5.0
Saskatchewan	2	.6	3	1.6
Missouri	2	.6	2	1.1
Wisconsin	0	0	2	1.1
Illinois	3	.9	2	1.1
NW Territories	2	.6	1	.5
Minnesota	15	4.4	0	0
Mexico	7	2.0	0	0
TOTALS	344	100.0	182	100.0

E. Canada Goose Propagation

This was a boom year for giant Canada goose production. The number of goslings hatched exceeded the previous high set in 1970 by 226 goslings.

PROPAGATION RECORDS

	1969	1970	1971	1972
No. of pairs nesting	89	97	93	110
No. of pairs re-nesting	53	49	43	74
No. of eggs laid	771	837	759	1,018
No. of goslings hatched	404	458	417	684
No. of geese raised to flight	389	436	401	704*

* This includes some birds from Jamestown eggs.

Releases were a joint effort by the refuge and the Northern Prairie Wildlife Research Center. Birds raised at both facilities were transferred to the following sites: Chase Lake NWR - 250; Long Lake NWR - 250; a private lake near Robinson - 250; and Slade NWR - ~~89~~ 149.

Each group of geese was marked with colored leg bands and Fish and Wildlife Service bands. A colored and numbered nasal saddle was placed on one bird in every 25. The geese were released when they were 8 weeks old and just beginning to fly. All of the releases were made in areas where older Canada geese are known to have frequented during migration. It is hoped that the younger geese will migrate south with the old birds and return to the release site for nesting.

Refuge Clerk Snider and Laborer Christianson placing the colored leg band on one of the young giant Canadas. Schoonover SD-SOL-1211

Reports from the Northern Prairie Wildlife Research Center indicate that all of the released geese were out of North Dakota by December 10, 1972.

Future plans call for the continuation of joint releases with the Northern Prairie Wildlife Research Center. Future release sites in North Dakota have not been determined at this time.

VI. PUBLIC USE

A. Recreational Uses

News releases publicizing the goose management controversy at Sand Lake created a large influx of visitors in 1972. Total non-consumptive visits to the refuge were: On Refuge Observation - 6,540, Wildlands Appreciation - 5,699, Photography - 450, Camping - 246, and Picnicking - 134. Camping and picnicking visits were lower than in 1971. These two categories are being reduced to comply with Systems Objectives and Bureau directives. Total non-consumptive visits were 13,069, compared to 5,344 in 1971.

Other visits in 1972 were: Waterfowl Hunting - 11,432, Big Game Hunting - 555, Fishing - 1,287, Upland Game Bird Hunting - 200, Slide Talks and Tours - 1,060, and Professional Services - 187.

A total of 27,790 visits was recorded in 1972.

B. Refuge Visitors

The following list includes some of those who visited Sand Lake during the year. Many of these visitors came in direct relation with the Sand Lake "Goose Problem".

Name	Organization	Purpose
Lynn Greenwalt	BSF&W	Goose Controversy
John Rodgers	BSF&W	Goose Controversy
Travis Roberts	BSF&W	Goose Controversy
Rolf Wallenstrom	BSF&W	Goose Controversy
R. A. Hodgins	S. D. G.F.&P.	Goose Controversy
John Popowski	S. D. G.F.&P.	Goose Controversy
Herbert Troester	BSF&W	Visit
Arnold Kruse	BSF&W	Goose Propagation
Forrest Lee	BSF&W	Goose Propagation
Ray Greenwood	BSF&W	Goose Propagation
Chris Schuler	BSF&W	Visit
Ty Berry	BSF&W	Visit
Charles Gibbons	BSF&W	Visit
Jim Matthews	BSF&W	Visit
Dave Gilbert	BSF&W	Visit
John Akin	BSF&W	Visit
Maurice Anderson	BSF&W	Blackbird Problem
Leo Kirsch	BSF&W	Visit
Ned Peabody	BSF&W	Visit
Ron Perry	BSF&W	Visit
Vic Hall	BSF&W	Visit
Conrad Fjetland	BSF&W	Visit
Bill Lindsay	BSF&W	Pollution Monitoring
Frank Pratt	BSF&W	Inspection
John Winship	BSF&W	Goose Census

State employees Laverne Roth, Dave Kraft, Tom Kuck, Jack Opitz and Jerry Streckfuss made numerous visits to the refuge regarding the goose problem and general enforcement.

Howard Lovrien and Dave Fisher, USGMA's, were also frequent visitors to the refuge during the year on enforcement matters. Bureau Biologists Ralph Town, Bill Bair, Jim Sieh and Jerry Stoudt visited the refuge on numerous occasions. Leonard McDaniel, Wildlife Services, was a frequent visitor during the fall while working on the blackbird problem.

C. Refuge Participation

As a result of the "Scorched Earth Policy" publicity, (See Section VII, C, 2), refuge personnel were requested to appear before sportsmen, students and professional groups to explain current refuge policies. There were numerous personal contacts, letters and telephone calls regarding the goose controversy.

Refuge tours were given to 336 participants in 16 groups. Slide shows and movies were given to 363 participants in 12 groups.

D. Hunting

1. Waterfowl

a. Ducks

South Dakota opened duck season on October 1, 1972 for 70 days, closing on December 9. The season was closed on redheads and canvasbacks. The point system was used for the third consecutive year with the following point values: 20 point ducks - drake mallard, hen pintail, ring-necked duck and black duck; 90 point ducks - hen mallard, wood duck and hooded merganser; all other ducks were 10 point ducks. The daily bag limit is reached when the point value of the last duck taken added to the sum of the point values of the other ducks already taken during that day reached or exceeded 100 points.

Duck hunting was excellent the entire season. Corn field hunting on late mallards was marginal because of bluebird weather.

b. Geese

A 75 day goose season opened on October 1 and closed on December 14. There were approximately 10,000 geese using the refuge on October 1. Hunting was only fair during the entire season.

1972 GOOSE KILL SURVEY

Number of Questionnaires mailed			582
Percent Returned			67
*Calculated Total Goose Hunters in Brown County			3,782
Average Number of Days Hunted per Hunter			8.4
Average Season Goose Kill per Hunter			4.4
Calculated Total Goose Kill in Brown County			16,640
Calculated Kill by Species:	Canadas	832	
	White-fronts	166	
	Snows & Blues	15,642	
Calculated Kill From Refuge Blinds			5,990

* Brown County Duck Stamp sales (4,628 X 61%) plus out-of-county hunters (26.8%) plus hunters under 16 (7.2%) = 3,782.

The 16,640 geese killed in 1972 are 47 percent fewer than were killed in 1971. Several factors which may have influenced the goose harvest were: 1. the goose flock consisted of 14% fewer immature geese than in 1971 (Data taken from field count in Section V,B), 2. a long Indian summer provided few good hunting days, 3. three state refuges were set up within 30 miles of Sand Lake which dispersed the geese in a wide area.

The blind system installed in 1970 has proven popular with most hunters and has reduced crippling losses to an acceptable level. In 1972, 22 additional blinds were installed along three-quarters of a mile of refuge boundary. A total of 198 blinds are now available to hunters.

It is calculated from the goose kill survey questionnaire that there were 11,432 visits to the refuge public shooting areas for the purpose of hunting waterfowl. The hunters spent 45,728 activity hours hunting and averaged .52 geese per visit. These figures are higher than those estimated for reporting purposes on the monthly public use forms.

2. Pheasant Hunting

A 14 day pheasant season opened on December 4 and closed on December 17. Extremely cold temperatures occurred throughout the season but those hunters who were willing to buck the cold weather and dense cover found an ample supply of birds. The refuge pheasant population was estimated at 3,000 birds or 15% higher than in 1971. Approximately 350 cocks were harvested by 200 hunters.

3. Deer

A 16 day archery season opened on September 2 and closed on September 17. Approximately 12 deer were shot and tagged. Several hunters reported shooting deer that they could not find. Future plans call for a meeting with the White-tail Bowmens Club to discuss crippling loss and the feasibility of continuing the early season.

The late archery season opened on December 4 and closed on December 31. Less than 30 hunters participated in the late season because of the cold temperatures experienced during December. Approximately 8 deer were shot during the late season including one 6-5 point buck.

The deer firearms season opened on November 25 and closed on December 3. There were 175 permits available for the 9 day season. Only 129 permits were taken due to a change in policy by the South Dakota Game, Fish and Parks Department which required that non-preference applicants (non-land owners) could be submitted only once every three years rather than once every two years.

Sixty-four deer were checked by refuge personnel. Forty-one percent of the 64 were bucks 1 1/2 years old or older, 28 percent were fawn bucks and the remaining 31 percent were does. The percent of antlered bucks shot was 1 percent lower than in 1971. It is believed that hunter success was 15 to 20 percent lower than the 93 percent success figure in 1971. The 1972 success data will not be available until late January or early February.

E. Violations

A considerable amount of time was spent patroling public hunting areas along the refuge boundary. Enforcing the closure of 11 3/4 miles of road to hunting was one of the major enforcement problems.

REFUGE VIOLATIONS - 1972

Name	Violation	Agent	Disposition*
Douglas J. Norman	Falsely Obt. License	Waldstein	150.00
Rudy D. Martin	Trespass	Lawhorn	25.00
Lavern A. Behr	Shooting Swan	Waldstein	40.00**
Fred F. Hendricks	Trespass	Waldstein	25.00
Rollie S. Chapple	Trespass	Waldstein	25.00
Steve F. Jensen	Shooting/Closed Road	Waldstein	25.00
Brian K. Liedtke	Shooting Swan	Waldstein	40.00**
Donald E. Grey	Shooting/Closed Road	Waldstein	25.00
Roy H. Fritz	Shooting/Closed Road	Waldstein	25.00
Jim E. Lynch	Shooting/Closed Road	Waldstein	25.00
Mathew J. Unzen	No Game Stamp	Waldstein	25.00
Linton B. Hinds	Shooting/Vehicle	Waldstein	50.00
John M. Gruenstein	Pheasant Out of Seas.	Waldstein	40.00**
Bryan D. Sieber	Unplugged Gun	Lawhorn	25.00
Dale E. Brassfield (17)	Shooting/Closed Road	Waldstein	Denied/Age
Edward C. Halvorson (17)	No Duck Stamp	Waldstein	Denied/Age
Myron P. Hoffman (16)	Hunting in Refuge	Waldstein	Denied/Age

* Includes fine and court costs
** Also forfeiture of hunting license for one year

All cases except the Linton Hinds case were handled in Municipal Court in Aberdeen. Excellent cooperation was received from the Brown County Conservation Officer.

General observance of special game laws affecting the refuge was excellent.

F. Safety

Safety meetings were held throughout the year with most meetings centering around current operations. All unsafe conditions and equipment were noted and corrective action taken. At the end of the year refuge personnel had logged 2,748 days with no lost-time injuries.

G. Transport Operations

"Fritz" Krege traveled 16,100 miles in the transport turck this year. The transport truck and D-7 were used for cleanup work in the Kulm, Valley City and Madison WMD's for a total of six weeks.

Listed below are some of the hauls for 1972.

January

Bait mixing equipment for Wildlife Services from Mitchell to Pierre

February

Trucks to Valentine NWR from Ft. Leonard Wood, Missouri

March

D-8 Cat to Necedah NWR from Desoto NWR

April

Ammonium Nitrate fertilizer to Swan Lake, Squaw Creek and Sand Lake NWR's from Crane Naval Air Station, Indiana

October

D-4 Cat to Big Stone NWR from Upper Mississippi Refuge

December

Timber to Mark Twain NWR from Burlington AMMO Depot
212 Cat Grader to Sand Lake for Big Stone NWR from Mark Twain NWR

VII. OTHER ITEMS

A. Dakota Lake Easement Refuge

The Dakota Lake Refuge boundary was checked and defaced signs and posts were replaced. Ten new posts and 18 new signs were used. The peak goose population this fall was 8,500 birds. Hunting pressure was heavy but success was poor.

Rumors came to us that a fight occurred in the Ludden Bar shortly after a census flight was made by the Bureau plane. It seems that a landowner on the north end of the refuge thought that a landowner on the south end was chasing geese south with an airplane. No one was injured in the fight and they were never told that it was a Bureau plane taking a goose census.

B. Wildlife Photography

Des Bartlett and his wife, Jen, were here for a month in the spring and again in October. Mr. Bartlett was making a film on snow geese for Anglia Films of London, England. The film will be shown on NBC-TV on January 23, 1973 at 7:00 p.m. CST. Glen Campbell will narrate the film.

Imprinted geese used by Bartlett in "Incredible Flight of the Snow Goose". Bartlett SD-SOL-1212

C. Personnel

Refuge Manager Lyle Schoonover has transferred to the new State Office in Bismarck, North Dakota. He will assume the duties of the Land Manager which will include supervision of Refuges, Wetland Management Districts and Wetland Acquisition. Lyle will be missed at Sand Lake, but many of his ideas will influence Sand Lake for years to come.

D. Miscellaneous

One overnight camper forgot to close his tent flap at night and subsequently had to take a complete series of rabies shots. During the night an animal (thought to be a skunk) came in and bit him on the ear. The animal was not captured or seen.

E. Goose Controversy

Early this spring, newspaper, radio and television stations throughout this part of the country frequently carried news items relating to the "Scorched Earth Policy" at Sand Lake Refuge. One reason for this publicity was the misunderstanding and exaggeration of the ideas presented in a paper given by the Bureau at the Central Flyway Council meeting in St. Louis, Missouri. Our first knowledge of the "Scorched Earth Policy" came through the local radio station.

F. Credits

Authorship of this report is credited to the following persons: Waldstein - Sections III, A and VI, E; Snider - Sections I, A and VI, B, C, F and G; and Lawhorn - remainder of report.

Credit for photographs included in the report is given with each picture.

Snider typed the report.

Submitted by:

Date: Feb. 8, 1973 Sam Waldstein

Acting Refuge Manager

Approved, Area Office:

_____

_____ Date: _____

TR Code	Reg.	Station	Sub.	Name	Report Period Yr	Mo.
1 2 3	4 5	6 7 8 9	10 11	12 13 14	15	16 17
3 0 1	0 3	3 5 1 6	0 0	S D L	2	XX XX

Bureau of Sport Fisheries and Wildlife
Division of Wildlife Refuges

PUBLIC USE REPORT

OUTPUT TYPE	LINE CODE									NO. VISITS	ACTIVITY HOURS	NON-STD TOTAL RBUs
	18	19	20	21	22	23	24	25	26	27-35	36-45	46-55
INTERPRETATION												
Wildlife Trails - Nonmotorized												
Self Guided	1	0	1	0	0	0	0	P	S			
Conducted	1	0	2	0	0	0	0	P	C			
Wildlife Tour Routes - Motorized												
Self Guided	1	1	1	0	0	0	0	P	U			
Conducted	1	1	2	0	0	0	0	P	T			
Interpretive Center	1	2	0	0	0	0	0	P	R			
Visitor Contact Station	1	3	0	0	0	0	0	P	Q			
Exhibits - Demonstrations												
Self Guided	1	4	1	0	0	0	0	P	A			
Conducted	1	4	2	0	0	0	0	P	M			
Other Programs	1	5	0	0	0	0	0	P	P	1,060	1,493	
EDUCATION												
Students	2	0	0	0	0	0	0	P	E			
Teachers	2	1	0	0	0	0	0	P	B			
Prof. Services Rendered	2	2	0	0	0	0	0	P	F	187	601	
RECREATION- WILDLIFE WILDLANDS												
Hunting Mig. Birds - Waterfowl												
Ducks	3	0	1	0	0	0	0	P	D			
Geese	3	0	2	0	0	0	0	P	G			
Swans	3	0	3	0	0	0	0	P	N			
General Waterfowl	3	0	4	0	0	0	0	P	W	Reported on Monthlies 7,484	Reported on Monthlies 29,936	11,432 From Goose 45,728 Kill Survey
Hunting Mig. Birds - Other	3	0	5	0	0	0	0	P	X			
Control Totals	9	9	2	0	0	0	0	R	~~Z~~	8,731	32,030	

Region 03 State S. D. Date Prepared 2/7/73

Station ~~Sand Lake Refuge~~

Form 3-239a
Rev. 7/72

TR Code	Reg.	Station	Sub.	Name	Report Period Yr	Mo.
1 2 3	4 5	6 7 8 9	10 11	12 13 14	15	16 17
3 0 1	03	3 5 1 6	0 0	S D L	2	XXXX

Bureau of Sport Fisheries and Wildlife
Division of Wildlife Refuges

PUBLIC USE REPORT

OUTPUT TYPE	LINE CODE									NO. VISITS	ACTIVITY HOURS	NON-STD TOTAL RBUs
	18	19	20	21	22	23	24	25	26	27-35	36-45	46-55
RECREATION - W/W (con't)												
Hunting Resident Game												
Upland Game Birds	3	1	1	0	0	0	0	P	L	200	520	
Big Game				(Species code)								
Deer - Gun	3	1	2	7	8	5	0	P	H	275	1,330	
Deer - Bow	3	1	3	7	8	5	0	P	J	280	1,060	
	3	1	4					P	K			
	3	1	4					P	K			
	3	1	4					P	K			
	3	1	4					P	K			
Small Game	3	1	5	0	0	0	0	P	Z			
Other Game	3	1	6	0	0	0	0	U	G			
Fishing												
Warmwater	3	2	1	0	0	0	0	U	W	1,287	3,093	
Coldwater	3	2	2	0	0	0	0	U	C			
Saltwater	3	2	3	0	0	0	0	U	S			
Clams, Crabs, Oysters, Frogs	3	2	4	0	0	0	0	U	Y			
Other Consumptive W/W Rec.	3	3	0	0	0	0	0	U	M			
Wildlife Observation												
Foot	3	4	1	0	0	0	0	U	H			
Auto	3	4	2	0	0	0	0	U	B	6,540	12,755	
Boat - nonmotor	3	4	3	0	0	0	0	U	R			
Other	3	4	4	0	0	0	0	U	K			
CONTROL TOTALS	9	9	2	0	0	0	0	R	Z	8,582	18,758	

Region 03 State S. D. Date Prepared 2/7/73

Station Sand Lake Refuge

TR Code	Reg.	Station	Sub.	Name	Report Period Yr.	Mo.
1 2 3	4 5	6 7 8 9	10 11	12 13 14	15	16 17
3 0 1	03	3 5 1 6	0 0	S D L	2	

Bureau of Sport Fisheries and Wildlife
Division of Wildlife Refuges

PUBLIC USE REPORT

OUTPUT TYPE	LINE CODE									NO. VISITS	OUTPUT UNITS	NON-STD TOTAL RBUs
	18	19	20	21	22	23	24	25	26	27-35	36-45	46-55
RECREATION - W/W (con't)											(Activity Hrs.)	
Wildlands Appreciation												
Foot	3	5	1	0	0	0	0	U	E			
Auto	3	5	2	0	0	0	0	U	N	5,699	1,435	
Boat	3	5	3	0	0	0	0	U	L			
Other	3	5	4	0	0	0	0	U	P			
Photography	3	6	0	0	0	0	0	U	T	450	1,800	
Field Trials	3	7	0	0	0	0	0	U	X			
Public Affairs											(Number)	
TV Programs	3	8	1	0	0	0	0	U	V			
Radio Programs	3	8	2	0	0	0	0	U	A			
Newspaper Articles	3	8	3	0	0	0	0	U	D		55	26,500
Other Articles	3	8	4	0	0	0	0	U	F			
Other	3	8	5	0	0	0	0	U	J			
RECREATION - NON W/W ORIENT.											(Activity Hrs.)	
Camping	4	0	0	0	0	0	0	R	C	246	10,942	
Picnicking	4	1	0	0	0	0	0	R	P	134	330	
Swimming	4	2	0	0	0	0	0	R	S	30	45	
Boating	4	3	0	0	0	0	0	R	B			
Waterskiing	4	4	0	0	0	0	0	R	W			
Off Road Vehicling	4	5	0	0	0	0	0	R	V			
Other	4	6	0	0	0	0	0	R	M			
TOTAL VISITS TO REFUGE	0	9	0	0	0	0	0	P	V	23,872		
CONTROL TOTALS	9	9	2	0	0	0	0	R	Z	30,431	14,607	26,500

Region 03 State S. D. Date Prepared 2/7/73

Station Sand Lake Refuge

Form 3-239c
Rev. 7/72

3-1570
NR-89
(4/54)

REFUGE GRAIN REPORT

Refuge Sand Lake NWR Months of January through December, 1972

(1) Variety*	(2) On Hand Beginning of Period	(3) Received During Period	(4) Total	(5) Grain Disposed of				(6) On Hand End of Period	(7) Proposed or Suitable Use*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Shelled Corn	2,500	4,680	7,180	2,712		2,900	5,612	1,568		1,568	
Feed Barley	1,000	1,028	2,028	200		261	461	1,567		1,567	
Rye		969	969		425		425	544	544		
Seed Barley		687	687		285			402	402		
Millet	450	200	650	300	28	94	422	228		228	

(8) Indicate shipping or collection points Elevator at Site #2

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

(10) Remarks

*See instructions on back.

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Sand Lake Refuge County Brown State South Dakota

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return Harvested		Government's Share or Return Unharvested		Total Acreage Planted	Green Manure, Cover and Waterfowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Acres	Bu./ Tons	Acres	Bu. /Tons			
Corn	626	40,040	126	4,680	310.5	20,150	1,052.5	See NR-7	550
Barley	317	11,091	92	1,715	302	10,570	711		
Millet			20	200	76	1,900	96		
Wheat	294.5	8,535			17	510	311.5		
Oats	234	14,040					234		
Alfalfa	104	208T					104		
Flax	16	160					16		
Sorghum	12	36T					12		
Rye			30	969			30		
								Fallow Ag. Land.	

No. of Permittees: Agricultural Operations 17 Haying Operations 0 Grazing Operations 0

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	Grazing	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle				
				2. Other				+59
				1. Total Refuge Acreage Under Cultivation				2,567
H - Wild				2. Acreage Cultivated as Service Operation				

3-1757
Form NR-7
(Rev.June 1960)

(1)

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

Refuge Sand Lake NWR Year 1972

Species	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Los
				* Lee Herseth's			Tract 13	50#	220	DNC	8/72		
				* Mitchell's			Tract 36	50#	144	DNC	8/72		
				* Scott's Trees			Tract 20	50#	14.5	DNC	9/72		
				* Hecla Rec. Fd.			Tract 11	50#	10.5	DNC	9/72		
				* Lahman's			Tract 21	50#	4.5	DNC	9/72		
				* Bonzer's			Tract 16	50#	11	DNC	8/72		
				* Stensland's			Tract 30	50#	54	DNC	8/72		
				* Corral (N. Hec.)			Tract 3	50#	21	DNC	9/72		
				* Hecla. Rec.			Tract 14	50#	42.5	DNC	8/72		
				* North's (East)			Tract 60	50#	28	DNC	8/72		
				** West Lahman's			Tract 21	50#	18	DNC	4/72		
				** East Lahman's			Tract 17	50#	10	DNC	4/72		
							TOTAL		578				

(1) Report agronomic farm crops on Form NR-8
(2) C = Collections and R = Receipts
(3) Use "S" to denote surplus

Total acreage planted:
Marsh and aquatic _____
Hedgerows, cover patches _____
Food strips, food patches _____
Forest plantings _____

Remarks: * Seeded with 46# Rye, 2# sweetclover, 1# Intermediate wheatgrass and 1 # alfalfa per acre

** Seeded with 46# Barley, 2# sweetclover, 1# Intermediate wheatgrass and 1# alfalfa per acre

3-1755
Form NR-5

DISEASE

Refuge Sand Lake NWR Year 19 72

Botulism

Period of outbreak _____

Period of heaviest losses _____

Losses:

	Actual Count	Estimated
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Areas affected (location and approximate acreage) _____

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

Condition of vegetation and invertebrate life _____

Remarks None this period

Lead Poisoning or other Disease

Kind of disease _____

Species affected _____

Number Affected Species	Actual Count	Estimated

Number Recovered _____

Number lost _____

Source of infection _____

Water conditions _____

Food conditions _____

Remarks None this period

INT.-DUP., D 5331 3-59

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PERSTICIDE APPLICATION

Refuge: Sand Lake NWR

Proposal Number: 1-72, 2-72, 3-72 and 4-72

Reporting Year: 1972

INSTRUCTIONS: Wildlife Refuges Manual, secs, 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1-72 June	Quackgrass and Pigeongrass	Refuge cornfields	100	Atrazine 80W	139#	1#/Acre	Water 20 Gal./Ac.	Boom Sprayer
2-72 June	Sowthistle and other broadleaves	Small Grain fields	400	2,4-Dimethyl-amine salt	300#	3/4#/Acre	Water 10 Gal/Ac.	Boom Sprayer
3-72 June	Sowthistle	Grassland	100	2,4-Dimethyl-amine salt	100#	1#/Acre	Water 10 Gal./Ac.	Boom Sprayer
4-72 June	Leafy Spurge	Grassland	50	Tordon 212	150#	3#/Acre	Water 10 Gal./Ac.	Boom Sprayer

10. Summary of results (continue on reverse side, if necessary)

35500

"Mother Goose" migrated north with the flock. Bartlett

SD-SDL-1213

U.S. accused of plan to rout S.D. geese

April 1972

Apr Tab – week of 16

By Dale Fetherling
Staff Writer

South Dakota conservationists charged Thursday that the federal government is planning a "scorched earth" policy in the Sand Lake National Wildlife Refuge to repel snow and blue geese from the popular hunting and bird-watching spot north of Aberdeen.

Federal officials denied that any plan has been agreed upon and said Upper Midwest hunting will not suffer in any event.

Donald Sinning, secretary of the 3,000-member South Dakota Wildlife Federation, said the group has learned that Sand Lake and two other refuges will begin discouraging the geese during the fall migration.

The decision by the Interior Department's Bureau of Sport Fisheries and Wildlife, he said, resulted from political pressure to allow increased kills in Texas and Louisiana.

Sinning said he understands that the water level will be lowered in the Sand Lake area, geese-attracting crops changed, and even harassment of the geese attempted if necessary to encourage the migration farther south.

Not only could hunting be reduced, Sinning said, but a precedent would be set for politically motivated changes at other refuges around the country. Further, sportsmen who have had to pay an increase from $3 to $5 in their duck-hunting stamps will find their money going for the discouragement of geese.

The other two refuges involved are the DeSoto National Wildlife Refuge near Omaha, Neb., and the Squaw Creek National Wildlife Refuge near St. Joseph, Mo. All are used extensively by snow and blue geese, which last year showed up in peak numbers of more than 160,000 at Sand Lake.

Robert Hodgins, South Dakota's game, fish and parks director, said the outlook isn't as bad as Sinning makes it sound.

"This year the snow geese and blue geese were late getting down there (the South), so those people got excited. Instead of working through flyway councils, they went to their congressional delegations to put heat on the bureau."

But he said the Mississippi Flyway Council strongly opposes the bureau's proposed program, and South Dakota will take action—such as buying land to provide additional crops — if need be.

"I think the bureau will determine that Sand Lake isn't a problem area in the migration process," Hodgins said.

Forrest Carpenter, regional supervisor of the Bureau's division of wildlife refuges, said there is "nothing final" about a proposal that food, water and sanctuary at the three refuges be manipulated to encourage more Southern migration.

"We are interested in trying to do what we can to keep the birds moving on," said Carpenter, who is based at Ft. Snelling in Minneapolis. "At the same time, we want some of the birds to stay a while. It's a fine line that has to be drawn in between."

South Dakotans "are concerned, and I think they have some reason to be, for fear the federal government will reduce their hunting." But even if the program is adopted, "it's not going to be so drastic that hunters in South Dakota are going to suffer," he said.

Not only is manipulation of food, water and sanctuary an imprecise art, but non-federal property also often provides these needs, he said. So even if the proposed action is taken, there's no guarantee that the birds will leave the state, Carpenter said.

Sinning said he believes that Texas and Louisiana hunters already bag some 70 percent of the blue and snow goose harvest. Carpenter said he didn't have the figures readily available but "their hunting success down there is holding up."

However, the goose population has increased, and the Southerners may not have reaped a proportionate increase, Carpenter said.

The idea of possibly discouraging the geese from the three Midwest refuges was brought up at a meeting in St. Louis, Mo., last week, Carpenter said, but it is "subject to further review" in Washington, D.C., where a decision may be reached in two to three weeks.

Sinning said the interest of the Southern sportsmen in increasing the migration of the geese has been recurrent. But if federal officials capitulate to Southern politicians, he said, this "could destroy the integrity of the national wildlife refuge system."

Carpenter said, "One thing is sure: we aren't going to please everybody."

Will keep geese longer

GF&P responds to action at Sand Lake

The South Dakota Game, Fish and Parks Commission Tuesday directed its staff to begin an "immediate study of all alternative methods to present management of snow and blue geese in the state." The purpose of the study is to determine methods that might be used by the state to hold geese longer during the fall migration.

Commission Chairman Jack Adams of Sisseton said the study is a response to an announcement recently by Travis Roberts, regional director of the Bureau of Sport Fisheries and Wildlife in Minneapolis. Roberts has said the bureau will take steps to make the Sand Lake National Wildlife Refuge "less attractive to geese."

The announcement by Roberts was understood by the GF&P Commission to mean that the federal government has decided to move geese out of the Sand Lake Refuge to further hunting opportunity in southern states.

Will study alternatives

Adams said all alternatives available to South Dakota to hold geese will be studied. He expressed commission concern for geese at the Waubay, Lake Andes and La Creek National Wildlife Refuges and the Missouri River impoundments.

GF&P Director R.A. Hodgins, said that national waterfowl resources have been managed for 20-25 years through the concept of participating flyway councils comprised of the directors of the various state game and fish agencies.

He said that important matters such as the status of migratory bird populations and regulations for their protection and harvest are constantly considered by the flyway technical committees. These committees are comprised of the most knowledgeable waterfowl biologist in each of the flyway states.

Result of political action?

Hodgins said in this instance, direction by the Assistant Secretary of Interior for Fish and Wildlife, to move geese out of Sand Lake, is apparently a result of political action by southern states.

"This kind of procedure is foreign to past methods of conducting waterfowl management and is unacceptable," he added

The GF&P Director said tha other flyway states will also b concerned about the future o snow and blue geese if their migration to Louisana and Texas is hastened.

Bureau data check

Bureau data shows that of the snow and blue goose kill in the central flyway, Texas is presently harvesting a large percent. This kill mostly occurs from mid-December to mid-January and, according to Hodgins, if the geese are moved south earlier in the fall, an even greater kill there will occur.

Sand Lake will be topic Friday at sports meet

The Day County Sportsman Club of Bristol will host a meeting of all Northeast South Dakota sportsman clubs and interested sportsmen Friday at 8 p.m. Purpose of the meeting will be to discuss Department of Interior plans to the Sand Lake National Wildlife undesirable for goose for goose hunting. The session will be at the club house.

President Alex Maxwell indicated that besides sportsmen, the club has invited personnel from the Department of Game, Fish and Parks, and managers of Sand Lake and the Waubay refuge to attend.

Maxwell said this week that Department of Interior officials have proposed cutting down feed, draining water and using noise makers to keep geese from staying in the Sand Lake area so hunters in Louisiana and Texas will have better hunting. "Records show that hunters in the southern states already harvest at least 70 percent of the geese now," the sportsman said.

Sand Lake proposal not final

PIERRE (AP) — Robert Hodgins, South Dakota Game, Gish and Parks director, said Monday he has been assured that the federal department of interior's proposal for moving geese from Sand Lake is not final.

Hodgins made public a letter from Spencer Smith, acting director of the Bureau of Sport Fisheries and Wildlife.

Spencer said, "We want to emphasize that we have made no decision about what will be done this fall."

THE BUREAU had presented a proposal to make three refuges less attractive to snow and blue geese, causing the waterfowl to migrate south sooner in the fall.

Smith's letter said the Bureau's policy is to maintain traditional waterfowl migration routes.

"In developing a plan to insure the preservation of traditional migration," he wrote, "we anticipate receiving sound biological support from the various states involved. We are awaiting response from the states and stand ready to consider any and all alternatives presented. It is possible that the three refuges we have identified are not necessarily the areas toward which we should be directing our attention. It may be that the plans we have developed for these areas are not the best. We anticipate and would solicit help from these states i developing the overall flyway plan."

THE REFUGES included Sand Lake, De Soto in Missouri and Squaw Creek north of Omaha.

Hodgins said the letter supported his belief that the bureau could not make a case for the proposal at Sand Lake.

Aberdeen American News - 2/6/72

New Refuge Cover Plots Provide Protection, Feed For Wildlife

By LEE WEISHAAR
American-News Outdoor Editor

"IT'S pretty much as we visualized it when we went through here last fall, isn't it?"

That was the question asked of this writer by Lyle Schoonover, manager of Sand Lake National Wildlife Refuge when we took a second tour of new game cover areas which have been incorporated into the refuge's scheme of game management.

It was indeed as we had figured it would be when this writer had his first tour of the areas, prior to any snowfall. At the time we noted that in a winter of heavy snow, the tall and heavy vegetation on the approximately 400 acres of habitat would be a boon to pheasants and other wildlife.

That wildlife is using the areas was immediately obvious. As we drove through the snow-choked low cover which makes up most of the national wildlife refuge, we saw very little in the way of wildlife or wildlife sign. Low grasses and rushes were packed with hard drifted snow and there was little cover or feed available.

As we came to the first of the new cover areas, first a deer and then flock after flock of pheasants fled the tangle of weeds and clover.

Walking into such an area, we found the snow only ankle deep and soft and fluffy. Buffered by high vegetation, the wind had not been able to pack it hard.

And the snow was a mass of wildlife tracks. One could pick out deer and pheasant sign as being dominant, but there were others. Every so often there was a fresh area where deer had dug into the light snow cover to get at some delicacy hidden under it. Around such an area were pheasant tracks, made by am certain it would be a boon to pheasants and deer, as well as other wildlife."

Schoonover's recipe for the cover areas is a bushel of rye, two pounds of sweet clover, a pound of alfalfa and two pounds of intermediate wheatgrass to the acre.

By rotating the four plots of 400 acres each, Schoonover assures 400 acres of green grazing and 1200 acres of cover in various stages of development in a given-year. In the fifth year, the first area seeded will be worked and the cycle will start over.

Wildlife on the refuge appeared to be in good physical condition. The deer were fat, the pheasants flew high and fast and — believe it or not — the antelope looked real good, too.

Yes, antelope. As we drove through a southern portion of the refuge, Schoonover noted that the previous evening he had seen an animal which he thought might have been an antelope. "It was nearly dark and I couldn't get a good look at him, so I didn't say anything about it to anyone."

Moments later, the refuge manager cried, "There!" And, sure enough, there was a nice, healthy antelope streaking away from us into the snow. This time it was close enough so there could be no doubt as to what it was.

Where did it come from? One can only speculate that it is a young buck from one of the herds in the hill country either to the northeast or the west, which was chased off by an older animal and wandered onto the refuge.

One thing we saw little sign of Wednesday was foxes. Schoonover noted that refuge personnel had seen few predators on the refuge this winter.

THE height and thickness of the cover on wildlife cover areas planted on Sand Lake National Wildlife Refuge are indicated by this photo, which shows refuge manager Lyle Schoonover fighting his way through the tangle of weeds and clover which provide excellent winter cover for wildlife. (American-News Photo)

The scene was repeated at each of three areas we checked during last Tuesday's snowstorm. Refuge roads has been plowed so corn could be distributed for the deer in an effort to keep them on the refuge and out of neighboring farmers' haystacks, but it still took an all-wheel drive vehicle to navigate the roads which wind through the refuge.

Schoonover explained that the cover areas were a new wrinkle in refuge management. Traditionally federal refuges and wetlands have been managed only for waterfowl, the prime responsibility of the Bureau of Sports Fisheries and Wildlife, Dept. of the Interior.

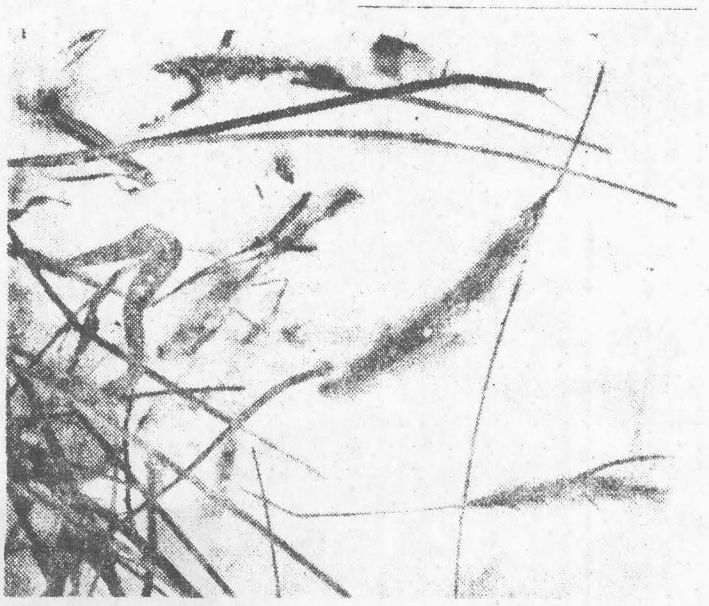
However, in recent years federal wetlands have been altered in ways which would provide cover for all wildlife without decreasing their value to ducks and geese.

Thinking along these lines, Schoonover initiated an ambitious plan for Sand Lake. A total of 1600 acres of uplands, used for grazing or haying previously, were set aside for the program. In the fall of 1970, 400 acres were planted to game cover and another 400 were seeded in 1971. The remaining two plots of 400 acres each will be seeded in 1972 and 1973. The plantings are primarily rye, which provides green grazing areas for geese in the fall.

The cover grows during the following summer and by fall the 400 acres is a tangle of weeds, rye, alfalfa, clover and grasses. This much resembles the old soil bank, and it has the same value to wildlife.

Schoonover noted that the cost of planting was minimal as compared to some wildlife practices, and the benefits were readily obvious.

"I wish some of the diverted acres in the state could be put into a similar covers areas," Schoonover said. If some federal or state agency could provide the initiative for farmers to devote some idle acres to cover such as this, I



THESE heads of rye, all of them partially filled with grain, were exposed simply by brushing away a light snow cover in one of the wildlife cover plots on Sand Lake National Refuge. Pheasants are able to just as easily find rye and weed seeds under the fluffy snow and can flourish in the protection of the heavy cover the plots provide. (American-News Photo)

NATIONAL WILDLIFE REFUGE SYSTEM
REPORT OF MISCELLANEOUS OUTPUTS
FY-72

File

SAND LAKE WETLNDS MGT DST
03-3516-03-SDW

TYPE OF OUTPUTS	UNITS	FY TOTAL
ENVIRONMENTAL PRESERVATION		
NATURAL ENVRNMNTS PRESR	ACRE	96777
NWRS-TYPE SANCTUARIES	AREA	1
MISCELLANEOUS WILDLIFE OUTPUTS		
WILDLIFE DIVERSITY	USE DAYS	266

NATIONAL WILDLIFE REFUGE SYSTEM

WATERFOWL USE DAYS

SAND LAKE WETLNDS MGT DST

03-3516-03-SDW

SPECIES NAME	JAN 1972-FEB 1972	MAR 1972-APR 1972	MAY 1972-JUN 1972	JUL 1972-DEC 1972	12 MONTH TOTAL
SPECIAL RECOG SPECIES					
AMERICAN COOT	0	457,500	450,000	0	907,500
WATERFOWL MAINTENANCE					
SWANS					
WHISTLING SWAN	0	750	0	0	750
GEESE					
LESSER-SNOW GOOSE	0	16,500	0	0	16,500
WHITE-FRONTED GOOSE	0	24,000	0	0	24,000
CANADA GOOSE	0	159,000	0	0	159,000
ALEUTIAN CANADA GOOSE	0	450,000	60	0	450,060
DUCKS					
COMMON MERGANSER	0	120,000	7,500	0	127,500
HOODED MERGANSER	0	900	300	0	1,200
MALLARD	0	1,980,000	214,500	0	2,194,500
BLACK DUCK	0	1,500	0	0	1,500
GADWALL	0	48,000	195,000	0	243,000
AMERICAN WIDGEON	0	34,500	16,500	0	51,000
GREEN-WINGED TEAL	0	4,800	4,200	0	9,000
BLUE WINGED TEAL	0	90,000	570,000	0	660,000
SHOVELER	0	90,600	162,000	0	252,600
PINTAIL	0	1,650,000	150,000	0	1,800,000
RED HEAD	0	51,000	40,500	0	91,500
CANVASBACK	0	108,000	20,250	0	128,250
LESSER SCAUP	0	960,000	120,000	0	1,080,000
RING-NECKED DUCK	0	55,500	15,000	0	70,500
COMMON GOLDENEYE	0	33,000	1,500	0	34,500
BUFFLEHEAD	0	15,000	6,000	0	21,000
RUDDY DUCK	0	30,000	42,000	0	72,000
TOTAL SWANS	0	750	0	0	750
TOTAL GEESE	0	649,500	60	0	649,560
TOTAL DUCKS	0	5,272,800	1,565,250	0	6,838,050
TOTAL WATERFOWL	0	5,923,050	1,565,310	0	7,488,360

Corrected 2-20-72

Low

NATIONAL WILDLIFE REFUGE SYSTEM
PUBLIC USE REPORT

ACT HRS BY MONTH

SAND LAKE WETLNDS MGT DST
03-3516-03-SDW

ACTIVITY NAME	JUL-71	AUG-71	SEP-71	OCT-71	NOV-71	DEC-71	JAN-72	FEB-72	MAR-72	APR-72	MAY-72	JUN-72	12 MONTH TOTAL
INTERPRETATION													
OTHER PROGRAMS								130				42	172
EDUCATION													
ENVIRONMENTAL EDUCATION										110	520		630
PROF. SERVICES RENDERED							2		205	40	14	10	271
RECREATION-WILDLIFE WILDLANDS													
HUNTING RESIDENT GAME													
SMALL GAME							45	50	5				100
OTHER GAME								170	5	5			160
TRAPPING							400	340					740
FISHING													
WARMWATER							585	645		1000	1400	360	3990
ON REF WLDLFE OBSERVATN									25	150	30	10	215
ON REF OTHR W/W N-C REC													
PHOTOGRAPHY										5			5
SIGHTSEEING									10		10	5	25
RECREATION NON-WILDLIFE													
PICNICKING										40			40
TOTAL INTERPRETATION								130				42	172
TOTAL EDUCATION							2		205	150	534	10	901
TOTAL HUNTING							445	220	10	5			680
TOTAL FISHING							585	645		1000	1400	360	3990
TOTAL OTHER W/W RECREATION									35	155	40	15	245
TOTAL WILDLIFE ORIENTED							1032	995	250	1310	1974	427	5988
TOTAL NON-WILDLIFE ORIENTED										40			40
TOTAL PUBLIC USE							1032	995	250	1350	1974	427	6028
NO. VISITS TO REFUGE							442	480	207	495	664	229	2517

NATIONAL WILDLIFE REFUGE SYSTEM
WILDLIFE USE REPORT
ALL REPORTED SPECIES FOR FY 72
(EXCLUDING WATERFOWL)
FY-72

SAND LAKE WETLNDS MGT DST
03-3516-03-SDw

SPECIES NAME	LINE CODE	USE DAYS JUL-SEP 71	USE DAYS OCT-DEC 71	USE DAYS JAN-MAR 72	USE DAYS APR-JUN 72	USE DAYS FY TOTAL	FY-NO. PRODUCED	FY-NO. HARVESTED	FY-PEAK POPULATION	DATE
THREATENED SPECIES										
REGISTERED										
FERRUGINOUS HAWK	701 3480	0	0	0	1230	1230	0	0	15	05/10
SPECIAL RECOG SPECIES										
WESTERN GREBE	720 0010	0	0	0	3300	3300	20	0	500	06/01
HORNED GREBE	720 0030	0	0	0	500	500	0	0	50	05/10
EARED GREBE	720 0040	0	0	0	22500	22500	100	0	350	06/01
PIED BILLED GREBE	720 0060	0	0	0	36000	36000	150	0	500	06/01
LESSER BLK-BACKED GULL	720 0500	0	0	0	5000	5000	0	0	250	04/01
RING BILLED GULL	720 0540	0	0	0	15000	15000	0	0	1000	04/05
FRANKLINS GULL	720 0590	0	0	0	100000	100000	0	0	10000	04/05
FORSTERS TERN	720 0690	0	0	0	7500	7500	0	0	500	05/01
COMMON TERN	720 0700	0	0	0	60000	60000	0	0	4000	05/10
BLACK TERN	720 0770	0	0	0	45000	45000	0	0	1000	06/25
DOUBLE-CRESTED CORMORANT	720 1200	0	0	0	4000	4000	15	0	100	05/10
WHITE PELICAN	720 1250	0	0	0	9500	9500	30	0	300	05/05
AMERICAN BITTERN	720 1900	0	0	0	3000	3000	35	0	75	06/05
GREAT BLUE HERON	720 1940	0	0	0	3000	3000	35	0	75	05/15
BLACK-CROWNED NIGHT HERON	720 2020	0	0	0	9000	9000	100	0	200	06/05
LESSER SANDHILL CRANE	720 2050	0	0	0	4000	4000	0	0	400	05/01
VIRGINIA RAIL	720 2120	0	0	0	15000	15000	80	0	240	06/01
SORA	720 2140	0	0	0	12500	12500	60	0	200	06/01
WILSONS PHALAROPE	720 2240	0	0	0	5000	5000	0	0	350	05/20
AMERICAN AVOCET	720 2250	0	0	0	17000	17000	0	0	250	06/01
COMMON SNIPE	720 2300	0	0	0	10000	10000	0	0	150	06/01
LONG BILLED DOWITCHER	720 2320	0	0	0	4000	4000	0	0	200	05/10
MARBLED GODWIT	720 2490	0	0	0	25000	25000	0	0	350	06/01
GREATER YELLOWLEGS	720 2540	0	0	0	1000	1000	0	0	25	05/10
LESSER YELLOWLEGS	720 2550	0	0	0	750	750	0	0	50	05/10
WILLET	720 2580	0	0	0	20000	20000	0	0	300	06/01
UPLAND PLOVER	720 2610	0	0	0	27000	27000	0	0	400	06/01
SPOTTED SANDPIPER	720 2630	0	0	0	35000	35000	0	0	750	04/20
KILLDEER	720 2730	0	0	750	140000	140750	0	0	2000	06/01
SEMIPALMATE PLOVER	720 2740	0	0	0	700	700	0	0	50	05/10
MARSH HAWK	720 3310	0	0	1200	4600	5800	30	0	70	05/10
RED TAILED HAWK	720 3370	0	0	200	0	200	0	0	10	03/00
SWAINSON'S HAWK	720 3420	0	0	0	600	600	4	0	10	05/10
ROUGH-LEGGED HAWK	720 3470	0	0	0	40	40	0	0	02	04/01
GOLDEN EAGLE	720 3490	0	0	10	20	30	0	0	02	04/15
BALD EAGLE	720 3520	0	0	20	50	70	0	0	03	04/15
PRAIRIE FALCON	720 3550	0	0	50	0	50	0	0	05	03/00
SPARROW HAWK	720 3600	0	0	150	600	750	4	0	15	03/00
LONG-EARED OWL	720 3660	0	0	0	400	400	3	0	5	04/25

NATIONAL WILDLIFE REFUGE SYSTEM
WILDLIFE USE REPORT
ALL REPORTED SPECIES FOR FY 72
(EXCLUDING WATERFOWL)
FY-72

SAND LAKE WETLNDS MGT DST
03-3516-C3-SDW

SPECIES NAME	LINE CODE	USE DAYS JUL-SEP 71	USE DAYS OCT-DEC 71	USE DAYS JAN-MAR 72	USE DAYS APR-JUN 72	FY TOTAL	FY-NO. PRODUCED	FY-NO. HARVESTED	FY-PEAK POPULATION	DATE
SHORT-EARED OWL	720 3670	0	0	0	3500	3500	25	0	50	05/20
GREAT HORNED OWL	720 3750	0	0	1080	2700	3780	15	0	30	04/20
SNOWY OWL	720 3760	0	0	180	0	180	0	0	2	03/00
HAWK OWL	720 3770	0	0	0	2850	2850	15	0	35	04/25
BURROWING OWL	720 3780	0	0	0	1500	1500	10	0	20	05/01
	TOTAL	0	0	3640	658340	661980	731	0		

NATIONAL WILDLIFE REFUGE SYSTEM

REPORT OF ECONOMIC OUTPUTS - FY 72

(IN DOLLARS)

SAND LAKE WETLNDS MGT DST

03-3516-03-SDW

TYPE OF BENEFIT	JUL-SEP 71	OCT-DEC 71	JAN-MAR 72	APR-JUN 72	FY TOTAL
REFUGE RECEIPTS					
GRAZING	0.00	0.00	0.00	450.22	450.22
TOTAL	0.00	0.00	0.00	450.22	450.22

NATIONAL WILDLIFE REFUGE SYSTEM
PUBLIC USE REPORT

VISITS BY MONTH

SAND LAKE WETLNDS MGT DST
03-3516-03-SDW

ACTIVITY NAME	JUL-71	AUG-71	SEP-71	OCT-71	NOV-71	DEC-71	JAN-72	FEB-72	MAR-72	APR-72	MAY-72	JUN-72	12 MONTH TOTAL
INTERPRETATION													
OTHER PROGRAMS								130				6	136
EDUCATION													
ENVIRONMENTAL EDUCATION										55	130		185
PROF. SERVICES RENDERED							2		82	10	4	3	101
RECREATION-WILDLIFE WILDLANDS													
HUNTING RESIDENT GAME													
SMALL GAME							45	50	5				100
OTHER GAME								85	5	5			75
TRAPPING							200	170					370
FISHING													
WARMWATER							195	215		250	350	120	1130
ON REF WLDLFE OBSERVATN									25	150	30	50	255
ON REF OTHR W/W N-C REC													
PHOTOGRAPHY										5			5
SIGHTSEEING									40		150	50	240
RECREATION NON-WILDLIFE													
PICNICKING										20			20
TOTAL INTERPRETATION								130				6	136
TOTAL EDUCATION							2		82	65	134	3	286
TOTAL HUNTING							245	135	10	5			395
TOTAL FISHING							195	215		250	350	120	1130
TOTAL OTHER W/W RECREATION									65	155	180	100	500
TOTAL WILDLIFE ORIENTED							442	480	157	475	664	229	2447
TOTAL NON-WILDLIFE ORIENTED										20			20
TOTAL PUBLIC USE							442	480	157	495	664	229	2467
NO. VISITS TO REFUGE							442	480	207	495	664	229	2517

NATIONAL WILDLIFE REFUGE SYSTEM

AVERAGE MONTHLY WATERFOWL POPULATIONS

SAND LAKE WETLNDS MGT DST

03-3516-C3-SDW

SPECIES NAME	JUL 71	AUG 71	SEP 71	OCT 71	NOV 71	DEC 71	JAN 72	FEB 72	MAR 72	APR 72	MAY 72	JUN 72
SPECIAL RECOG SPECIES												
AMERICAN COOT	0	0	0	0	0	0	0	0	250	15000	10000	5000
WATERFOWL MAINTENANCE												
SWANS												
WHISTLING SWAN	0	0	0	0	0	0	0	0	5	20	0	0
GEESE												
LESSER-SNOW GOOSE	0	0	0	0	0	0	0	0	400	150	0	0
WHITE-FRONTED GOOSE	0	0	0	0	0	0	0	0	600	200	0	0
CANADA GOOSE	0	0	0	0	0	0	0	0	0	5300	0	0
ALEUTIAN CANADA GOOSE (lesser corrected)	0	0	0	0	0	0	0	0	15000	0	0	2
DUCKS												
COMMON MERGANSER	0	0	0	0	0	0	0	0	500	3500	250	0
HOODED MERGANSER	0	0	0	0	0	0	0	0	0	30	10	0
MALLARD	0	0	0	0	0	0	0	0	26000	40000	4150	3000
BLACK DUCK	0	0	0	0	0	0	0	0	20	30	0	0
GADWALL	0	0	0	0	0	0	0	0	100	1500	1900	4600
AMERICAN WIDGEON	0	0	0	0	0	0	0	0	350	800	350	200
GREEN-WINGED TEAL	0	0	0	0	0	0	0	0	10	150	100	40
BLUE WINGED TEAL	0	0	0	0	0	0	0	0	0	3000	11000	8000
SHOVELER	0	0	0	0	0	0	0	0	20	3000	2400	3000
PINTAIL	0	0	0	0	0	0	0	0	20000	35000	2400	2400
RED HEAD	0	0	0	0	0	0	0	0	500	1200	750	600
CANVASBACK	0	0	0	0	0	0	0	0	600	3000	400	275
LESSER SCAUP	0	0	0	0	0	0	0	0	2000	30000	3000	1000
RING-NECKED DUCK	0	0	0	0	0	0	0	0	350	1500	500	0
COMMON GOLDENEYE	0	0	0	0	0	0	0	0	500	600	50	0
BUFFLEHEAD	0	0	0	0	0	0	0	0	150	350	200	0
RUDDY DUCK	0	0	0	0	0	0	0	0	0	1000	400	1000
TOTAL SWANS	0	0	0	0	0	0	0	0	5	20	0	0
TOTAL GEESE	0	0	0	0	0	0	0	0	16000	5650	0	2
TOTAL DUCKS	0	0	0	0	0	0	0	0	51100	124660	27860	24315
TOTAL WATERFOWL	0	0	0	0	0	0	0	0	67105	130330	27860	24317

NATIONAL WILDLIFE REFUGE SYSTEM
PUBLIC USE REPORT

ACT HRS BY MONTH.

SAND LAKE
03-3516-00-SDL

ACTIVITY NAME	JAN-72	FEB-72	MAR-72	APR-72	MAY-72	JUN-72	JUL-72	AUG-72	SEP-72	OCT-72	NOV-72	DEC-72	12 MONTH TOTAL
INTERPRETATION													
EXHIBITS-DEMONSTRATIONS													
SELF GUIDED					12								12
CONDUCTED					180	30			50				260
OTHER PROGRAMS			85	285	210	140	20	84		502	117		1443
EDUCATION													
PROF SERVICES RENDERED	55		3	1		212	8	36	72	4	60	150	601
RECREATION-WILDLIFE WILDLANDS													
HUNTING MIGRATORY BIRDS													
GENERAL WATERFOWL										20336	9600		29936
HUNTING RESIDENT GAME													
UPLAND GAME BIRDS												520	520
BIG GAME, DEER-GUN													
WHITE-TAILED DEER											1150	180	1330
BIG GAME, DEER-BOW													
WHITE-TAILED DEER									1000			60	1060
TRAPPING	120	20											140
WARMWATER	250	180	75	300	140	48	300	300	600	300	180	120	2793
WILDLIFE OBSERVATION													
AUTO	10	15	640	1750	1200	1200	300	600	2000	3000	2000	40	12755
WILDLANDS APPRECIATION													
AUTO		5	125	395	60	275	200	225				60	1345
OTHER					150								150
PHOTOGRAPHY			100	400	480	280	60	80	400	200	40		2040
RECREATION NON-WILDLIFE													
CAMPING				2430	8400	72			10				10912
PICNICKING		36	8	40	100	60	20	30	40				334
SWIMMING					15	30							45
TOTAL INTERPRETATION			85	285	402	170	20	84	50	502	117		1715
TOTAL EDUCATION	55		3	1		212	8	36	72	4	60	150	601
TOTAL HUNTING	370	200	75	300	140	48			1000	20336	10750	760	33979
TOTAL FISHING							300	300	600	300	180	120	1800
TOTAL OTHER W/W RECREATION	10	20	865	2545	1590	1755	560	905	2400	3200	2040	100	15990
TOTAL WILDLIFE ORIENTED	435	220	1028	3131	2132	2185	888	1325	4122	24342	13147	1130	54085
TOTAL NON-WILDLIFE ORIENTED		36	8	2470	8515	162	20	30	50				11291
TOTAL PUBLIC USE	435	256	1036	5601	10647	2347	908	1355	4172	24342	13147	1130	65376

NATIONAL WILDLIFE REFUGE SYSTEM
PUBLIC USE REPORT

ACT HRS BY MONTH

SAND LAKE
03-3516-00-SDL

ACTIVITY NAME	JAN-72	FEB-72	MAR-72	APR-72	MAY-72	JUN-72	JUL-72	AUG-72	SEP-72	OCT-72	NOV-72	DEC-72	12 MONTH TOTAL
NO. VISITS TO REFUGE	230	117	965	3046	1890	2014	1437	1512	1757	7036	3818	605	24427

NATIONAL WILDLIFE REFUGE SYSTEM
PUBLIC USE REPORT

VISITS BY MONTH

SAND LAKE
03-3516-00-SDL

ACTIVITY NAME	JAN-72	FEB-72	MAR-72	APR-72	MAY-72	JUN-72	JUL-72	AUG-72	SEP-72	OCT-72	NOV-72	DEC-72	12 MONTH TOTAL
INTERPRETATION													
EXHIBITS-DEMONSTRATIONS													
SELF GUIDED					50								50
CONDUCTED					90	15			50				155
OTHER PROGRAMS			85	285	210	140	10	21		251	58		1060
EDUCATION													
PROF. SERVICES RENDERED	55		3	1		3	2	6	36	1	30	50	187
RECREATION-WILDLIFE WILDLANDS													
HUNTING MIGRATORY BIRDS													
GENERAL WATERFOWL										5084	2400		7484
HUNTING RESIDENT GAME													
UPLAND GAME BIRDS												200	200
BIG GAME, DEER-GUN													
WHITE-TAILED DEER											230	45	275
BIG GAME, DEER-BOW													
WHITE-TAILED DEER									250			30	280
TRAPPING	40	10											50
WARMWATER	125	60	30	120	70	32	100	150	300	150	90	60	1287
WILDLIFE OBSERVATION													
AUTO	10	15	320	875	600	600	200	400	1000	1500	1000	20	6540
WILDLANDS APPRECIATION													
AUTO		20	500	1579	1140	1100	800	900				200	6239
OTHER					600								600
PHOTOGRAPHY			25	100	120	70	15	20	100	50	10		510
RECREATION NON-WILDLIFE													
CAMPING				66	175	4			1				246
PICNICKING		12	4	20	25	30	10	15	20				136
SWIMMING					10	20							30
TOTAL INTERPRETATION			85	285	350	155	10	21	50	251	58		1265
TOTAL EDUCATION	55		3	1		3	2	6	36	1	30	50	187
TOTAL HUNTING	165	70	30	120	70	32			250	5084	2630	275	8726
TOTAL FISHING							100	150	300	150	90	60	850
TOTAL OTHER W/W RECREATION	10	35	845	2554	1260	1770	1015	1320	1100	1550	1010	220	12689
TOTAL WILDLIFE ORIENTED	230	105	963	2960	1680	1960	1127	1497	1736	7036	3818	605	23717
TOTAL NON-WILDLIFE ORIENTED		12	4	86	210	54	10	15	21				412
TOTAL PUBLIC USE	230	117	967	3046	1890	2014	1137	1512	1757	7036	3818	605	24129

NATIONAL WILDLIFE REFUGE SYSTEM
PUBLIC USE REPORT

VISITS BY MONTH

SAND LAKE
03-3516-00-SDL

ACTIVITY NAME	JAN-72	FEB-72	MAR-72	APR-72	MAY-72	JUN-72	JUL-72	AUG-72	SEP-72	OCT-72	NOV-72	DEC-72	12 MONTH TOTAL
NO. VISITS TO REFUGE	230	117	965	3046	1890	2014	1437	1512	1757	7036	3818	605	24427

NATIONAL WILDLIFE REFUGE SYSTEM
REPORT OF MISCELLANEOUS OUTPUTS
FY-72

File

SAND LAKE
03-3516-00-SDL

TYPE OF OUTPUTS	UNITS	FY TOTAL
ENVIRONMENTAL PRESERVATION		
NATURAL ENVRNMNTS PRESR	ACRE	22701
NWRS-TYPE SANCTUARIES	AREA	1
MISCELLANEOUS WILDLIFE OUTPUTS		
WILDLIFE DIVERSITY	USE DAYS	235
SPECIES TRANSPLANTED	EA. ANIMAL	221
SPECIMEN DONATED	DOLLARS	70

NATIONAL WILDLIFE REFUGE

WATERFOWL USE DAYS

SAND LAKE

03-3516-CC-SDL

SPECIES NAME	JAN 1972-FEB 1972	MAR 1972-APR 1972	MAY 1972-JUN 1972	JUL 1972-DEC 1972	12 MONTH TOTAL
SPECIAL RECOG SPECIES					
AMERICAN COOT	0	181,050	285,000	0	466,050
WATERFOWL MAINTENANCE					
SWANS					
WHISTLING SWAN	0	300	0	0	300
GEESE					
LESSER-SNOW GOOSE	0	3,581,610	0	0	3,581,610
WHITE-FRONTED GOOSE	0	4,500	0	0	4,500
CANADA GOOSE 1729	0	291,000	0	0	291,000
ALEUTIAN CANADA GOOSE 1723	0	31,200	13,800	0	45,000
DUCKS					
COMMON MERGANSER	0	35,490	2,250	0	37,740
RED-BREASTED MERGANSER	0	150	0	0	150
HOODED MERGANSER	0	1,800	300	0	2,100
MALLARD	0	1,384,200	207,000	0	1,591,200
GADWALL	0	39,870	60,000	0	99,870
AMERICAN WIDGEON	0	5,700	6,600	0	12,300
GREEN-WINGED TEAL	0	1,170	1,500	0	2,670
BLUE-WINGED TEAL	0	94,110	255,000	0	349,110
SHOVELER	0	44,730	59,250	0	103,980
PINTAIL	0	1,069,800	165,000	0	1,234,800
WOOD DUCK	0	0	1,800	0	1,800
RED HEAD	0	39,600	33,000	0	72,600
CANVASBACK	0	7,260	1,650	0	8,910
LESSER SCAUP	0	262,830	16,500	0	279,330
RING-NECKED DUCK	0	35,250	11,100	0	46,350
COMMON GOLDENEYE	0	12,540	60	0	12,600
BUFFLEHEAD	0	5,640	300	0	5,940
RUDDY DUCK	0	6,360	13,500	0	19,860
TOTAL SWANS	0	300	0	0	300
TOTAL GEESE	0	3,908,310	13,800	0	3,922,110
TOTAL DUCKS	0	3,046,500	834,810	0	3,881,310
TOTAL WATERFOWL	0	6,955,110	848,610	0	7,803,720

NATIONAL WILDLIFE REFUGE SYSTEM
PUBLIC USE REPORT

ACT HRS BY MONTH

SAND LAKE
03-3516-CC-SDL

ACTIVITY NAME	JUL-71	AUG-71	SEP-71	OCT-71	NOV-71	DEC-71	JAN-72	FEB-72	MAR-72	APR-72	MAY-72	JUN-72	12 MONTH TOTAL
INTERPRETATION													
EXHIBITS/DEMONSTRATIONS													
ON REF, SELF GUIDED											12		12
ON REF, CONDUCTED											180	30	210
OTHER PROGRAMS									85	285	210	140	720
EDUCATION													
PROF. SERVICES RENDERED							55		3	1		212	271
RECREATION-WILDLIFE WILDLANDS													
TRAPPING							120	20					140
FISHING													
WARMWATER							250	180	75	300	140	48	993
ON REF WLDLFE OBSERVATN							10	15	640	1750	1200	1200	4815
ON REF OTHR W/W N-C REC													
PHOTOGRAPHY									100	400	480	280	1260
SIGHTSEEING								5	125	395	60	275	860
OTHER AND GENERAL											150		150
RECREATION NON-WILDLIFE													
CAMPING										2430	8400	72	10902
PICNICKING								36	8	40	100	60	244
SWIMMING											15	30	45
TOTAL INTERPRETATION									85	285	402	170	942
TOTAL EDUCATION							55		3	1		212	271
TOTAL HUNTING							120	20					140
TOTAL FISHING							250	180	75	300	140	48	993
TOTAL OTHER W/W RECREATION							10	20	865	2545	1590	1755	6785
TOTAL WILDLIFE ORIENTED							435	220	1028	3131	2132	2185	9131
TOTAL NON-WILDLIFE ORIENTED								36	8	2470	8515	162	11191
TOTAL PUBLIC USE							435	256	1036	5601	10647	2347	20322
NO. VISITS TO REFUGE							230	117	965	3046	1890	2014	8262

NATIONAL WILDLIFE REFUGE SYSTEM
WILDLIFE USE REPORT
ALL REPORTED SPECIES FOR FY 72
(EXCLUDING WATERFOWL)
FY-72

SAND LAKE
C3-3516-CO-SDL

SPECIES NAME	LINE CODE	USE DAYS JUL-SEP 71	USE DAYS OCT-DEC 71	USE DAYS JAN-MAR 72	USE DAYS APR-JUN 72	FY TOTAL	FY-NO. PRODUCED	FY-NO. HARVESTED	FY-PEAK POPULATION	DATE
SPECIAL RECOG SPECIES										
WESTERN GREBE	720 0010	0	0	0	14700	14700	130	0	600	05/15
EARED GREBE	720 0040	0	0	0	2400	2400	40	0	60	05/15
PIED BILLED GREBE	720 0060	0	0	0	8000	8000	120	0	250	05/15
LESSER BLK-BACKED GULL	720 0500	0	0	100	1800	1900	0	0	100	03/31
RING BILLED GULL	720 0540	0	0	1800	31500	33300	200	0	600	03/31
FRANKLINS GULL	720 0590	0	0	42000	990000	1032000	1000	0	18000	05/15
FORSTERS TERN	720 0690	0	0	0	4500	4500	16	0	100	05/15
COMMON TERN	720 0700	0	0	0	36000	36000	120	0	8000	05/15
BLACK TERN	720 0770	0	0	0	4500	4500	16	0	200	05/15
DOUBLE-CRESTED CORMORANT	720 1200	0	0	0	14000	14000	110	0	450	05/15
WHITE PELICAN	720 1250	0	0	0	19500	19500	80	0	500	05/15
AMERICAN BITTERN	720 1900	0	0	0	1650	1650	30	0	45	05/15
GREAT BLUE HERON	720 1940	0	0	18	3600	3618	10	0	50	05/15
CATTLE EGRET	720 2001	0	0	0	600	600	0	0	20	05/15
BLACK-CROWNED NIGHT HERON	720 2020	0	0	0	9000	9000	90	0	300	05/15
WILSONS PHALAROPE	720 2240	0	0	0	22500	22500	80	0	1000	05/15
AMERICAN AVOCET	720 2250	0	0	0	9000	9000	35	0	800	05/15
COMMON SNIPE	720 2300	0	0	0	9000	9000	30	0	350	05/15
LONG BILLED DOWITCHER	720 2320	0	0	0	4500	4500	16	0	280	05/15
LEAST SANDPIPER	720 2420	0	0	0	1800	1800	8	0	100	05/15
MARBLED GODWIT	720 2490	0	0	0	2250	2250	8	0	100	05/15
GREATER YELLOWLEGS	720 2540	0	0	0	5400	5400	20	0	270	05/15
LESSER YELLOWLEGS	720 2550	0	0	0	6750	6750	25	0	250	05/15
WILLET	720 2580	0	0	0	5400	5400	20	0	600	05/15
UPLAND PLOVER	720 2610	0	0	0	5400	5400	20	0	200	05/15
KILLDEER	720 2730	0	0	2000	90000	92000	500	0	1500	05/15
TURKEY VULTURE	720 3250	0	0	5	0	5	0	0	1	03/10
MARSH HAWK	720 3310	0	0	300	1800	2100	10	0	30	06/30
RED TAILED HAWK	720 3370	0	0	0	360	360	6	0	6	06/30
SWAINSONS HAWK	720 3420	0	0	0	180	180	3	0	6	06/30
ROUGH LEGGED HAWK	720 3470	0	0	0	180	180	0	0	4	06/30
FERRUGINOUS HAWK	720 3480	0	0	0	180	180	2	0	4	06/30
BALD EAGLE	720 3520	0	0	20	300	320	0	0	10	04/17
PRAIRIE FALCON	720 3550	0	0	10	0	10	0	0	1	03/16
SPARROW HAWK	720 3600	0	0	10	180	190	2	0	2	06/30
LONG EARED OWL	720 3660	0	0	0	180	180	3	0	2	05/06
SHORT EARED OWL	720 3670	0	0	44	90	134	2	0	2	06/30
GREAT HORNED OWL	720 3750	0	0	360	180	540	2	0	6	03/30
SNOWY OWL	720 3760	0	0	360	0	360	0	0	6	03/21
BURROWING OWL	720 3780	0	0	0	180	180	2	0	2	06/30
	TOTAL	0	0	47027	1307560	1354587	2756	0		

NATIONAL WILDLIFE REFUGE SYSTEM

REPORT OF ECONOMIC OUTPUTS - FY 72

(IN DOLLARS)

SAND LAKE

03-3516-00-SDL

TYPE OF BENEFIT	JUL-SEP 71	OCT-DEC 71	JAN-MAR 72	APR-JUN 72	FY TOTAL
DEPREDATIONS PREVENTED					
FEEDLOTS	0.00	0.00	480.00	0.00	480.00
TOTAL	0.00	0.00	480.00	0.00	480.00

NATIONAL WILDLIFE REFUGE SYSTEM

AVERAGE MONTHLY WATERFOWL POPULATIONS

SAND LAKE

03-3516-00-SDL

SPECIES NAME	JUL 71	AUG 71	SEP 71	OCT 71	NOV 71	DEC 71	JAN 72	FEB 72	MAR 72	APR 72	MAY 72	JUN 72
SPECIAL RECOG SPECIES												
AMERICAN COOT	0	0	0	0	0	0	0	0	10	6025	3500	6000
WATERFOWL MAINTENANCE												
SWANS												
WHISTLING SWAN	0	0	0	0	0	0	0	0	0	10	0	0
GEESE												
LESSER-SNOW GOOSE	0	0	0	0	0	0	0	0	83300	36087	0	0
WHITE-FRONTED GOOSE	0	0	0	0	0	0	0	0	150	0	0	0
CANADA GOOSE	0	0	0	0	0	0	0	0	6400	3300	0	0
ALEUTIAN CANADA GOOSE	0	0	0	0	0	0	0	0	240	800	220	240
DUCKS												
COMMON MERGANSER	0	0	0	0	0	0	0	0	1052	131	75	0
RED-BREASTED MERGANSER	0	0	0	0	0	0	0	0	5	0	0	0
HOODED MERGANSER	0	0	0	0	0	0	0	0	0	60	10	0
MALLARD	0	0	0	0	0	0	0	0	31390	14750	2800	4100
GADWALL	0	0	0	0	0	0	0	0	167	1162	1300	700
AMERICAN WIDGEON	0	0	0	0	0	0	0	0	53	137	150	70
GREEN-WINGED TEAL	0	0	0	0	0	0	0	0	17	22	50	0
BLUE-WINGED TEAL	0	0	0	0	0	0	0	0	50	3087	5500	3000
SHOVELER	0	0	0	0	0	0	0	0	260	1231	1500	475
PINTAIL	0	0	0	0	0	0	0	0	25060	10600	2500	3000
WOOD DUCK	0	0	0	0	0	0	0	0	0	0	0	65
RED HEAD	0	0	0	0	0	0	0	0	570	750	900	200
CANVASBACK	0	0	0	0	0	0	0	0	172	70	35	20
LESSER SCAUP	0	0	0	0	0	0	0	0	2273	6488	450	100
RING-NECKED DUCK	0	0	0	0	0	0	0	0	700	475	350	20
COMMON GOLDENEYE	0	0	0	0	0	0	0	0	406	12	2	0
BUFFLEHEAD	0	0	0	0	0	0	0	0	66	122	10	0
RUDDY DUCK	0	0	0	0	0	0	0	0	0	212	200	250
TOTAL SWANS	0	0	0	0	0	0	0	0	0	10	0	0
TOTAL GEESE	0	0	0	0	0	0	0	0	90090	40187	220	240
TOTAL DUCKS	0	0	0	0	0	0	0	0	62241	39309	15832	11995
TOTAL WATERFOWL	0	0	0	0	0	0	0	0	152331	79506	16052	12235

NATIONAL WILDLIFE REFUGE SYSTEM
PUBLIC USE REPORT

VISITS BY MONTH

SAND LAKE
03-3516-00-SDL

ACTIVITY NAME	JUL-71	AUG-71	SEP-71	OCT-71	NOV-71	DEC-71	JAN-72	FEB-72	MAR-72	APR-72	MAY-72	JUN-72	12 MONTH TOTAL
INTERPRETATION													
EXHIBITS/DEMONSTRATIONS													
ON REF, SELF GUIDED											50		50
ON REF, CONDUCTED											90	15	105
OTHER PROGRAMS									85	285	210	140	720
EDUCATION													
PROF. SERVICES RENDERED							55		3	1		3	62
RECREATION-WILDLIFE WILDLANDS													
TRAPPING							40	10					50
FISHING													
WARMWATER							125	60	30	120	70	32	437
ON REF WLDLFE OBSERVATN							10	15	320	875	600	600	2420
ON REF OTHR W/W N-C REC													
PHOTOGRAPHY									25	100	120	70	315
SIGHTSEEING								20	500	1579	1140	1100	4339
OTHER AND GENERAL											600		600
RECREATION NON-WILDLIFE													
CAMPING										66	175	4	245
PICNICKING								12	4	20	25	30	91
SWIMMING											10	20	30
TOTAL INTERPRETATION									85	285	350	155	875
TOTAL EDUCATION							55		3	1		3	62
TOTAL HUNTING							40	10					50
TOTAL FISHING							125	60	30	120	70	32	437
TOTAL OTHER W/W RECREATION							10	35	845	2554	1260	1770	6474
TOTAL WILDLIFE ORIENTED							230	105	963	2960	1680	1960	7898
TOTAL NON-WILDLIFE ORIENTED								12	4	86	210	54	366
TOTAL PUBLIC USE							230	117	967	3046	1890	2014	8264
NO. VISITS TO REFUGE							230	117	965	3046	1890	2014	8262

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Cont. NR-1
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WATERFOWL
(Continuation Sheet)

REFUGE _____ MONTHS OF January TO April, 1972

(1) Species	(2) Weeks of reporting period: 3/14 (11)	3/21 (12)	3/28 (13)	4/4 (14)	4/11 (15)	4/18 (16)	4/25 (17)	(18)	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:											
Whistling				20	20				280		
Trumpeter											
Geese:											
Canada Large	100	150	400	300	310	300	300		13020		
~~Cackling~~ S. Canada-	1,500	3,000	15,000	11,000	2,000	50	150		228,900		
Brant											
White-fronted	20	200	300						3850		
Snow & Blue	28,000	20,000	136,000	128,000	16,000	150	200		2,648,450		
~~Blue~~											
~~Other~~ Total geese	29,620	23,350	151,700	139,300	18,310	500	650		2,894,220		
Ducks:											
Mallard			55,000	32,000	11,300	5,500	5,200		798,000		
Black											
Gadwall			500	800	850	1,900	1,100		35,050		
Baldpate			300	250	200	50	50		5,950		
Pintail			38,000	26,500	7,000	2,800	4,100		562,800		
Green-winged teal			50	50	20	20			980		
Blue-winged teal			150	400	1,750	2,100	8,100		87,500		
Cinnamon teal											
Shoveler			800	1,800	1,100	1,050	975		40,075		
Wood											
Redhead			1,500	2,000	300	200	500		31,500		
Ring-necked			1,200	1,600	150	100	50		21,700		
Canvasback			500	180	100				5,460		
Scaup			6,000	13,300	1,200	5,200	1,250		222,950		
Goldeneye			800						5,600		
Bufflehead			200	200	210	50	30		4,730		
Ruddy				100	100	300	350		5,950		
Other C. merganser			2,000	100	200	150	75		17,675		
Coots: Total Ducks			101,000	83,080	32,530	16,620	21,780		1,827,210		
				2,000	6,000 (over)	6,800	9,300		168,700		

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	280	20	
Geese	2,894,220	151,700	
Ducks	1,822,210	107,000	
Coots	168,700	9,300	

SUMMARY

Principal feeding areas _____

Principal nesting areas _____

Reported by _____

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

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WATERFOWL
(Continuation Sheet)

REFUGE Sand Lake MONTHS OF May TO August, 1972

(1) Species	(2) Weeks of reporting period 7/11	7/18	7/25	8/1	8/8	8/15	8/22	8/29	(3) Estimated waterfowl days use	(4) Production Broods: seen	Broods: Estimated total
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada		350				390			36,960		
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard		10,600				21,000			1,189,400		
Black											
Gadwall		4,700				3,100			210,100		
Baldpate		160				390			23,800		
Pintail		7,000				10,100			692,600		
Green-winged teal		40				80			5,270		
Blue-winged teal		6,900				8,000			723,400		
~~Cinnamon teal~~ # Merg									310		
Shoveler		700				1,100			116,550		
Wood & C. merg		210 Wood				300 Wood			17,610 Wood	3325 C Merg	
Redhead		200				300			49,400		
Ring-necked									11,450		
Canvasback		100				190			10,675		
Scaup									16,950		
Goldeneye									62		
Bufflehead									310		
Ruddy		350				420			37,570		
~~Other~~ Total Ducks		27,960				44,980			3,111,782		
Coots:											
		6,000				7,200			692,700		

(over)

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Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE _____ MONTHS OF _____ TO _____, 19 __

(1) Species	(2) Weeks of reporting period 1 (5/2)	2 (5/9)	3 (5/16)	4 (5/23)	5 (5/30)	6 (6/6)	7 (6/13)	8 (6/20)	9 (6/27)	10 (7/4)
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada Large	215			220				240		
~~Cackling~~ S. Canada	100									
Brant										
White-fronted										
Snow & Blue	300									
Blue										
~~Other~~ Total geese	615									
Ducks:										
Mallard	4,300			2,800				4,100		
Black										
Gadwall	1,100			1,300				700		
Baldpate	60			150				70		
Pintail	3,200			3,500				3,000		
Green-winged teal	10			50						
Blue-winged teal	13,300			5,500				3,000		
~~Cinnamon teal~~ & Merg				10						
Shoveler	850			1,500				475		
Wood & C. merg				75	C. merg			60 Wood		
Redhead	450			900				200		
Ring-necked	25			350				20		
Canvasback				35				20		
Scaup	950			450				100		
Goldeneye				1						
Bufflehead				10						
Ruddy	800			200				250		
Other Total Ducks	25,045			15,832				11,995		

No figures available

5/9 through 9/30 data tabulated from System Totals

2,500

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12/28

WATERFOWL

REFUGE Sand Lake

MONTHS OF January TO April, 19 72

(1) Species	(2) Weeks of reporting period									
	1/4 1	1/11 2	1/18 3	1/25 4	2/1 5	2/8 6	2/15 7	2/22 8	2/29 9	3/7 10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada Large										
Cackling Small Canada										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard										
Black										
Gadwall										
Baldpate										
Pintail										
Green-winged teal										
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
Coot:										

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WATERFOWL

REFUGE Sand Lake MONTHS OF Sept TO Dec, 19 72

(1) Species	(2) Weeks of reporting period									
	1 9/5	2 9/12	3 9/19	4 9/26	5 10/3	6 10/10	7 10/17	8 10/24	9 10/31	10 11/7
Swans:										
Whistling					20	50	80	50	300	500
Trumpeter										
Geese:										
Canada Large		380			300	350	180	200	150	50
~~Cackling~~ S. Canada		5			500	800	5,000	3,200	2,000	300
Brant										
White-fronted		250			200	200	150			
Snow & Blue					38,000	69,000	102,000	55,000	72,000	57,000
~~Blue~~										
~~Other~~ Total geese		635			39,000	70,350	107,330	58,400	74,150	57,350
Ducks:										
Mallard		26,000			33,000	29,000	21,000	60,000	110,000	96,000
Black		92			200	100	170	300	400	300
Gadwall		3,500			4,000	800	2,000	100	200	300
Baldpate		630			1,200	900	100			
Pintail		14,000			23,000	15,000	4,000	1,000	100	100
Green-winged teal		90					200	150	50	
Blue-winged teal		9,000			8,000	2,000	200	100	100	
Cinnamon teal										
Shoveler		1,200			1,000	1,100	300	50	250	50
~~Wood~~ H. Merganser		200							20	100
Redhead		500			800	900	1,500	300	200	
Ring-necked		80			80	200	200	600	350	100
Canvasback		200			200	300	200	200		
Scaup		150			250	200	300	4,000	40,000	1,000
Goldeneye C. Merganser										
Bufflehead						80	100	100		1,000
Ruddy		450			400	600	400	400	400	200
Other Total Ducks		56,092			72,130	51,180	30,670	67,300	152,070	99,150
Coot:		9,000			5,000	1,000	2,000	2,000	800	0

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WATERFOWL
(Continuation Sheet)

REFUGE Sand Lake MONTHS OF Sept TO Dec, 19 72

(1) Species	(2) Weeks of reporting period: 11/14 (11)	11/21 (12)	11/28 (13)	12/5 (14)	12/12 (15)	12/19 (16)	12/26 (17)	(18)	(3) Estimated waterfowl days use	(4) Production Broods seen	(4) Production Estimated total
Swans:											
Whistling	1,090	50							14,980		
Trumpeter											
Geese:											
Canada Large	100	50	30						21,270		
~~Cackling~~ S. Canada						2			82,812		
Brant											
White-fronted									7,350		
Snow & Blue	6,000	3,500	500			20			2,821,000		
~~Blue~~											
~~Other~~ Total geese	6,100	3,550	530			22			2,933,432		
Ducks:											
Mallard	30,000	20,000	20,000			180			3,718,580		
Black									13,050		
Gadwall									156,800	51,800	
Baldpate									34,300		
Pintail									722,400	302,400	
Green-winged teal									5,500	2,800	
Blue-winged teal									342,800	72,800	
Cinnamon teal											
Shoveler									55,250	19,250	
~~Wood~~ H Merganser									6,840	840	
Redhead									40,900	25,900	
Ring-necked	200	50							14,860	12,460	
Canvasback									12,300	6,300	
Scaup	5,000	100							360,450	355,950	
~~Goldeneye~~ C. Merganser	500								3,500		
Bufflehead									8,960		
Ruddy									30,300	16,800	
~~Other~~ Total Ducks	35,700	20,150	20,000			180			5,559,760		
Coots:									345,600		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	14,980	1,090	
Geese	2,932,432	107,330	
Ducks	5,559,760	152,070	
Coots	345,600	9,000	

SUMMARY

Principal feeding areas

Principal nesting areas

Reported by

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

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Interior Duplicating Section, Washington, D. C.
1953