

SAND LAKE NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

JANUARY 1, 1962 TO APRIL 30, 1963

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I. GENERAL

A. Weather Conditions

All weather data were recorded at the official weather station located at refuge headquarters.

	<u>Snowfall</u>	<u>Precipitation</u>		<u>Temperature</u>	
		<u>Month</u>	<u>Normal</u>	<u>Max.</u>	<u>Min.</u>
January	3.0	.15	.77	52	-23
February	T	T	.63	52	-21
March	2.0	.23	1.20	83	2
April	<u>3.0</u>	<u>1.44</u>	<u>2.12</u>	<u>78</u>	<u>14</u>
Period Totals	8.0	1.82	4.72	83	-33

Precipitation for the calendar year 1962 was slightly above average. Subsoil moisture was good, but the surface soil was quite dry at freezeup last fall. Snowfall was very light during the winter, resulting in a small runoff.

The winter was relatively mild with light snow cover and few blizzards. There was no icing or other conditions, which adversely affected resident wildlife.

A few light rains in April have supplied sufficient moisture for normal growth. High winds in April caused extensive blowing on summer fallow and fall plowed fields.

B. Habitat Conditions

1. Water

Above average precipitation in the summer of 1962 resulted in a constant flow in the James River throughout the winter. With little runoff, the flow fluctuated only slightly through the period.

a. Dakota Lake. The lake was maintained at slightly over spillway level all winter with a constant flow. Early migrant drcks, and geese used the open water area below the control structure until the early breakup the last few days of March.

b. Mud Lake. Mud Lake remained at slightly over spillway level and has had a constant flow all winter. In March, the stoplogs were removed to draw the lake down approximately one foot to facilitate dike repair and tillage for grass seeding. The pool was nearing the desired drawdown level by the end of April.

Small mudflats are exposed at the present level of 1287.6. With normal evaporation, extensive mudflats will be exposed by mid-summer.

High winds on March 28 and 29 cleared the lake of ice in record time. This year's breakup date was the second earliest recorded.

c. Sand Lake. A small flow passed over the outlet at the Columbia Dam the entire winter. Breakup came March 29 with some high southerly winds. The pool will be drawn down six inches below full pool stage to facilitate water management in the upper pool.

Inflow coming down the James River during the summer will be passed through the upper pool and held in Sand Lake to maintain water levels as constant as possible.

2. Food and Cover

The refuge had a record concentration of geese last fall and they consumed most of the food before winter. Remaining food was utilized by resident game birds and big game. The winter was relatively mild with little snow accumulation. Constant thawing and evaporation of the snow made field conditions open to foraging animals all winter; pheasants did not concentrate around feed lots and grain storage as in most winters. We had a little open water all winter below the Columbia dam and a flock of 1,000 mallards wintered there, foraging in the adjacent grain fields.

Both pheasants and deer utilized the tall dense stands of rushes for winter cover.

II. WILDLIFE

A. Migratory Birds

1. Waterfowl

a. Swans. The swan migration is poorly substantiated this year. We had a peak of 35 birds April 17-23 compared to 45 birds last year.

b. Geese. Unseasonably warm weather this spring resulted in an early breakup, March 28 and 29. Phenologically the large flocks of geese arrived 10-14 days earlier and stayed for a shorter length of time than usual.

First arrivals were large Canada geese (2 birds) on March 4. This group reached a peak of 400 birds during the week of March 10 - 16. Three hundred of the large Canadas were seen leaving the refuge March 11; this was assumed to be a migration exodus. Only resident breeders of the large geese have been present on the refuge since March 16. Approximately 30 pairs of the large geese have been seen during the last two weeks of the period. One nest with four eggs was reported April 11. On April 19, five nests were observed from the air. Two weeks later, on May 3, in a second aerial count, the five previously located nests were found plus eight additional nests. At a number of sites pairs showed defense patterns, but the nest was not found. It is estimated that a total of 20 nests are present. No predation has been observed and as a result of constant water levels throughout the incubation period, nesting success should be high. The clutches as observed from the air, appeared to be unusually large. In most cases, it was believed that the clutches varied from five to seven eggs. The location of the 13 nests under observation are shown on the following map. Ten nests were found on muskrat houses and three on islands. The first brood with four young were seen on May 10.

First arrivals of small Canada geese (150 birds) were seen March 22. Peak numbers were reached the following week March 24-30 with 5,000 birds counted. The migrants moved out the first week of April and only a few birds remained until the end of the reporting period.

Blue and snow geese (200 birds) were first seen March 23. Approximately 5,000 blues and snows arrived March 24. An aerial survey count on March 26 showed 2,500 blue and snow geese on the refuge plus a few hundred on the Dakota Lake easement just north of the refuge. The main flight arrived March 27. An aerial survey on that date showed 85,000 blue and snow geese on the refuge by late afternoon and an equal number in the vicinity of Lake Preston, which is 75 miles southeast. The large numbers of blue and snow geese increased in the few days following March 27 and only stayed in the refuge area about one week. In most years, the large flocks of blue and snow geese remain in the vicinity of the refuge for about two weeks. Most of the geese used the

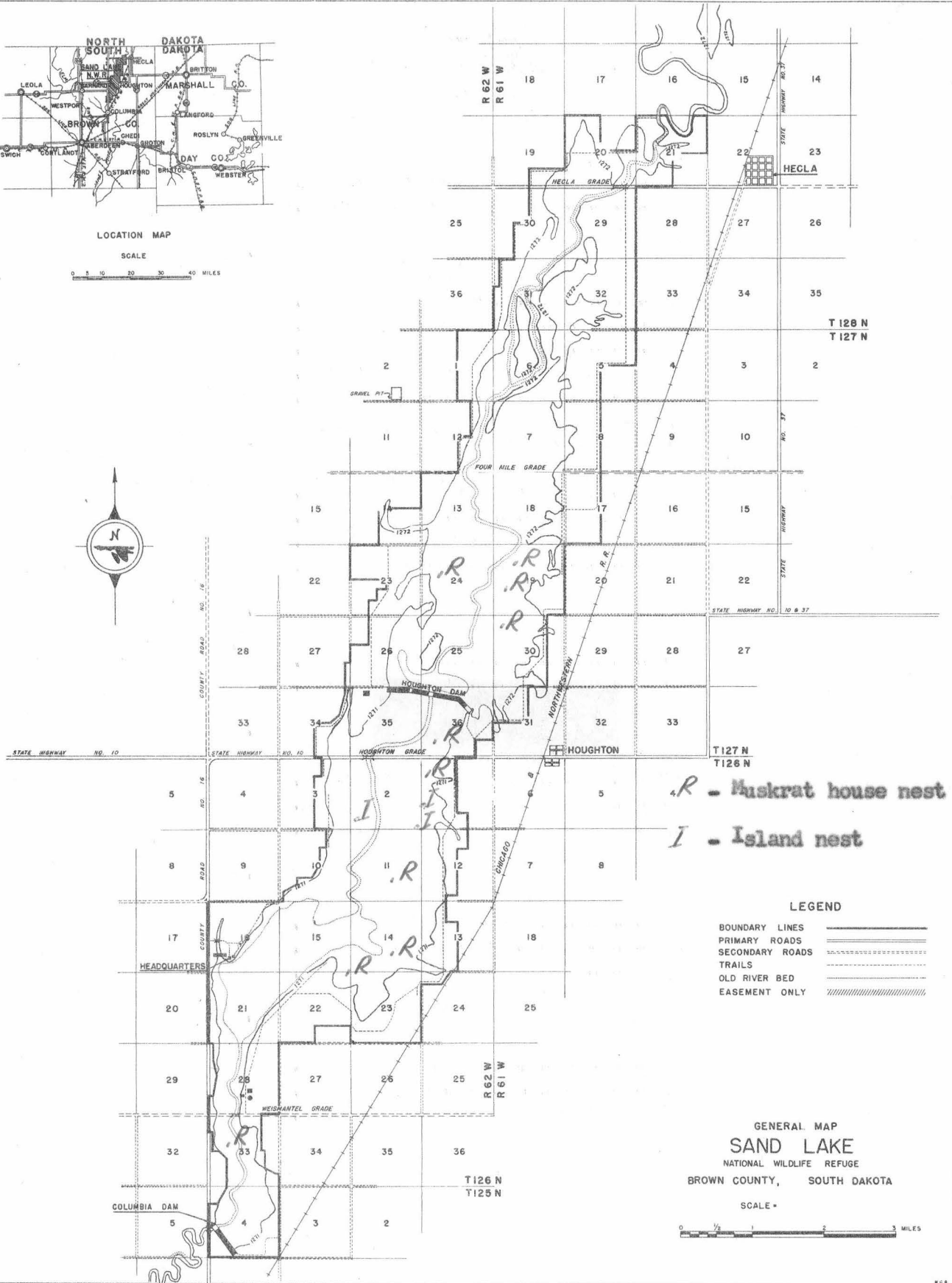
CANADA GOOSE NESTS - 1963



LOCATION MAP

SCALE

0 10 20 30 40 MILES



LEGEND

- BOUNDARY LINES
- PRIMARY ROADS
- SECONDARY ROADS
- TRAILS
- OLD RIVER BED
- EASEMENT ONLY

GENERAL MAP SAND LAKE

NATIONAL WILDLIFE REFUGE

BROWN COUNTY, SOUTH DAKOTA

SCALE •

0 1/2 1 2 3 MILES

refuge at night for the first few days and spent the daytime hours browsing and loafing in the pastures and potholes several miles from the refuge. There were approximately 100 blue and snow geese on the refuge at the end of the reporting period.

c. Ducks. A constant stream-flow through the winter maintained an open water area at the lower control structure. Snow accumulation was nil this past winter and 1,000 mallards wintered on the refuge. This number increased to 2,000 in the last week of February and gradually built up to 4,000 birds the week ending March 23. With the exception of non-stop migrants on March 23 and 24, 4,000 was the peak mallard concentration on the refuge this spring.

Non-stop migrant mallards passed over the refuge primarily on March 23 in small flocks averaging 22 birds each at the rate of 8,000 birds per hour. The flight continued all day on March 24 in the same size flocks but passed at a slower rate. It is not known if the flight continued overnight March 23 and 24. The total number of mallards passing on these dates was a minimum of 29,000 (observed) and possibly as high as 100,000 depending on bird movements the night of March 23. Mallard and pintail numbers on the refuge have decreased slowly since mid-April with only residents now present. A peak of 70,000 mallards was recorded on the refuge in mid-April 1962, this number could have been equaled had migrant birds stopped in 1963.

Diving ducks reached peak numbers the week ending April 13 with 3,700 birds present. Scaup were the most abundant species making up 3,000 of the total. About half of the Scaup were still present at the end of the reporting period.

Blue-winged Teal and shovellers have increased steadily since the first migrants arrived the last week of March. There were 4,000 Blue-wings and 2,000 Shovellers on the refuge at the close of the period. Blue-Teal are the most common nesting species on the refuge followed by shovellers and pintail. Ducks are making extensive use of small water holes and temporary marsh areas both on the refuge and off. Most of these water areas have had some water since the rainy period started in the summer of 1962.

d. Other water birds, shorebirds and doves. Large numbers of water birds have been nesting on the refuge in recent years. Two great blue heron rookeries with 50 nests each, a black-crown night heron rookery with 1,200 birds, plus 600 pelicans and 500 cormorants and 20,000 Franklin's gulls nested on the refuge last year.

By the first of May, great blue herons had built nests on drifts in the phragmites. Cormorants resumed nesting on the previously occupied islands and in addition moved to the tops of many muskrat houses. Franklin's gulls were building nests in the wide expanses of cattail by May 1, but egg laying had not yet commenced.

One dove was seen March 19, the next observation was not made until a month later. Nesting commenced in April in the numerous shelterbelts on the refuge.

B. Upland Game Birds

1. Ring-necked Pheasant

The size of the wintering pheasant population was slightly below normal. Due to ~~lack~~^{ck} of snow cover and blizzards, the winter losses were very low. Ample food was available throughout the winter so the breeding population should be in excellent physical condition. Prospects are good for an increase over the fall population of 1962.

2. Hungarian Partridge

Only a few sightings were made over the winter. Winter losses, usually the greatest loss in this species, were low.

3. Prairie Chicken

Restocking attempts of 1959 and 1960 have failed to reestablish a breeding population of prairie chickens on the refuge. Only a half dozen sightings of single birds have been recorded this period.

The booming ground in the eastern portion of Dickey County, North Dakota however, has held its own. A count on April 29 revealed 8 males and 2 females. Additional females may have been in the area and not shown during the brief period of observation.

C. Big Game

1. White-tailed Deer

Due to the ~~lack~~^{ck} of snow cover, no aerial survey of the refuge was conducted over winter. Calculation from the previous winter's survey and the known kill from the 1962 hunting season indicates we now have 350 to 375 deer on the refuge. Due to the relatively low hunting season kill last fall it is judged that the herd increased from 5 to 10 percent. Winter losses were nil and all animals appear to be in good condition this spring.

D. Fur Animals, Predators and Others

1. Fur Animals and Predators

a. Mink. Nine mink were taken during a 45 day season that opened on November 15, 1962. Little change in mink population on the refuge has been noted in recent years, even though the season was closed in 1961.

b. Muskrat. The effects of the extremely low water levels of 1959 in Sand Lake are now quite pronounced. The expanded stands of cattail have continued to thrive under full pool levels. With the increase of cattail, the muskrat population has made a rapid increase. By comparison, the rat population in the Mud Lake Pool, which remained at full pool, has shown only a minor increase.

Muskrat House Counts

<u>Year</u>	<u>Mud Lake November House Count</u>	<u>Sand Lake November House Count</u>
1960	6	0
1961	83	217
1962	96	1,529

The State trapping season was closed on muskrats the past season so no removals were made. Survival during the winter was high and as a consequence another increase can be expected this fall.

The increased muskrat population has proved to be helpful in creating openings in the monotype stands of cattail. As a byproduct, the houses are preferred nesting sites for Canada geese and several species of water birds.

It is hoped that a continued rise in the population will aid in reducing the acreage of blackbird roosting habitat.

c. Beaver. Only a small number of beaver use the refuge. One new house was located last year and its occupants are removing undesirable trees along the highway. There is also one colony denning in the river bank. The total population is estimated at 20 animals.

d. Skunk raccoon, fox and badger. Trapping success this winter was low, only 20 skunk and 13 raccoon were taken. The predator control program, started last year, resulted in some reduction in the overall population of all these species. Where 42 coon were taken a year ago with the use of dogs only two or three were caught this winter. Further discussion of the predator control program is included in Section V.

2. Rodents

Pocket gophers have been an increasing problem. Demonstrations were made several years ago with hand operated poisoning equipment, but nothing was practical for large scale control until the advent of the burrow building machine. Results of this program are included in Section V.

E. Birds

The following is the arrival dates of migratory birds as recorded by Mr. Elmer Podoll, who has kept these records for many years.

Arrival Dates for Migratory Birds - Spring 1963

<u>Species</u>	<u>Observed Arrival Date</u>
Tree sparrows (several 100)	February 2
Horned Lark increase	9
Common Canada (2)	March 4
Marsh Hawk increase	4
Common Canada (300)	11
Killdeer	11
Crow increase	11
Red-winged Blackbird (500)	14
Meadow Lark (45)	15
Sparrow Hawk	15
Pintail (500)	15
Robin (50)	15
Common Canada or Little Canada (1500)	15
American Merganser (5)	15
Herring Gull (3)	15
Slate-colored Junco	16
Coot	19
Oregon Junco	19
Kingfisher	19
Scaup (35)	22
Great Blue Heron	22
Bladpate	23
Gadwall	23
Redhead	23
Shoveller	23
Goldeneye	23
Lap Longspurr	23
Pied-billed Grebe	23
Purple Grackle increase	23
Field Sparrow (500)	23
Black Duck (4)	23
Whitefront (20)	23
Snow Goose (500)	23
Blue Goose (100)	23
Green-wing Teal (10)	24
Bald Eagle (4)	24
Hooded Merganser (10)	24
Ringbill Gull	24
Canvasback	26
Bufflehead	26
Snow and Blue goose increase	27
Ruddy	27
Ringneck	27
Blue-wing Teal	April 2
Yellow Shafted Flicker	2
Song Sparrow	4

Cormorant	April	4
Mourning Dove		4
Red Shafted Flicker		4
Swans (45)		4
Burrowing Owl		6
Black-crowned Night Heron		8
Cardinal		10
Yellowhead Blackbird		10
Pelican		12
Fox sparrow		12
Franklin Gull		15
Western Grebe		18
White Crowned Sparrow		19
Purple Marten (Male)		19
Bittern		22
Common Tern		25
Marbled Godwit		25
Willet		27
Lesser Yellowleg		27
Wilson Phalarope		28
White-throat Sparrow		28
Avocet		28
Kingfisher		28
Greater Yellowleg		28
Harris Sparrow		30

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

1. Construction of a safety shield around the ladder in the grain elevator.
2. Ground valves in the 1958 Ford pickup, 1956 Ford courier and in the research vehicle. New oil rings were installed in the research truck.
3. Eroded nesting islands were rebuilt with rock hauled on the ice. The rock tops were made 12 foot square and two feet above pool level.
4. 1,000 cubic yards of rock and gravel were hauled to repair refuge roads damaged by high water last summer.
5. A summer goose pen 120 ft. by 90 ft. by 6 ft. was constructed to hold our more valuable captives during the summer months.

B. Plantings

1. Cultivated Crops

Crop planning with the permittees was complicated this year. 280 acres were planned for diversion with payments going to the permittees. Just as field work commenced, the policy on diverted acreage payment to permittees was changed and half of the agreements had to be revised. The 280 acres of wildlife crops planned for diverted acres will now be harvested by the permittees.

With light runoff, the permittees could get into the fields early and had little difficulty with excessive surface water. Portions of the agricultural land, which were flooded in the summer of 1962, are still soft and will not be suitable for farming before mid-summer. Millet is planned for some wet areas, others will be sown to fall rye.

C. Planned Burning

Two hundred acres of emergents were burned in early spring as a preparatory step for reed canary grass plantings later in the summer. The areas which burned well, dried rapidly and have been disked. Sites which did not burn have a dense layer of accumulated debris. Tillage will have to be delayed on the wetter sites until mid-summer.

D. Fires

The refuge staff was called out to one off-refuge grass fire. Between the work of the refuge crew and the Columbia Fire Department, the fire loss was restricted to several haystacks.

IV. RESOURCE MANAGEMENT

A. Grazing

Our Land Use Plan was completely revised during the period. In the new plan, grassland management was changed slightly to meet our present waterfowl objectives. Stocking rates were reduced in most units managed for nesting cover. Other tracts are now managed for goose browse; on these the stocking rates are moderately heavy. The excess annual growth will be mowed in the fall. All seedings will be to cool season grasses on the browse sites and in some cases nitrogen fertilizer will be applied. In our opinion, green browse can be supplied cheaper and more consistently in this area with grasses than with agricultural crops. In other units, the vegetation consists almost entirely of rushes. The objective in these areas is to open up the cover through heavy grazing.

Approximately 700 acres of desirable grasses were damaged by high water in the summer of 1962. Flooding during June and July killed all species in some areas, in others only prairie cordgrass and some sedges were left. The new invaders are curly dock and foxtail barley.

Grazing will commence June 1 and close October 1. The present rates are \$2.00 per A.U.M. with future charges to be based on the price of beef. A few permittees have expressed some dissatisfaction with the rate increase, but we noted that none have relinquished their permits.

B. Fur Harvest

With a closed season on muskrats, fur divisions were confined to mink and a small number of muskrats accidentally taken in mink sets. The local warden authorized trappers to sell their share of the few muskrats taken.

Fur Receipts - 1962

<u>Mink</u>	<u>Disposition</u>	<u>Price</u>
2 Males	N. Y. Auction Co.	\$ 7.50 ea.
2 Females	N. Y. Auction Co.	4.00 ea.
1 Male	Local sale	20.00 ea.*

* receipts divided.

13 Muskrats	N. Y. Auction Co.	.80 ea.
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In making a comparison of local sales with those of N. Y. Auction Co., it seems that the local sales were considerably higher on mink. After the commission was deducted, four mink netted the Government \$21.85. Comparable pelts sold locally for \$12 to \$20. The auction sales on muskrat were slightly higher than the local market.

V. FIELD INVESTIGATIONS AND APPLIED RESEARCH

A. Predator Control

A predator control program was conducted on the refuge both as a rabies control measure and as a means of increasing waterfowl production. The work was carried out in conjunction with the Branch of Predator and Rodent Control. Distribution commenced April 9 and terminated April 19.

Fresh eggs poisoned with one cc of solution containing 1/16th part strychnine; green food coloration and mineral oil were used as bait. The eggs were placed at active burrows, around building sites, on trails and at road culverts. Records were kept of the bait stations so that results could be checked in 10 - 14 days following distribution. The evaluation was based on 64 dozen eggs this year and on 60 dozen eggs in 1962. A total of 135 dozen and 84 dozen eggs were distributed in 1962 and 1963 respectively. Results of the two annual programs based on 60 dozen and 64 dozen for 1962 and 1963 respectively are as follows:

Year	Fox	Skunk	Raccoon	Badger	Cat	Rodent	No. eggs/ observed kill	No. of fox shot or gassed
1962	13	106	43	16	-	no record	4	97
1963	7	30	7	8	1	10	12	23

The total predator kill for 1963 was considerably larger than the observed kill on the check line because:

326 eggs were distributed after the time of evaluation.
193 eggs in the check line were missing with no trace of shells.
133 eggs were consumed with no observed kill near the bait station.
50 eggs could not be located on the check line.

Project costs:

\$3.77 per observed kill from poisoned eggs alone.
\$2.63 per observed kill from poisoned eggs plus incidental shooting and gassing.

B. Pocket Gopher Control

The burrow builder, fabricated by Mr. Podoll a year ago, was given the first trial this spring. Artificial burrows were made approximately 20 feet apart in heavily infested alfalfa fields. In other sites, such as pastures and small grain fields, spot control was made to cover only areas where new mounds appeared.

The burrows were run at a depth of eight inches with an application of two pounds of poisoned barley per acre. The machine proved to be highly efficient in old alfalfa fields and in grasslands. Considerable trouble was experienced in retaining a burrow in fields cultivated the previous season. It was also learned that quackgrass rhizomes collected on the subsoiler in cultivated fields, but that no problem was experienced after the quackgrass formed a sod.

In an evaluation, made three weeks following treatment, it was determined that 90 percent kills were made in heavily infested fields treated with burrows at 20 foot intervals. It was estimated that 75 percent kills were made in fields given a spot treatment.

The local response to the refuge lead was almost immediate. Three new machines are already in operation in the neighborhood. We have given the new operators the benefit of our experience, knowing that long range control must be a community effort.

C. Blackbird Studies

A report was prepared by Mr. DeGrazio for the third year's work in five year research study on the refuge. The study will be continued with a similar work plan in 1963. Some of the highlights of the report are as follows:

1. Personnel Contributions

<u>Agency</u>	<u>No. of Personnel</u>	<u>Man-days Contributed</u>
Denver Research Center	10	390
* Sand Lake Refuge	4	117
S. Dak. Dep't Game, Fish & Parks	1	<u>94</u>
Total		601

* Time contributions by other refuges in banding was not known.

2. Corn Damage Appraisal

The total corn loss on 8,412 acres of corn in the 94 section study area was 20,020 bushels. The average bushel loss per acre at 1/4 to one mile from the nearest marsh was 4.23 bushels; from 1-1/4 to two miles the loss was 1.73 bushels; and from 2-1/4 to three miles the loss was .37 bushels.

The average loss was 5.68 bushels per acre on refuge fields and 2.00 bushels for off-refuge fields.

3. Blackbird Populations

The peak population at Sand Lake was about 1 1/4 million birds compared to two million birds the previous year. This decrease is attributed to an increase of water areas in 1962, which tended to scatter the birds over a larger area.

Larger numbers of birds stayed at Sand Lake for a longer period of time in 1962 than in 1961 because of mild weather in October and November.

4. Baiting Experiments

DRC-736 used to paralyze birds temporarily for banding:

In six trials the number of recoverable birds that fed on the bait, varied from 12% to 75%. The average induction time was 28 minutes and the average duration of paralysis was 1.5 hours with 1.25% DRC-736 concentrations on cracked corn. Mortality was 14%.

DRC-632 used as a toxic bait:

Difficulty was encountered in recovering enough dead birds in the marsh habitat to evaluate effectiveness. DRC-632 was found to be toxic to other grain feeding birds such as juncos and mourning doves.

DRC-1327 used to evaluate distress properties:

Birds administered DRC-1327 were observed to give violent distress symptoms. Tests were conducted to see if the chemical would have a repellant effect when applied to standing corn. It was concluded that the chemical was ineffective as an area repellant in the manner applied.

5. Frightening Devices

Three methods of using amplified distress calls were investigated.

1) Amplified distress calls from a stationary ground unit, 2) amplified distress calls from a mobile groundunit and 3) amplified distress calls from a low flying aircraft.

The devices used were effective in moving birds, but the cost of equipment used was too costly for use on low profit crops.

6. Banding

Juvenile blackbirds were banded as nestlings. Adult birds were captured in Australian crow traps, cannon net traps and by DRC-736. The results are as follows:

see next page

1962 Blackbird Research Banding Summary

<u>Species</u>	<u>Total No. Banded</u>	<u>Sand Lake</u>	<u>No. White Tagged</u>	<u>Off Refuge in S. Dak.</u>	<u>No. Blue Tagged</u>	<u>North Dakota</u>	<u>No. Red Tagged</u>
Redwing	3,218	2,574	2,219	471	288	173	91
Yellowhead	2,053	1,733	1,459	215	153	105	88
Grackle	1,560	1,357	1,187	148	130	55	50
Cowbird	409	330	327	52	52	27	27
Brewers	9	9	9	0	0	0	0
Rusty	1	1	1	0	0	0	0
Starling	<u>147</u>	<u>132</u>	<u>0</u>	<u>15</u>	<u>15</u>	<u>0</u>	<u>0</u>
Total	7,397	6,136	5,334	901	638	360	256

7. Reductional Control in Roosts

DRC-632, which was found to be 200 times more lethal to birds than mammals, offered possibilities for reductional control in roosts. Aerial applications sprayed on caged birds gave encouraging results. In the case of free flying birds however, the birds avoided contact with spray or were covered by a canopy of marsh vegetation. The results were, for the most part, negative.

VI. PUBLIC RELATIONS

A. Recreational Use

Use of the refuge by colleges and universities for field trips is increasing steadily. We are giving these groups priority in distributing our time spent with refuge visitors. We had six college student groups in April and have a few more scheduled for May. We welcome these groups and the opportunity to forward their knowledge of the refuge system and its purpose.

B. Refuge Visitors

February

Bob Hanten, S. Dak. Dep't.; fish removal inquiry
Jim Gillett, Wetlands Mgr, Oakes, N. Dak.; review easements

March

Fred Rush, Lake Andes Refuge; equipment transfer

April

Lacreek Refuge; equipment transfer

Frequent visitors too numerous to list;

Albert Gould, SCS; Aberdeen AAO personnel; S. Dak. Dep't. of Game, Fish and Parks wardens and other conservationists; Game Management Agents; Predator and Rodent Control agents; College groups.

C. Refuge Participation

January

Mr. Schoonover showed slides and gave talk to Marshall County Sportsmen's Club., Britton, S. Dak.
Mr. Schoonover showed slides and gave talk to Clark Isaac Walton Club, Clark, S. Dak.

February

Mr. McWhorter showed slides and gave talk to local 4-H Club, Columbia.
Mr. Schoonover showed a movie for PTA at Ordway school.
Mr. Schoonover discussed goose management problems with officials of the Brown County Sportsmen's Club.
Mr. Schoonover discussed soil testing with members of the S. Dak. Wheat Growers Ass'n.
Mr. Wahl showed film and gave talk to Sportsmen's Club, Claremont.

March

Mr. Schoonover showed slides and gave talk at First Lutheran Church, Britton, S. Dak.

Mr. Schoonover attended a meeting of the Oahe Sub-Conservancy District at Onida, S. Dak.

Mr. Schoonover attended regional wetlands meeting in Jamestown, N. Dak.

Mr. Schoonover showed slides and gave talk to Sportsmen's Club, at Mobridge, S. Dak.

April

Mr. Schoonover attended Marshall County Sportsmen's Club meeting, Britton, S. Dak.

VII. OTHER ITEMS

A. Wetland Areas

Fencing was completed on the Krause Tract, but grazing will be delayed at least one year to permit the grass to recover from prolonged overgrazing.

Posting of the tract has not yet been completed.

B. Safety

In safety meetings, safe driving was discussed. Also included were discussions of safety bulletins and suggestions for improvement. The last suggestion, a guard around the ladder at the grain elevator, has been completed.

There have been no lost time accidents at this station in 601 days at the close of this period.

C. Transport Truck Operation

A new transport outfit was acquired the last week in January for intra-regional use. Fritz Krege from the station is the full time driver and has put 16,000 miles on the new rig at the close of this period. See photo section.

Following are this periods accomplishments.

January

Delivered old tractor and loby trailer to Mingo Refuge.

Took delivery of new International Harvester diesel truck-tractor in California

February

Took delivery of new loboy trailer in Alabama.
Hauled scraper Ft. Leonard Wood to Squaw Creek Refuge.
D-7 Caterpillar from Ohio to Necedah Refuge.
Bridge steel Camp McCoy, Wisconsin to Necedah Refuge.
Dragline Camp Dod, Iowa to Lacreek Refuge.

March

Loboy trailer Mingo Refuge to Crescent Lake Refuge.
Payloader Rock Island, Illinois to Sand Lake.
Dragline Lacreek Refuge to Valentine, Nebr.

April

Trailer House Ft. Leonard Wood to Lostwood Refuge.
Payloader Sand Lake to Upper Souris Refuge
Miscellaneous equipment Sullys Hill Refuge To Sand Lake Refuge.
Rye grain Sand Lake to Horicon Refuge and Necedah Refuge.
Grader Necedah to Chautauqua Refuge.
Land mats Savanna, Illinois to Upper Mississippi Refuge.
Grader Camp McCoy, Wisconsin to Seney Refuge
Grader Camp McCoy, Wisconsin to Ottawa Refuge
D-6 Caterpillar Ft. Sheridan, Illinois to Ottawa Refuge
Dragline Ohio to Ottawa Refuge.
D-4 Caterpillar Michigan to Sand Lake.
D-4 Caterpillar Ft. Sheridan, Illinois to Waubay

This has been a busy period for Fritz and the green "corn binder".

Submitted by:

Lyle J. Schoonover

Date: May 24, 1963

Refuge Manager

Approved, Regional Office:

Date: _____

Regional Refuge Supervisor



The new sign
at the observation
site on Highway 10



Ice pushed up by heavy winds during spring breakup. Riprap
on the bank was displaced.



Shoreline sprayed with Amitrol T in the Fall of 1962



Grazing Unit 25 suffered a loss of grass in the '62 flood. White areas are alkali deposits left by the standing water.



Elmer Podoll and the burrow builder used to control pocket gophers.



The burrow builder in action. 90% kills were made in fields poisoned at 20 foot intervals.



The old tractor and lowbed trailer.



The new tractor and lowbed trailer.

3-1750

Form NR-1

(Rev. March 1953)

WATERFOWL

REFUGE

Sand Lake

MONTHS OF

January

TO

4213

. 19 63

[illegible]

3 -1750a

Cont. NR-1

(Rev. March 1953)

WATERFOWL (Continuation Sheet)

REFUGE

Sand Lake

MONTHS OF

January

TO

April 30, 1963

(1) Week ending Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total	
	3/16 : 11	3/23 : 12	3/30 : 13	4/6 : 14	4/13 : 15	4/20 : 16	4/27 : 17	5/4 : 18			
Swans:											
Whistling				35	35				490		
Trumpeter											
Geese:											
Canada Large	400	60	135	135	60	80	85	85	8,330		
Cackling											
Brant											
White-fronted				1500	20	20			10,640		
Snow			35000	40000	14000	2000	200	50	638,750		
Blue			50000	60000	21000	3000	250	50	933,100		
Other Little Canada		150	5000	3000	500	500	200	50	65,800		
Ducks:											
Mallard	2500	4000	2000	1500	1500	500	500	500	167,300		
Black											
Gadwall		6	300	300	250	150	200	200	9,842		
Baldpate		35	1000	500	400	300	200	150	18,095		
Pintail		300	3000	2000	2000	300	300	150	56,350		
Green-winged teal		4	20	200	200	200	150	50	5,768		
Blue-winged teal				3000	3000	3000	4000	4000	119,000		
Cinnamon teal											
Shoveler			500	1000	1200	2000	2000	2000	60,900		
Wood											
Redhead		6	300	300	300	100	100	50	8,092		
Ring-necked			100	100	100	20	100	25	3,115		
Canvasback			60	200	200	50	50	25	4,095		
Scaup		20	2000	2500	3000	3000	1500	1000	91,140		
Goldeneye		10	20	20	20				490		
Bufflehead		6	20	20	20	20			602		
Ruddy				20	20	10			210		
Other Amer. Merganser		50	200	20	20				2,030		
Coot:		15	2000	2000	3000	3000	3000		91,105		
				(over)							

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans	<u>490</u>	<u>35</u>	<u> </u>
Geese	<u>1,656,620</u>	<u>104,500</u>	<u> </u>
Ducks	<u>547,029</u>	<u>12,230</u>	<u> </u>
Coots	<u>91,105</u>	<u>3,000</u>	<u> </u>

SUMMARY

Principal feeding areas Geese - pastures off refuge; ducks
stubble off refuge & marsh on refuge.

Principal nesting areas Pastures and wildland on refuge.

Reported by Robert E. McWhorter

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).

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge. Sand Lake

Months of January to April 30, 1963 195

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Pelican	50	4/8	400	4/25						
Cormorants	3	3/29	600	"						
Great Blue Heron	4	3/23	200	"						
Black-crowned Night Heron		4/8	1,000	"						
II. <u>Shorebirds, Gulls and Terns:</u>										
Killdeer	3	3/23	2,000	"						
Wilson Snipe	10	4/10	200	"						
Franklin Gull	1	3/23	5,000	"						
Common Tern	1	4/25		"						
Black Tern										
Upland Plover										
Lesser Yellow Legs	2	4/28								

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove					
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow					
				Reported by.....	

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

UPLAND GAME BIRDS

1613

Refuge Sand Lake

Months of January to April 30, 19463

(1) Species	(2) Density	(3) Young Produced	(4) Sex Ratio	(5) Removals	(6) Total	(7) Remarks	
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd. Estimated Total	Percentage	Hunting For Re- stocking For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	Marsh edge and upland 10,000					4,500	Less than usual movement into refuge due to open winter.
Hungarian Partridge	Upland 7,000					5	
Prairie Chicken	Upland 7,000					6	Winter use only.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

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

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

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Sand Lake

Year ending April 30, 1963

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs					(5) Total		
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re- stocking	For Re- search	Share Trapping			Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	Popula- tion	
								Permit Number	Trappers Share	Refuge share					
Mink	Marsh 5,000			9						4½	4½	4			100
Muskrat	Marsh 5,000			25						12	13	13			9000
Beaver	Marsh 5,000														20
Weasel	Marsh 5,000														25
Skunk	Upland 7,000			20	133					20					200
Raccoon	Marsh 5,000			13	66					13					150
Badger	Upland 7,000				26										35
Red Fox	Upland 7,000			121											40

* List removals by Predator Animal Hunter

* List removals by Predator Animal Hunter

REMARKS: In the spring of 1963 a pocket gopher control program was started on the refuge using the "Burrow Builder Machine" technique. Observations 3 weeks after application indicate 75-90% kill.

Reported by Robert E. McWhorter

INSTRUCTIONS

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

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