

Sand Lake National Wildlife Refuge

Narrative Report

January 1, 1961 to April 30, 1961

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I. GENERAL

A. Weather Conditions

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

	<u>Snowfall</u>	<u>Precipitation</u>		<u>Max.</u>	<u>Min.</u>
		<u>This Month</u>	<u>Normal</u>	<u>Temp</u>	<u>Temp</u>
January	T	T	.68	42	-31
February	6.0	.30	.63	44	-16
March	T	.10	1.20	67	11
April	T	1.64	2.10	78	9
Totals	6.0	2.04	4.61	Extremes 78	-31

We received several fairly large snows late last fall before the ground had frozen. This covering of snow prevented the topsoil from freezing during the winter. Thus, with the usual winter thaws occurring, most of the melted snow soaked down into the ground. Since we received very little snowfall and less than half the normal amount of precipitation this period, there was very little runoff this spring.

The artificial potholes near the lakes on the refuge are down only 12 to 14 inches from capacity. The relatively high water level in these dugouts is probably due to seepage from the lakes. However, the levels in the natural potholes in this part of the state are down several feet.

B. Habitat Conditions

1. Water

a. Dakota Lake. At the start of the period about an inch of water was flowing over the spillway. The flow remained at this rate until the middle of March when the small runoff in the Ludden and Oakes, North Dakota areas caused the James River to rise and on March 23, six inches of water was flowing over the spillway. The water began to go down during the first week in April and by the end of the period four inches of water was pouring over the spillway.

b. Mud Lake. At the beginning of the period this pool level was 15 inches below pool capacity. The ice began to break up during the middle of March and the water level rose steadily until three inches of water was going over the old spillway at the end of the period.

c. Maple River. Two inches of water was going over the west end of the spillway on March 17. There was no great change in the water level on this area this spring and at the end of the period there were still two inches of water flowing over the structure.

d. Sand Lake. In January this pool was six inches below pool capacity. We had planned to discharge water before the spring run off so there would be a "cushion" reservoir in Sand Lake to handle the excess water coming from Mud Lake. This would have also enabled us to discharge water down the river below the refuge at a controlled rate. However, by mid-March it became apparent that the spring runoff would be small, thus the radial gates were kept closed in order to hold all the available water. With three inches of water spilling into Sand Lake at the old spillway on Mud Lake Dike, the Sand Lake pool was finally filled during the last week of the period.

All pools are six inches above approved levels with the exception of the display pool. This pool is about two feet below spillway elevation and will probably be lower at the end of the summer due to evaporation.

2. Food and Cover

Due to a fairly good grain crop last year and several blizzards late in November which drove the majority of the ducks and geese southward, there was still quite a bit of grain left after the fall migration. To allow better utilization, about 90 acres of corn was dragged down in March for the spring migrants. For about ten days after the geese arrived they fed out away from the refuge instead of utilizing the knocked down corn. Later, during a few days of strong winds, the geese began to feed in these corn fields. Due to the frequent thawing spells in late February and early March and the relative small snowfall there were abundant bare spots in fields this year for the pheasants. This definitely cut down on road kills as the birds could find ample scratching and gravel areas away from the roads.

Relatively little goose browsing in refuge grazing units was noted this spring. Even when the geese were observed away from the refuge they were feeding in stubble or picked corn fields.

Very little of the rank goosefoot (Chenopodium spp) that came in during the drouth of 1959 in the Sand Lake unit is visible now. High water level, wind action and ice action have taken most of these weeds out. Although this plant did provide some food for the waterfowl last summer and good cover for nesting and young coots, it was very tough getting through with a boat to take pair or brood counts.

II. WILDLIFE

A. Migratory Birds

1. Waterfowl

a. Swans. Fourteen Whistling Swans were first seen on March 26. This is the normal arrival date for this species. A peak of 200 was reached during the second week in April. This is the highest spring peak since 1957 when a peak of 317 swans were present also during the second week in April.

b. Geese. Due to the low water levels and dry potholes away from the refuge this spring, the refuge, with near capacity water levels, was a big attraction for geese this year. Shortly before noon on March 23, an estimated 15,000 snows and blues piled into the refuge in 15 minutes with many more geese coming in later the same day. Two days later there were 150,000 snows and blues present. The population stayed at 150,000 for about one week. Then, on April 2 and 3, a peak of 200,000 snows and blues was reached with another 100,000 on Dakota Lake and Renziehausen Slough. An aerial census of April 4 revealed only 103,000 geese on the three areas indicating that many geese moved northward during the night of April 3.

This years' peak occurred two weeks earlier than the previous three years peaks and was the highest since 1958 when 250,000 snows and blues were present on the refuge.

From the arrival date through the peak period there was a higher percentage of blue geese than snows, which is normal during the spring migration. However, after the peak was reached the percentage reversed and there were more snows than blues. This indicates that the majority of the blues headed north from here earlier than the majority of the snows. It is believed that the snow-blue ratio has reversed in previous years also here at this refuge.

The resident flock of Canada geese began nest building the first week in April. The first brood of six gosling was seen on May 11, which is almost two weeks earlier than the first brood seen last year.

Little Canada geese arrived during the first week in March and peaked during the first week in April. The peak date and number were near normal. There are still about 1,000 of these little geese present during mid-May.

The White-front migration was in full swing by the last week in March. This years migration began a week earlier than last year but was about the same as the 1958 and 1959 migration dates. Our peak of 1,000 birds was the highest since 1957 when 1,000 birds were present.

c. Ducks. With the exception of several artesian ponds all water areas were frozen over by mid-January. As a result, very few ducks spent the winter here.

The spring migration began March 13 when five pintails were first seen. Only two weeks later we reached our peak of 39,875 ducks. This is the highest peak since 1958 when a peak of 77,000 ducks were present. The high peak this year was undoubtedly due to the lack of adequate water in surrounding potholes and sloughs, thus forcing ducks to use the refuge pools.

Mallards and Pintails began nesting the first week in April. The first pintail brood was seen on May 10 near the Columbia Dam. This is about one week earlier than the first brood seen last year.

d. Other Waterbirds, Shorebirds and Doves. The observed arrival dates of birds in this area can be found after section II. The use of the refuge by shorebirds was normal, although the shall potholes away from the refuge with exposed mud flats, were especially inviting. Only seven Sandhill Cranes were seen this period, on April 22.

No Mourning Doves wintered in this area. Doves arrived about two weeks earlier than the normal arriving date with nest building getting under way during the last part of the period.

B. Upland Game Birds

1. Ring-necked Pheasants. Pheasants are abundant this spring due to a relatively high population after last fall's hunting season and little winter kill of birds. Due to several heavy snowfalls late last fall there were heavy concentrations of birds over most of the refuge during the early part of the period. Flocks of four to five hundred birds were commonly seen in standing corn fields.

Nest initiation was near normal and it appears that there will be a fairly good hatch.

2. Gray Partridge. The partridge population is about the same as last year although no population trend indicators are used except occasional observations. Four pairs of "Huns" have been seen this spring.

3. Prairie Chicken. There were several observations of prairie chickens this period. One chicken was seen several times at the south end of the refuge in mid-February and a chicken was seen twice near Site 2 in late February.

On April 12, a booming ground was located about eight miles northeast of the refuge in the extreme eastern portion of Dickey County, North Dakota. On this date nine birds were seen. A later check revealed 12 birds, presumably all males, on this booming ground. No leg bands could be seen, as it was near impossible to get close to these chickens.

No leg bands could be seen as it was near impossible to get close to these chickens. There are six or seven sections of grassland in this area which appear to have good chicken habitat. This is the only known tract of suitable grassland near the refuge that has much potential in establishing a nucleus flock of chickens. However, this area will probably be included in the proposed Garrison irrigation project or lay adjacent to it. Therefore, if this area is to be preserved in the interest of prairie chickens immediate steps should be taken.

C. Big Game Animals

A high population of white-tailed deer is still present on the refuge after the hunting season late last fall. A ground count in early March revealed 175 deer. On this basis, we estimate that there are 250 deer on the refuge.

Our estimate of 100 deer killed on the refuge last fall during the hunting season was fairly close, as the State, from report cards for Brown County, reported that 103 deer were killed on the refuge. There were very few road kills this period.

D. Fur Animals, Rodents, Predators and Other Animals

1. Fur Animals and Predators

a. Mink. There were very few observations of mink this period, although one was seen at the display pool on March 24. We estimate the population to be slightly below normal for the period.

b. Muskrat. It was assumed that there would be considerably more rats on the refuge shortly after the water was back to normal; especially in the Sand Lake Unit. However, this is not the case as very few rat houses are present. A few rats have been seen near the Columbia Dam, presumably "den" rats as there are no known houses in this area.

c. Beaver. There was no beaver activity noted during the period. The beaver lodge on the river below Hecla Grade is the only known lodge on the refuge.

d. Red Fox. Considerably fewer foxes were seen on the refuge than during the same period a year ago. Undoubtedly, this is due to the concerted efforts put forth a year ago by trappers and airplane hunters.

Beginning July 1, the state fox bounty will be lowered to \$2.00 for adults and pups. The present bounty is \$7.50 for adults and \$2.00 for pups. Needless to say, there was much complaining from aerial fox hunters when this law was passed.

e. Grey Fox. No grey fox were seen during the period.

f. Raccoon. These nest predators are still present in fairly high numbers after the trapping season. Although 106 'coons were taken during the season, several have been seen in stubble fields and near artesian ponds on the refuge. During the later part of the period road kills were more frequent.

g. Badger. Badgers are still numerous in the area as evidenced by the fresh diggings. The state is going drop the \$4.00 bounty on badger July 1.

2. Rodents

1. Cottontail Rabbits. After a vigorous campaign of live trapping 59 cottontails for the University of Minnesota and shooting about 150 in shelterbtl's the "bunnies" are down to a more tolerable population level now.

The University of Minnesota is using the live-trapped rabbits on a cancer research project. We have been assured that the rabbits from this area were free of cancer-causing growths, but several rabbits from Kansas (~~see photo section~~) have growths which are capable of producing cancer if the contents are injected into healthy rabbits. The full details on this study are not known, but as more information is received it will be in another narrative.

2. Ground Squirrels. Thirteen-lined ground squirrels are too numerous in this area. Many holes can be found on refuge lawns due to the activity of these squirrels. Franklin ground squirrels were occasionally seen during the latter part of the period.

E. Predaceous Birds

1. Hawks. There was a normal movement of Rough-legged Hawks through this area the first week in March. There was also a small movement of Marsh Hawks during this same period. A few Red-tailed Hawks were seen during the last week in March. Although there were a few Sparrow Hawks seen in March, a small movement of these birds was noted during the last week in April.

On April 13, a seemingly unusual incident occurred. While a horned owl was being observed through binoculars a roughlegged hawk attacked the owl. The owl flew about 75 feet to a fence corner, where there was some brush, and landed on the ground in the brush. The hawk, determined to have owl for supper or a mean fight, kept hovering over the brushy fence corner for about two minutes. Then, when the hawk flew about 50 yards away the owl immediately flew northward to a large shelterbelt and the hawk was in hot pursuit after it. Evidently, the owl had invaded the hawk's hunting territory and the hawk didn't think "two could live as fat as one" on his territory.

2. Eagles. Three Golden Eagles, two adults and one young, were seen during March. There were no Bald Eagles seen.

3. Owls. Two Snowy Owls were seen during mid-March by the headquarters. Horned Owls were frequently seen during the period and Long-eared Owls were occasionally seen. One Saw-whet Owl was seen in February. Burrowing Owls were first seen on April 19. There was a large movement of Short-eared Owls through this area the second week in April.

4. Crows. No large flight of crows was noted this spring, but small flocks of 50 to 75 birds were seen moving through this area most of March.

F. Other Birds

The observed arrival dates can be found on the following page.

G. Fish

From the number of dead fish that floated down the James River at the Hecla Grade and the number of fish at the Columbia Dam it appears that the winter kill was slightly below that of last year. Most of the winter killed fish were carp, perch and a few northern pike. There was little ice fishing activity this year at the Hecla Bridge.

H. Reptiles

None.

I. Disease

None noted this period.

Sand Lake Refuge
Arrival Dates for Migratory Birds
Spring 1961

<u>Species</u>	<u>Number</u>	<u>Observed Arrival Date</u>
Common Canada Geese	325	March 2
Robin	1	3
Red-winged Blackbird	50	13
Pintail	5	13
American Goldeneye	12	15
Lesser Scaup	6	19
American Merganser	12	19
Little Canada Geese	500	19
Lesser Snow Geese	4	19
Killdeer	3	19
Redheads	3	19
Ring-billed Gulls	9	20
Mourning Dove	1	21
Golden Eagle	1	21
Snow and Blue Geese	15,000 in 15 minutes	23
Herring Gull	-	23
Gadwall	2	24
Baldpate	10	25
Shoveller	5	25
Slate-colored Juncos	2	25
Green-winged Teal	25	25
Canvasback	8	25
Great Blue Heron	1	25
Ring-necked Duck	8	25
Whistling Swans	14	26
White-fronted Goose	700	27
Sparrow Hawk	1	27
Grackle	1	29
Red-tailed Hawk	1	30
Cedar Waxwing	5	April 1
Coot	5	2
Pied-billed Grebe	1	3
Bufflehead	3	6
Sharp-shinned Hawk	1	7
Franklin Gull	1	9
Double-crested Cormorant	1	9
Black-crowned Night Heron	1	12
Ruddy Duck	11	13
Pelican	10	13
Burrowing Owl	2	16
Short-eared Owl	5	16
Blue-winged Teal	5	16
American Bittern	1	19
Yellow-headed Blackbird	10	19
Purple Martin	-	20
Barn Swallow	3	21
White-crowned Sparrow	5	21

Sand Hill Crane	7	April 22
Marbled Godwit	1	22
Greater Yellowlegs	1	23
Willet	1	23
Belted Kingfisher	1	23
Avocet	1	24
Myrtle Warbler	2	25
Common Terns	3	25
Western Grebe	2	26
Wilson Snipe	1	27
Eared Grebe	1	28
Upland Plover	1	29

III. REFUGE DEVELOPMENT & MAINTENANCE

A. Physical Development

1. Made and painted three refuge recognition signs.
2. Made tour route signs.
3. Built visitor registration and leaflet stand.
4. Built additional bedroom to lower apartment at Site 2.
5. Had new well drilled at Site 3.
6. Transported $7\frac{1}{2}$ yard scraper from Marion, Ohio.
7. Moved load of surplus furniture from Ft. Mead, S. Dak. for summer living quarters.
8. Hauled load of scrap metal from Air Base at Rapid City, S. Dak.
9. Began conversion of barn into living quarters for summer use.
10. Repainted two "closed road" signs.
11. Hauled two loads of fixtures and paneling from abandoned house at Arrowwood Refuge.
12. Took up old electric cross fencing in four pasture units.
13. Painted woodwork and trim in office.
14. Refinished office desk.

B. Plantings

1. Aquatic and Marsh Plants. None.
2. Trees and Shrubs. None.
3. Upland Herbaceous Plants. None.
4. Cultivated Crops. Although this has been a cold windy spring, a few farmers began seeding during the last week in March. About 80 percent of the small grain crop was in by the last of the period.

C. Collections and Receipts

None.

D. Control of Vegetation

None this period. The regular application of 2,4-D, to Canada and Sow this is planned for this summer, but due to a cut in our Soil and Moisture allotment this operation will be reduced accordingly.

E. Planned Burning

An attempt was made during early March to burn off several nesting islands below the Houghton Grade. The old vegetation on these islands is very rank and unattractive to geese. However, due to snow accumulation and sparse litter on the ground the fire couldn't get started.

Fall burning is much more preferred here and burning will be conducted this fall in accordance with the burning plan approved during fall of 1959.

F. Fires. None.

IV. RESOURCE MANAGEMENT

A. Grazing

Most of the grazing permits have been issued for the coming season with the turn in date to be after May 27. Most of the pastures are in good condition and should easily be able to withstand the stocking rates the same as last year.

An additional grazing unit is to be established in the north level ditching area. The grazing of this area has a two-fold purpose - to open the shoreline on the level ditching and to suppress the growth of phragmites so it will be more attractive to waterfowl. There are about 200 acres in this area.

B. Haying

None.

C. Fur Harvest

Permits were issued to two trappers and one aerial hunter for the 1960-61 trapping season. The following table summarizes the take by all.

<u>Species</u>	<u>Permittee Share</u>	<u>Government Share</u>
Mink	5	5
Muskrat	0	0
Beaver	1	1
Weasel	0	0
Skunk	19	0
Raccoon	106	0
Badger	2	0
Red Fox	42	0

No notification on prices received has been sent to this station.

Considerably fewer badgers and foxes taken this season. Most of the foxes were taken by airplane hunters.

D. Timber Removal

None

E. Commercial Fishing

None

F. Other Uses

None

V. FIELD INVESTIGATIONS OR APPLIED RESEARCH

A. Blackbird Studies

Work on this project during the period consisted of setting up plots to count territorial males and putting out millet on bare ground to test the acceptability by blackbirds. The program for this year is scheduled to be in full swing by June 7.

B. Waterfowl trapping and Banding

With the intention of finding out if geese could be trapped during the spring migration we began prebaiting on March 23 and set out four cannon net traps on April 3. After the traps were set only small numbers of Little Canadas visited the trap site. As a result only 44 Little Canadas were caught; 12 adult males, 10 adult females, 11 immature males and 11 immature females.

Since there were more Snows and Blues here during the trapping period and because they were less reluctant to visit the trap site than the Little Canadas, more Snows and Blues were caught. Tabulated below is a summary of Snows and Blues trapped and banded this spring.

<u>Date</u>	<u>Snows</u>					<u>Blues</u>		
	<u>Ad.Male</u>	<u>Ad.Fe</u>	<u>Im.Male</u>	<u>Im.Fe</u>	<u>Tot.</u>	<u>Male</u>	<u>Fe.</u>	<u>Tot.</u>
May 1	11	8	13	11	43	18	11	29
May 11	4	2	12	9	27	8	9	17
May 12	9	10	23	26	68	17	13	30
May 16	<u>0</u>	<u>1</u>	<u>5</u>	<u>9</u>	<u>15</u>	<u>3</u>	<u>3</u>	<u>6</u>
	24	21	53	55	153	46	36	82

The age ratios on geese banded May 1 were comparable to the age ratios of geese banded last fall. By May 11 and 12 there is evidence of a smaller portion of adult birds indicating that the breeders head north earlier than the young birds. It is recognized, however, that this is a fairly small sample to draw conclusions from.

The immature snow geese could easily be identified by the patches of grey plumage on them, even by May 16. However, there was a wide variation in sexual development of these males with grey plumages. Some immature males had an extended penis only $\frac{1}{2}$ cm. in length and was quite comparable to the sexual development of young geese banded during the fall. Others had a moderately developed sheath and an extended length of $2\frac{1}{2}$ cm. The amount of grey plumage appeared to be independent of sexual development. Although the birds were not weighed, the smaller lighter birds were usually the least sexually developed.

Classification of immature male snows and blues by the degree of sexual development:

See next page.

<u>Date</u>	<u>Penis less than 1 cm.*</u>	<u>Penis 1-2 cm.*</u>	<u>Penis over 2 cm.*</u>
May 12	6	10	7
May 16	0	4	1

* Estimated lengths.

The immature male Little Canadas showed the same variation of sexual development as in the snow geese. One immature female Little Canada that was banded here last fall was retrapped this spring.

All species of geese, especially Little Canadas, seem more antagonistic in the spring and as a result fewer birds concentrated on the bait area. Although there were several damp, windy days during the trapping, three good catches were missed due to faulty cartridges.

Large samples in the spring are probably not possible, but we believe that 500 snows and 100 Little Canadas could be taken each spring with a reasonable expenditure of time.

We also banded 88 Green-winged Teal, 82 Pintails, 69 Bladpates, 5 Redheads, 3 White-fronted geese, 9 Blue-winged Teal and 55 coots this spring.

C. Prairie Chicken Restoration

It was planned to trap 30-35 prairie chickens in the Lake Andes area and release them here on the refuge again this past winter. About the time the actual trapping was to take place the weather warmed up causing the snow to melt and the chickens quit going to the baited area.

From the chicken observations this past winter on the refuge and the booming ground located northeast of the refuge the prairie chicken transplant certainly looks more promising, although no bands have been seen on chickens observed in the refuge or on the booming ground.

VI. PUBLIC RELATIONS

A. Recreational Uses

Due to the big flight of Snows and Blues through this area we had the usual number of bird watchers this spring, especially from Minneapolis and St. Paul. During the last 38 days of the period there were 202 visitors to the refuge. Most of these people were bird watchers.

Very little ice fishing was noted at the Hecla Recreation area this period.

B. Refuge Visitors

- 3/24 Messrs. Swanson & Waters, USQMA and R.O., Discuss mutual problems.
- 4/1 Dale Sanders, Brainerd, Minn., Waterfowl photography.
- 4/1 Barry Peterson, Aberdeen, S. Dak., Wetlands discussion.
- 4/1 Charles MacInnes, Ithaca, N. Y., Little Canada goose investigations.
- 4/7 Langford third grade, Langford, S. Dak., Tour refuge.
- 4/8 Mr. & Mrs. John Carlsen, Mgr. Waubay Refuge, Observe goose flight.
- 4/9 Barnard School, Barnard, S. Dak., Tour refuge.
- 4/10 Gary Hoffmaster, Engineering, Aberdeen, S. Dak., Store equipment.
- 4/11 Wendell Beaver, Fred Riewert, Tom Rohwer, John Popowski, Douglas West, Russell Robbin, Maurice Andersen, Walter Larsen, Larry DeBates, Ray Hart, Carl Trautman, Wilbur Foss, Harvey Pritz, Bob Dahlgren, S. Dak. Dept of Game, Fish and Parks, See refuge operations.
- 4/11 Pres. Hts. Jr. College Nature Study Class, Aberdeen, Tour refuge.
- 4/11 Wayne Schmidt & Jim Stillings, Tamarac Refuge, Equipment & grain.
- 4/12 NSTCollege Ornithology Class, Aberdeen, Bird identification & Trapping.
- 4/13 Einar Kaastad, DeSoto Refuge, Equipment and grain.
- 4/15 Dr. Warner & Ornithology class, U. of Minn., Refuge observations.
- 4/20 Messrs. DeGrazio & Besser, Denver Research Lab., Blackbird studies.
- 4/24 Burt Laugen, R.O. Minneapolis, Administrative inspection.

C. Refuge Participation

- 1/2 Mr. Schoonover showed a film and gave talk to Britton Sportsmen Club.
- 1/24 Mr. Schoonover and Blackard attended Brown County Sportsmen Club meeting in Aberdeen.
- 2/9 Mr. Blackard showed movie and gave talk to Sportsmen Club at Kulm, N.D.
- 2/8 Mr. Schoonover attended seminar in Minneapolis concerning snow geese.
- 2/15 Mr. Schoonover showed slides to the Sportsmen Club, Ellendale, N.D.
- 2/21 Mr. Schoonover attended Brown County Sportsmen Club, Aberdeen, S.D.
- 2/23 Mr. Schoonover gave lecture to game bird class at S. Dak. State College, Brookings, S. Dak.
- 2/28 Mr. Schoonover showed movie to PTA, Barnard, S. Dak.
- 3/22-23 Mr. Schoonover and Blackard attended meeting in Jamestown, N. D. on refuge wetlands acquisition and law enforcement problems.
- 3/21 Mr. Podoll attended diesel school in Brookings, S. Dak.
- 4/7 Mr. Blackard gave talk to Langford school children.
- 4/11 Mr. Blackard gave talk to Junior College, Aberdeen, S. Dak.
- 4/11 Mr. Schoonover gave talk to S. Dak. biologists.
- 4/12 Mr. Blackard gave^{talk} showed slides and gave tour to NSTC Ornithology class.
- 4/15 Mr. Schoonover gave talk to Ornithology class of U. of Minn.

- 4/22 Mr. Schoonover showed slides to Biology class from Macalester College, St. Paul, Minn.
4/26 Mr. Schoonover showed slides to Lions Club, Aberdeen, S. Dak.
4/28 Mr. Schoonover showed slides to Aberdeen Sportsmens Club.

VII. OTHER ITEMS

A. Easement Refuges

1. Dakota Lake. This area was visited only a few times during the period to make gauge readings and check waterfowl populations. Due to the large flight of Snows and Blues through this part of North Dakota, this easement area had 20-30,000 geese on it during the first week in April.

2. Maple River. The Maple River refuge was visited twice during the period. Near the end of the period 125 Little Canadas and about 50 ducks were seen on this area. However, it is believed that this area received much greater waterfowl use during the peak of the spring migration.

B. Safety

Listed below are the dates and topics of safety meeting held during the period.

1/27 A film was shown by highway patrolman Paul Mueller of Aberdeen. The film pointed out the different items of a car that cause death and injuries during an automobile accident. Afterwards, a discussion led by Blackard was held on safe driving techniques. All personnel were present except Mr. Podoll.

2/28 A film on safe driving procedures and pedestrian precautions was shown. Later, Blackard led a discussion on safe driving when in large towns. All personnel were present and participated in the discussion.

3/30 Several items were brought up in a discussion led by Blackard. Items discussed included lifting and handling odd-shaped objects and potential personal hazards while fighting grass fires. Mr. Krege pointed out several precautions to be taken when driving the low-boy truck, especially when loaded and in a town. Safety bulletin # 167 was read and discussed. All personnel were present.

4/21 A film entitled "Safe As You Think" was shown, followed by discussion on Balling objects and correct use of ladders. All personnel but Mr. Wahl were present.

Proudly, but cautiously, we boast that there has been no lost time accident at this refuge in 1175 days.

C. News Articles

Numerous news articles were prepared for the Aberdeen American News this period. It has been our experience that if these news releases are not typed up before they are sent in it is easy for some of the outdoor editors to get only part of the facts and then make up the rest. Therefore, we have been very reluctant to give information over the telephone to these writers. Instead, we tell them that we will prepare a news release and send to them.

D. Credits

This entire report was written by Assistant Manager Blackard.

E. Photographs

All pictures, ~~except the rabbit photos~~, were taken by Blackard with the refuge camera.

Submitted by:

May 22, 1961

Jerry J. Blackard
Jerry J. Blackard
Assistant Refuge Manager

Approved by:

Lyle J. Schoonover
Lyle J. Schoonover
Refuge Manager

Approved, Regional Office:

Date: _____

Regional Refuge Supervisor

WATERFOWL
(Continuation Sheet)REFUGE Sand LakeMONTHS OF January TO April 30, , 19 61

(1) Week ending	(2) Weeks of reporting period								(3)	(4)
	3/18:	3/25:	4/1:	4/8:	4/15:	4/22:	4/28:	5/6:	Estimated waterfowl days use	Production Broods: Estimated seen : total
Species	11	12	13	14	15	16	17	18		
Swans:										
Whistling			20	125	200	100	10		3,185	
Trumpeter										
Geese:										
Canada	400	400	400	400	400	300	200	200	22,400	
Cackling Little Canada	1600	1600	3000	3000	2500	2000	1200	1000	119,175	
Brant										
White-fronted		700	1000	500	300	200			18,900	
Snow	4	50000	80000	80000	60000	40000	20000	25000	2,415,056	
Blue		100000	120000	120000	40000	20000	15000	10000	2,975000	
Other										
Ducks:										
Mallard	1000	5000	10000	8000	7000	3000	1000	1000	269,850	
Black										
Gadwall		500	500	1000	1000	1000	750	750	38,500	
Baldpate			2000	2500	2500	2000	750	500	71750	
Pintail	50	6000	12000	10000	8000	4000	1000	1000	294,350	
Green-winged teal		2000	2000	3000	2500	1500	750	750	87,500	
Blue-winged teal						1000	1500	2000	31,500	
Cinnamon teal										
Shoveler			1000	1500	2000	1500	750	750	52,500	
Wood										
Redhead	25	1000	2500	2500	2500	1000	500	400	73,675	
Ring-necked		25	50	50	100	75			2,100	
Canvasback		25	500	500	700	1500	500	500	29,575	
Scaup Lesser	100	9000	9000	7000	9000	9000	500	500	308,700	
Goldeneye Common	25	25	25	50	50	25			1,400	
Bufflehead				25	25	50	10	10	840	
Ruddy						25	100	100	1,575	
Other										
Common Nerganser	50	300	300	300	200	75			8575	
Coot:				10	200	10000	5000	5000	141,470	

(over)

	(5)	(6)	(7)
	<u>Total Days Use</u>	<u>Peak Number</u>	<u>Total Production</u>
Swans	<u>3,185</u>	<u>200</u>	
Geese	<u>5,550,531</u>	<u>204,400</u>	
Ducks	<u>1,272,390</u>	<u>39,875</u>	
Coots	<u>141,470</u>	<u>10,000</u>	

SUMMARY

Principal feeding areas fields adjacent to and on the refuge.

Principal nesting areas Common Canadas - between Mud Lake
Dike and Four-mile Grade

Reported by Jerry J. Blackard

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).

W A T E R F O W L

REFUGE Sand Lake

MONTHS OF January TO April 30., 19 61

		(2)									
		Weeks of reporting period									
(1) Week ending	1/7	1/14	1/21	1/28	2/4	2/11	2/18	2/25	3/4	3/11	
Species	1	2	3	4	5	6	7	8	9	10	
<u>Swans:</u>											
Whistling											
Trumpeter											
<u>Geese:</u>											
Canada									200	300	
Cackling Little Canada									125	4,000	
Brant											
White-fronted											
Snow											4
Blue											
Other											
<u>Ducks:</u>											
Mallard	300	300	100	100	100	100	100	100	350	1,000	
Black											
Gadwall											
Baldpate											
Pintail											
Green-winged teal											
Blue-winged teal											
Cinnamon teal											
Shoveler											
Wood											
Redhead											
Ring-necked											
Canvasback											
Scaup											
Goldeneye											
Bufflehead											
Ruddy											
Other											
<u>Coot:</u>											

UPLAND GAME BIRDS

Refuge Sand LakeMonths of January to April 30, 19461

(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 fringe, Upland 10,000								8,000	Estimated
Gray Partridge	Marsh, meadows, Fields, 4,000								30	3 coveys actually seen during the period.
Prairie Chicken	Upland meadows 1,000								15	8 were about 12 observations of single birds this period.

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.

3-1751

Form NR-1A

(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge..... Months of..... to..... 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
<u>I. Water and Marsh Birds:</u>											
Bared Grebe	1	4/28	10	4/30	Still present						
Western Grebe	2	4/26	35	"	"						
Pied-billed Grebe	1	4/3	25	"	"						
White Pelican	10	4/13	400	"	"						
Double-crested Cormorant	1	4/9	300	"	"						
Great Blue Heron	1	3/25	25	"	"						
Black-crowned Night Heron	1	4/12	50	"	"						
American Bittern	1	4/19	10	"	"						
 <u>II. Shorebirds, Gulls and Terns:</u>											
Killdeer	2	3/19	25	4/25	Still present						
Wilson's Snipe	1	4/27	30	4/30	"						
Avocet	1	4/24	20	4/27	"						
Greater Yellow-legs	1	4/23	50	4/25	"						
Marbled Godwit	1	4/22	50	4/30	"						
Herring Gull	5	3/23	150	4/15	"						
Ring-billed Gull	9	3/20	2500	4/15	"						
Franklin's Gull	1	4/7	6000	4/30	"						
Common Tern	3	4/25	10	4/30	"						
Willet	2	4/23	10	4/30	"						
Upland Plover	1	4/29	50	4/30	"						

(over)

(1)	(2)		(3)		(4)	(5)			(6)
III. <u>Doves and Pigeons:</u>									
Mourning dove	2	3/22	350	4/30	Still present				
White-winged dove									
IV. <u>Predaceous Birds:</u>									
Golden eagle	1	3/21	5	4/20	"				
Duck hawk									
Horned owl	Winter resident								
Magpie									
Raven									
Crow	Winter Resident								
Marsh Hawk	5	3/1	30	3/20	"				
Red-tailed Hawk	1	3/30	5	3/30	"				
Rough-legged Hawk	5	3/2	40	3/10	"				
Sparrow Hawk	1	3/27			"				
Snowy Owl	2	3/17	Only 2 were seen this period.						
Burrowing Owl	2	4/16	10	4/30	Still present				
Reported by						Jerry J. Blackard			

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.

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Sand Lake

Year ending April 30, 1961

(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, upland	5000 ac		10						5	5			175
Muskrat	Marsh	5000		0						0				1000
Beaver	Marsh, upland	5000		2						1	1			7
Weasel	Marsh, upland	10000		0						0				150
Skunk	Marsh, meadow	10000		19						19				375
Raccoon	Marsh, upland	13000		106						106				400
Badger	Meadow, field	8000		2						2				100
Red Fox	Marsh, upland	8000	35	7						42				150
* List removals by Predator Animal Hunter														

REMARKS:

Reported by Jerry J. Blackard

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 unprime-ness 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.

MAY • 61 •



This 7½ cubic yard scraper was acquired from Army surplus at Marion, Ohio this period. This scraper is in excellent condition as it has been used very little.

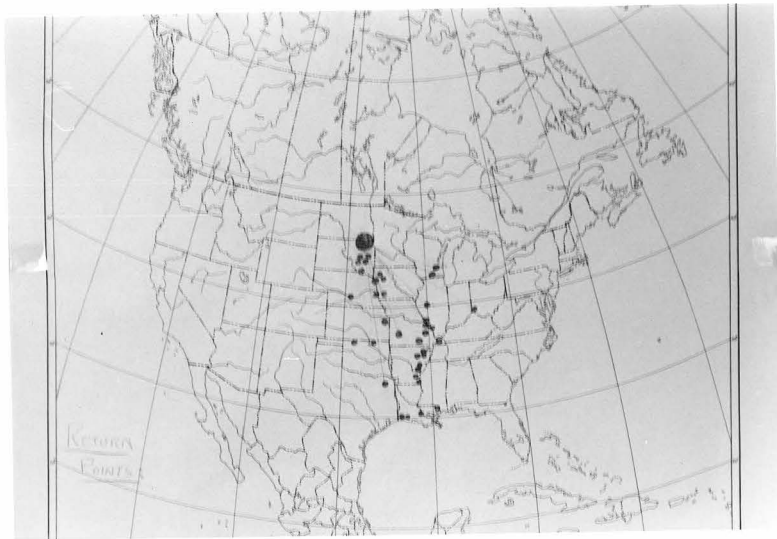


These Thirteen-lined Ground Squirrels will dig no more holes on the refuge lawns. This hole, taken over by ground squirrels, is about one foot in diameter and can cause considerable damage to a lawn mower.



This natural, shallow slough is two miles north of the headquarters. This is one of the few natural potholes in this area with water in it this spring.

• MAY • 61



Band return pattern from 1960 fall Mallard banding at Sand Lake.

• MAY • 61



Snow and Blue geese on the Columbia Dam road. At the time the picture was taken there were 20-25,000 geese on the road and in the air.