

LAKE ANDES NATIONAL WILDLIFE REFUGE

LAKE ANDES, SOUTH DAKOTA 57356

NARRATIVE REPORT

January 1 through December 31, 1969

PERMANENT PERSONNEL

Ralph F. Fries	Refuge Manager
John D. Forester	Ass't Refuge Manager
Theodore A. Carlson	Refuge Clerk
Derald V. Florey	Laborer-Maintenance
Ralph H. Town	Area Biologist

TEMPORARY PERSONNEL

Patrick Baily	(4/29-5/26/69)	Laborer
Carolyn Banta	(6/9-8/22/69)	Clerk-Typist (YOC)
Robert Brunner	(9/11-9/20/69)	Laborer
Paul Cavier	(9/16-11/29/69)	Laborer
Jerald Evans	(6/2-9/5/69)	Laborer
Derald Florey	(1/1-12/13/69)	Laborer-Maintenance
Ejner Frandsen	(4/16-12/13/69)	Laborer
John Fuchs	(9/8-11/29/69)	Laborer
Robert Green	(6/9-8/22/69)	Conservation Aid*
Douglas Hahn	(6/16-9/10/69)	Biological Technician
Johnnie Houseman	(9/21-11/29/69)	Laborer
Edison Keeler	(6/2-11/29/69)	Laborer
Richard McCutcheon	(6/16-9/13/69)	Laborer
Jerry Miller	(6/2-8/4/69)	Laborer-Maintenance
George Nielsen	(9/21-10/9/69)	Laborer
Tommy Petrik	(5/12-11/29/69)	Laborer
James Rasmussen	(6/9-8/20/69)	Conservation Aid*
Albert Ridgway	(5/5-11/26/69)	Laborer
Darell Tilberg	(6/9-9/6/69)	Biological Technician
John Weisser	(6/10-8/29/69)	Laborer
Brent Zeller	(6/4-8/29/69)	Laborer
Bruce Zeller	(6/4-8/29/69)	Laborer

\* Izaak Walton League Students

Lake Andes NWR

CROSSING OVER TO ACCOMPLISH  
NEW REFUGE OBJECTIVES



Ralph Fries  
Refuge Manager



John Forester  
Ass't. Refuge  
Manager



Ted Carlson  
Refuge Clerk



Derald Florey  
Laborer,  
Maintenance



Ralph Town  
Area  
Biologist

## C O N T E N T S

	<u>Page</u>
I. General	
A. Weather Conditions.....	1
B. Habitat Conditions.....	2
1. Water.....	2
2. Food and Cover.....	4
II. Wildlife	
A. Migratory Birds.....	9
1. Waterfowl.....	9
2. Waterbirds and Shorebirds.....	13
3. Doves.....	14
B. Upland Game Birds.....	15
C. Big Game Animals.....	15
D. Fur Animals, Predators, Rodents, and Other Mammals.....	15
E. Hawks, Eagles, Owls, Crows, etc.....	17
F. Other Birds.....	18
G. Fish.....	18
H. Reptiles and Amphibians.....	19
I. Disease.....	19
III. Refuge Development and Maintenance	
A. Physical Development.....	19
1. Development.....	19
2. Major Maintenance Items.....	19
B. Plantings.....	20
1. Cultivated Crops.....	20
C. Collections and Receipts.....	21
1. Seed or Other Propagules.....	21
2. Specimens.....	21
D. Control of Vegetation.....	21
IV. Resource Management	
A. Grazing.....	22
B. Fur Harvest.....	22
C. Commercial Fishing.....	22
V. Field Investigation or Applied Research	
A. Dove Banding.....	22
B. Blue-winged Teal Banding.....	22
C. Canada Goose Banding.....	23
D. Pre-season Mallard Banding.....	23
E. Cover Width Study.....	24
F. Experimental Native Grass Planting.....	24
G. Mallards for NPWRC.....	25



VI.	Public Relations	
A.	Recreational Uses.....	25
B.	Refuge Visitors.....	27
C.	Refuge Participation.....	27
D.	Hunting.....	28
E.	Violations.....	29
F.	Safety.....	30

VII.	Other Items	
A.	Items of Interest.....	30
1.	Wagner Irrigation District.....	30
2.	Refuge Host Annual Sobraska Refuge Picnic.....	30
3.	Personnel.....	32
4.	Credits.....	32
B.	Signature.....	33



## I. GENERAL

A. Weather Conditions

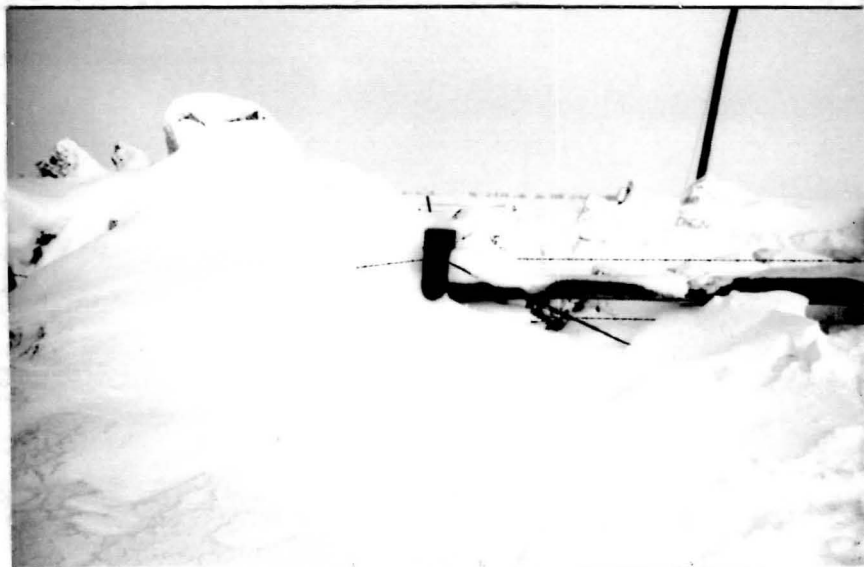
	<u>Month*</u>	<u>Precipitation</u> <u>Normal**</u>	<u>Snowfall</u>	<u>Max.</u> <u>Temp.</u>	<u>Min.</u> <u>Temp.</u>
January	.49	.49	5.0	46	-13
February	1.93	.70	20.0	41	-3
March	.43	1.42	1.6	52	0
April	.79	2.12	T	78	29
May	1.24	2.80		97	37
June	3.26	3.92		99	37
July	4.69	2.07		100	52
August	1.76	3.15		102	50
September	3.73	1.94		95	41
October	3.35	1.23	1.0	77	21
November	.67	.83	2.5	75	14
December	.98	.54	11.0	65	-5
Annual Totals	<u>23.32</u>	<u>21.22</u>	<u>41.1</u>	<u>102***</u>	<u>-13***</u>

\* Data from the official weather station operated by the Army Corps of Engineers at Pickstown, S. D., 8 miles southwest of the refuge.

\*\* Data from "Climatological Data, South Dakota, Annual Summary" for Armour, South Dakota, located 11 miles northeast of the refuge.

\*\*\* Extremes.

The year began with a snow cover of about 17 inches. Five more inches fell in January and then 20 inches fell in February. Blizzard conditions were the general rule in January and February and roads were blocked on numerous occasions. The local school was once closed for 5 consecutive days, and numerous other times for a day or two. Many roads had drifts across them 6-8 feet high.



Snowdrifts east of the refuge service center. (Fries, 3/69, 69-1)

July was considerably wetter than normal. A late July hailstorm passed through about  $\frac{1}{2}$  mile west of the refuge. This storm caused a complete crop loss within its path and killed numerous birds.

Total precipitation for the year was 23.32 inches or 2.10 inches above normal.

## B. Habitat Conditions

### 1. Water

A summary of the refuge gauge readings is given in Table I.

TABLE I

Monthly Gauge Readings  
(Feet MSL)

<u>Month</u>	<u>North Unit</u>	<u>Center Unit</u>	<u>South Unit</u>	<u>Owens Bay</u>
January	1432.02	1428.86	1429.56	1439.66
February	1432.02	1428.86	1429.56	1439.66
March	1432.02	1428.86	1429.56	1440.38
April	1437.24	1431.66	1431.66	1440.89
May	1436.55	1431.75	1431.49	1440.58
June	1436.02	1431.40	1431.08	1440.35
July	1435.85	1431.27	1431.19	1440.37
August	1435.45	1430.93	1430.76	1440.30
September	1435.04	1430.41	1430.36	1440.21
October	1434.99	1430.55	1430.55	1440.56
November	1434.97	1430.63	1430.60	1440.63
December	1434.88	1430.67	1430.61	1440.66
Net change in feet	+2.86	+1.81	+1.05	+1.00

Up to this year water levels in Lake Andes have been steadily dropping since 1963. However, this year the lake rose an average of 1.9 feet. Owens Bay is maintained by an artesian well and fluctuates little from year to year.

Due to the large amount of snow in the winter of 1968-9 many local people predicted that the lake would fill and overflow. But the major part of the lake only rose about 2 feet whereas it would have taken a 7 foot rise to fill the lake.

There are probably several factors that were responsible for this. For one thing the heavy fall snows came before the ground froze. Much of the soil remained unfrozen all winter due to the insulating snow cover. This permitted some spring runoff to seep directly into the soil. Also, during the spring thaw it froze nearly every night and the thaw was rather gradual.



While water in the main part of the lake only raised about 2 feet, the north unit did fill to capacity. This is the smaller unit and receives much of the runoff from the north. The control structure on the north unit is set at 1436.35. Water passed over this structure into the center unit. Water also flowed through the emergency spillway on the west end of the north dike. This is the first time water has passed through the emergency spillway since it was completed in 1964.



Water passing from north to center unit through the emergency spillway. (Fries, 4/4/69, 69-2)

## 2. Food and Cover

The year started with no food left on the refuge for the wintering waterfowl; the entire refuge-grown crop was utilized the previous December. As snow depths increased waterfowl found it impossible to glean any food from the surrounding private cropland. At this time the waterfowl population stabilized at 40,000 mallards and 6,300 Canada geese.



Refuge milo fields were devoid of food by early January. Snow depths averaged 17 inches and the ground was 100% snow covered. (Fries, 2/69, 69-3)

Many farmers in this area store cob corn in cribbing (snow fence) with no tops. By mid-January the ducks were feeding on these corn piles and depredation complaints began. One farmer left seven dead mallards at the refuge office that he had found by his cribs. Examination revealed that none of the birds had been shot. At a crib near Red Lake we found 46 dead mallards that got caught in the cribbing.

We suggested that the farmers cover the cribs with hay, old cribbing, or even snow; erect scarecrows, park vehicles in the area etc.

The situation grew progressively worse as more snow came and an emergency feeding program was initiated on 1/25/69. About 400 bushels of a corn-wheat-milo mixture stored at the refuge were fed.





One of the first handouts of the emergency feeding program for the hungry waterfowl. (Town, 1/69 69-4)

In addition 3,310 bushels of shelled corn were obtained at Tyndall, S. Dak. Also 3,007 bushels of oats were obtained from Lake Andes, S. Dak. The corn and oats were ASCS stored grain that we received for our emergency feeding program. The feeding terminated on 3/15/69.

It was interesting to note that the ducks accepted the oats equal to, or slightly better than, the corn. When the feed was first put out it took the birds about 3 days to start feeding on the grain even though the birds normally loafed on the feeding site. After the 3 day period, they would begin feeding immediately after the grain was put out. On one occasion a truckload (about 170 bu.) of shelled corn was dumped about 3:30 PM after we finally got the road open. By 9:00 AM the next morning there wasn't a kernel of corn left.





Shelled corn obtained from the ASCS was fed near the artesian well on an emergency basis. A truckload usually lasted about one day. (Carlson, 3/69, 69-5)

The local pheasant population also suffered heavily during the winter of 1968-9. Tree plantings were completely drifted full of snow and provided little cover. The state embarked on an emergency pheasant feeding program in this area.

Cottontails and jack rabbits also found cover at a premium. Bobwhite quail populations in the general refuge area were devastated due to a lack of suitable cover.



The snow-depth line can be visualized by observing the height at which the rabbits de-barked the trees. (Town, 4/69 69-6)

Food and cover were ample throughout the summer and fall periods. Sweetclover did exceptionally well this summer and was much in evidence on the refuge and surrounding lands.

Refuge-grown crops produced well this year. Corn averaged 47 bu./ac. and milo averaged 66 bu./ac. In the fall most waterfowl fed on surrounding private lands until very late in December.

The south unit of the lake and Owens Bay provided little food in the form of aquatics. However, the center and north units had excellent stands of sago pondweed.

## II. WILDLIFE

A. Migratory Birds

The January and February population of wintering mallards was fairly stable at about 40,000. This compares with 100,000 the previous year. The severe weather of the previous December and on into January and February was probably responsible for this drastic decrease in numbers.

The first spring migrants were pintails noted on March 8. Mallards on the refuge started to decrease and were down to 150 by the end of March.

Many ducks moved through the area on April 2 and the peak of the spring migration occurred April 3. At this time we had a scaup buildup that reached 12,000 in number. Ruddy ducks also arrived then.

A breeding pair count was conducted in late May and early June. Table II summarizes this data since 1964.

TABLE II

Pair Counts

<u>Unit</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>Average</u>
North	119	56	64	32	105	36	69
Center	289	105	194	36	118	202	157
South	57	95	87	105	148	96	98
Owens Bay	148	62	40	31	75	66	70
Prairie Pond						4	4
Total	613	318	385	204	446	404	395

Breeding pairs on the refuge showed a slight decline from the previous year but were comparable to the long-term average. Actually, there were many breeding ducks in the general refuge area. But the birds used the wetlands on the surrounding private land rather than the refuge. Most years these surrounding wetlands are dry.



A brood count was made in late July. 122 broods were observed. This compares to 61 broods the previous year.

The following method was used to arrive at total duck production for the refuge.

$$\frac{\text{Broods Observed (122)}}{\text{Breeding Pairs (404)}} = \text{Brood-Pair Ratio (.302)}$$

$$\frac{\text{Brood-Pair Ratio (.302)}}{\text{Avg. Brood-Pair Ratio (.221)}} = \frac{\text{Productivity Rate (X)}}{\text{Assumed Productivity Rate (.45)}}$$

$$\text{Productivity Rate} = 64.4\%$$

$$\text{Productivity Rate (.644)} \times \text{No. Pairs (404)} = \text{Calculated Broods (260)}$$

$$\text{Calculated Broods (260)} \times \text{Avg. \# yg./brood to flight stage (6)} =$$

1,560 Ducks Produced

During the past 6 years the following numbers of ducks have been produced on the refuge:

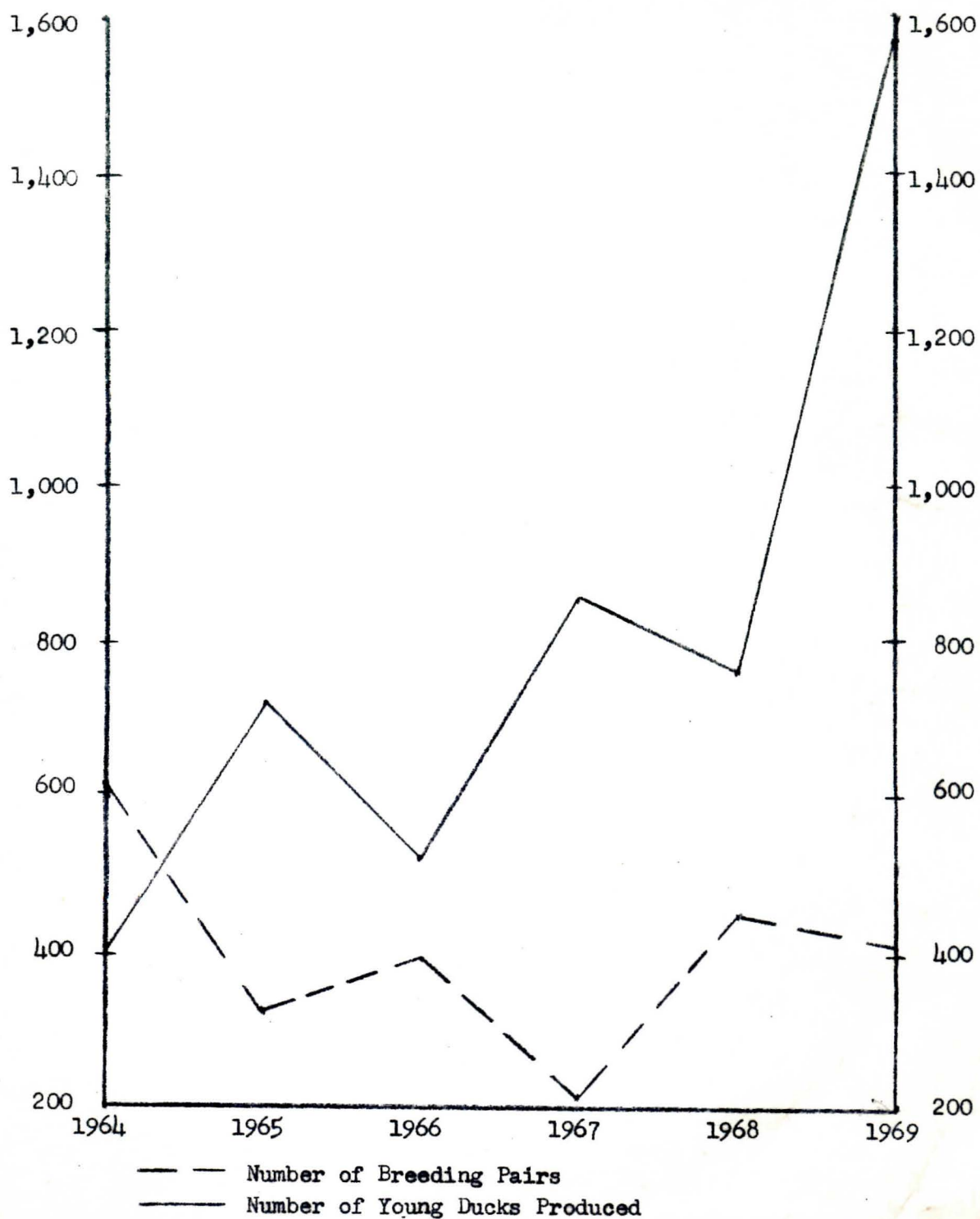
<u>Year</u>	<u>Ducks Produced</u>	<u>Year</u>	<u>Ducks Produced</u>
1964	402	1967	847
1965	718	1968	762
1966	519	1969	1,560

Six year average - 801

This year was considered an excellent year for duck production in this general area of the state. Our productivity rate of 64.4 % (average 45%) would tend to substantiate this general belief.

On the following page is a graph of the numbers of breeding pairs and calculated production for the past six years.

Number of Breeding Pairs &  
Young Ducks Produced by Year  
on Lake Andes Refuge



Migrant blue-winged teal were observed in August and by the last week of September some mallards were arriving. Mallards increased to 225,000 by late November and remained fairly constant to mid-December. The mallard population dropped to 150,000 by the end of the year.



A spectacular concentration of mallards always gathers near the artesian well to idle away the winter hours. (Town, 2/69, 69-7)

Redheads and canvasbacks used the north and center units to a great extent. Sago pondweeds were abundant in these units. Redheads peaked at 3,600 and canvasbacks at 2,120. These peaks occurred during the last 2 weeks of October.

The fall ruddy duck migration was spectacular. The population peaked at 8,340 the last week in September. Most of the ruddies used the south and center units.

There were few coots on the refuge during the summer. Migrants started arriving the first week of September. Coot increased in numbers until the peak of 117,900 was reached the first week of October. Most of the coot utilized the center unit.



The year started with 6,300 Canada geese on the refuge. This number dropped to 3,200 by February and the last ones left by the end of March. Fall migrants started showing up by late September but very few used the refuge. Most geese used Fort Randall Reservoir during the fall. We had less than 200 Canada geese on the refuge all fall. When the reservoir froze over the later part of December the count jumped to 2,200 Canadas.

Blue and snow geese passed through the area in much greater numbers than normal this spring. 1,200 were observed on the north unit on April 1. The local warden says he saw more blues and snows this spring than any spring in the 26 years that he has been here. Very few stayed in the area for more than a day or so. These birds usually move through farther east. However, this year we had much sheet water in this area while the eastern part of the state was still covered with much snow. Presumably the blues and snows skirted around the western edge of the heavy snow belt.

An occasional flock of blues and snow geese and white-fronts passed through during the fall. One Ross goose was trapped at White Swan Bottom in December. This is about 12 miles southwest of the refuge.

## 2. Waterbirds and Shorebirds

The first spring migrants to arrive were killdeer on March 19. Other shorebirds observed were avocets, yellow legs and Wilson's phalaropes.

An occasional great blue heron is seen and little green herons were common throughout the summer. One American egret was seen on 9/16 on the Owens Bay unit. Numerous sandhill cranes passed through the area on 10/27, however, none are known to have stopped on the refuge.

Franklin and ring-billed gulls are common on the refuge. In the fall hundreds of gulls would feed near the Missouri River and then fly back to the refuge to roost. Flight lines of gulls were common sight each morning and evening.

Grebes observed included eared, horned, pied-billed and western. Some grebes were seen during the summer but none are known to have nested on the refuge.

White pelicans and double-crested cormorants were seen on numerous occasions.

### 3. Doves

As usual doves were numerous on the refuge and reproduction seemed average.

A nest count was taken in the shelterbelt south of the refuge buildings again this year.

<u>Year:</u>	<u>No. of Active Dove Nest</u>	<u>No. of Active Grackle Nests</u>
1967	46	68
1968	37	39
1969	33	28

During the summer 200 doves were banded by the refuge staff.

## B. Upland Game Birds

Ring-necked pheasants are the most numerous game birds. These birds are common on the Owens Bay unit and use the marsh vegetation on the other units for roosting and wintering cover.

January, February, and March dealt severe blows to the pheasant population in the general area. However, the birds on the Owens Bay unit fared quite well. A snowmobile survey of the Owens Bay unit on 1/29/69 revealed 151 hens and 47 roosters. We are estimating a December pheasant population of 240 for the Owens Bay unit which is an increase. This contrasts to a decline in pheasant numbers of about 60% off the refuge.

The 1968 Christmas bird count tallied 707 pheasants whereas the 1969 count had 172.

A single prairie chicken was observed several times in January and February near Owens Bay. One prairie chicken was also seen in the same area the following December.

## C. Big Game Animals

White-tailed deer use the refuge on an off and on basis. A doe with 2 fawns was observed on the Owens Bay unit on numerous occasions during the summer.

During the severe winter of 1968-9 some deer concentrated near the refuge service center. On 2/22/69 17 deer were seen near the buildings. These deer fed on corn and oats that were put out as emergency feed for waterfowl.

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

There are few fur animals present on the refuge. A very few muskrat houses are located in the north and south units and Owens Bay. I would estimate the total number of rat houses to be about 15.

Mink sign is rare on the refuge. One is known to be in the area of the Owens Bay outlet structure.

One red fox den was located near the south shore of Owens Bay. There were at least 4 pups by the den.



Coyotes use the refuge occasionally. On 1/29/69 two coyotes were observed on the Owens Bay unit. On 3/12/69 three coyotes were seen on the center unit. Tracks and other sign can be seen on all parts of the refuge.

On 2/26/69 a dead opossum was found near the refuge service center. No other opossums were seen throughout the year.

Cottontail rabbits have declined drastically from a year ago. It was an unusual sight to see a cottontail during November or December.

When the snowdrifts melted from refuge tree plantings the mouse damage to the nankin cherry bushes became evident.



Mice debarked the nankin cherry bushes beneath the snow east of the refuge service center. (Town, 3/69, 69-8)

At first it appeared that the damage was quite extensive. The mice seemed to have girdle all the branches that were beneath the snow but over a foot or so from the ground. At flowering time only the lower most branches were alive. However, by the end of the summer new sprouts had replaced the branches that had died because of mouse damage.





Mouse damage killed all nankin cherry branches that were beneath the snow except those close to ground level. (Town, 3/69, 69-9)

E. Hawks, Eagles, Owls, Crows, etc.

Rough-legged, red-tailed, and marsh hawks are regularly observed. During the more open winter of 1969-70 marsh hawks were observed throughout the winter.

Eagles are seen on the refuge throughout the late fall and winter months. The most commonly observed are adult bald eagles. Peak eagle numbers on the refuge at any one time are about 8-10.

Two crippled golden eagles were brought to the refuge in the fall of 1969. One appeared to have recovered and was banded and released. The other one had a broken wing that healed but this one will not be able to fly again.

The eagle roost along the Missouri River south of Fort Randall Dam is well used by eagles. On 12/20/69 127 eagles were observed going into the roost. The roost is about 10 miles southwest of the refuge.

An occasional burrowing owl is seen in the general area. Two were seen  $\frac{1}{2}$  mile north of the refuge service center on 7/14/69. A pair of great-horned owls nested in the tree belt south of the service center.

F. Other Birds

A Christmas bird count was conducted in the vicinity of the refuge on 12/30/69. More Species were observed this year than any year since the counts began.

Christmas Bird Counts  
Lake Andes Refuge Vicinity

<u>Year</u>	<u>No. Species Observed</u>	<u>No. Individual Birds Observed</u>
1965	40	108,325
1966	49	158,139
1967	52	171,290
1968	24	47,078
1969	57	104,723

Red-winged blackbirds concentrated near the refuge as usual. These birds damaged some of the refuge corn crop and ate about 50% of the sunflower crop. Farmers near the north unit registered several complaints about the blackbirds in their milo fields. Most farmers adjacent to the unit set up exploders in their fields.

G. Fish

On 2/1/69 the South Dakota Game, Fish and Parks Department opened Lake Andes to promiscuous fishing. However, few fishermen took advantage of the opportunity. Fish in the north and center units winter killed. Some dead largemouth bass were found along the shore of the south unit in the spring.

But some live largemouth bass were observed in the south unit during the summer and a few were caught. Bullheads in the south unit suffered no winter kill and some bullheads about 1 pound in size were taken throughout the summer and fall.

The national fish hatchery at Yankton stocked 1 $\frac{1}{4}$  million northern pike fry on 4/16/69. One-half of these were put in the south unit and one-half in the center unit. The same hatchery stocked 30,000 largemouth bass fingerlings in the north unit, and 99,000 largemouth fingerlings in the center unit on 6/27/69. No test nettings were made during the summer or fall so the success of the plantings is not presently known.

Several largemouth bass in the 4 pound class were seen in the Owens Bay unit. This unit is closed to fishing.



#### H. Reptiles and Amphibians

Central painted turtles are common on the refuge. No snapping turtles were seen.

Leopard frogs, garter snakes, and occasional western hognose snake are present on the refuge.

#### I. Disease

No diseases were noted. During the year we actually counted 160 dead ducks and 27 dead Canada geese. An estimated 650 ducks and 30 geese died. This is mainly natural mortality, eagle kills, etc. rather than any disease.

### III. REFUGE DEVELOPMENT AND MAINTENANCE

#### A. Physical Development

##### 1. Development

About 2 3/4 miles of new boundary fence were constructed on the east and south sides of the Owens Bay unit.

A cannon net trap site was constructed southeast of the artesian well. It proved successful for the banding of our pre-season mallard quota. However, we were not able to band a single Canada goose on the site.

New refuge recognition signs were constructed by the refuge sign shop at Winona. All these have been erected and the refuge is now well marked.

Two 250,000 BTU overhead propane furnaces were installed in the refuge service center building.

##### 2. Major Maintenance Items

The heavy snow during the winter of 1968-9 caused havoc with boundary fences. It is quite apparent that trees should not be planted near fences as the trees cause snow drifts that ruin fences.



Refuge boundary fence damage east of the service center building. (Town, 3/69, 69-10)

B. Plantings

1. Cultivated Crops

Refuge grown crops were much better than normal. This was probably due to the good rainfall received in July.

137 acres of corn yielded 6,443 bushels for an average of 47 bu/ac.  
Milo yielded 10,300 bushels on 157 acres for an average of 66 bu/ac.



About 20 acres of birds seed type sunflowers were planted. Black-bird damage to these was high. One of the reasons for planting the sunflowers was to encourage the blackbirds to eat the sunflowers and stay out of the farmer's milo and corn fields. The blackbirds did seem to prefer the sunflowers. We were unable to determine the yield by sample harvesting, but estimate that the sunflowers averaged 15 bu/ac.

### C. Collection and Receipts

#### 1. Seed or Other Propagules

The following agricultural seeds were purchased for the refuge:

##### Corn

Funks G17A, 7 bushels at \$11.50

Funks G38A, 7 bushels at \$11.50

Funks G18A, 7 bushels at \$11.00

##### Milo

Funks L-555, 16 bushels at \$10.00

##### Sunflowers

50 pounds at \$.50 per pound

The following trees were planted around the service center building for landscaping purposes:

4-Green Ash

3-Hackberry

3-Black Walnut

4- Apple

2-Mountain Ash

200 cottonaster were planted north of the artesian well. We hope to use these eventually as a living parking lot border.

#### 2. Specimens

Nothing to report.

### D. Control of Vegetation

Young willows and cottonwoods in the emergency spillway on the north dike were sprayed with 2, 4-D.

All refuge corn and milo fields were sprayed with 2, 4-D with the exception of 48 acres. These 48 acres were sprayed with atrazine. Results of all 2, 4-D spraying were good but the atrazine spraying results were disappointing.

For the first time this year some musk thistle was observed on the refuge. This has been a problem weed in Nebraska in past years and has now invaded the counties in southern South Dakota. We had a small patch of musk thistle about mid-way through the tree planting west of the service center. This patch was thoroughly sprayed with tordon and the results looked excellent.

#### IV. RESOURCE MANAGEMENT

##### A. Grazing

The 1 grazing permit normally issued for the refuge was terminated. Mr. Novak formerly grazed a portion of the refuge around Owens Bay each fall. We explained the added wildlife benefits expected from a no grazing policy and Mr. Novak offered little resistance.

##### B. Fur Harvest

There are few fur animals on the refuge and no trapping was done in 1969.

##### C. Commercial Fishing

Commercial fishermen in the past have removed bullheads from Lake Andes. After the winter kill there were only fish in the south unit and these were few in number. Consequently no commercial fishing was done in 1969.

#### V. FIELD INVESTIGATION OR APPLIED RESEARCH

##### A. Dove Banding

The station was assigned a dove banding quota of 200. Izaak Walton student Jim Rassmussen succeeded in banding the 200 doves.

##### B. Blue-winged Teal Banding

The station received a quota to band 500 flying blue-winged teal. This quota was reached by using swim-in traps on the refuge and the Van Zee and New Holland WPAs.



Refuge manager Fries showing summer students the fine points of duck banding. (Town, 8/69, 69-11)

C. Canada Goose Banding

The station quota was to band 1,000 Canada geese. During the late fall we succeeded in banding 292 at White Swan Bottom along the Missouri River. None have been caught at the refuge.

D. Pre-season Mallard Banding

The refuge received a quota to band 500 pre-season mallards. We succeeded in banding 527 by using cannon nets on the new trap site near the artesian well.





Carlson, Fries, and Ridgeway engaging in some pre-season banding of mallards. (Forester, 9/69, 69-12)

#### E. Cover Width Study

The various width cover strips were maintained as previously requested in a study by M.C. Hammond. Area biologist Ralph Town put out 99 eggs in the various strips. After 20 days the eggs were checked. Of the 99, 81 were undisturbed, 12 were destroyed, and 6 were missing. No attempts will be made to evaluate any information until several years of data are gathered.

#### F. Experimental Native Grass Planting

A tract of land in the extreme southeast corner of the refuge (5-96-64) was summerfallowed in 1969. The tract is 156 feet x 2,600 feet.

A grass seed mixture consisting of Big Bluestem, Little Bluestem, Indiangrass, Green Needlegrass, and Bluegrama was prepared. The mixture was prepared for a seeding rate of 10 lbs. pure live seed per acre; 2 lbs. pure live seed per acre for each of the above 5 grass species.

The north one-half of the field was planted using a Nesbitt grassland drill on 11/10/69. The south one-half will be planted in the spring of 1970.



The east one-half of the field will be mowed at least 3 times during the growing season at a height about  $\frac{1}{2}$  inch above the height of the new grass seedlings. The west one-half will be left unmowed.

This will provide information for 4 treatments:

- Northeast quadrant - fall planted and mowed.
- Southeast quadrant - spring planted and mowed.
- Northwest quadrant - fall planted and unmowed.
- Southwest quadrant - spring planted and unmowed.

An evaluation of the success of the various techniques in establishing native grass species will be made over the next 5 years.

#### G. Mallards for NPWRC

270 male mallards were trapped and sent to the NPWRC for use in their predator study.

### VI. PUBLIC RELATIONS

#### A. Recreational Uses

Normally the largest recreational use is fishing but this year waterfowl hunting was the top recreational use. There were 3,150 visits for waterfowl hunting. Most of this occurs on the north and south refuge dikes and as fence line shooting around the Owens Bay unit.

Due to the winter fish kill there was little fishing activity this year -- 1,377 visits. This involved bullhead fishermen fishing the south unit. On a good day a fisherman would get about 6-8 bullheads that would weigh a pound each.

A complete recreational use tabulation is on the following page.

*Annual*  
**MONTHLY RECREATIONAL USE REPORT**

Refuge name

Lake Andes

State

South Dakota

State

Code 41  
(1-2)

Congressional

District Code 02  
(3-4)

Refuge

Code 356  
(5-7)

Report Yr. Mo.

Period 69  
(8-11)

(Card Columns). . . . . (12-13) (14-18) (19-25)

ACTIVITY	Code	VISITS FOR THE MONTH	
		Total Number	Total Hours
Hunting:			
Big Game	01	25	70
Upland Game	02	250	500
Waterfowl	03	3150	12000
Other Migratory	04	30	60
Other	05	20	30
Bow	06		
Fishing:			
Salt Water	07		
Warm Water	08	1377	5094
Cold Water	09		
Environmental Education	10		
Wildlife Photography	11	67	132
Wildlife Observation	12	377	391
Conducted Programs	13	20	2
Field Trials	14		
Wildlife Trails	15		
Wildlife Tours/Routes	16		
Visitor Contact Stations	17		
Camping (wildlife related)	18		
Picnicking (wildlife related)	19	59	118
Wildlife Interpretive Center	20		
Off-Site Programs	21	238	9

(Card Columns). . . . . (12-13) (14-18) (19-25)

ACTIVITY	Code	VISITS FOR THE MONTH	
		Total Number	Total Hours
On-Site Programs	22		
*Miscellaneous Wildlife	23	113	171
Swimming	24		
Boating	25		
Water Skiing	26		
Camping	27		
Group Camping	28		
Picnicking	29	6	8
Horseback Riding	30		
Bicycling	31		
Winter Sports	32		
Fruit, Nut and Vegetable Collecting	33	20	40
*Miscellaneous Non-Wildlife	34	3	3
Peak Load Day	35	100	
Actual Visits	36	5532	
Fee Area Use	37		
Number of Fee Areas	38	(14-18)	
Fee Collections	39	\$	
Collection Costs	40	\$	



B. Refuge Visitors

See Visitors list appended.

Frequent visitors were personnel of the Huron Acquisition Office, GMA B. Law of Mitchell, and local warden Les Nelsen.

C. Refuge Participation

1/14	Fries, Forester, Carlson	Attend grassland meeting at Platte.
1/15	Carlson	Shown Job Corps slides to refuge staff and wives, SCS personnel, County Agent, and local warden.
1/15	Carlson	Slide talk - Lake Andes Women's Study Club.
2/10	Carlson	Slide Talk - Lake Andes Knights of Columbus.
2/16	Fries	Slide talk - Lake Andes Presbyterian youth group.
3/12	Fries, Forester, Carlson	Attend annual wildlife banquet of East River Sportsmen's Club at Platte.
3/14	Fries, Forester	Attend tree planting workshop at Mitchell.
3/17	Fries	Slide talk - Biology class, Lake Andes.
3/17	Fries	Slide talk - Biology class, Avon.
3/17	Forester	Movie- Lake Andes High School.
3/17	Forester	Movie - Pickstown 5th & 6th grades.
3/18	Fries	Slide talk - Biology, Marty Mission.
3/18	Forester	Movie - Delmont School, 7-12 grades.
3/18	Fries	Movie - Pickstown cubscouts.
3/19	Fries	Slide talk - Biology class, Wagner.
3/20	Forester	Movie - Corsica grade and high school.
3/21-22	Fries	Attend S.D. Chapter of Wildlife Society meeting at Huron.
3/27	Fries, Forester, Carlson	To DeSoto Refuge for orientation tour of our Bureau neighbor.
4/1-3	Fries, Forester	Attend Bureau workshop at Watertown.
4/9-10	Fries	Attend water development meeting at NPWRC.
4/29	Fries	Met with Miner County Commissioners re special acquisition problem.
5/12-16	Fries	Attend CSC <u>Basic Management Techniques I</u> course at Rapid City.



5/21	Forester	Slide talk - 5th grade, Pickstown.
6/12	Fries	Attend pollution meeting at General Beadle College, Madison.
7/7-11	Forester	Attend CSC <u>Introduction to Supervision</u> course at Omaha.
8/14-15	Fries, Forester	Field tour of Hastings, Neb. WPAs.
8/29-30	Fries	Manned wildlife booth at State Fair at Huron.
9/4	Fries	Met with Game, Fish and Parks Director Hodgins at Pierre.
9/25-26	Fries	Attend Bureau wetland meeting at Webster.
9/25	Forester	Attend Interagency meeting at Pickstown.
10/1	Fries	Slide talk - Lake Andes Lakers Club.
10/13	Forester	Slide talk - Charles Mix County NFO.
10/13	Carlson	Movie - East River Sportsmen's Club, Platte.
10/29	Forester	Slide talk - Wagner Rotary Club.
11/10	Forester	Movies - American Legion, Pickstown.
11/19	Fries	Question and Answer session, Wagner Rotary.
11/21	Fries	Met with Dr. Sill, Chairman of Biology Dept. at USD, and staff re wetlands program in South Dakota.
12/4	Fries, Forester	Tour of Diagnostic Vet Lab at SDSU.
12/5	Fries, Forester	Attend Waterfowl Seminar at SDSU.
12/12	Fries	Attend meeting of Conservancy Sub-district at Armour.

#### D. Hunting

Waterfowl hunters did fairly well in the general area. Redhead and canvasback hunting was excellent on the north dike most of the season. Field shooting for mallards was good the last half of the duck season. Goose shooting was good near the reservoir but poorer than normal around the refuge. Most waterfowl shooters considered this to be a better than average year.

This area is generally known for its fine pheasant hunting. However, the severe winter of 1968-9 took its toll. All hunters had to really work if they were to get anywhere near their limit of 3 roosters.

#### E. Violations

Game law violations in the general area are numerous. Two of us worked the opening day of duck season and made 8 cases. On another occasion on a blustery day, 3 of us worked from noon until dark and made 6 cases. Of the 31 cases, 17 involved over the limit. Fines were running \$10.00 to \$15.00 the early part of the season, but we did finally get a different local justice to raise this to the \$20.00 to \$30.00 range.

72 confiscated ducks were donated to the Marty Mission Indian School.

<u>Name</u>	<u>Violation</u>	<u>Fine</u>
Stiefel, Mike	hunting w/o guardian	Juvenile
Lipett, Mary Pat	hunting w/o guardian	Juvenile
Vander Ley, Larry	hunting w/o guardian	Juvenile
Koehn, Dennis	No small game stamp	Juvenile
Haar, John	No small game stamp	Juvenile
Trusdale, Terry	hunting on refuge	Juvenile
Lau, Marvin	overlimit of ducks	\$14.35
Walsh, James	overlimit of ducks	\$30.60
Pearson, Wayne	overlimit of ducks	Juvenile
Pearson, Norman	overlimit of ducks	\$30.60
Wilson, Tom	overlimit of ducks	\$9.35
Hohn, Sam	overlimit of ducks	\$9.35
Bittner, William	shooting cormorant	\$14.35
Kiner, Ralph	overlimit of ducks	\$25.00
Schuler, Phil	overlimit of ducks	\$25.00
Hohn, Gary	overlimit of ducks	\$25.00
Kreeger, Paul	late shooting	\$20.00
Klatt, Kenneth	overlimit of ducks	\$25.00
Jenison, Larry	shooting gull	\$27.10
Soulek, Allen	overlimit of ducks	Juvenile
Nielsen, Larry	overlimit of ducks	Juvenile
Fousek, Otto	overlimit of ducks	\$15.00
Harrington, Donald	overlimit of ducks	Juvenile
Sweetman, Richard	overlimit of ducks	\$35.00
Johnson, Earl	late shooting	\$20.00
Sweetman, Gerald	overlimit of ducks	\$35.00
Van Den Hul, Herman	late shooting	\$20.00
Svatos, Dan	no duck stamp	Juvenile
Bures, Edward	no duck stamp	Juvenile
Mc Lean, Donald	overlimit of ducks	\$15.60
Brannan, William	unplugged gun	\$15.60

## F. Safety

We are extremely pleased that there were no accidents this year. The station record now stands at 773 days.

Due to the special Mundt funds and the accelerated development program on the station WPAs, we hired 22 temporary employees. Several of these were students who had little field experience and were involved in hazardous jobs such as fencing, chain sawing, and equipment operation.

All new employees were thoroughly briefed on safety and the hazards of any particular job. Hard hats and leather gloves were bought for all. A roll bar and seat belts were installed on the farm tractor.

The permanent staff attends monthly safety meetings held in conjunction with the local SCS office.

## VII. OTHER ITEMS

### A. Items of Interest

#### 1. Wagner Irrigation District

A Lake Andes-Wagner Irrigation district was formed in March. In the irrigation proposal Lake Andes is to be used as a storage reservoir. Our Bureau desires to maintain the north and center units of the lake at levels for optimum wildlife use and limit boating and fishing. The Bureau would allow the south unit to be managed for maximum recreational use. The state Game, Fish and Parks Department wants high water levels in all units. They are thinking of the fishing and boating interests in the general area. It is expected that the major differences will be resolved in 1970.

#### 2. Refuge Hosts Annual Sobraska (South Dakota & Nebraska) Refuge Picnic

Lake Andes hosted the annual Sobraska refuge picnic on June 7. Many of the refuges and WPA districts were represented as about 80 persons were in attendance. In addition to hamburgers and hotdogs, paddlefish sticks were included in the menu.





Self-service chow at the Sobraska refuge picnic. (Town 6/7, 69-13)



Full stomachs and much doubtful advise were acquired by all. (Town, 6/7, 69-14)

### 3. Personnel

Derald Florey who was on a temporary appointment received a permanent appointment as Laborer, Maintenance effective 12/14/69.

Refuge clerk Ted Carlson was very active in community affairs: Treasurer and Sunday School Superintendent of First Lutheran Church, Treasurer of Randall Hills County Club, official time keeper for football and basketball games of the local school, member of bowling teams in Lake Andes and Wagner, and a member of the S.D. Chapter of the Wildlife Society. Ted and his wife became the proud parents of a daughter, Julie, born 3/14/69.

Assistant manager John Forester was promoted to GS-7 in February. John is a member of the National Wildlife Federation and the S.D. Chapter of the Wildlife Society.

Refuge Manager Ralph Fries is a member of the Lake Andes Knights of Columbus, Lake Andes Lakers Club, Lake Andes Izaak Walton League, Pickstown American Legion Post, S.D. Wildlife Federation, S.D. Chapter of the Wildlife Society, and the National Wildlife Society. Ralph and his wife bowl on the couples league at Wagner.

### 4. Credits

The refuge narrative report was written by Ralph Fries and typed by Ted Carlson. Photo credits are given by each photo.

## SIGNATURE PAGE

Submitted by:

(Signature)

Ralph F. Fries  
Refuge Manager  
Title

Date: February 25, 1970

Approved, Regional Office:

Date: \_\_\_\_\_ -

(Signature)

Regional Refuge Supervisor

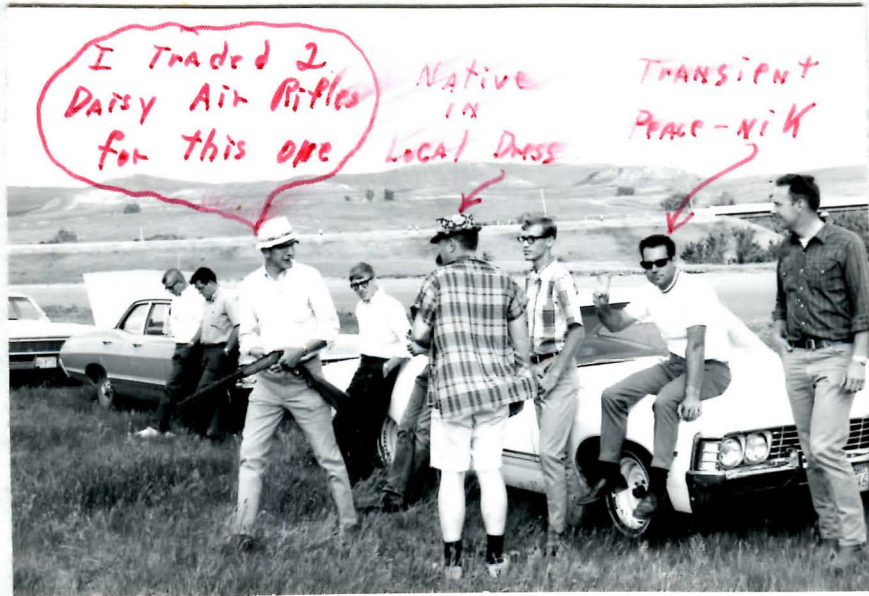


OFFICIAL VISITORS LOG

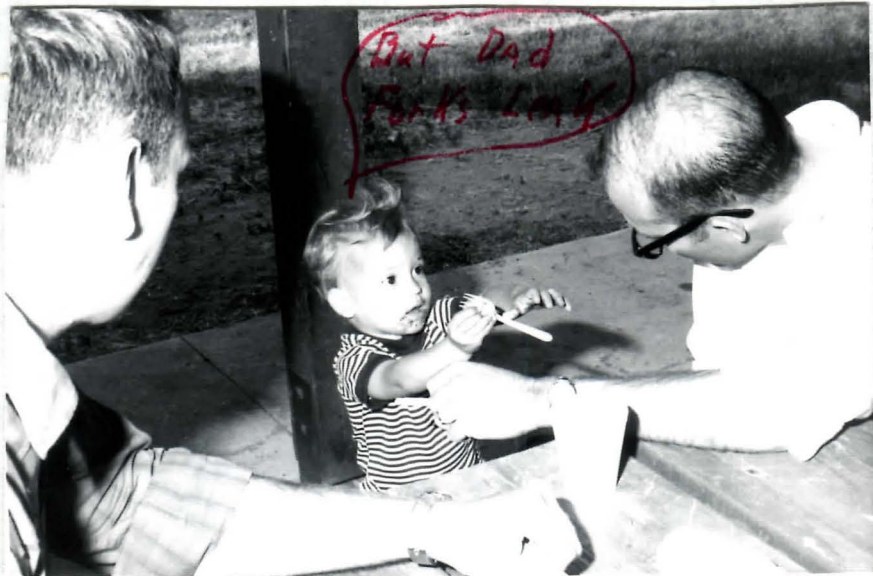
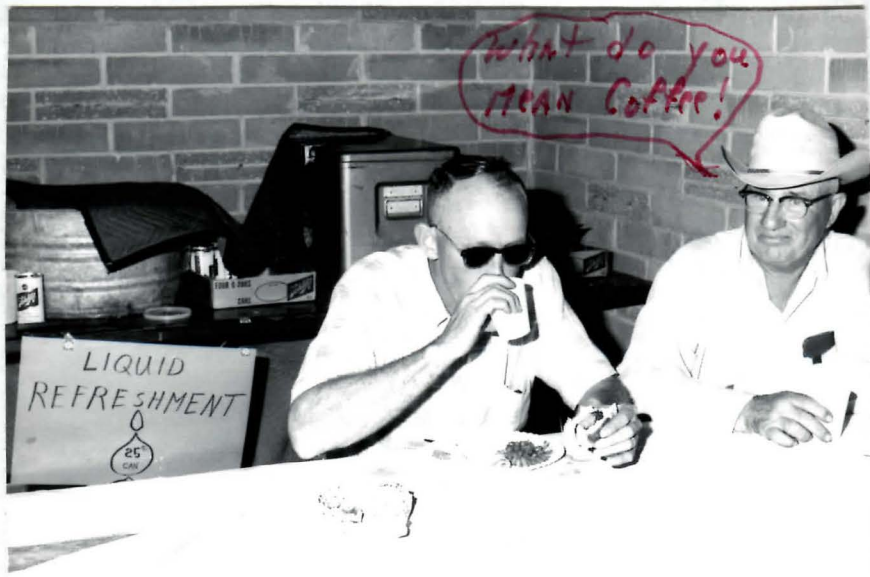
DATE	NAME	ORGANIZATION	PURPOSE OF VISIT
2/19/69	Alan Sargeant	NPWRC	Pick up mallards
2/19/69	Al Davenport	NPWRC	Pick up mallards
3/12/69	Gordon Beckett	Fishery Services	Visit
4/14/69	Virtus Meyer	State Forester	Tree plantings
4/16/69	Hatchery Crew	Fisheries (Yankton, S. Dak.)	Stock northernns
5/7/69	John Winship	RO	WPA aerial check
6/5/69	Don Reilly	RO	Photos
6/27/69	Hatchery Crew	Fisheries (Yankton, S. Dak.)	Stock black bass
7/29/69	William Hassebart	Hastings Wetlands Office	Field tour of WPAs
7/29/69	Dave Rose	Hastings Wetlands Office	Field tour of WPAs
9/24/69	Forest Carpenter	RO	L.A.-Wagner Irrigation Dist. Meeting
9/24/69	Robert Randall	River Basins	L.A.-Wagner Irrigation Dist. Meeting
12/16/69	Don Darthet	Sioux Falls, S. Dak.	Photography
12/30/69	Bruce Harris	State Game, Fish & Parks	Christmas Bird Count

NR Club only

CANDID SHOTS FROM THE SOBRASKA PICNIC











## DEPARTMENT OF THE INTERIOR

### Fish and Wildlife Service Regional Information

Lake Andes National Wildlife Refuge  
Lake Andes, South Dakota 57356

Fries 487-7603

#### BUREAU OF SPORT FISHERIES AND WILDLIFE

For Immediate Release

#### COUNTY RECIEVES CHECK FROM FISH AND WILDLIFE SERVICE

Wildlife refuge manager Ralph Fries of Lake Andes recently presented county treasurer \_\_\_\_\_ of \_\_\_\_\_ County a check in the amount of \_\_\_\_\_. The check represents an annual payment to the county. This payment is for wetlands owned by the U.S. Fish and Wildlife Service and managed as Waterfowl Production Areas.

These wetlands are managed for maximum wildlife production according to Fries. They are also open to public hunting and generally provide some of the best pheasant and duck hunting in the area.

The Lake Andes office is responsible for the management of Waterfowl roduction Areas in 20 counties in southeastern South Dakota.



## DEPARTMENT OF THE INTERIOR

### Fish and Wildlife Service Regional Information

Lake Andes National Wildlife Refuge

Lake Andes, South Dakota 57356

Fries 487-7603

#### BUREAU OF SPORT FISHERIES AND WILDLIFE

For Immediate Release

#### EAGLES AND YOU

Bald and golden eagles have arrived in southeastern South Dakota and will spend the <sup>winter</sup> months here. According to refuge manager Ralph Fries of Lake Andes National Wildlife Refuge, Bureau of Sport Fisheries and Wildlife, southeastern South Dakota is well-known as an eagle wintering site. Eagles are especially common near the Missouri River in the winter months.

Two crippled eagles have already been brought to Lake Andes Refuge. Both birds appear to have been shot. Fries reminds everyone that all eagles are protected by both federal and state law.

The bald eagle is our national emblem. However these majestic birds must be three years old before they get the white head and tail feathers that most people associate with a bald eagle. Until they are three years old bald eagles are rather a uniform dark color and are easily confused with golden eagles.

Illegal shooting and pesticides are taking a heavy toll of eagles. Conservationist across the county are greatly concerned about this decline. Our national emblem, the bald eagle, should be of great concern to all Americans. Many people have never seen an eagle but South Dakotans are very fortunate and should do all in their power to preserve the eagles wintering in this area.

Fries says don't shoot eagles. It has been established that shooting is responsible for most eagle mortality in South Dakota. If you find a dead or crippled eagle notify your local game warden or Lake Andes Refuge. Crippled eagles are nursed back to health and released if they sufficiently recover. We should all protect eagles so that future generations can see these graceful birds soaring through the skies.

WATERFOWL

REFUGE Lake Umbagog

MONTHS OF January TO April, 19 69

(1) Species	(2) Weeks of reporting period									
	1/1	1/5	1/12	1/19	1/26	2/2	2/9	2/15	2/22	2/29
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	6300	6300	6300	6300	3200	3200	1800	1800	1800	1800
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	43000	43000	43000	43000	40000	40000	40000	40000	40000	40000
Black										
Gadwall										
Baldpate										
Pintail										
Green-winged teal										
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
Coot:										



WATERFOWL

REFUGE Lake Andes Refuge

MONTHS OF May TO August, 19 69

(1) Species	(2) Weeks of reporting period									
	5/10 1	5/17 2	5/24 3	5/31 4	6/7 5	6/14 6	6/21 7	6/28 8	7/5 9	7/12 10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada										
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	170	170	281	281	281	281	281	281	281	281
Black										
Gadwall	100	100	157	157	157	157	157	157	157	157
Baldpate	40	40	18	18	18	18	18	18	18	18
Pintail	100	100	83	83	83	83	83	83	83	83
Green-winged teal			23	23	23	23	23	23	23	23
Blue-winged teal	130	130	211	211	211	211	211	211	211	211
Cinnamon teal										
Shoveler	930	930	149	149	149	149	149	149	149	149
Wood										
Redhead			37	37	37	37	37	37	37	37
Ring-necked	20	20								
Canvasback	20	20	3	3	3	3	3	3	3	3
Scaup	2900	2900	177	177	177	177	177	177	177	177
Goldeneye										
Bufflehead	10	10								
Ruddy	860	860	145	145	145	145	145	145	145	145
Other										
Total Ducks	5280	5280	1284	1284	1284	1284	1284	1284	1284	1284
Coot:	200	200								

WATERFOWL

REFUGE LAKE ANDES

MONTHS OF SEPT TO DEC, 19 69

(1) Species	(2) Weeks of reporting period									
	9/7-9/13 1	9/14-9/20 2	9/21-9/27 3	9/28-10/4 4	10/5-10/11 5	10/12-10/18 6	10/19-10/25 7	10/26-11/1 8	11/2-11/8 9	11/9-11/15 10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	6	1	6	6		150				142
Cackling										
Brant										
White-fronted						25				
Snow										1
Blue										
Other										
Ducks:										
Mallard	820	830	2090	2090	30,150	20,980	20,980	39,000	89,130	75,370
Black										
Gadwall	260	250	690	690	9,790	2,060	2,060	730	4,790	620
Baldpate	1,860	1,060	5,450	5,450	18,940	1,190	1,190	1,850	350	520
Pintail	60	120	30	30	1,290	270	270	100	40	
Green-winged teal		40				330	330		170	70
Blue-winged teal	4,270	4,200	1,400	1,400	350	20	20			
Cinnamon teal										
Shoveler	310	1,360	560	560	860	140	140	20	20	10
Wood										
Redhead	170	250			160	3,600	3,600	660	60	20
Ring-necked			50	50	200	120	120	30		
Canvasback		70	110	110	640	2,120	2,120	1,480	4490	960
Scaup		20	100	100	370	430	430	670	1400	2,310
Goldeneye								70	80	20
Bufflehead					20	110	110	130	1490	540
Ruddy	1,540	3,230	8,430	8,430	3,090	410	410	470	450	
Other	2,700	6,520	9,950	9,950						
Unid.										
Total Ducks	11,990	17,950	28,860	28,860	65,860	31,780	31,780	45,210	102,470	80,440
Coot:	19,000	22,060	70,100	70,100	117,900	42,350	42,350	6,050	1,530	680

A T E R F O W L  
 (continuation Sheet)

REFUGE LAKE ANDRES

MONTHS OF JANUARY TO APRIL, 19 69

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total	
	11	12	13	14	15	16	17	18			
<u>Swans:</u>											
Whistling											
Trumpeter											
<u>Geese:</u>											
Canada	1000	1000	2270	60	10				301,980		
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
<u>Ducks:</u>											
Mallard	12000	15000	9900	1520	150	180	180	180	3,157,770		
Black											
Gadwall				100	30	380	380	380	8,890		
Baldpate			10			130	130	130	2,800		
Pintail			140	100		30	30	30	2,310		
Green-winged teal						20	20	20	520		
Blue-winged teal					20	120	120	120	2,560		
Cinnamon teal											
Shoveler			10	200	40	220	220	220	6,370		
Wood											
Redhead		10	10	100	80	50	50	50	2,450		
Ring-necked						40	40	40	840		
Canvasback				50	2100	280	280	280	20,930		
Scaup				12000	10200	5920	5920	5920	279,720		
Goldeneye	20	100	20	30	40				3,350		
Bufflehead	10			20	330	220	220	220	7,140		
Ruddy				750	920	1320	1320	1320	39,410		
Other <u>Merganser</u>		100			20				840		
<u>Coots:</u>											
				500	210	2470	2470	2470	56,840		

(over)



	(5) Total Days Use	(6) Peak Number	(7) Total Production	SUMMARY
Swans	None	None		Principal feeding areas <u>Harvested fields in Corsica, Belmont, Lake Andes, Wagner Areas;</u>
Geese	301,980	6,300		<u>unharvested fields on refuge, refuge feeding program, aquatic vegetation beds in Lake Andes</u>
Ducks	3,535,910	43,000		Principal nesting areas _____
Coots	56,840	2,470		

Reported by \_\_\_\_\_

Ralph F. Fries, Refuge Manager

# 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).

WATERFOWL  
(Continuation Sheet)

REFUGE Lake Andes Refuge MONTHS OF May TO August, 1969

(1) <u>Species</u>	(2) <u>Weeks of reporting period</u>								(3) <u>Estimated</u>	(4) <u>Production</u>	
	<u>7/19</u>	<u>7/26</u>	<u>8/2</u>	<u>8/9</u>	<u>8/16</u>	<u>8/23</u>	<u>8/30</u>	<u>9/6</u>	<u>waterfowl</u>	<u>Broods:</u>	<u>Estimated</u>
	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>18</u>	<u>days use</u>	<u>seen</u>	<u>total</u>
<u>Swans:</u>											
Whistling											
Trumpeter											
<u>Geese:</u>											
Canada											
Cackling								6	42		
Brant											
White-fronted											
Snow											
Blue											
Other											
<u>Ducks:</u>											
Mallard	674	674	674	674	674	674	674	810	56,812	35	524
Black											
Gadwall	153	153	153	153	153	153	153	180	18,747	11	128
Baldpate								470	4,858		
Pintail	235	235	235	235	235	235	235	280	17,103	5	94
Green-winged teal									1,288		
Blue-winged teal	703	703	703	703	703	703	703	2920	68,583	49	703
Cinnamon teal											
Shoveler	63	63	63	63	63	63	63	370	27,041	4	63
Wood											
Redhead	37	37	37	37	37	37	37	80	4,445	1	12
Ring-necked									280		
Canvasback								60	868		
Scaup	12	12	12	12	12	12	12		51,100		
Goldeneye											
Bufflehead									140		
Ruddy								150	21,210		
Other								1240	8,680	17	216
<u>Coots:</u>											
<u>Total</u>	1877	1877	1877	1877	1877	1877	1877	6500	283,339	122	1740
<u>Coots</u>								1890	16,030		

(over)

	(5)	(6)	(7)	SUMMARY
	Total Days Use :	Peak Number :	Total Production	
Swans	<del>none</del>	<del>none</del>	<del>none</del>	Principal feeding areas <del>aquatic vegetation lake shores,</del>
Geese	<del>42</del>	<del>6</del>	<del>none</del>	<del>agricultural crops in lake shores area</del>
Ducks	<del>283,287</del>	<del>6500</del>	<del>1740</del>	Principal nesting areas <del>upland and emergent vegetation</del>
Coots	<del>16,030</del>	<del>1870</del>	<del>none</del>	<del>on or near lake shores</del>
				Reported by <del>Ralph Fries Refuge Manager</del>

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).



WATERFOWL  
(Continuation Sheet)

REFUGE LAKE ANDUS

MONTHS OF SEPT TO DEC., 19 69

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total
	11/16- 11/22	11/23- 11/29	11/30- 12/6	12/7- 12/13	12/14- 12/20	12/21- 12/27	12/28- 1/3	18		
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	147	147	200	200	200	100	2200		24,535	
Cackling										
Brant										
White-fronted									175	
Snow									7	
Blue										
Other										
Ducks:										
Mallard	215,000	215,000	225,000	225,000	225,000	80,000	150,000		11,315,080	
Black										
Gadwall									153,580	
Baldpate									265,020	
Pintail									15,470	
Green-winged teal									6,580	
Blue-winged teal									61,620	
Cinnamon teal										
Shoveler									27,860	
Wood										
Redhead									57,640	
Ring-necked									3,990	
Canvasback									84,700	
Scaup									40,810	
Goldeneye									1,190	
Bufflehead									16,800	
Ruddy									185,280	
Other Unid.									282,840	
<u>COOTS:</u>										
Total Ducks									12,461,400	
Coots									2,744,840	
					(over)					

	(5) Total Days Use	(6) Peak Number	(7) Total Production	SUMMARY
Swans	<u>NONE</u>	<u>NONE</u>		Principal feeding areas <u>AGRICULTURAL FIELDS, CENTER UNIT</u>
Geese	<u>24,717</u>	<u>2200</u>		
Ducks	<u>12,461,400</u>	<u>225,000</u>		Principal nesting areas
Coots	<u>2,744,840</u>	<u>117,900</u>		
				Reported by <u>Ralph Fries, Refuge Manager</u>

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).

Form NR-1A  
(Nov. 1945)

MIGRATORY BIRDS  
(other than waterfowl)

Refuge Lake Umbagog Months of May to August 1959

(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>										
Green Heron	1	5/13								
Hared Grebe			100	7/15						
Western Grebe			20	7/15						
White Pelicans			150	8/29						
Wilson's Phalarope			2000	5/1						
Double Crested Cormorant			10	8/1						
II. <u>Shorebirds, Gulls and Terns:</u>										
Avocet	2	5/19	50	8/1						
Franklins Gulls			2000	8/6						

(over)



(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons</u> : Mourning dove White-winged dove		100 8, 1			100
IV. <u>Predaceous Birds</u> : Golden eagle Duck hawk Horned owl Magpie Raven Crow Osprey	1 6/10	3 6/10			3
Reported by <u>Ralph Fries Refuge Manager</u>					

#### 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) To Estimated total number of the species using the refuge during the period conce

3-1751

Form NR-1A

(Nov. 1945)

MIGRATORY BIRDS  
(other than waterfowl)Refuge Lake AndesMonths of SEPTEMBER to DECEMBER 195 69

(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>										
American Egret White pelican			1	9/16	40	10/15				
II. <u>Shorebirds, Gulls and Terns:</u>										
Franklin Gulls			8,000	10/20						

(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		2	Dec.	1	12/30
Bald Eagle Marsh Hawk		4 5	Dec. Dec.		
Reported by <u>Ralph F. Fries</u>					

#### 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 he species using the refuge during the period concerned



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
Fish and Wildlife Service

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Lake Andes Refuge

For 12-month period ending August 31, 1969

Reported by Ralph Fries

Title Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type      Acreage		(3) Use-days	(4) Breeding * Population	(5) Production	
North Unit	Crops		Ducks	2,080,098	36	261
	Upland	45	Geese	56,856		
	Marsh	233	Swans			
	Water	348	Coots	396,198		
	Total	626	Total	2,533,152	36	261
Center Unit	Crops		Ducks	2,157,215	202	870
	Upland		Geese	56,814		
	Marsh	1,837	Swans			
	Water	500	Coots	395,988		
	Total	2,337	Total	2,610,017	202	870
South Unit	Crops		Ducks	2,120,158	96	348
	Upland		Geese	56,814		
	Marsh	295	Swans			
	Water	1,450	Coots	388,848		
	Total	1,745	Total	2,565,820	96	348
Owens Bay	Crops	375	Ducks	4,024,446	70**	261**
	Upland	237	Geese	223,266		
	Marsh	19	Swans			
	Water	203	Coots	421,721		
	Total	834	Total	4,669,433	70**	261**
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
Totals	Crops	375	Ducks	10,381,917	404	1740
	Upland	282	Geese	393,750		
	Marsh	2,384	Swans			
	Water	2,501	Coots	1,602,755		
	Total	5,542	Total	12,378,422	404	1740
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

\* No. of Breeding Pairs

(over)

\*\*Includes Prairie Pond Area

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August narrative report.

#### INSTRUCTIONS

- (1) Area or Unit: A geographical unit that, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. Estimated acreage of each unit should be indicated.
- (2) Habitat: Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland consists of all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type including wet meadow and deep marsh; and the water category includes all other water areas inundated most or all of the growing season and extends from the deeper edge of the marsh zone to strictly open-water areas, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for each type should be kept as accurate as possible through reference to available maps supplemented by periodic field observations and should agree with unit acreage.
- (3) Use-days: Use-days is computed by multiplying weekly water-fowl population figures by seven.
- (4) Breeding Population: An estimate of the total breeding population of each category of birds for each area or unit.
- (5) Production: Estimated total number of young raised to flight age.

3-1752

Form NR-2

(April 194

## UPLAND GAME BIRDS

Refuge Lake AndesMonths of January to April, 19 69

(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	Cropland, Grassland Marsh, and herbaceous cover 613 acres	12.3			1:1.4				50	



## INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.\*

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

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

Refuge Lake Andes Refuge Months of May to August, 1946

(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	Cropland, Grassland Marsh, "woody Veg. 613 ac."	5	12	96	1M:1F	none			120	
Bobwhite Quail	"	153				none			4	

## 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.



3-1752  
Form NR-2  
(April 1946)

UPLAND GAME BIRDS

Refuge Lake Andes

Months of September to December, 1969

(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 observed	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked pheasant	Cropland, grass- land, woody veg. 613 ac.				1M:2F	none			240	Owens Bay area has many birds wintering there.

## 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.

3-1753  
Form NR-1  
(June 1945)

BIG GAME

Refuge Lake Allouez

Calendar Year 1969

(1) Species	(2) Density	(3) Young Produced	(4) Removals					(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31		
White-tailed Deer	Grassland, marsh, tree plantings, cropland 1,135 acres											9	7		

Remarks:

Reported by Ralph F. Fries *Ralph F. Fries*

## INSTRUCTIONS

Form NR-3 - BIG GAME

- (1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.
- (2) DENSITY: 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 total number of young produced on refuge.
- (4) REMOVALS: Indicate total number in each category removed during the year.
- (5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.
- (6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.
- (7) TOTAL REFUGE POPULATION: Give the estimated population of each species on the refuge at period of its greatest abundance and also as of Dec. 31.
- (8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.



3-1754  
Form NR-4  
(June 1945)

SMALL MAMMALS

Refuge\_                     

Year ending April 30, 1969

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5) Total Popula- tion
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	
								Permit Number	Trappers Share	Refuge share				
Muskrat	Shoreline 50 acres Marsh 60 acres	5.5												20
Mink		55.0												2
Raccoon		55.0												2
Skunks	All uplands and marsh 600 acres	300												2
Red Fox		300												2
Cottontail Rabbits		30												20
Opossum		300	1*											2
Fox Squirrel	Shelterbelts and wooded dikes 17 acres	2.1												8
* List removals by Predator Animal Hunter														

\* List removals by Predator Animal Hunter

REMARKS:

\* Road kill

Reported by Ralph P. Pries

## 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.

DISEASE

Lake Andes

Refuge

Year 19

69

Botulism

None known

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		

(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

Lead Poisoning or other Disease

Kind of disease

Lead poisoning, cripples, eagle kills, natural mortality

Species affected

Mallard & Canada Geese

Number Affected

Species	Actual Count	Estimated
Mallards	160	850
Canada geese	27	30

Number Recovered

Number lost

Source of infection

Frozen except for small area around artesian well.

Water conditions

Food conditions

Private fields were completely

showed under in Jan. & Feb. Refuge grown crops were completely utilized before Jan. & Feb. 6,717 bu. of shelled corn & oats were fed. Many birds fed on corn from the cribs of surrounding landowners. This caused depredation complaints. Food was abundant in Nov. & Dec.

Remarks

We actually saw 67 mallards that were actually hung in corn cribbing (snow fences). The farmers store their corn in the cribbing and in the process of reaching in between the slats in the cribbing the ducks hang themselves.

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

NONAGRICULTURAL COLLECTIONS, RECEIPTS,

(1)  
PLANTINGS

Refuge Lake Andes

Year 19 69

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 Loss
Cottonaster	200 ea.	R	May		20.00	none	north of artesian well		300 foot row			95%	
Mixture	16 ea.	R	May		89.00	none	landscaping near service center		16 trees			80%	
1/4 Gr. Ash													
3 Hackberry													
3 Bl. Walnut													
2 Mt. Ash													
1/4 Apple													

- (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: \_\_\_\_\_

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CULTIVATED CROPS - HAYING - GRAZING

Refuge Lake Indian

County Charles Mix

State South Dakota

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water- fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
			Acres	Bu./ Tons	Acres	Bu. /Tons			
Corn					137	6,443 Bu.	137	Sweetclover	44
Milo					157	10,300 Bu.	157		
Sunflower					20	300 Bu.	20		
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No. of Permittees: Agricultural Operations \_\_\_\_\_ Haying Operations \_\_\_\_\_ Grazing Operations \_\_\_\_\_

None

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	Grazing	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle				
				2. Other				
				1. Total Refuge Acreage Under Cultivation				377
Hay - Wild				2. Acreage Cultivated as Service Operation				377

DIRECTIONS FOR PREPARING FORM NR--8'  
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops Specify the acreage kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation Report total land area devoted to agricultural purposes during the year.

# REFUGE GRAIN REPORT

Refuge Lake Andes

Months of Jan. through Dec., 1969

(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
corn, wheat, milo mixture	400 bu.					400 bu.		none			
cob corn	200 bu.							200 bu.		200 bu.	

(8) Indicate shipping or collection points \_\_\_\_\_

(9) Grain is stored at Refuge corn crib

(10) Remarks \_\_\_\_\_

\*See instructions on back.

## REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

**Report all grain in bushels.** For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.
- (4) A total of columns 2 and 3.
- (6) Column 4 less column 5.
- (7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.



## ANNUAL REPORT OF PESTICIDE APPLICATION

Proposal Number

Reporting Year

1969

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)
June, '69	Lambs Quarters, Pigweed, other broad-leaved weeds	Cropland on Owens Bay unit & willows in spillway of North Dike	248	2,4-D Butyl ester, 80% (low volatile)	248 lbs. a.e.	1 lb. a.e./ac	water 2 gal/ac	ground sprayer
6/6/69	All broad-leaf weeds & grass	Cornfield N. of artesian well	48	Atrazine	36 lbs. a.i.	3/4 lb. a.i. per acre	water & oil 3 gal/ac	ground sprayer
July, 1969	Musk Thistle	Small patch in tree planting W. of Service Bldg. about midway in planting	0.5	Tordon	1/2 lb. a.i.	1 lb. a.i./acre	water 2 gal/ac.	Hand sprayer

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

2,4-D -----Results appeared very good. Does not control milkweed though.

Atrazine-----Appeared to be of little value. Several check rows were left and they looked the same as the sprayed rows. Possibly due to a dry period after application.

Tordon-----Musk thistle plants appeared dead.