LAKE ANDES NATIONAL WILDLIFE REFUGE

LAKE ANDES, SOUTH DAKOTA

NARRATIVE REPORT

January 1 Through December 31, 1965

PERMANENT PERSONNEL

Ralph H. Town	Wildlife Biologist
Peter S. Suich	Refuge Manager (Trfd. May 29)
David L. Olsen	Refuge Manager (Eff. June 14)
Fred R. Rusch, Jr.	Biological Technician

TEMPORARY PERSONNEL

Pat Bailey	Laborer
Louis Pesicka	Laborer

Cover Photograph

Part of the 100,000 mallards and Canada geese concentrated on Owens Bay during December. Approximately 3,100 mallards are flying and approximately 3,000 are standing on the ice.

C O N T E N T S

I. GENERAL

A. Weather Conditions

TABLE I

	Precipitation			Max.	Min.
	Month*	Normal**	Snowfall*	Temp.*	Temp.*
January	.40	.49	5.0	54	-12
February	.23	.70	2.8	68	-16
March	.40	1.42	5.0	54	-12
April	1.00	2.12		94	29
May	4.02	2.80		93	32
June	6.79	3.93		91	53
July	2.39	2.07		100	53
August	1.21	3.15		105	46
September	3.25	1.94		87	27
October	.40	1.23		83	30
November	.33	.83	2.0	81	7
December	.98	.54	1.0	59	0
Annual Totals	21.40	21.22	15.8	Extremes 105	-16

* Data from the official weather station maintained by the Corps of Engineers at Pickstown, 8 miles southwest of the Refuge.

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

The average daily temperature in January was .9 degree below the normal of 19.2 degrees. Little drifting of snow was noted. The average daily temperature in February was 23.8 degrees, 1.2 degrees above normal. March was extremely cold with temperatures averaging 18.3 degrees, 14.8 degrees below normal. Minimum temperatures during the last five days of March were below zero with the extreme minimum of -12 degrees recorded on the 28th. Although 12.8 inches of snow were received during this three month period, total moisture was only 1.03 inches, averaging .08

inch of moisture per inch of snow.

Temperatures in April were near normal, averaging .4 degree above the normal of 48.8 degrees. The 1.00 inch of precipitation recorded during the month of April was comprised of moisture received on ten days, the maximum of which was .25 inch. The average daily temperature in May was 62.1 degrees, 1.6 degrees above normal. Precipitation was received on 16 days throughout the month. On eleven days, amounts were less than one-fourth inch; the maximum received at any one time was 1.26 inches.

Average daily temperatures during June and July were 1.1 degrees and 2.3 degrees below the normal of 70.5 and 77.6 degrees, respectively. Precipitation was recorded on 17 days in June and 10 days in July totaling 9.18 inches, which was 3.18 inches above the normal for this period.

Temperatures in August averaged 1.5 degrees below normal even though highs of 101, 103, and 105 degrees were recorded on the 11th, 12th, and 13th. Measurable precipitation was received on four days in amounts ranging from .13 to .75 inch.

September was cool and wet with daily temperatures averaging 11.4 degrees below the normal average daily temperature of 65.5 degrees. Precipitation was recorded on 20 days with a maximum of .63 inch.

October temperatures averaged 2.5 degrees above normal. Measurable precipitation was received on only two days and a trace was recorded on one other day. Temperatures in November averaged 2.3 degrees above the normal of 35.4 degrees. Light rain in mid-November deposited .13 inch of moisture. The first snow of the season started to fall on the 25th and continued through the next two days. An accumulation of two inches was recorded. Temperatures moderated shortly thereafter and the snow had melted by the last day of the month. Mild temperatures continued throughout December, averaging 7.5 degrees above the normal of 24.6 degrees. Light rain recorded on the 10th and 11th resulted in .84 inch of moisture. The inch of snow melted during the last week of the month and at the end of the year, no snow cover was present.

The first frost, which was also the first killing frost of the season, occurred on September 23. The average date of the first frost is September 30, and the average date of the first killing frost is October 14.

In general, 1965 was cool with near normal precipitation. Total precipitation was .18 inch above normal and daily temperatures averaged 1.4 degrees below normal.

B. Habitat Conditions.

1. Water.

On January 1 the elevation of the North Unit was 1434.50. Water levels receded to 1434.35 by June 1. Heavy rains in the Corsica area, approximately 12 miles north of the Refuge, early in June resulted in runoff entering this unit. On July 1, water started flowing into the Center Unit. By July 9, the water level of the North Unit reached its peak elevation of 1436.84. Water continued to flow into the Center Unit until August 6, when the level of the North Unit had receded to the spillway elevation. Water levels continued to recede throughout the remainder of the year and at the end of 1965, the elevation was 1435.46, .89 foot below the crest of the spillway.

Water levels in the Center Unit dropped throughout the year. The level decreased .10 foot in July in spite of the inflow from the North Unit. At the end of the period, the elevation was 1433.05, 1.11 feet below the elevation recorded on January 1, 1965, and 1.80 feet below the crest of the south dike spillway.

At the beginning of the period, the elevation of the South Unit was 1434.00. Inflow from Owens Bay in late March and early April raised the water level of this unit .30 foot. However, water elevations dropped to 1433.22 during the remainder of the year as a result of evapo-transpiration. This is 1.63 feet below the management level, indicating a net loss of .78 foot for the year.

On January 1, 1965, the water level in Owens Bay was 1440.44. Water levels increased to elevation 1441.12 by February 18. This level was maintained, except during a short period in mid-March, until one, 12 inch stoplog was removed from the structure on March 30. The drawdown to 1440.52 was accomplished by April 5. Levels fluctuated between 1440.42 and 1439.84 until September 28. In accordance with the Water Management Plan, a 12 inch stoplog was placed in the structure on that date. By December 31, the water elevation had risen to 1440.80, .72 foot below the recommended level of 1441.52.

The flow of the artesian well was checked on July 30 and it continues to be 750 gallons per minute. The temperature of the water flowing from the well is approximately 71 degrees as disclosed by a check made on December 30.

Spring breakup occurred on April 9 when all units were completely open. Freeze up occurred on November 27. However, small areas remained open on the Center and South Units. Several of these open areas, as well as a large area near the artesian well on Owens Bay, were still present at the end of the period. A major portion of the Fort Randall Reservoir also remained open at the

end of the period.

2. Food and Cover.

Waterfowl had utilized the remainder of the standing corn in refuge fields by February 17. It was not necessary to chop the crops to insure complete utilization.

Pondweed growth in Lake Andes, including Owens Bay, was considered good but seed production was fair. Mallards, Gadwall, and diving ducks used the pondweed extensively throughout the summer and migration periods.

The perimeter of Lake Andes and grasses present in the refuge pasture units afforded nesting cover for both waterfowl and upland game birds.

Approximately 4065 bushels of milo and 5875 bushels of corn were produced on the Refuge during 1965. Field feeding mallards were first noted on September 28. By the end of the year, all grain in refuge fields that could be reached by feeding waterfowl had been utilized and approximately 4600 bushels of corn and 2400 bushels of milo remained.

A cooperator produced 850 bushels of corn on the Bergquist Tract. One hundred eighty bushels remained in the field at the end of the period.

One depredations complaint was received during the year. In early September Mr. Ted Krell requested assistance when blackbirds started feeding in a late, irrigated milo field. An exploder was loaned to him. Again this year ducks cleaned up waste grain in harvested fields before the farmers turned in their cattle. Although the usual grumbling was heard, no official complaints were received.

II. WILDLIFE

A. Migratory Birds.

1. Waterfowl.

The number of mallards on the Refuge fluctuated from 30,000 to 135,000 during January and early February. The peak wintering population of 200,000 birds was recorded during the last two weeks of February. The number declined through March, and by the first week in April only the summer residents remained. Mallard use days during the first four months this year were

27% less than the same period in 1964.

The spring migration of other species of ducks did not occur until the second week of April. Last year the migrational buildup occurred one month earlier. Also, there was a marked decline in the spring migration this year as compared to 1964. Use days of species other than mallards during January through April 1965 totalled 141,000 as compared to 1,104,050 in 1965. This was a decline of 96%.

Although the peak population of 15,000 Canada geese during the period January through April was greater than the peak of 12,500 in 1964, total Canada goose use days were down 14%. White-front, snow, and blue goose use days totalled 3,900 during this period; a decline of 73% from 1964.

Breeding pair counts were conducted during the second week of June. Of the 318 pairs counted, 35% were blue-winged teal, 28% mallards, and 20% gadwalls. The remaining 17% were miscellaneous species. The total number of breeding pairs was down 53% from the five year average (see Table II).

Wildlife Biologist Ralph Town and State Game Warden Leslie Nelsen conducted a breeding pair count on the Fort Randall Reservoir on June 15. They censused approximately 76 miles of shoreline. The following waterfowl were observed:

Mallards	26 males	1 female	1 pair	
Gadwall			1 pair	
Wood duck	2 males			1 unknown
Canada goose				1 unknown

The results of this count indicate that the rapidly fluctuating water levels associated with Corps of Engineers impoundments are not conducive to waterfowl production.

Brood counts were conducted on July 18, 23, and 27. Of the 56 broods observed, 41% were gadwall, 34% mallard, and 23% blue-winged teal. The number of broods observed was down 52% from the 5 year average (see Table II).

Both breeding pairs and broods have showed a decline since 1963 (see Figure I). Likewise, water levels in the three units of Lake Andes have decreased steadily since the spring of 1963.

Mr. Paul Carpenter, a farmer who lives northeast of the Refuge, reported seeing a nesting goose on Johnson Bay during June. However, an extensive search on July 23 failed to disclose the nest.

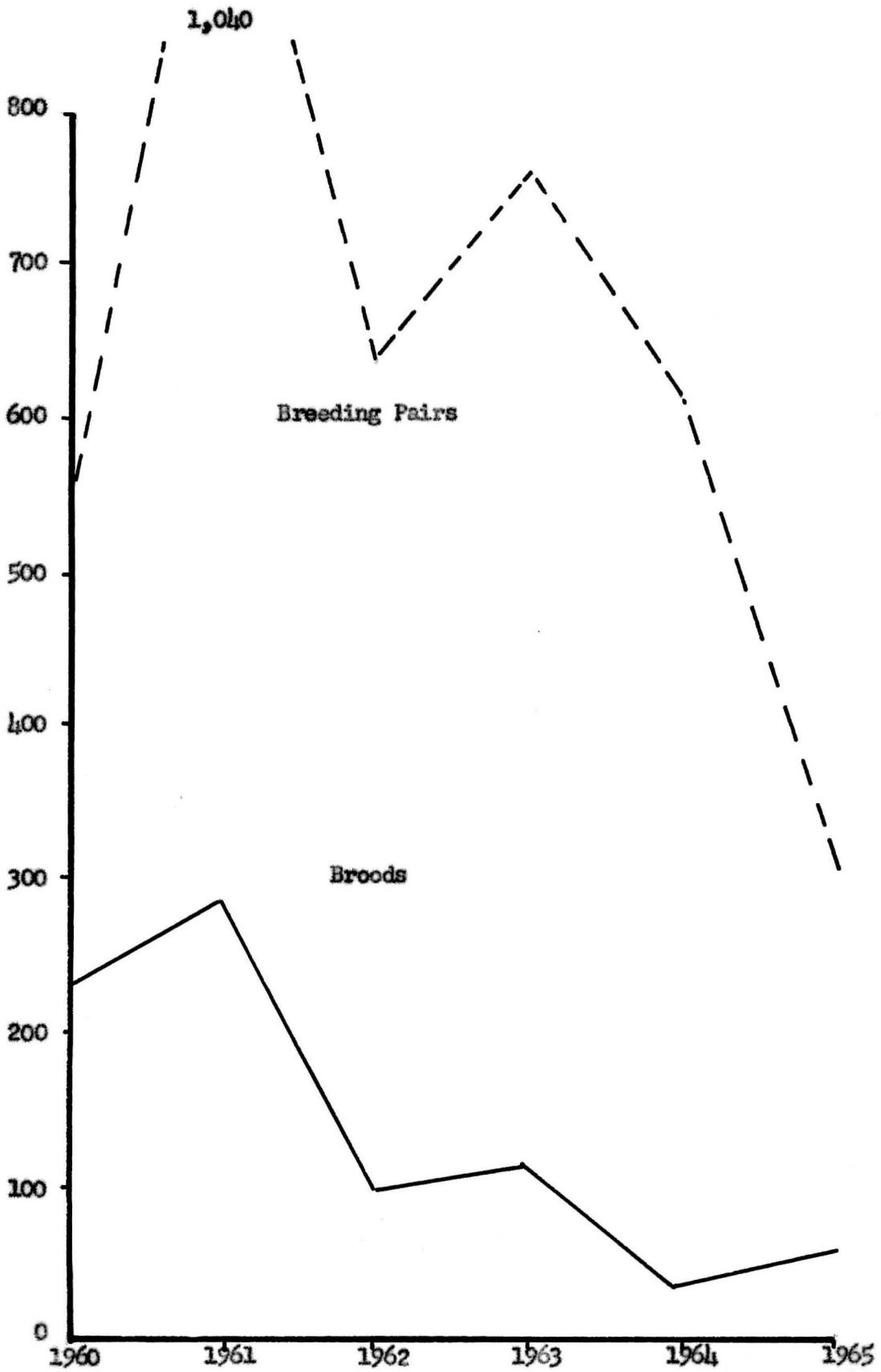
TABLE II

Breeding Pair and Brood Counts - Lake Andes

Year	Owens Bay		North Unit		Center Unit		South Unit		Total	
	Breeding Pairs	Broods	Breeding Pairs	Broods	Breeding Pairs	Broods	Breeding Pairs	Broods	Breeding Pairs	Broods
1961	91	7	152	26	531	103	266	146	1040	282
1962	80	15	115	12	306	50	131	21	632	98
1963	183	9	155	22	219	45	201	35	758	111
1964	148	5	119	1	289	19	57	9	613	34
1965	62	7	56	8	105	28	95	13	318	56
5 Year Average	113	9	119	14	290	49	150	45	672	116

FIGURE I

Breeding Pairs and Broods Observed on Lake Andes Refuge 1960-1965



Migrant blue-winged teal became evident during the last part of August. A peak of 1,600 birds was reported. By the first of October, most of the blue-winged teal had departed. Only a few were noted during the second weekend of the regular duck hunting season.

Migrant mallards first appeared during the latter part of September, and numbers rose rapidly till the last of October. By the first of November, the peak of 136,000 mallards on the Refuge was censused by the State. Throughout the month of December, the mallard population on Lake Andes fluctuated almost daily. A constant exchange of birds between Lake Andes Refuge and the Fort Randall Reservoir continued until the reservoir froze, thereby forcing the birds into the Owens Bay area.

At the close of the reporting period, approximately 90,000 mallards were concentrated in an area of approximately 9 acres adjacent to the artesian well. It is extremely difficult to obtain an accurate count from the ground. Therefore, aerial photographs will be taken to determine the approximate number of ducks concentrated in an acre of open water. Using this figure, an attempt will be made to establish a grid system of making more comprehensive estimates from the ground.

Total waterfowl use days were down from the 1964 level. An 8% decrease was noted (see Table III).

TABLE III

Total Waterfowl Use Days by Calendar Year

Year	Spring	Summer	Fall	Total
1960	2,711,358	656,096	7,119,868	10,487,322
1961	7,219,730	1,007,800	5,970,920	14,198,450
1962	8,725,225	262,575	4,027,099	13,014,899
1963	5,007,055	377,900	10,612,725	15,997,680
1964	12,428,700	419,710	5,180,392	18,028,802
1965	8,476,500	154,390	7,911,900	16,533,790

88,260,943 total
14,710,157 average.

2. Waterbirds and Shorebirds.

The first migrant shorebirds noted were a group of 5 greater

yellowlegs and 2 least sandpipers observed on the North Unit on April 1. By April 15, killdeer, great blue heron, and black-crowned night heron appeared.

Flocks of sandhill cranes numbering from 36 to 500 were seen almost daily during the last two weeks of April.

Pelicans first appeared on April 15 and migrant flocks were seen throughout most of that month. Approximately 300 remained as non-nesting summer residents.

Black and common terns were first observed during the last week of April and the first part of May. These birds also remained as non-nesting summer residents.

Avocets and western willets were present in small numbers during the spring migration.

A non-nesting flock of double-crested cormorants remained on the Refuge throughout the summer foraging on small fish.

Western, pied-billed, and horned grebe were present during the spring and summer. Broods of each of these species were observed. Normally, the eared grebe is the most common of the grebes on the Refuge. However, this year a peak of 50 was reported on April 29 and only 2 remained on the area throughout the summer.

The fall migratory instinct was first evidenced by the flocking of yellow-headed and red-winged blackbirds during the latter part of August. During the first week of September, a migrant flock of approximately 4,000 Franklin's gulls was observed around Lake Andes. Migrant ring-billed and herring gulls were observed during the latter part of September.

Migrant pelicans and Wilson's phalaropes were last observed during the first week of October.

3. Doves.

No census was conducted on the Refuge. Inadequate observations and the large number present throughout the summer months preclude the making of any estimates. The first migrant was observed on April 7, and the last recorded observation in the fall was on October 20.

B. Upland Game Birds.

A single bobwhite quail was observed three times during June in the Owens Bay area. A covey was observed along the shore of the South Unit this fall. The refuge population was estimated to be 10 birds.

The ring-necked pheasant population on the Refuge decreased again this year. Excellent nesting cover was available in the Owens Bay area. There was little disturbance by man or cattle, and the weather conditions during the nesting season were considered average. The estimated population at the end of the period was 30 as compared to 200 on December 31, 1964.

C. Big Game Animals.

Although no permanent deer population exists on the Owens Bay area, two white-tailed deer were observed on this unit during the latter part of September. Another group of 7 was seen on January 12 along the diversion ditch one-half mile north of town. On March 18, 8 were observed along the shore of Johnson Bay.

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

A muskrat house count conducted on Owens Bay indicated that approximately 60 muskrats were present. This was an 18% decrease from the population noted during December 1964.

The number of mink on the Owens Bay area increased from an estimated 5 to 20 as the units of Lake Andes froze over and the mallards began concentrating near the artesian well. Mink trapping was not permitted because they serve their purpose well by taking the crippled and sick ducks ever present around the well.

A red fox den was located in field 8 in late April. This den was near a pasture unit which was utilized by nesting waterfowl. A dry vixen was taken from the den by steel traps.

Although no observations of raccoon or skunk were made, tracks were often seen along the shoreline of the lake. The refuge population is estimated to be 5 of each species.

Unusual in this area was the observation of several opossums in the Owens Bay area. During July, a female, probably dead for three days, was found with a litter of 7 young curled up beside her. Local residents claim that opossums are highly unusual in this area. This was the first observation on the Refuge.

E. Hawks, Eagles, Owls, Crows, Ravens, and Magpies.

Rough-legged, marsh, and duck hawks were occasionally observed throughout the winter and early spring. Red-tailed and Swainson's hawks, and a single osprey were observed during the spring migration. Summer residents included marsh and red tailed hawks.

The fall hawk migration commenced during the last week of September; Cooper's, sparrow, and rough-legged hawks were common during this period.

A peak of 25 bald eagles was observed on Owens Bay on March 25. By March 29, only 8 remained; this was the last day eagles were observed on the area.

During the fall, eagles arrived at about the same time geese were noted. On several occasions during December, golden eagles were noted harassing the mallard concentrations on Owens Bay. A golden eagle was observed actually taking a mallard out of a flying flock (see photo section).

On December 31, another incident of a golden eagle killing an apparently healthy mallard was observed. After capturing the mallard, the eagle landed and proceeded to tear away at the feathers of its prey. An adult bald eagle made several threatening passes at the golden. After several passes, the golden left its kill for the bald eagle. The bald eagle then moved in, picked up the mallard, flew several hundred feet away, landed, and finished its stolen meal. An observation such as this makes one wonder about the supposed superiority and dominance of the golden eagle.

The resident population of crows is estimated to be 10. Only a slight increase in the crow population was noted on the Refuge during the fall migration.

The refuge population of great horned owls is estimated at 5. These birds are year round residents. Two snowy owls, which were observed in the Owens Bay area during November and December 1964, remained until January 12. No other observations of these birds have been made during this reporting period.

F. Other Birds.

The following observations, which are considered uncommon, were recorded during this year:

1 marbled godwit on April 15
2 Hudsonian godwits on May 2
2 stilt sandpipers on May 4
1 upland plover on July 20
1 American bittern on June 10
1 spotted sandpiper on July 12
4 pectoral sandpipers on July 18
5 black-bellied plovers on August 18
2 Bonaparte's gulls on October 26

G. Fish.

State personnel checked the dissolved oxygen level in all units on January 12 and found dangerously low levels in 16 samples. Water levels in the lake were considered low, and, in addition, there were 6 to 8 inches of hard snow over approximately 20 inches of ice.

Fisheries Management personnel from Valentine, Nebraska, anticipated a complete winterkill, and the lake was opened to dark house spearing from February 1 through March 30. There was little interest in this special season; only 70 northern pike were taken.

Local residents felt that windrowing the snow on the ice would help alleviate the shortage of oxygen in the lake. They employed 3 motor patrols which windrowed approximately 200 acres before one patrol broke through the ice. Their efforts were in vain, however, as a total kill of the bass occurred in all units.

Fisheries Management personnel conducted an inventory of the fish in the South and Center Units during the period April 12-16. Checks revealed that bullheads and northern pike survived. Two bluegills and a yellow perch were netted in the South Unit, and 4 yellow perch, 1 white sucker, and 1 black crappie were taken in the Center Unit. No large mouth bass were taken.

On April 16, two million northern pike fry were stocked in the South and Center Units. The purpose was to establish a third age class of this species.

On June 2, sixty thousand large mouth bass were stocked in the South and Center Units. The last stocking of the year occurred on August 31 when 100,000 bluegill fingerlings were also stocked in the South and Center Units.

Fishing remained poor until April, when northern pike started feeding. During the latter part of April and the first part of June, limits of northerns from 2½ to 4 pounds were common. Moderate fishing use continued throughout May; 1375 fishing use days were recorded during the month. Fishing use in 1965 decreased 89% from the use recorded in 1964.

The fishery inventory conducted during November in the South and Center Units showed that these units are still overpopulated with bullheads. Their average size was .20 pound. By November the bass fingerlings stocked during June had attained an average size of 6 inches. This was considered excellent growth.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development.

1. Major Maintenance Projects.

a. Quarters # 21 was vacated on January 15, subsequently sold, and torn down (see Section IV F). Charles Mix County equip-

ment and personnel were employed to push in the basement walls. Refuge personnel filled the resulting hole, removed sidewalks, and graded the area (see photo section).

b. Charles Mix County equipment and personnel, under refuge supervision, cleared brush and trees, filled a small, deep "minnow pond", and leveled approximately 1 acre in the southwest corner of the public use area. Refuge personnel removed the debris and building foundations from the area. The former building site was graded. Several dead trees were removed from the shoreline. The toilets were given a second coat of white paint, trim was painted green, and roofs were stained red.

c. All outside, overhead electrical wiring was replaced with underground cable. The cable was installed in conjunction with the renovation of the pump system. Two power poles were removed from the building area as a result of this change.

d. The shop and storage building, Building # 26, was completely rewired by Mr. Norman Anderson under informal contract at a cost of $220.25. All wire was placed in conduit.

e. Mr. Pat Leer installed an 82 gallon, underground, permapressure tank and rewired the refuge domestic water system. This work wasunder informal contract and cost $276.21. The pump controls and pressure tank were located in the basement of Quarters # 21. When the building was removed, it was necessary to completely change and rewire the system.

f. The second coat of white paint was applied to Buildings 2, 25, and the outside toilet. The trim of all of the buildings at the building site was painted green.

g. Refuge personnel constructed 1.11 miles of 4 strand, barbed wire fence along the north boundary of the Refuge. The cost of materials was $478.02 and labor was $285.74, for a total cost of $763.76. Work was completed on August 18.

2. Routine Maintenance Projects.

The two new refuge signs erected in 1964 were repainted. Old wooden sign posts along the north and south dikes were replaced with steel posts, damaged signs were replaced, and signs were more evenly distributed along the dikes. New "No Parking" signs were ordered from the County.

For the second year in a row, several wagon loads of rocks were removed from field 6 and the Bergquist Tract.

Refuge roads, waterways, public use area, and building site were mowed periodically. Toilets at the public use area were cleaned weekly.

Major and minor repairs were performed on machinery.

B. Plantings.

2. Trees and Shrubs.

The replacement of red cedar, Nanking cherry, Chinese elm, and native wild plum that did not survive the 1964 planting was accomplished in late April. It is estimated that 90 to 98 percent of this year's planting survived.

The three rows of red cedar, 3.1 acres, along the west side of the old shelterbelt were not replanted. The area was disced and planted to corn as part of field 7E.

3. Upland Herbaceous Plants.

a. Approximately 10 acres of waterways and backsloped road shoulders were seeded to switchgrass on May 6. This was the second attempt to establish this species in these areas. Except for two small patches on the road shoulders, a stand again failed to materialize. Sufficient moisture was received during May and June, so the reason for the failure is unknown.

b. The spoil area at the north dike emergency spillway, consisting of approximately 5 acres, was seeded to western wheatgrass and big bluestem on October 6. The area was disced and seed was broadcast by hand and harrowed in. The rate of seeding was 4 pounds of western wheatgrass and 5 pounds of big bluestem per acre. Results of the seeding could not be determined during this period.

4. Cultivated Crops.

Major changes were made in the farming program this year. Planting crops in alternating 70 foot strips was discontinued and entire fields were planted in either milo or corn. This reduces machinery operation and time in preparing seed beds and planting. Although the fields may be less attractive to waterfowl than the 70 foot strips, the primary purpose of the crops is use as a depredations deterent when and if a serious problem developes. Therefore, the more grain remaining in the fields, the more feed available if needed. If the crops are not used, they are chopped down during the latter part of February and throughout March.

Milo was planted as a row crop rather than drilled as a small grain. Thus, cultivation of this crop was possible; this resulted in better weed control. Also, the thinner stand reduced competition for moisture.

Refuge grown crops consisted of 143 acres of milo and 154 acres of corn. The grades and rates of commercial fertilizer were applied as recommended by South Dakota State University as a result of soil tests. The initial application was applied in a band at the time of planting in all fields except field 7W. The flow of fertilizer through the lister-planter attachment could not be reduced to the recommended rate. Therefore, liquid fertilizer was broadcast by the Farmers Co-op Company on this field. All crops were cultivated twice. Side dressing was accomplished during the final cultivation.

The seeding rate of corn was reduced from 6.07 acres per bushel in 1964 to 7.69 acres per bushel in 1965. An excellent stand was realized and the crop developed rapidly through the tasseling stage. Ear development in fields 7E and 13 was seriously affected by the hot, dry weather of late July and August. Strong southerly winds prevailed on the three days in mid-August when temperatures exceeded 100 degrees. On the 13th, corn in both fields was "burning up". Yields were 32 bushels per acre in field 7E and 22 bushels in field 13. In comparison, the corn in field 6 was not affected during this period and the yield was 48 bushels per acre.

Milo was planted at the rate of 3.99 pounds of seed per acre, or approximately 6.5 pounds per acre less than the drilled crops of previous years. Yields ranged from 19 to 41 bushels per acre as compared to no production in 1964.

Showers received immediately after field 6 was planted resulted in the growth of weeds equalling that of the milo. Control by cultivation was impossible. Therefore, the field was sprayed with 2-4-D on July 1 to control pig weeds. It is estimated that an 85 percent kill of weeds was realized.

The cost to produce the food crop on the Refuge this year was $.63 per bushel.

The 17 acres of cropland on the Bergquist Tract was planted to corn under a cooperative agreement. The yield was estimated at 50 bushels per acre by the cooperator. Severe blackbird damage was experienced after the corn had started to dent and by harvest, only 17 bushels per acre remained. The cooperator picked only 5.8 acres of his 4/5 share, which was 13.6 acres.

The 20 acre experimental grass plot on the south side of field 8 was disced and harrowed several times until May 31. Machinery

was required constantly after that date until mid-July to plant, cultivate, and side dress refuge crops. As a result, weeds had grown too thick and high to control by discing. The plot will have to be plowed again in the spring.

C. Collections and Receipts.

1. Seed or Other Propagules.

The following seed was purchased from Mr. E. R. Vesely, Lake Andes, South Dakota:

11 bushels Dekalb 4141A hybrid seed corn @ $8.00 per bushel
9 bushels Dekalb 238 hybrid seed corn @ $8.50 per bushel
1 bushel Dekalb 414 hybrid seed corn @ $8.00 per bushel
7 bushels Dekalb E56 hybrid milo seed @ $8.50 per bushel
3 bushels Dekalb S33 hybrid milo seed @ $8.50 per bushel

The following grass seed was purchased from the Farmers' Co-op Company, Lake Andes, South Dakota:

52 pounds PLS switchgrass @ $1.35 per pound
31 pounds PLS big bluestem @ $1.90 per pound (12.5 lb. PLS)
21 pounds PLS western wheatgrass @ $.70 per pound

The shelterbelt replanting stock was purchased from the local Soil Conservation District. The District obtained all of the stock, except the cedars, from Gurney's Nursery, Yankton, South Dakota. The cedars were obtained from the Park Nursery in North Dakota. The replanting consisted of the following:

385 eastern red cedar @ $.125 each
205 Nanking cherry @ $.05 each
120 Chinese elm @ $.05 each
260 native wild plum @ $.05 each

The District gave a 12% discount of the total bill.

Three hundred ten bushels of ear corn were picked in field 6 for use as bait in the waterfowl trapping programs. One hundred twenty bushels of milo were harvested to determine the yield in fields 7W and 8. This grain will also be used as bait.

2. Specimens.

No report was received from the Patuxent Wildlife Research Center concerning the cause of death of the two snowy owls which were forwarded for examination in 1964.

During the period January 21-26, 228 drake mallards were

transferred to the Minnesota Conservation Department. These birds were used in a program in conjunction with FFA Chapters to raise and release ducklings on suitable areas. The drakes were used to introduce a "wild" strain into the pen-reared mallards. Reports indicate that results were quite successful and an expanded program will be undertaken in 1966. The drakes, after serving their tour of duty, were banded and released and will be replaced during refuge banding operations in 1966.

IV. RESOURCE MANAGEMENT

A. Grazing.

A special use permit was issued to Mr. Joseph Novak, Lake Andes, for grazing on three pasture units. Maximum AUM's and grazing periods were established for each unit with a total of 90 AUM's allowed. Cattle were placed on one unit at a time rather than on all units after July 15 as in the past.

Seven yearlings were placed in the Owens Bay enclosure on May 16. After June 13, the number was increased to 36 animals of all age classes and 28.52 of the allowable 30 AUM's were used by July 15. The cattle were moved to the remaining portion of pasture unit 10, 48 acres of brome grass, on July 16. The number of animals was increased to 44 on August 22, and 37.60 of the authorized 40 AUM's were utilized by August 31. The cattle were moved to unit 9 on September 1, and 19.16 of the maximum 20 AUM's were utilized by September 20, the date the cattle were removed from the Refuge.

A range survey was conducted by the Range Technician of the local Soil Conservation Service office on August 5. Pasture 9 was classified in good condition and the Owens Bay enclosure in fair condition. The brome grass portion of unit 10 was not classified because only tame grasses are present.

C. Fur Harvest.

The refuge share of furs taken during the 1964 trapping season, one mink, was forwarded to the Hudson's Bay Company Fur Sales, Inc., New York, New York, on February 11. The net price received for the fur was $4.74. The permittee, Mr. Walt Engel, received $8.00 for his one mink fur at a local firm.

Trapping was not permitted on the Refuge during the 1965 trapping season.

Three Refuge Permits, Form 3-100, were issued in October and

November authorizing the trapping of furbearers on the North and South Units. One hundred twenty muskrats and 6 mink were taken on the North Unit. The trappers received $16.00 each for the male mink and $6.00 each for the female mink furs. The muskrats were sold in the round for an average price of $1.00.

E. Commercial Fishing.

Mr. Lawrence Kallstrom continued removing bullheads from the Center and South Units throughout 1965 under a contract issued by the South Dakota Game, Fish and Parks Commission in 1964. Mr. Kallstrom removed 164,800 pounds of fish from the South Unit and 316,400 pounds from the Center Unit this year. A total of 665,276 pounds, 348,876 pounds from the South Unit and 316,400 pounds from the Center Unit, have been removed since netting operations began on September 1, 1964. In spite of his efforts, the bullhead population appears to be holding its own.

F. Other Uses.

Quarters # 21 was vacated on January 15. The house and a chicken house, building # 41, were declared surplus and offered for sale on February 10. Building # 41 was sold to Mr. Doyle Reinschmidt, Ravinia, South Dakota, for $32.75 but no bid was received for the two story house. The house was re-advertized and subsequently sold to Messrs. Joe Sperl and Walt Schnabel, Lake Andes, for $256.00 on April 19.

A model 82, "Adams" grader and a 20 ton hydraulic jack were sold to Mr. Burton Weaver, Ravinia, South Dakota, for $20.00 and $12.50, respectively. The items had been surveyed and were offered for sale to the highest bidder.

V. FIEID INVESTIGATIONS OR APPLIED RESEARCH

A. Experimental Marking of Mallards.

Mr. Rod Drewien, a student at South Dakota State University, Brookings, marked seven mallards during the period February 19 through March 24. Plastic nasal saddles and plastic neck bands were used. The birds were held in the refuge duck trap to determine the "wearing ability" of each type of band. Mr. Drewien concluded that both types of markers were unsatisfactory because they resulted in death to the birds.

B. Blood Parasite Study.

Mr. Gerald M. Polcyn, a student of South Dakota University,

Vermillion, took several blood samples and smears from mallards during the period January 27-29. The smears were to be checked for the presence of blood parasites. Although a report of this study was requested, it has not been received.

C. Cricket Frog Study.

Mr. Gerald Regan, a student of the University of Kansas, visited the Refuge on July 12. He wanted to determine if the cricket frog (Acris crepitans) had extended its range as far north as Lake Andes. A report of Mr. Regan's findings has not been received.

D. Aquatic Plant Study.

On August 17 an attempt was made to determine aquatic plant production in the South Unit, utilizing the Sincock method. This method, which is successfully utilized on the east coast, did not produce satisfactory results.

From the surface, the sago pondweed (Potameton pectinatus) appeared to be thick. However, very few aquatics were picked up in the sampling tong. A single stem rose from the bottom of the pool and the luxuriant growth was only on the surface.

Next year an attempt will be made using a similar technique. A floating hoop, similar to one used for counting rabbit pellets, will be employed in place of the tongs.

It is imperative that a sampling method be devised to measure aquatic plant production before the irrigation proposal becomes a reality.

E. Canada Goose Banding.

An annual quota of 600 Canada geese has been established for this area. Immediately following the mallard banding program in February, an area on the George Nielsen Farm was baited with corn in an attempt to trap geese. Mallards discovered the bait, however, and the bait was cleaned up before geese came on the area. Therefore, the goose banding efforts were discontinued.

In mid-December, immediately after the close of the goose hunting season, several areas along the Fort Randall Reservoir and near Red Lake were baited. Approximately 5 bushels of corn were spread on a winter rye field which had been used extensively by geese throughout the hunting season. Although the application of corn was light, the geese stopped using the field. It seemed that the geese would not use grain that was not natural to the area baited. No Canada geese were banded again this year.

F. Mallard Banding.

An annual post season banding quota of 2,000 mallards has been set for this station. With populations up to 100,000 birds concentrated in an area of approximately 4 acres, trapping is relatively simple with a Colorado ramp style trap.

A total of 120 man hours was utilized in trapping and banding the 2,000 ducks. The breakdown of species banded is: 1379 male mallards; 620 female mallards; and 1 male black duck.

A total of 16,761 mallards have been banded at this station since 1952 (see Table IV). Returns have totaled 1,116 but records are incomplete for 1961, 1962, and 1965. Location of recoveries by state and province is given in Table V.

TABLE IV

Summary of Winter Mallard Banding and Returns
Lake Andes Refuge

Banding Year	Number Banded	Number Returns
1952-53	981	159
1953-54	2,370	391
1954-55	1,010	160
1958	996	100
1960	1,822	83
1961	1,875	30
1962	1,999	73
1963	1,700	55
1964	2,000	65
1965	1,999	--
Totals	16,761	1,116

TABLE V

Location of Recoveries of Mallards
Winter Banded at Lake Andes Refuge

Location	Number	Percent
South Dakota	168	15.0
Arkansas	156	14.0
Saskatchewan	134	12.0
Nebraska	123	11.0
North Dakota	79	7.1
Alberta	70	6.3

TABLE V (Continued)

Location	Number	Percent
Missouri	58	5.2
Louisiana	55	4.9
Manitoba	35	3.1
Texas	33	3.0
Minnesota	29	2.6
Kansas	28	2.5
Oklahoma	26	2.3
Illinois	25	2.2
Iowa	23	2.1
Tennessee	13	1.2
Montana	12	1.1
Other*	49	4.4
Totals	1,116	100.0

* Less than one percent each: Alaska, Arizona, California, Idaho, Indiana, Kentucky, Michigan, Mississippi, Northwest Territories, Ohio, Ontario, Oregon, Virginia, Washington, Wisconsin, and Wyoming.

VI. PUBLIC RELATIONS

A. Recreational Uses.

Total recreation use declined from 32,600 use days in 1964 to 4769 in 1965, a decrease of 85%. Although the lake was opened to dark house spearing in February and March, total fishing use days declined from 32,000 to 3517. This marked decline was attributed to the loss of large mouth bass as a result of the winterkill.

Hunting use also declined in spite of the 12 day special teal season (see Section D, below).

B. Refuge Visitors.

See list appended.

C. Refuge Participation.

January 9 - Mr. Suich conducted tour of Refuge for 6 Cub Scouts and 2 leaders from Pickstown, South Dakota.

February 7-12 - Mr. Town attended Waterfowl Wing Bee at Poynette, Wisconsin.

February 25 - Mr. Town attended Brown County Sportsman Club meeting at Aberdeen, South Dakota.

March 4-5 - Messrs. Town and Suich assisted State personnel with trapping, sexing, aging, and banding grouse at Kadoka, South Dakota.

June 21 - Mr. Olsen attended Fort Randall Conservancy Sub-district Board meeting in Wagner.

July 28 - Mr. Olsen assisted State Warden Nelsen with running pheasant brood transect.

July 29 - Mr. Rusch assisted State Warden Nelsen with raccoon depredations complaint.

August 4-11 - Mr. Town attended Central Mountain and Plains Section of the Wildlife Society meeting at the University of Wyoming Summer Camp at Centennial, Wyoming.

August 20 - Messrs. Town and Rusch attended Fort Randall Conservancy Sub-district Board meeting in Wagner.

September 13-17 - Mr. Town attended Prairie Grouse Council meeting at Warroad, Minnesota.

September 20 - Mr. Olsen attended Pickstown Gun Club meeting in Pickstown, South Dakota.

September 21 - Mr. Olsen delivered copies of Waterfowl Tomorrow to Wagner, Lake Andes, and Pickstown public schools.

September 28 - Messrs. Olsen and Town attended meeting of Charles Mix Izaak Walton League in Lake Andes.

October 12 - Mr. Olsen showed film "The Farmer and the Sportsman" to the Platte Sportsman Club in Platte, South Dakota.

October 14 - Mr. Olsen showed films "The Farmer and the Sportsman" and "The Mallard" to the Pickstown Gun Club, Pickstown.

October 18 - Mr. Olsen attended Fort Randall Conservancy Sub-district Board meeting in Wagner.

October 26 - Messrs. Town and Rusch showed films "The Mallard" and "Know Your Ducks" to Charles Mix Izaak Walton League in Lake Andes.

December 13 - Mr. Olsen attended Fort Randall Conservancy Sub-district

Board meeting in Wagner.

December 28 - Messrs. Olsen and Town attended Charles Mix Izaak Walton League meeting in Lake Andes. Both employees joined the League at this meeting.

D. Hunting.

The Fort Randall Reservoir did not freeze over during the waterfowl hunting season. As a consequence, Canada geese remained on the Reservoir and did not congregate on Owens Bay. Limited goose hunting was noted in the Lake Andes area until the last week of the season when from two to fifteen hunters were noted along the east boundary of the Refuge. Only a few geese were killed by these hunters. Hunters on privately-owned lands surrounding the Refuge also had little success.

Several hunter use-days were recorded on the Center Unit during the special teal season. Refuge personnel conducted "spy blind" observations, but no violations were detected. Bag checks revealed excellent success with blue-winged teal the principal species taken. Only a few green-winged teal were noted in the bags. Hunters were enthusiastic about the special season and hoped it would be continued in the future.

Although several species of ducks, including mallards, were plentiful during the regular waterfowl hunting season, very little pressure was exerted in the Lake Andes area. Late in the season a few hunters were pass shooting along the north dike. Goldeneye and scaup were the predominant species in the bag during this period. The general opinion of local residents seemed to be that it was impractical to hunt for only one mallard. Several local hunters stated that they did not purchase waterfowl stamps because the bag limit included only one mallard.

Waterfowl hunting stamp sales at the local Post Office indicated little change from 1964. Sales for the last five years were as follows: 1961 - 161 stamps; 1962 - 86 stamps; 1963 - 154 stamps; 1964 - 169 stamps; and 1965 - 170 stamps.

Only a few pheasant hunters were noted in the vicinity of the Refuge. Pheasant hunting success in this area ranged from poor to fair. The total number of hunting licenses, both resident and non-resident, increased from the previous year. This was attributed to the larger bag limits allowed in this area. Other zones in the State had daily bag limits of one and two birds; in this area the limit was three birds per day.

Local sportsman groups exerted pressure to have the south dike opened for pass shooting. The proposal was turned down because of the crippling loss that would result. Also, the crowded conditions

would result in a poorer quality type of shooting. Several letters were received by the South Dakota Department of Game, Fish and Parks protesting this decision but the dike remained closed.

E. Violations.

The tresspass case of Messrs. E. R. Brue, R.E. Anderson, S. G. Froiland, Thomas Froiland, and David Froiland, all of Sioux Falls, South Dakota, which was pending in Federal Court on January 1, was dropped by the U.S. Attorney's office.

Mr. David Olsen apprehended Messrs. Kenneth F. and Kenton Weber, Pickstown, South Dakota, on September 4 for illegal possession of five gadwalls during the special teal season. The hunters stated that they thought the birds were cinnamon teal. No charges were filed against Kenton, who was 13 years old. Mr. Weber appeared before Justice of the Peace George Schekel on September 7 and was fined $25.00 plus $4.70 costs. Fifteen dollars of the fine were suspended. State Game Warden Wilson Dent assisted with drawing up the complaint.

While assisting Sand Lake Refuge personnel with enforcement on the first day of goose season, October 1, Mr. Olsen apprehended Dr. Jerome A. Eckrich, Jr., Aberdeen, South Dakota, for hunting before legal shooting hours. Dr. Eckrich stated that he thought shooting hours started one-half hour before sunrise. The case was turned over to the State for prosecution. The defenant appeared before Judge George Crane on October 5 and received a $25.00 fine.

The following early shooting cases were made by Mr. Olsen while assisting Game Management Agents in the Milwaukee Slough area, Lake County, South Dakota, on October 9 and 10. All cases were turned over to the State for prosecution.

O. V. Daniel, Sioux Falls, South Dakota, appeared before Justice of the Peace Robert J. Maloney on October 22 and paid a $10.00 fine plus $17.30 costs.

Eldon Danielson, Sioux Falls, South Dakota, appeared before Justice of the Peace Robert J. Maloney on October 22 and paid a $10.00 fine plus $17.30 costs.

Stanley Bucklin, Sioux Falls, South Dakota, age 17, appeared before Judge Carl E. Bohn on October 15. He received a warning and a lecture from Judge Bohn.

Tim Eidsness, Sioux Falls, South Dakota, age 17, also appeared before Judge Bohn on October 15 and received a warning and lecture.

Ronald Olson, Sioux Falls, South Dakota, appeared before

Justice of the Peace Robert J. Maloney on October 15 and received a $10.00 fine plus $17.20 costs.

Orville Thulin, Garretson, South Dakota, appeared before Justice of the Peace Robert J. Maloney on October 16 and paid a $10.00 fine plus $14.00 costs.

Refuge Manager Olsen spent five days during the period November 31 through December 7 assisting Game Management Agents with collecting evidence of baiting and staking out the Bryce McDowell Farm, 30 miles southeast of Pierre, South Dakota. On December 7, hunters shot over the baited area and twenty-two men were apprehended. The case was submitted to U.S. Attorney Doyle in Sioux Falls and at the end of the period is pending in Federal Court. According to newspaper and television reports, several sportsman clubs throughout the State have requested the U.S. Attorney to bring this case to trial at an early date. There is considerable public interest and opinion because the farm is one of the largest commercial hunting areas along the Missouri River in South Dakota.

F. Safety.

Regular monthly safety meetings are held with Soil Conservation Service employees in Lake Andes. The Refuge is responsible for conducting the meeting approximately once every three months.

As refuge personnel carry on the farming programs, safety in the operation of farm machinery is of prime importance. Safety training of temporary employees is carried out in the form of informal discussions about proper procedures to be used.

Blaze orange safety vests were purchased and one placed in each vehicle. These are to be worn when changing tires or making other repairs along a highway.

A new type, inflatable life jacket was purchased.

While Refuge Manager Olsen was on temporary duty at the Swan Lake Refuge, the vehicle he was driving was involved in an accident. On the night of November 11, the vehicle was parked on a one-way trail while Mr. Olsen was checking a trap site for the presence of geese. Mr. Paul Ban, an employee of the Missouri Conservation Commission who was also assisting with the goose banding, drove down the trail at about 10 miles per hour with only his park lights on. He did not see the Government vehicle and ran into the back end of it. No damage was done to the State vehicle but the rear bumper, tail gate, and rear fender panel of the Government vehicle were damaged. Repairs have been accomplished and the cost of $272.35 has been paid by Mr. Ban's insurance company.

The station record of no lost time accidents stands at 4,835 days.

There have been no lost time accidents recorded on this refuge since it was staffed on October 6, 1952.

On January 22, three graders were used by local residents to windrow snow on the ice of Lake Andes (see Section II G). One of the graders, operated by a city employee, broke through the ice into approximately 5 feet of water. Volunteers worked throughout the night utilizing dynamite and a tractor powered wench to remove the machine. The cost to repair the grader was approximately $200.00.

VII. OTHER ITEMS

A. Items of Interest.

1. Personnel.

Mr. Peter S. Suich, Refuge Manager, transferred to the Iroquois Job Corps Conservation Center, Basom, New York, effective May 29.

Mr. David L. Olsen was transferred and promoted from Assistant Refuge Manager, Agassiz Refuge, to Refuge Manager, Lake Andes Refuge, effective June 14.

2. Wagner Irrigation Unit.

Refuge personnel attended several meetings of the Fort Randall Conservancy Sub-district Board throughout the year. Differences of opinion on three major recommendations exist between the Bureau and local residents, who are supported by the South Dakota Game, Fish and Parks Commission. First, the Choteau Creek Wildlife Area proposal has been vigorously opposed by local residents. Several hundred acres of grasslands used primarily for prairie hay would be inundated by development of low level dikes across the low, flat area. Present land owners maintain that this grassland is vital in their livelihood. Adjoining land owners do not want the refuge established because they fear the resulting waterfowl and blackbird populations would inflict severe crop depredations.

The Bureau maintains that the area is required as an enhancement for wildlife. This, along with two other wildlife areas, would be a second, and very important, benefit which would result from the irrigation unit.

The second issue is the management of the water levels on Lake Andes, which is to be used as a reservoir under the present plan. State and local residents want maximum levels for the

South and Center Units set at 1436.35 feet. The Bureau has approved the higher elevation for the South Unit with the stipulation that the south dike be raised and the structure renovated so that the lower level of 1435.00 feet can be maintained in the Center Unit. The Center Unit is to be managed as a waterfowl production area.

The Bureau feels that the North Unit is not to be made a part of the irrigation plan. To date no protests of this plan have been voiced.

The Bureau desires to have public and recreational facilities developed on the South Unit only, maintaining the Center and North Units primarily for waterfowl production and resting areas. The State wishes to have recreational facilities on all units.

These problems must be resolved before final planning and implementation of the Wagner Irrigation Unit can be accomplished.

3. Training.

The following is a list of training sessions and workshops attended by refuge personnel during 1965:

January 20 - Mr. Fred Rusch attended a corn and milo growers workshop in Sioux Falls, South Dakota. The workshop was sponsored by the South Dakota State University and the South Dakota Fertilizer Association.

February 2-5 - Mr. Ralph Town attended the regional biologists'workshop at Minneapolis, Minnesota.

March 3 - Messrs. Pete Suich and Ralph Town attended a Soil Conservation Service range and pasture workshop at Lake Andes.

March 15-19 - Messrs. Suich and Rusch attended the law enforcement workshop at Valentine, Nebraska. Mr. Rusch attained the highest grade on the final examination in the class of some 25 Bureau and State personnel.

March 29-April 3 - Mr. Town attended the Bureau biologists' workshop at the Arden Hills Civil Defense Training Center, Minneapolis, Minnesota.

March 29-April 30 - Mr. David Olsen attended the basic refuge manager's training school at Arden Hills Civil Defense Training Center, Minneapolis, Minnesota.

April 7-9 - Mr. Suich attended a waterfowl production

workshop at Valentine, Nebraska. Mr. Town assisted with the instruction of this session.

April 11-16 - Mr. Suich attended a Job Corps Key Staff training session at Grants, New Mexico.

April 25-29 - Mr. Town attended the wetland manager's workshop at Jamestown, North Dakota.

September 26-30 - Mr. Town attended the law enforcement workshop in Minneapolis, Minnesota.

November 2-4 - Mr. Rusch attended an ammonium nitrate-fuel oil (AN/FO) blasting techniques workshop at Valentine, Nebraska.

For the second year, Mr. Olsen assisted with the Canada goose transplant project at the Swan Lake Refuge, Sumner, Missouri. Approximately 6,000 Canada geese were trapped by cannon net trap during the period October 25-November 14.

4. Credits.

Wildlife Biologist Town prepared the summary of mallard banding on the Lake Andes Refuge. Biological Technician Rusch prepared Sections I, III, IV, V, VI, and the NR forms. He was also responsible for the typing of this report. In addition to editing the report, Mr. Olsen prepared Sections II and VII.

SIGNATURE PAGE

Submitted by:

David L Olsen
(Signature)

David L. Olsen

Refuge Manager
Title

Date: February 11, 1966

Approved, Regional Office:

Date: _____

_____
(Signature)

Regional Refuge Supervisor

OFFICIAL VISITORS LOG

DATE	NAME	ORGANIZATION	PURPOSE OF VISIT
1/ 13	Bonar Law	U.S.G.M.A. Mitchell	Dove traps and dove banding
1/13	Kent Olson	Huron A.A.O.	Use on WPA's
1/16	Frank Ligas	National Audubon Society	Eagle Trapping
1/19	Dick Kopecky	Corps of Engineers, Pickstown	Corn and Milo Workshop
1/20,21,26	Glenn Garden	Minnesota Conserv ation Dept	Pick up mallard drakes
1/20,21,26	Gene Gibson	do	do
1/27-29	Gerald M. Poleyn	South Dakota University, Vermillion	Obtain blood samples from mallards
2/2/	Delmar Robinson	Fisheries Management, Ft Niobr-	Oxygen test on Lake Andes
2/2	Bruce Mc Carraher	Nebraska Fisheries	Courtesy call
2/2	Walter Meyer	do	do
2/5	Jim Ficken	U.S.G.S.	Water analysis on Lake Andes in c op-
2/5	Rod Larsen	U.S.G.S.	eration with the State Water Resources Commission
2/10	Robert Heitteko	Huron A.A.O.	Purchase of WPA's
2/19, 3/24	Rod Drewien	South Dakota State University	Experimental marking of mallards
2/28	Frank Ligas	National Aubudon Society	Borrow nets
3/25	Bonar Law	U.S.G.M.A. Mitchell	Discuss law enforcement

OFFICIAL VISITORS LOG

DATE	NAME	ORGANIZATION	PURPOSE OF VISIT
3/26	Lloyd J. Branaugh	Knights of Columbus, Yankton	Program for meeting
4/2	Jack Ritts	Lacreek National Wildlife Refuge	Pick up surplus property
4/1,2	Robert Sharp	Regional Office	Discuss fish management
4/12-16	Delmar Robinson	Fisheries Management, Valentine, Neb.	Check winter kill on Lake Andes
4/12-16	Larry Vaughn	do	do
4/14	Harvey Miller	Northern Prairie Wildlife Research	Courtesy call
4/23	Lelan S. Key	Lacreek National Wildlife Refuge	Return borrowed tractor
4/26-27	Delmar Robinson	Fisheries Management, Valentine, Neb.	Seine minnows
5/3	Lyle Laberee	SCS Lake Andes	Proposed work on diversion ditch
5/3	Larry Krobirger	SCS Lake Andes	Courtesy Call
5/18	Rod Larsen	U.S.G.S.	Water analysis of Lake Andes
5/26	Dr. Norman Benson	Fisheries, Yankton	Courtesy Call
5/26	Lowell Hoffman	Fisheries, Yankton	Courtesy Call
'20	George Shurr	S.D. State Geological Survey	Artesian Well information
6/22	Claire Sudbeck	Gavins Point Fish Hatchery	Stocking of Bass fingerlings
7/2	Eley Dennison	Huron A.A.O.	Courtesy Call

OFFICIAL VISITORS LOG

DATE	NAME	ORGANIZATION	PURPOSE OF VISIT
7/12	Gerald T. Regan	Dept. of Zoology, University of Kansas	collecting Acris crepitans blanchardi
7/30	Kenneth Brown	RC&D SCS Lake Andes	Set gauge at artesian well
8/27	Marvin Lee	Lacreek Refuge	Check on availability of smokeless powder
9/3	Jim King	U.S. Civil Service Commission Sioux Falls	Personnel investigation
9/3	Paul A. Kern	States Attourney	Discuss law enforcement
9/7	Rod Larsen	U.S.G.S.	Water analysis on Lake Andes
9/7/	Ralph Blakburn	U.S.G.S.	do
9/7	Wilson Dent	Dept Game Fish and Parks, Platt	Assisting with Weber Case
9/16	A.T. Fillingham	SCS Lake Andes	Discuss grassland management of WMA'S
9/21	David Fisher	Agent in Charge, U.S.G.M.A. Pierre	Law Enforcement
9/21	Boner Law	U.S.G.M.A. Mitchell	Law Enforcement
9/22	George Jonkel	Huron AAO	Courtesy Call
10/4	Edward Smith	Regional Office	Refuge Inspection
12/9	Loren Bonde	U.S.G.M.A. Lincoln, Nebraska	Courtesy Call
12/9	Jay Gore	U.S.G.M.A. Trainee, Lincoln, Neb.	Courtesy Call
12/27	Buford Duepener	Tamarac Job Corps Center	Pickup Excess property

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE Lake Andes Refuge MONTHS OF January TO April, 19 65

(1) Species	(2) Weeks of reporting period: Week Ending	1/2	1/9	1/16	1/23	1/30	2/6	2/13	2/20	2/27	3/6
		1	2	3	4	5	6	7	8	9	10
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada		5,000	9,000	14,000	15,000	7,000	5,000	1,000	7,000	3,000	2,000
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard		30,000	50,000	98,000	60,000	135,000	55,000	50,000	200,000	200,000	140,000
Black											
Gadwall											
Baldpate											
Pintail											
Green-winged teal											
Blue-winged teal											
Cinnamon teal											
Shoveler											
Wood											
Redhead											
Ring-necked											
Canvasback											
Scaup											
Goldeneye								10	10	25	
Bufflehead										2	
Ruddy									1	1	
Other Merganser									1	15	
Coot:											

3 -1750a
Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Lake Andes Refuge MONTHS OF January TO April, 1965

(1) Species	(2) Weeks of reporting period: Week Ending 3/13 (11)	3/20 (12)	3/27 (13)	4/3 (14)	4/10 (15)	4/17 (16)	4/24 (17)	5/1 (18)	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:							*				
Whistling											
Trumpeter											
Geese:											
Canada	500	5,000	3,000	3,000	300	16			558,700		
Cackling											
Brant											
White-fronted		210		105	160				3,300		
Snow				36					250		
Blue				50					350		
Other											
Ducks:											
Mallard	50,000	15,000	20,100	5,800	25	182	100	50	7,764,700		
Black											
Gadwall						220	100	10	2,300		
Baldpate		4		2		125	50	10	1,300		
Pintail	5	75		6		54	30	10	1,250		
Green-winged teal					4	22	10		250		
Blue-winged teal						75	75	75	1,550		
Cinnamon teal											
Shoveler					15	522	450	400	9,700		
Wood											
Redhead	12	30	25	45	200	80			2,750		
Ring-necked	2			5	6	4			100		
Canvasback	10	30		20	100	205	125	50	3,800		
Scaup		1		3	500	5,040	2,500	150	57,350		
Goldeneye	30	30	11	70					1,300		
Bufflehead	2			10		430	200	25	4,700		
Ruddy	4			2		2,780	1,500	200	31,400		
Other Unidentified						150			1,050		
Merganser	1		225	250		1,880	800		22,200		
Coot:				7	56	510	350	250	8,200		

* No count made

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese	562,600	15,000	
Ducks	7,905,700	200,000	
Coots	8,200	510	
	8,476,500		

SUMMARY

Principal feeding areas harvested fields in Lake Andes, Wagner, Corsica, and Delmont areas; unharvested refuge fields; Lake Andes proper; and surrounding potholes.

Principal nesting areas

Reported by
Fred R. Rusch, Jr., Wildlife Technician

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.

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

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

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

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

Interior Duplicating Section, Washing D. C.
1953

INT.-DUP., D.C.-53824-59

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE Lake Andes Refuge MONTHS OF May TO August, 19 65

(1) Week Ending	5/8	5/15	5/22	5/29	(2) Weeks of reporting period 6/5	6/12	6/19	6/26	7/3	7/10
				4	5	6	7	8	9	10
					14		17	17	17	17
					1		1	1	1	1
				70	189	178	234	234	234	234
				10	126	126	126	126	126	126
				30	6	6	6	6	6	6
				10	10	10	22	22	22	22
					8	8	8	8	8	8
Green-winged teal	65	55	45	20	220	220	220	220	220	220
Blue-winged teal										
nnamon teal	300	200	100	10	4	4	4	4	4	4
oveler										
wood				40	12	12	12	12	12	12
Redhead										
Ring-necked	10	10	90							
Canvasback	130	110		60	60	48	61	61	61	61
Scaup										
Goldeneye	25	10								
Bufflehead	450	600	925	1170	70	20	71	71	71	71
Ruddy					2		2	2	2	2
Other Merganser										
Foot:	225	200	150	120	90	64	90	90	90	90

6/12 Calculated breeding population only.

6/19 thru 7/17 Breeding population plus non-breeders and young noted during breeding pair count.

7/24-8/28 Above plus additional calculated production, as determined by brood counts.

* No count made. ** Calculated breeding population only.

.3 -1750a
Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Lake Andes Refuge MONTHS OF May TO August, 1965

(1) Species	(2) Weeks of reporting period: Week Ending 7/17 (11)	7/24 (12)	7/31 (13)	8/7 (14)	8/14 (15)	8/21 (16)	8/28 (17)	18	(3) Estimated waterfowl days use	(4) Production: Broods seen	(4) Production: Estimated total
Swans:	*		*	*	*	*	*				
Whistling											
Trumpeter											
Geese:											
Canada	17	3	3	3	3	3	3		800		
Cackling											
Brant											
White-fronted	1								40		
Snow											
Blue											
Other											
Ducks:											
Mallard	234	384	384	384	384	384	384		30,800	19	
Black											
Gadwall	126	273	273	273	273	273	273		22,600	23	145
Baldpate	6	13	13	13	13	13	13		2,200		7
Pintail	22	21	21	21	21	21	21		2,100	1	11
Green-winged teal	6	17	17	17	17	17	17		1,100		9
Blue-winged teal	220	469	469	469	469	469	469		31,800	13	249
Cinnamon teal											
Shoveler	4	8	8	8	8	8	8		4,800		4
Wood			10	10	10	10	10		350		
Redhead	12	26	26	26	26	26	26		1,950		14
Ring-necked											
Canvasback									700		
Scaup	61	115	115	115	115	115	115		9,800		54
Goldeneye											
Bufflehead									250		
Ruddy	71	94	94	94	94	94	94		29,600		23
Other Merganser	2	2	2	2	2	2	2		100		
Coot:	90	154	154	154		154	154		15,550		90

* No count made.

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese	840	18	None
Ducks	138,000	1,950	718
Coots	15,550	225	90
	154,340		

SUMMARY

Principal feeding areas aquatic vegetation beds in Lake Andes and outlying potholes.

Principal nesting areas upland grass areas surrounding Lake Andes and in adjacent alfalfa and small grain fields.

Reported by David L. Olsen, 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).

Interior Duplicating Section, Washington, D. C.
1953

76242

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE Lake Andes Refuge MONTHS OF September TO December, 19 65

Week (1) Ending / Species	(2) Weeks of reporting period 1	2	3	4	5	6	7	8	9	10
	9/4	9/11	9/18	9/25	10/2	10/9	10/16	10/26	10/30	11/6
Swans:		*	*	*	*	*				
Whistling										
Trumpeter										
Geese:										
Canada	3						2	4		
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	150	150	150	150	250	1000	25,000	46,000	73,580	61,540
Black										
Gadwall	60	60	60	60	200	310	440	500	1,570	1,010
Baldpate	30	30	30	30	280	470	750	900	4,070	4,640
Pintail	30	30	30	30	250	30	30	30	30	860
Green-winged teal		20	20	20	20	20	30	30	30	60
Blue-winged teal	1,600	1,600	1,600	1,600	800	40	40	40	40	
Cinnamon teal										
Shoveler	300	300	300	300	360	290	200	150	30	1,070
Wood	20	20	20	20						
Redhead					30	60	80	150	1,300	1,180
Ring-necked					10	20	30	50	50	30
Canvasback					100	300	500	800	5,910	2,910
Scaup					50	100	300	750	3,890	8,360
Goldeneye										260
Bufflehead						20	50	100	850	2,690
Ruddy	150	150	150	150	150	100	50	500	2,370	3,940
Other Merganser									10	
Hooded Merganser					2500	2760	27,500	59,000	93,810	10
Coot	1,200	1,200	1,200	1,200	20,000	43,500	33,000	7,190	5,000	88,560 730

*No count made.

3 -1750a
Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Lake Andes Refuge MONTHS OF September TO December, 1965

(1) Species	(2) Weeks of reporting period: Week Ending 11/13 (11)	11/20 (12)	11/27 (13)	12/4 (14)	12/11 (15)	12/18 (16)	12/25 (17)	1/1 (18)	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:					*		*				
Whistling											
Trumpeter											
Geese:											
Canada	120	100	25	230	415	600	785	970	22,700		
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other Ross								1			
Ducks:											
Mallard	100,000	136,000	84,000	67,000	72,000	78,000	84,000	90,000	6,432,800		
Black											
Gadwall	500	100							34,100		
Baldpate	2,000	50				2			93,000		
Pintail						1			9,400		
Green-winged teal									1,700		
Blue-winged teal									51,500		
Cinnamon teal											
Shoveler	50								25,100		
Wood									500		
Redhead	1,000	250				7			29,000		
Ring-necked	130	30				1			2,400		
Canvasback	2,900	2,900							114,200		
Scaup	8,000	5,000				7			187,100		
Goldeneye	260	250				89			6,000		
Bufflehead	1,000	50				2			33,300		
Ruddy	1,000					1			61,000		
Other Merganser	160	370							3,800		
Hooded Merganser									100		
Coot:	117,000 500	145,000 150	84000 10			14			804,200		
*No count made.											

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese	22,700	970	
Ducks	7,085,000	145,000	
Coots	804,200	43,500	

SUMMARY

Principal feeding areas Lake Andes and harvested grain fields in Lake Andes, Wagner, Tripp, and Armour areas.

Principal nesting areas

Reported by David L. Olson

David L. Olson, 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).

Interior Duplicating Section, Washington, D. C.
1953

3-1750
Form NR-1B
(December 1956)

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, 1965

Reported by David L. Olson — Title Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type	(2) Habitat Acreage	(3)	(3) Use-days	(4) Breeding Population	(5) Production
North Unit	Crops	17	Ducks	110,300	112	127
	Upland	23	Geese	20,000		
	Marsh	150	Swans			
	Water	320	Coots	44,200	24	34
	Total	500	Total	174,100	136	161
Center Unit	Crops		Ducks	474,500	208	236
	Upland		Geese	19,500		
	Marsh	200	Swans			
	Water	2100	Coots	187,100	6	8
	Total	2300	Total	681,100	214	244
South Unit	Crops		Ducks	475,600	190	215
	Upland		Geese	43,100		
	Marsh	100	Swans			
	Water	1700	Coots	178,200	6	8
	Total	1800	Total	697,200	196	223
Owens Bay	Crops	228	Ducks	11,398,000	124	140
	Upland	86	Geese	638,100		
	Marsh	99	Swans			
	Water	315	Coots	222,200	28	40
	Total	728	Total	12,258,300	152	180
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
TOTALS	Crops	315	Ducks	12,458,300	634	718
	Upland	109	Geese	721,000		
	Marsh	549	Swans			
	Water	4435	Coots	632,000	64	90
	Total	5408	Total	13,811,300	698	808

(over)

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 waterfowl 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.

Interior Duplicating Section, Washington, D. C.
1956

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

MIGRATORY BIRDS
(other than waterfowl,

Refuge Lake Andes Refuge Months of January to April 1965

(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. Water and Marsh Birds:										
Double-crested cormorant	37	Apr 10	96	Apr 15						
Sandhill cranes	36	Apr 15	36	Apr 15	36	Apr 15				
Eared grebe	2	Apr 13	50	Apr 29						
Horned grebe	15	Apr 13	15	Apr 13	15	Apr 13				
Pied-billed grebe	5	Apr 13	20	Apr 29						
Western grebe	4	Apr 29	4	Apr 29						
Black crowned night heron	1	Apr 15	3	Apr 27						
Great blue heron	1	Apr 9	1	Apr 9						
White pelicans	25	Apr 12	95	Apr 27						
II. Shorebirds, Gulls and Terns:										
Avocet	3	Apr 17	3	Apr 17						
Marbled godwit	1	Apr 15	1	Apr 15	1	Apr 15				
Franklin's gull	1	Apr 29	450	Apr 30						
Ring-billed gull	3	Mar 21	Numerous by end of period							
Killdeer	5	Apr 7	Numerous by end of period							
Wilson's phalarope	50	Apr 29	Numerous by end of period							
Least sandpiper	2	Apr 1	Numerous by end of period							
Common tern	2	Apr 22	10	Apr 29						
Greater yellowlegs	5	Apr 1	5	Apr 1	5	Apr 1				
Lesser yellowlegs	1	Apr 29	Numerous by end of period							
Western willet	7	Apr 27	7	Apr 27	1	Apr 29				

(over)

(1)	(2)		(3)		(4)		(5)	(6)
II. Doves and Pigeons:								
Mourning dove	1	Apr 7	Numerous by end of period					
White-winged dove								
IV. Predaceous Birds:								
Golden eagle	1	Feb 26	2	Mar 18	1	Mar 30		
Duck hawk								
Horned owl	5	Present throughout period						
Magpie								
Raven								
Crow	50	Present throughout period						
Bald eagle	2	Jan 8	25	Mar 25	8	Mar 29		
Prairie falcon	1	Apr 13	1	Apr 13	1	Apr 13		
Duck hawk	1	Feb 24	1	Feb 24	1	Feb 24		
Marsh hawk	1	Feb 11	1	Mar 30				
Red-tailed hawk	2	Feb 4	2	Feb 4	1	Apr 4		
Rough-legged hawk	1	Jan 12	1	Mar 30	1	Mar 30		
Osprey	1	Apr 13	1	Apr 13	1	Apr 13		
Snowy owl	2	Jan 12	2	Jan 12	2	Jan 12		

Reported by Fred B. Bunch, Jr., Wildlife Technician

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 Gruiiformes)
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.

T.-DUP. SEC., WASH., D.C.

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

MIGRATORY BIRDS
(other than waterfowl,

Refuge Lake Andes Refuge Months of May to August 1965

(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. Water and Marsh Birds:										
American bittern	1	Jun 10	1	Jun 10	1	Jun 10				
Double-crested cormorant			118	Jun 10						
Eared grebe					2	Jun 10				
Pied-billed grebe			Numerous throughout period							
Western grebe			96	Jun 10						
Black crowned night heron			67	Jun 10						
Great blue heron			2	Jun 10						
Green heron	1	May 10	9	Jun 10	2	Aug 3				
White pelicans			300	May 3						
II. Shorebirds, Gulls and Terns:										
Avocet			11	May 10	11	May 10				
Dowitchers	25	May 2	25	May 2	6	Jul 18				
Hudsonian godwit	2	May 2	2	May 2	2	May 2				
Franklin's gull			Numerous throughout period							
Herring gull	2	Jun 10	2	Jun 10	2	Jun 10				
Ring-billed gull			Numerous throughout period							
Killdeer			Numerous throughout period							
Wilson's phalarope			Numerous throughout period							
Black-bellied plover	5	Aug 18	5	Aug 18	5	Aug 18				
Upland plover	1	Jun 4	1	Jun 4	1	Jun 4				
Spotted sandpiper	1	Jul 12	1	Jul 12	1	Jul 12				
Stilt sandpiper	2	May 4	2	May 4	2	May 4				
Pectoral sandpiper	4	Jul 18	4	Jul 18	4	Jul 18				
Snipe	1	May 4	1	May 4	1	May 4				
Black tern	20	May 13	Numerous throughout period							

(CONTINUED ON BACK)

(over)

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove			Numerous throughout period					
White-winged dove								
IV. Predaceous Birds:								
Golden eagle								
Duck hawk								
Horned owl			5	Present throughout period				
Magpie								
Raven								
Crow			10	Present throughout period				
Red-tailed hawk	1	Jul 20	1	Jul 20				
Swainson's hawk	4	May 30	4	May 30				
II. Shorebirds (Continued)								
Common tern			30	Jun 10				
Forster's tern	1	Jul 18	1	Jul 18	1	Jul 18		
Least tern	1	May 26			1	Jul 18		
Western willet			8	May 2	1	May10		
Lesser yellowlegs			Numerous throughout period					

Reported by David L. Olsen

David L. Olsen, Refuge Manager

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 Gruiiformes)
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.

INT.-DUP. SEC., WASH., D.C.

59317

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

MIGRATORY BIRDS
(other than waterfowl,

Refuge Lake Andes Refuge Months of September to December 1965

(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. Water and Marsh Birds:										
American bittern			1	Sept. 3	1	Sept. 28				
Double-crested cormorant			360	Oct. 5	5	Oct. 26				
Eared grebe					1	Nov. 5				
Horned grebe			9	Sept.28	4	Oct. 26				
Pied-billed grebe					12	Oct. 26				
Western grebe					2	Nov. 5				
Black-crowned night heron					2	Sept.28				
Great blue heron			12	Sept.10	2	Oct. 9				
Green heron					2	Sept.28				
Pelicans			600	Sept.24	1	Oct. 15				
II. Shorebirds, Gulls and Terns:										
Bonaparte's gull	2	Oct. 26	2	Oct. 26	2	Oct. 26				
Franklin's gull					30	Sept.28				
Ring-billed gull					1	Sept.28				
illdeer					1	Oct. 26				
son's phalarope					3	Oct. 9				
r yellowlegs					1	Sept.28				

(over)

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove								
White-winged dove					1	Oct. 20		
IV. Predaceous Birds:								
Golden eagle	1	Oct. 19	1	Dec. 7				
Duck hawk								
Horned owl	5	present throughout the period						
Magpie								
Raven								
Crow	10	present throughout the period						
Bald eagle	3	Nov. 29	3	Nov. 29				
Cooper's hawk	1	Sept.20	1	Sept.20	1	Sept.20		
Marsh hawk	1	Sept.28	1	Sept.28	1	Sept.28		
Red-tailed hawk					1	Sept.28		
Rough-leg hawk	1	Nov. 23	1	Nov. 23	1	Dec. 14		
Sparrow hawk	1	Sept.10	4	Sept.28	4	Sept.28		

Reported by Ward T. Allen

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 Gruiiformes)
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 to mber of the species using th efuge during the period concerned.

INT.-DUP. SEC., WASH., D.C.

59317

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Lake Andes Refuge Months of January to April, 1965

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	Cropland, grassland, marsh and herbaceous thickets 461 acres	2.3			1:5		None		50	A report was received that several pheasant hens died during the winter. Five carcasses were noted on the Refuge. Two hundred (200) birds were present on the Bergquist Tract until mid-April, making the wintering population 300 pheasants. At the end of the period, 50 birds remain on the Refuge.
Bobwhite Quail	do	46.1			1:1		None		10	No quail were noted during 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.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Lake Andes Refuge Months of _____ to August, 1965

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasants	Cropland, grassland, marsh, and herbaceous thickets 501 acres	8.3	1	30	1:5	None			60	The refuge population of adult birds normally decreases during the summer months.
Bobwhite Quail	do	50.1			1:1	None			10	Four observations of single quail reported during this period. No young observed.

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 Refuge Months of September to December, 19 65

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked pheasant	cropland, grassland, marsh, and herbaceous thickets 501 acres	16.7			1:5	none			30	Refuge population declined this period instead of increasing as in the past two years.
Bobwhite quail	do	50.1			1:1	none			10	A covey was observed twice on the south side of the South Unit.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

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

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Lake Andes Refuge Year ending April 30, 1965

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5) Total Population
								Share Trapping						
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator * Control	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	
Fox	Shoreline, 50 acres	12.5			1								1	4
Mink	Marsh, 60 acres	3.0		2				1-5057	1	1	1			20
Muskrat	do	.7												85
Raccoon	do	12.0												5
Striped skunk	do	12.0												5

* List removals by Predator Animal Hunter

REMARKS:

Reported by Fred R. Rusch, Jr., Wildlife Technician

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 headingslisted.

(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.

3-1755
Form NR-5

DISEASE

Refuge Lake Andes Refuge Year 1965

Botulism

Period of outbreak none

Period of heaviest losses _____

Losses:

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

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

Areas affected (location and approximate acreage) _____

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

Condition of vegetation and invertebrate life _____

Remarks _____

Lead Poisoning or other Disease

Kind of disease lead poisoning

Species affected Mallards

Number Affected Species	Actual Count	Estimated
Mallards		~~400~~

Number Recovered _____

Number lost _____

Source of infection Ingested shot some of which may have ~~been picked up near the artesian well~~

Water conditions ~~All water frozen except small area~~ near the artesian well

Food conditions Normal

Remarks The estimated loss has increased over previous years because of the number of mallard carcasses observed in the refuge fields during spring farming operations

INT.-DUP., D.C.- 53818-59

NR-6 **Bureau of Sport Fisheries and Wildlife**

PUBLIC RELATIONS

(See Instructions on Reverse Side)

Refuge Lake Andes Refuge Calendar Year 1965

1. Visits

a. Hunting 1210 b. Fishing 3527 c. Miscellaneous 388 d. TOTAL VISITS 5145

1a. Hunting (on refuge lands)

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl	None		
Upland Game			
Big Game			
Other			

Number of permanent blinds None

Man-days of bow hunting included above None

Estimated man-days of hunting on lands adjacent to refuge 206

1b. Fishing (area open to fishing on refuge lands)

TYPE OF AREA	ACRES	MILES
Ponds or Lakes	4447	
Streams and Shores		

1c. Miscellaneous Visits

Recreation 12 Official 108

Economic Use 268 Industrial

2. Refuge Participation (groups)

TYPE OF ORGANIZATION	On Refuge NO. OF GROUPS	On Refuge NUMBER IN GROUPS	Off Refuge NO. OF GROUPS	Off Refuge NUMBER IN GROUPS
Sportsmen Clubs			5	
Bird and Garden Clubs				
Schools				
Service Clubs				
Youth Groups	1	8		
Professional-Scientific				
Religious Groups				
State or Federal Govt.				
Other				

3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Press Releases		Radio Presentations	
Newspapers (P.R.'s sent to)	13	Exhibits	
TV Presentations		Est. Exhibit Viewers	

3-1756
(Rev. 4/63)

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

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS (1)

Refuge Lake Andes Refuge Year 1966

	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
Species	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
Eastern Red Cedar	385	R	4/29	S.C.S.	42.35	none	Shelterbelt 2	*	4 acre shelterbelt	385 trees	4/29	90%	
Nanking Cherry	205	R	4/26	S.C.S.	9.02	none	do	*		205 bushes	4/27	95%	
Chinese Elm	120	R	4/26	S.C.S.	9.66	none	do	*		120 trees	4/26	98%	
Native Wild Plum	260	R	4/26	S.C.S	11.44	none	do	*		260 bushes	4/26	98%	
Switchgrass	52	R	5/6	Farmers Co-op	70.20	none	Waterways and road shoulders	5 lbs/A	10 A	52 lbs. seed	5/6	none	Unknown
Western Wheatgrass	21	R	10/4	do	14.70	none	Spoil area	4 lbs/A	5 A	21 lbs. seed	10/6	Unknown	
Big bluestem	31	R	10/4	do	58.90	none	spillway channel north dike	6 lbs/A	5 A	31 lbs. seed	10/6	Unknown	

(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 Replacement on 4 acres

Remarks: * Replacement of trees that did not survive during 1964

76148

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

Fish and Wildlife Service ... of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Lake Andes Refuge County Charles Mix State South Dakota

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return Harvested		Government's Share or Return Unharvested		Total Acreage Planted	Green Manure, Cover and Water-fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Acres	Bu./ Tons	Acres	Bu. /Tons			
Corn	6	100			11	180	17		
Milo			5	120	138	3,945	143		
Corn			7	310	147	5,565	154		
						9,690	314		
								Fallow Ag. Land.	20

No. of Permittees: Agricultural Operations 2 Haying Operations ____ Grazing Operations ____

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	Grazing	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle	44	85.28	$136.45	131
				2. Other				
				1. Total Refuge Acreage Under Cultivation				334
Hay - Wild				2. Acreage Cultivated as Service Operation				317

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 thenumber 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 Unharvesed 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.

3-1570
NR-8a

REFUGE GRAIN REPORT

Refuge Lake Andes Refuge Months of January through December, 195

(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, ear	10	310	420			110	110	310		310	
Milo		120	120					120		120	

(8) Indicate shipping or collection points

(9) Grain is stored at refuge granary and a privately-owned crib near the refuge

(10) Remarks Milo harvested from Refuge fields to check yield. Corn harvested for goose and duck trapping operation

*See instructions on back.

16—61482-1

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.

16—61482-1 U S. GOVERNMENT PRINTING OFFICE

PEST PLANT CONTROL REPORT

Lake Andes Refuge, Calendar Year 1965

(To be inserted in the September-December Narrative Report.)

Plot No.	Acres	Species Treated	Growth Stage	Date of Treat.	Chem. or Method Used	Dilut. or Carrier	Rate Per Acre	Water Depth	Cost					% Kill last Observ.	Date last Observ.
									Material	Labor	Equipment	Total	Per Acre		
8	78	Pigweed Amaranthus retroflexus	6 inches	7/1	2-4-D 80% butyl ester	water	.226		14.60	34.54	15.00	64.14	.82	85%	10/27

INSTRUCTIONS ON REVERSE SIDE

Additional forms will be supplied by Regional Office upon request.

Remarks: Include any important information not given in above columns, including No. of years an area has been treated where repeated treatments have been made.

INSTRUCTIONS

1. Plot No: Number used to identify the area of infestation in the field and on maps.

2. Acres: Use decimals, not fractions.

3. Species Treated: Use common and scientific names. LIST ONE SPECIES - THE PRIMARY ONE.

4. Growth Stage: i.e., Bud, half leaf, full leaf, early flower, full flower, etc.

5. Date of Treatment: Dates applications were made, using a separate line for each area treated. If more than one treatment is made on the same area during the summer, a separate line is used for each application.

6. Chemical or Method Used: Show type of herbicide; i.e., 2,4-D ester, etc., also mechanical methods (mowing, plowing, burning etc.)

7. Diluent or Carrier: Show diluent or carrier used plus stickers, spreaders, etc.

8. Rate Per Acre: Give lbs. acid equivalent per acre - not lbs. of herbicide or total mix. Check the label for % of acid equivalent.

9. Water Depth: Give depth in inches.

10. Cost, Material: Include herbicide and carrier.

11. Cost, Labor: Take from Application form.

12. Cost, Equipment: Take from Application form.

13. Total Cost: Take from Application form.

14. Cost per Acre: Take from Application form.

15. % Kill: Show percent dead plants with no regrowth showing at last observation.

16. Date Last Observation: Last date plants were checked following mechanical treatment or application of herbicide. If the same area is treated more than once during the same season, a new entry should be made on a separate line for each separate treatment. If the same area has been treated for several years, this should be shown in the space for remarks, giving the number of years the area has been treated.

The north dike spillway completed except for the placement of rip rap in September 1964. Oct 64-11-PSS Yashica 120

Heavy June rains in the Corsica area filled the North Unit and water flowed through the spillway into the Center Unit for the first time on July 1. Aug 65-(no number)-DLO Yashica 120

Quarters # 21 in September 1964. The cost of renovating the inoperative sewage system was deemed prohibitive so the building was sold for $256.00. Sep 64-1A-PSS Yashica 120

The house was dismantled and salvaged material was sold. This is the same area as above after the building was removed and the site cleaned and leveled. Sep 65-10-D10 Yashica 120

This corn, in field 6, yielded 48 bushels per acre. Production was greatly reduced by hot, dry weather during late July and August. Aug 65-B-RHT Yashica 120

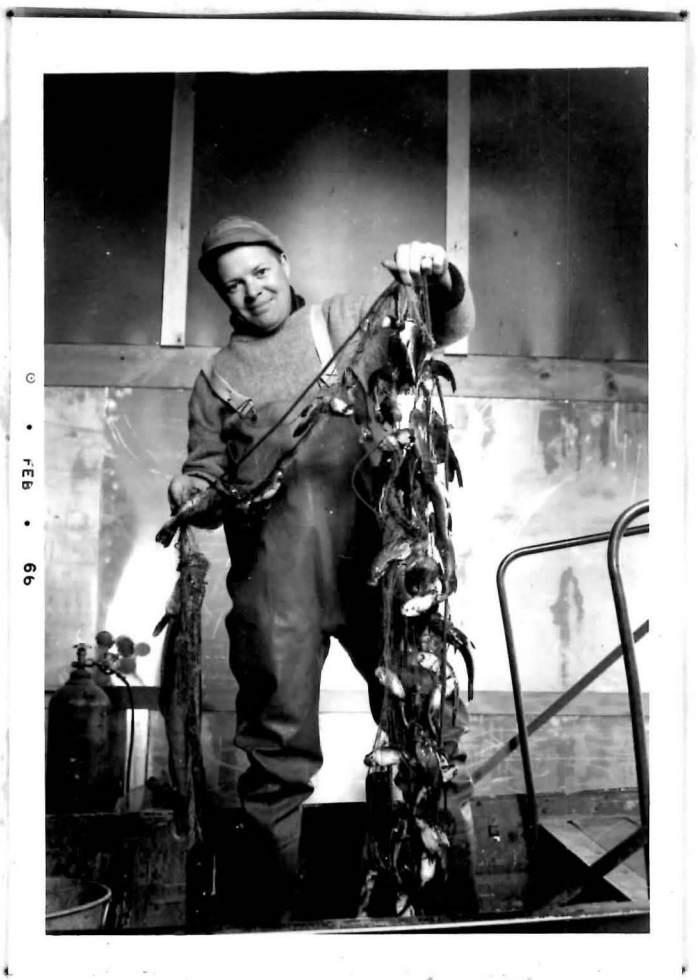
Local residents windrowed snow on approximately 200 acres of the South Unit so sunlight would penetrate the ice. They felt this would raise the oxygen level of the water. A road patrol broke through the ice and the project was discontinued.
Feb 65-C-PSS Yashica 120

⊙ • FEB • 66

Strings of northern pike such as this were common during June. The fish weighed from 2½ to 3½ pounds. Aug 65-3A-DLO Petri 35

⊙ • FEB • 66

These northerns were gill netted on the Center Unit during the spring check. The average weight was 3.1 pounds. The largest fish weighed 5 pounds. Apr 65-1-RHT Nikon 35



Many hours were spent removing bullheads from the gill nets. Fisheries Management Biologist Delmar Robinson displays a sample of the tangled mess. Apr 65-6-RHT Nikon 35

FEB • 66

Flocks of mallards such as this departed from Owens Bay morning and evening to feed in harvested fields. Dec 65-6A-DLO
35mm Pentax w/135mm telephoto

Golden eagles were often seen harassing mallards. This mallard was caught out of a flying flock. The eagle landed and proceeded to tear away at the feathers of the bird. However, the mallard managed to escape. This photo shows the eagle attempting to catch the running mallard. Dec 65-4-DLO
35mm Pentax w/300mm telephoto

WATERFOWL PRODUCTION AREAS

NARRATIVE REPORT

January 1 through December 31, 1965

C O N T E N T S

I. GENERAL

A. Status of Acquisition Program.

The waterfowl production areas in the southeastern 26 counties of South Dakota are managed by personnel of the Lake Andes Refuge. Of the 26 counties, 20 have land which is under easement and 16 have land which has been purchased by fee title.

At the end of this reporting period, a total of 4,883.84 acres have been purchased by fee title, and easements have been taken on 212,170.33 acres. Figure I indicates acreages of fee title and easement lands by county.

The Area Acquisition Office in Huron, South Dakota, has indicated that only approximately 45 percent of the delineated areas have been acquired. Thus, the wetland acreage under jurisdiction of this office will undoubtedly double within the next few years. The work load of the wetland manager will increase correspondingly and additional personnel and funds will be required.

B. Weather Conditions.

The only official weather station in this county is located at Pickstown, South Dakota. Data from that station are recorded in the refuge narrative report.

C. Habitat Conditions.

Indications of water and habitat conditions were obtained from most of the areas in conjunction with inspections made throughout the reporting period. Table I indicates acreage and water conditions in each waterfowl production area.

TABLE I

Summary of Waterfowl Production Areas - Lake Andes Refuge

Tract	Date Checked	Water Conditions	Habitat Conditions	Total Acres	Acres Cropland	
Aurora County						
Althen				160.00	70	*
Lutz	9/22	Dry	Slough farmed.	160.00	72	**
Schute	9/22	Dry	One dugout had water.	147.49	3	*
Scott	6/29	Dry	Choked w/cattail.	112.00		
Bon Homme County						
Roth				51.00	1	*

TABLE I (Continued)

Tract	Date Checked	Water Conditions	Habitat Conditions	Total Acres	Acres Cropland	
Beadle County						
Boomsma-Paegler	9/23	Dry	Heavily overgrazed.	110.31		
Reed-Ochsner	11/17	Dry		50.00		**
Marshall	11/17	Dugout water		50.00		**
Rupple	11/17	Dry		57.72		
Brule County						
Buffalo County						
Charles Mix County						
Koupal	Dec.	Dry	Overgrazed.	160.00	18	**
Sherman	Nov.	Good	Excellent waterfowl use.	191.00	19	*
Clay County						
Davidson County						
Kurtenbach	Fall	Dry		72.00	26	*
Vogel	Sep.	Excellent	Good waterfowl use.	42.50	20	**
Zehnpfenning	Sep.	Excellent	Good waterfowl use.	30.00	19	**
Douglas County						
Dubes	Dec.	Excellent	Good aquatic growth.	81.30		**
Hubers-Niewenhuis-Nydam-Van Zee	Dec.	Excellent	Excellent waterfowl use.	334.00	45	**
Star	Dec.	Excellent	Good aquatic growth.	156.73	104	**
Hand County						
Cahalan	Fall	Dry	Choked w/cattail.	355.96		
Muellenberg				80.00		*
Public Land				40.00		
Public Land				40.00		
Hanson County						
Boggs	10/65	Dry		240.00	75	**
Hughes County						

TABLE I (Continued)

Tract	Date Checked	Water Conditions	Habitat Conditions	Total Acres	Acres Cropland	
Hutcheson County						
Henke				20.00	2	
Hyde County						
Jerauld County						
Hoarty				10.00		**
Kraft		Dry		12.20		
Public Land		Excellent		40.00		
Winter	June	Excellent		80.00		
Lake County						
Bickett	Fall	Dry		45.60	25	
Buseman	6/11	Dry	Overgrown w/vegetation.	22.44	2	
Crandall	Nov.	Good		65.00	50	*
Demaray	6/11	Good		46.00	15	
Fischer	July	Some water		15.00	7	**
Fuglsby				60.00	26	*
Glatz	6/11	Dry	Overgrown w/vegetation.	59.00	20	
Noordsy	7/29	Good	Excellent interspersion of emergents and aquatics.	60.00		
Lincoln County						
McCook County						
Janssen	Oct.	Low water		40.00	25	**
Janssen	Oct.	Low water		160.00	62	**
Roth				17.85	3	*
Sabers				20.00	3	**
Urell				60.00	26	**
Miner County						
Hein	Dec.	Excellent		160.00	86	**
Public Land	Dec.	Excellent		40.00		
Raesley	June	Good		160.00		**
Sullivan	July	Good		49.87	9	**
Windedahl	June	Poor	Choked w/emergent vegetation.	162.00		**
Minnehaha County						
Acheson	Sep.	Dry		70.10	32	*
Fensterman				65.50	8	*
Van Der Vliet		Mostly dry		25.10	8	*
Voelker-Voelker				48.00	12	*

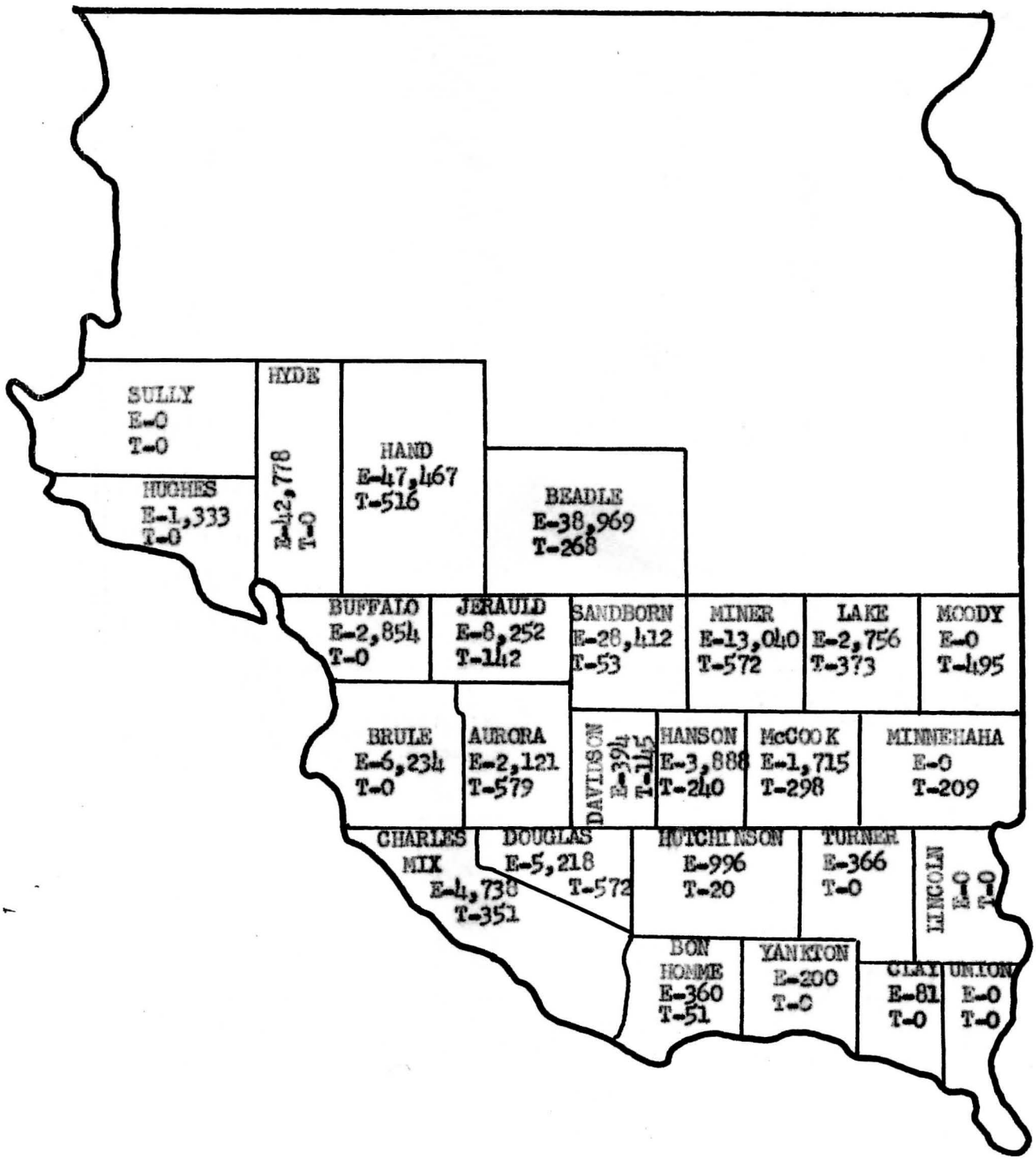
TABLE I (Continued)

Tract	Date Checked	Water Conditions	Habitat Conditions	Total Acres	Acres Cropland	
Moody County						
Huebner-Petsch	July	Good		116.00	8	
Jensen				56.00	10	**
Long-Strenge	June	Good		113.00		**
Nelson				40.00	5	*
Reaves-Reaves-Toates-				170.17	35	**
Sanborn County						
Johnson	July	Dry	Overgrown w/weeds.	53.00		
Sully County						
Turner County						
Union County						
Yankton County						
Totals 65 Tracts				4,883.84	951	

* Use reservation expires December 1966.
** Use reservation expired December 1965.

FIGURE I

Land Acreages Under Jurisdiction of the Lake Andes Refuge



E-Acres Under Easement
T-Acres Fee Title Land

II. WILDLIFE

A. Migratory Birds.

1. Waterfowl.

The wetland program is relatively new in southeast South Dakota. Therefore, it is difficult to compare this year's waterfowl use with that of previous years. Breeding pair, brood, and transect censuses conducted this year will be the basis to determine changes in future years.

Breeding pair counts were conducted in Beadle, Miner, and Lake Counties by Biologists Eley Denson and Kent Olson of the Huron Area Acquisition Office. Pair count data are summarized in Table II.

TABLE II

Breeding Pair Counts on WPA's in Miner, Lake, and Beadle Counties - 1965

Tract	Date	Mallard		BW Teal		Gadwall		Other		Coot
		Pr	M	Pr	M	Pr	M	Pr	M	
Bickett	6/11		2	1	2					5
Boomsma	6/1							1	1	
Buseman	6/3	Dry								
Demaray	6/11	2	3	1	2	1		2	2	5
Glatz	6/3	Thickly overgrown with emergents								
Hein	6/3				1	1				
Marshall	6/1	Dry								
Noordsy	6/11				2		1	5	3	3
Raesley	6/3			2		1	1			
Reed	6/1	One inch of water								
Rupple	5/25		1		1		3	2	6	
Sullivan	6/3	1	4	10	3	3	4	2	6	3
Windedahl	6/3	No open water; thickly overgrown with emergents								

On June 24, a waterfowl breeding pair count was conducted on a 32 mile transect located in the northern part of Charles Mix County and extending into Douglas County. According to State Game Warden Leslie Nelsen, this transect was surveyed during the 1950's and in 1960. Only data from the 1960 census could be located.

In addition to the number of breeding pairs and lone males observed within one-eighth mile of the road, the number of coots, pheasants, and water areas were also recorded. Table III summarized these data.

TABLE III

Breeding Pair Counts on Douglas-Charles Mix Counties Transect 1960 and 1965

Species	1960 Pairs	1960 Males	1965 Pairs	1965 Males
Mallard	4	23	1	16
Gadwall	5	2	11	6
Baldpate			1	
Pintail	11	17	1	1
GW Teal		2		8
BW Teal	43	44	33	38
Shoveler	5	19	6	
Total Dabblers	68	107	53	69
Ring-necked	2	3		
Canvasback		1		
Scaup	2	3		2
Ruddy				1
Total Divers	4	7	0	3
Total Ducks	72	114	53	72
Coots			7	
Pheasants			30	
Water Areas	87		30	

No intensive efforts were made to conduct systematic brood counts by personnel of this station. However, Biologists Olson and Denson attempted to conduct brood counts in the Miner and Lake County areas. They reported that the majority of the areas had dense emergent vegetation, thus making observation extremely difficult.

Migrant blue-winged teal were first noted during the last week of August on several of the tracts in Douglas and Davidson Counties. On September 3, the day before the opening of the experimental early teal season, approximately 1,500 blue-winged teal were observed on the Star WPA in Douglas County. An additional 1,000 ducks, comprised primarily of ruddies, gadwalls, and pintails, were also present.

Only light hunting pressure was exerted on these birds during the early teal season, and they remained on the small wetland areas throughout the month of September. On September 8, approximately 700 ducks, of which 75 percent were teal, were observed on the Dubes WPA.

Mallards, teal, ring-necked, and gadwall remained on the small wetland areas throughout most of October.

Larger areas afforded resting places for large concentrations of migrant mallards. On November 17, after the close of the regular duck hunting season, 7,500 mallards were in an open area in the ice on the New Holland Tract.

By the first of December, most of the waterfowl had departed from the small wetland areas and had congregated along the Missouri River.

2. Waterbirds and Shorebirds.

Western willets, Wilson's phalaropes, and lesser yellowlegs were observed on an easement area in Hyde County during June. A Wilson's snipe, 20 least sandpipers, and 2 lesser yellowlegs were observed on the Boomsma-Paegler WPA during September.

On September 3, 15 sora rails were observed in a small, marshy area on the New Holland WPA. Obviously, this was the peak of their migration. Wilson's snipe were common on the Star and Dubes Tracts during September and October.

3. Doves.

For the third consecutive year, refuge personnel conducted dove coo counts on two routes. Route 181R is located in northern Charles Mix County and Route 271R is in western Aurora County. The data were forwarded to USGMA Fisher for compilation.

B. Upland Game Birds.

Thirty-five pheasants were observed on the Johnson WPA in Sanborn County during September. Pheasants were also noted on the Cahalan, Dubes, Sherman, Koupal, Noordsy, and Fisher Tracts. No doubt, every waterfowl production area supports some wintering populations of pheasants. In many localities, these are the only areas which contain suitable winter cover.

During the Christmas bird count in Charles Mix County, 9 bobwhite quail, 26 pheasants, and 64 prairie chickens were recorded.

C. Big Game Animals.

Sixteen white-tailed deer were observed on the Toates WPA in June. Deer use was also reported on the Cahalan, Johnson, and Scott WPA's.

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

Raccoon sign was noted on almost all tracts which contained water. Mink tracks were observed on the Boomsma-Paegler Tract. Muskrat houses were numerous on the Dubes, Noordsy, and Fisher Tracts.

E. Hawks, Eagles, Owls, Crows, Ravens, and Magpies.

A great horned owl was observed on the Dubes Tract on May 26. Burrowing owls were considered common in Hyde County during July.

Migrant crows, in flocks of thousands of birds, were noted in the area east of Platte, South Dakota, on October 4.

Two prairie falcons, a Krider's red-tailed hawk, and a Cooper's hawk were observed during the Christmas bird count in Charles Mix County. In addition, 72 adult bald, 4 adult golden, 1 immature golden, and 45 unidentified eagles were observed.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development.

A three strand, barbed wire fence was constructed on the Boomsma-Paegler Tract in Beadle County. The 2.07 miles of fence was built by a former land owner under informal contract at the rate of $.70 per rod. The Refuge furnished all materials. The total cost of the fence was $1,327.98, or $641.23 per mile.

A three strand, barbed wire fence was built on the Noordsy WPA by Mr. Normal Fischer. The labor for this 280 rod fencing project was also under informal contract at the rate of $.70 per rod. The total cost of the fence was $552.95, or $631.94 per mile.

A purchase order was issued to Mr. Walter Jost, Wessington Springs, South Dakota, for the construction of approximately 82 rods of fence on the Winter WPA, Jerauld County. The fence was not completed by the end of the reporting period.

Refuge personnel constructed .12 mile of fence on the Dubes WPA, which is located 13 miles north of the refuge building site. The total cost of this short fence was $101.59, or $846.58 per mile.

Comparative costs clearly indicate that fences on WPA's should not be constructed by refuge personnel. It is more economical and practical to contract the work to local residents at $.70 per rod. All materials are furnished by the Refuge.

B. Plantings.

3. Upland Herbaceous Plants.

The seeding of native grasses on the Petsch-Huebner WPA was not accomplished because a heavy weed growth developed by late summer. The 8 acre area was disced by Mr. George Schmidt under informal contract in an attempt to control the weeds.

During 1966, this office will recommend the planting of oats on all land which was in cropland last year. When native grass seed is available, it will be planted either at the same time as the small grain or in the stubble in the fall. Sweet clover may be established when the lack of funds prohibits the planting of native grasses.

4. Cultivated Crops.

Fifty-seven percent of the tracts had land use reservations through December 1965 or later. Therefore, no crops were grown on any of the WPA's under cooperative agreement this year.

IV. RESOURCE MANAGEMENT

C. Fur Harvest.

Trapping was permitted on all of the waterfowl production areas. Only a few reports were received regarding trapping success. Approximately 60 muskrats were harvested from the Noordsy Tract by a farmer who posted the land with "Exclusive Trapping Rights" signs. He was advised that these areas are open to the public and no exclusive rights could be granted.

Two trappers from Pickstown, South Dakota, trapped 125 muskrats on the Dubes WPA. They received $.90 in the round for the skins.

A mink and a raccoon were trapped on the Boomsma-Paegler Tract.

VI. PUBLIC RELATIONS

D. Hunting.

Local and migrant blue-winged teal and an occasional green-winged teal provided excellent hunting throughout the special teal season. Few hunters failed to bag their limit of 4 teal during the first weekend.

An inspection of some of the small wetland areas in Douglas and Charles Mix Counties on September 3 revealed that broods were still present. A brood of Class IIC ruddies was observed on the New Holland Tract. In addition, several broods of Class III gadwalls were observed.

Believing that many of these broods would be "gunned down" on the water and then examined for species identification, refuge personnel were concerned about the outcome of the special teal season.

The regular duck hunting season was also considered excellent in this area. With the one mallard and one pintail limit in effect, hunters had to use caution when "flock shooting". Concentrations of up to 1,500 mallards remained on the Dubes Tract throughout the hunting season.

Refuge personnel locally publicized snipe hunting. Wilson's snipe were abundant on the small wetland areas. Considerable local interest was noted.

E. Violations.

All refuge personnel engaged in spy blind activity during the opening weekend of the special teal season. For the most part, extreme caution was exhibited by hunters in the Charles Mix, Douglas, and McCook County areas. The only violation was the illegal possession of gadwalls, which was reported in the refuge narrative report.

A post season check of some of the small wetland areas revealed a few dead female mallards. This was expected.

EASEMENT PROGRAM

At the close of this reporting period, this office had jurisdiction of 212,170.33 acres of land under easement. Due to the distance between many of these areas, an annual aerial inspection was conducted on November 17-18. Pilot Biologist Winship, Wildlife Biologist Town, and Refuge Manager Olsen made the flight. Approximately 10 hours flying time were required. At an altitude of approximately 3,000 feet, three sections on either side of the aircraft could be examined.

No burning violations were noted. In the 26 counties checked, only three burned tracts were noted. Burning does not appear to be a problem in this area.

Aerial photographs were taken of fresh plowing around a pothole in Bon Homme County. A check from the ground disclosed that the terms of

the easement had been violated. The problem was discussed with the easement grantor, and he agreed to fill the ditch. This was the only violation observed.

In addition to checking for violations, a check of water conditions on the easements was also conducted. In summary, it was noted that 55 percent of the areas were dry, 25 percent had water on them in the form of man made dugouts, and 19 percent had water in natural basins.

A similar check in the spring would undoubtedly show a considerably larger percentage of the potholes with water in natural basins.

SIGNATURE PAGE

Submitted by:

(Signature)

David L. Olsen

Refuge Manager

Title

Date: February 11, 1966

Approved, Regional Office:

Date: _____

_____

(Signature)

Regional Refuge Supervisor

PEST PLANT CONTROL REPORT

Lake Andes Wetlands Refuge, Calendar Year 1965
(To be inserted in the September-December Narrative Report.)

Plot No.	Acres	Species Treated	Growth Stage	Date of Treat.	Chem. or Method Used	Dilut. or Carrier	Rate Per Acre	Water Depth	Cost: Material	Cost: Labor	Cost: Equipment	Cost: Total	Cost: Per Acre	% Kill Last Observ.	Date last Observ.
Johnson WPA	1	Leafy Spurge (Euphorbia esula)	seeding	Oct.10	Trysben	water	20lbs/acre with 100 gals water per acre		59.50	10.24	[illegible]	$69.74	$69.74		

INSTRUCTIONS ON REVERSE SIDE

Additional forms will be supplied by Regional Office upon request.

Remarks: Include any important information not given in above columns, including No. of years an area has been treated where repeated treatments have been made.

INSTRUCTIONS

1. Plot No: Number used to identify the area of infestation in the field and on maps.

2. Acres: Use decimals, not fractions.

3. Species Treated: Use common and scientific names. LIST ONE SPECIES - THE PRIMARY ONE.

4. Growth Stage: i.e., Bud, half leaf, full leaf, early flower, full flower, etc.

5. Date of Treatment: Dates applications were made, using a separate line for each area treated. If more than one treatment is made on the same area during the summer, a separate line is used for each application.

6. Chemical or Method Used: Show type of herbicide; i.e., 2,4-D ester, etc., also mechanical methods (mowing, plowing, burning etc.)

7. Diluent or Carrier: Show diluent or carrier used plus stickers, spreaders, etc.

8. Rate Per Acre: Give lbs. acid equivalent per acre - not lbs. of herbicide or total mix. Check the label for % of acid equivalent.

9. Water Depth: Give depth in inches.

10. Cost, Material: Include herbicide and carrier.

11. Cost, Labor: Take from Application form.

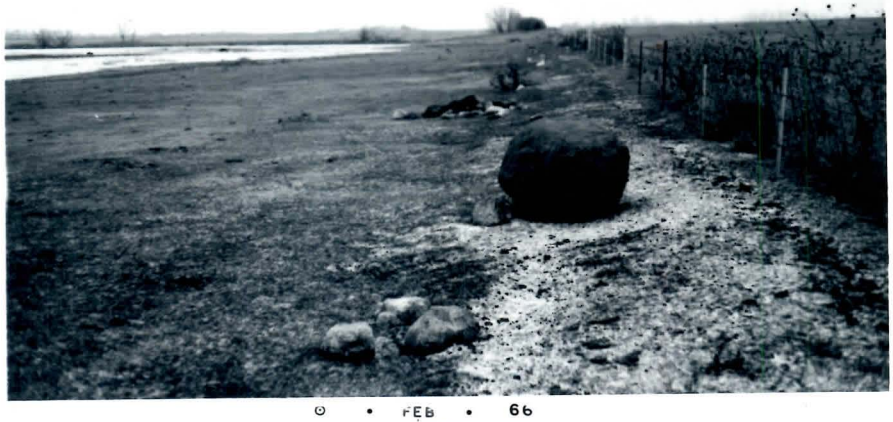
12. Cost, Equipment: Take from Application form.

13. Total Cost: Take from Application form.

14. Cost per Acre: Take from Application form.

15. % Kill: Show percent dead plants with no regrowth showing at last observation.

16. Date Last Observation: Last date plants were checked following mechanical treatment or application of herbicide. If the same area is treated more than once during the same season, a new entry should be made on a separate line for each separate treatment. If the same area has been treated for several years, this should be shown in the space for remarks, giving the number of years the area has been treated.



⊙ • FEB • 66

The Dubes WPA, Douglas County, is typical of the areas purchased. Former land owners take as much from the land as they possibly can before the use reservation expires. Dec 65-6A-DLO
35mm Pentax

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Dubes WPA Dec-65-3A-DLO 35mm Pentax

Turning cattle into a marshy area late in the growing season often opens the area for waterfowl use. This photo was taken in Lake County near the Noordsy WPA. Sep 65-8-DLO
Yashica 120

Violation of an easement. The ditch (1) drains the marsh area. Arrows indicate direction of flow. A violation such as this was clearly evident from an altitude of 3,000 feet.
Nov 65-12-RHT Nikon 35

This gadwall, mistaken for a cinnamon teal during the special teal season, still had undeveloped primaries. The hunter stated that the bird was about 5 feet in the air, just taking off, when it was shot. Sep 65-3-RHT Yashica 120

© • FEB • 66

Biologist Town displays a limit of blue winged-teal and a Wilson's snipe bagged on the Star WPA. Sep 65-17-DLO 35mm Pentax

A limit of Wilson's snipe harvested on the Star WPA, Douglas County. Oct 65-3-RHF Yashica 120