

VALENTINE

NARRATIVE REPORT

January-December 1966

NARRATIVE REPORT
VALENTINE NATIONAL WILDLIFE REFUGE
VALENTINE, NEBRASKA

1966

P E R S O N N E L

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I. GENERAL

A. Weather Conditions

TABLE 1

	<u>Month</u>	<u>Precipitation</u>		<u>Max. Temp.</u>	<u>Min. Temp.</u>
		<u>Normal</u>	<u>Snowfall</u>		
January	<u>.33</u>	<u>.62</u>	<u>5.5</u>	<u>55</u>	<u>-17</u>
February	<u>.50</u>	<u>.56</u>	<u>6.5</u>	<u>46</u>	<u>-8</u>
March	<u>.46</u>	<u>1.09</u>	<u>3.0</u>	<u>74</u>	<u>0</u>
April	<u>1.21</u>	<u>2.20</u>	<u>8.0</u>	<u>75</u>	<u>10</u>
May	<u>1.04</u>	<u>3.36</u>	<u> </u>	<u>91</u>	<u>28</u>
June	<u>5.54</u>	<u>4.00</u>	<u> </u>	<u>91</u>	<u>43</u>
July	<u>4.01</u>	<u>2.91</u>	<u> </u>	<u>102</u>	<u>46</u>
August	<u>4.97</u>	<u>2.55</u>	<u> </u>	<u>91</u>	<u>43</u>
September	<u>3.62</u>	<u>1.78</u>	<u> </u>	<u>87</u>	<u>39</u>
October	<u>.88</u>	<u>1.07</u>	<u> </u>	<u>83</u>	<u>23</u>
November	<u>.21</u>	<u>.55</u>	<u> </u>	<u>74</u>	<u>6</u>
December	<u>.50</u>	<u>.43</u>	<u>7.5</u>	<u>61</u>	<u>-3</u>
Annual Totals	<u>23.27</u>	<u>21.12*</u>	<u>30.5</u> Extremes	<u>102</u>	<u>-17</u>

*Average computed for years 1936 through 1966.

Precipitation for the year was approximately two inches above normal. However, the major portion of the precipitation was received during the months of June through September, causing a very dry spring and fall.

January - April: Temperatures were near normal, with little precipitation. The two major blizzards which caused so much damage and livestock loss in the Dakotas were felt here, but with only a small amount of snow received, were not too severe.

May - August: With only 1.04 inches of precipitation received during May, compared to a normal 3.36 inches, it was feared the summer would

be very dry. During June, however, 1.54 inches more rainfall than normal was received, and during July and August an additional 3.52 inches above normal was recorded, providing excellent moisture conditions during the major portion of the growing season.

September - December: The fall months were exceptionally mild, with the first below zero reading on December 23. Although precipitation for the period was rather light with the exception of the first week of September, ground moisture conditions were good.

B. Habitat Conditions

1. Water: Ice on the lakes began going out on March 14, and by March 18 most lakes were ice-free. A brief freeze-over occurred again during the March 23 storm, but lakes were soon open for good.

Excellent spring water conditions were experienced during 1966. At the time the ice went out, potholes were full, and numerous sheet water areas were appearing in the meadows. Peak water levels occurred in late March and early April, fully a month before the peak of last year. Thus, conditions were excellent upon the arrival of breeding ducks. The earlier peak water levels no doubt precluded any appreciable nest flooding and were conducive to improved nesting success.

Spring water release was again necessary in Dewey Lake. Water was barely topping the spillway on March 25, when stop logs were pulled. Nearly two months of water release were required to bring Dewey down to operating level.

Figures 1 and 2 give a comparison of current and past water levels in four representative lakes.

The usual decline in water levels occurred during the hot summer months, but lakes rose again when evaporation ceased. Thus, water levels at year's end were running approximately six inches above recent normals. All indications point to another good year to come. Release of excess water may be necessary at several locations.

Winter freeze-up began on November 1. However, lakes were alternately ice-covered and open due to erratic temperatures. Complete freeze over did not occur until late December.

2. Food and Cover:

Aquatic Foods - Aquatic vegetation transects were not run this year. Data gathered annually since establishment of the transects

Average 5 year water levels (1961-1965)
as compared with 1965 and 1966 water levels.

— 1966
— 1965
— 5 yr. Mean
(1961-1965)

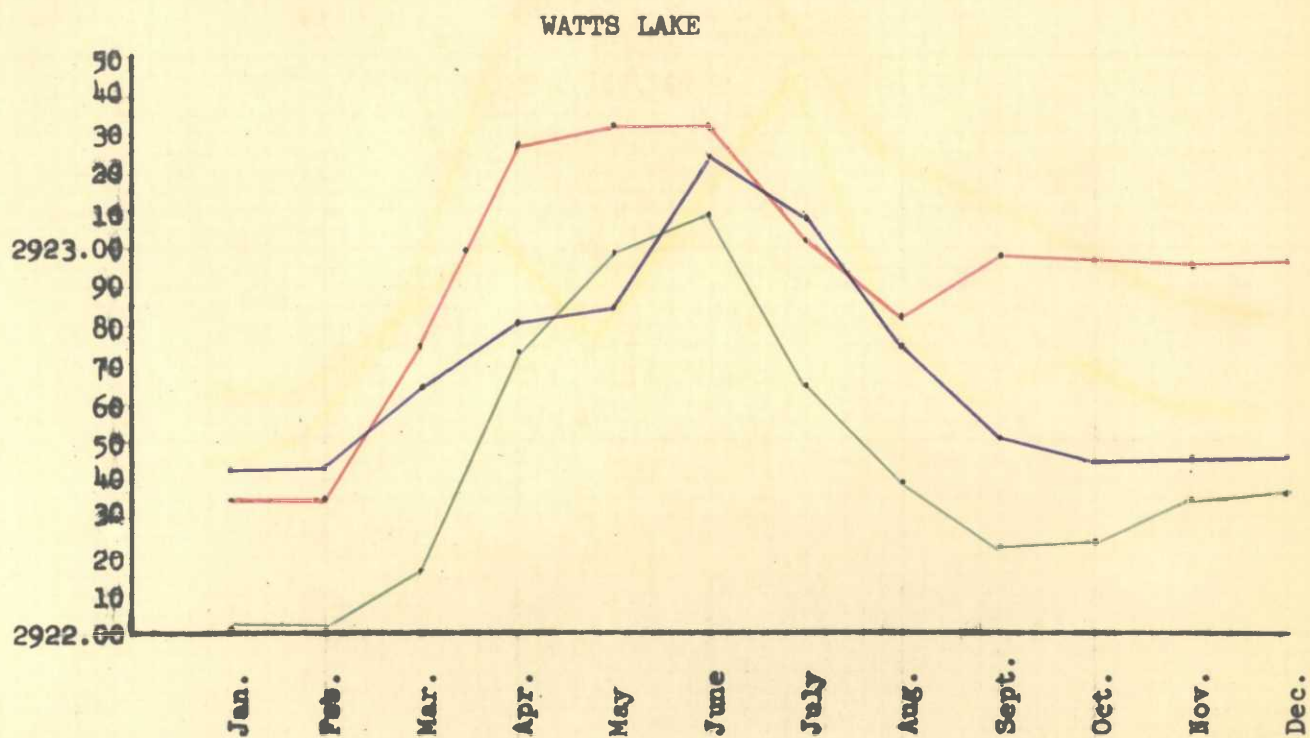
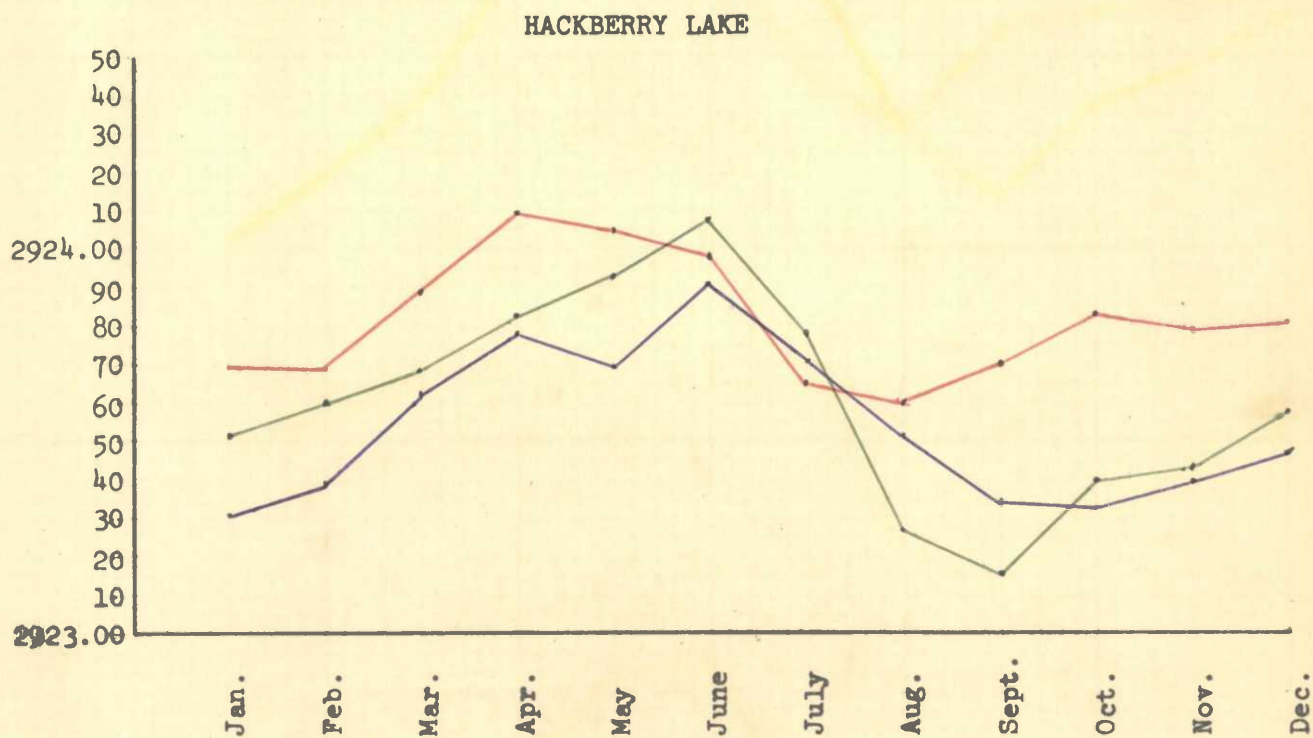


Figure 1.

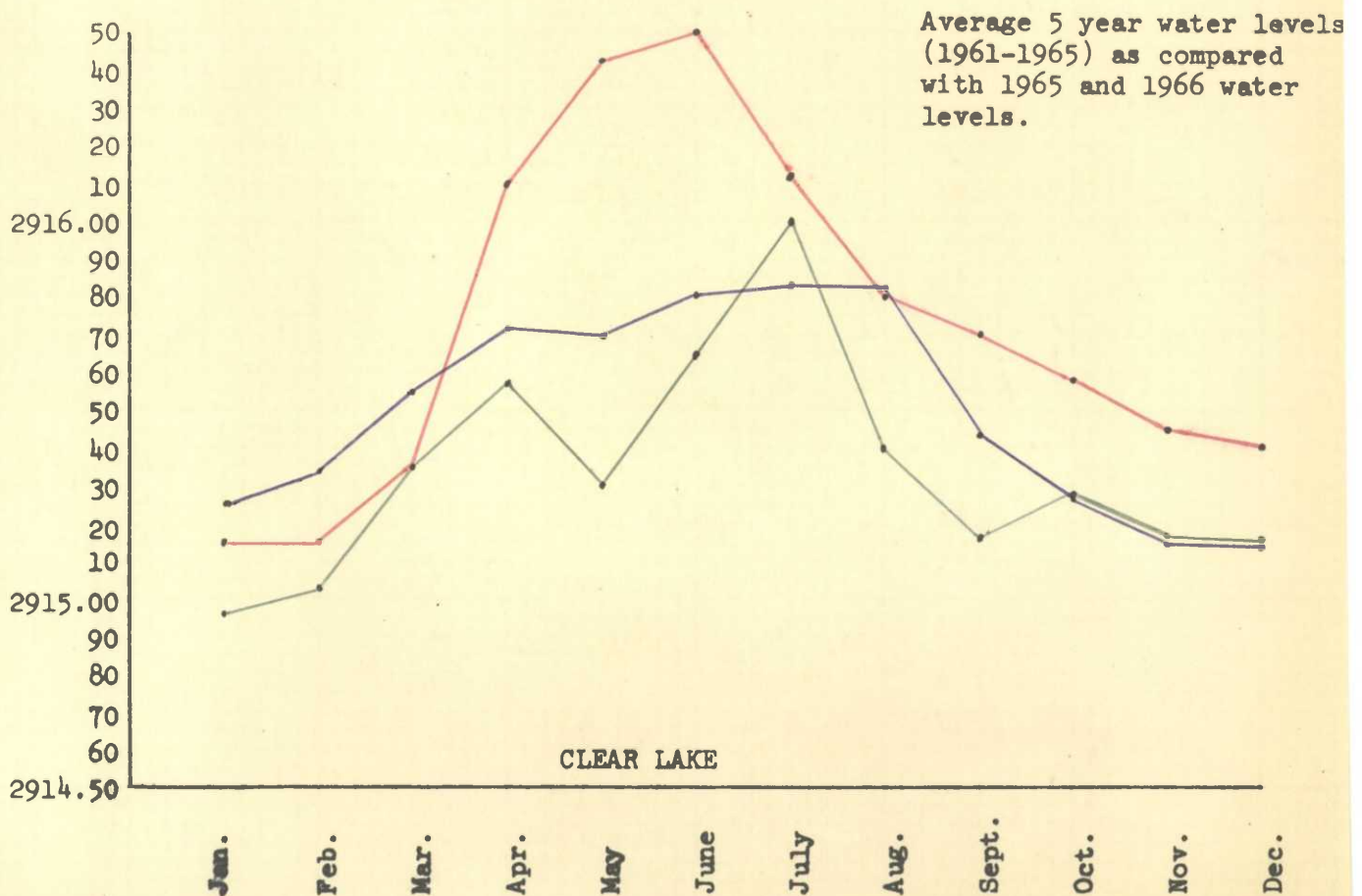
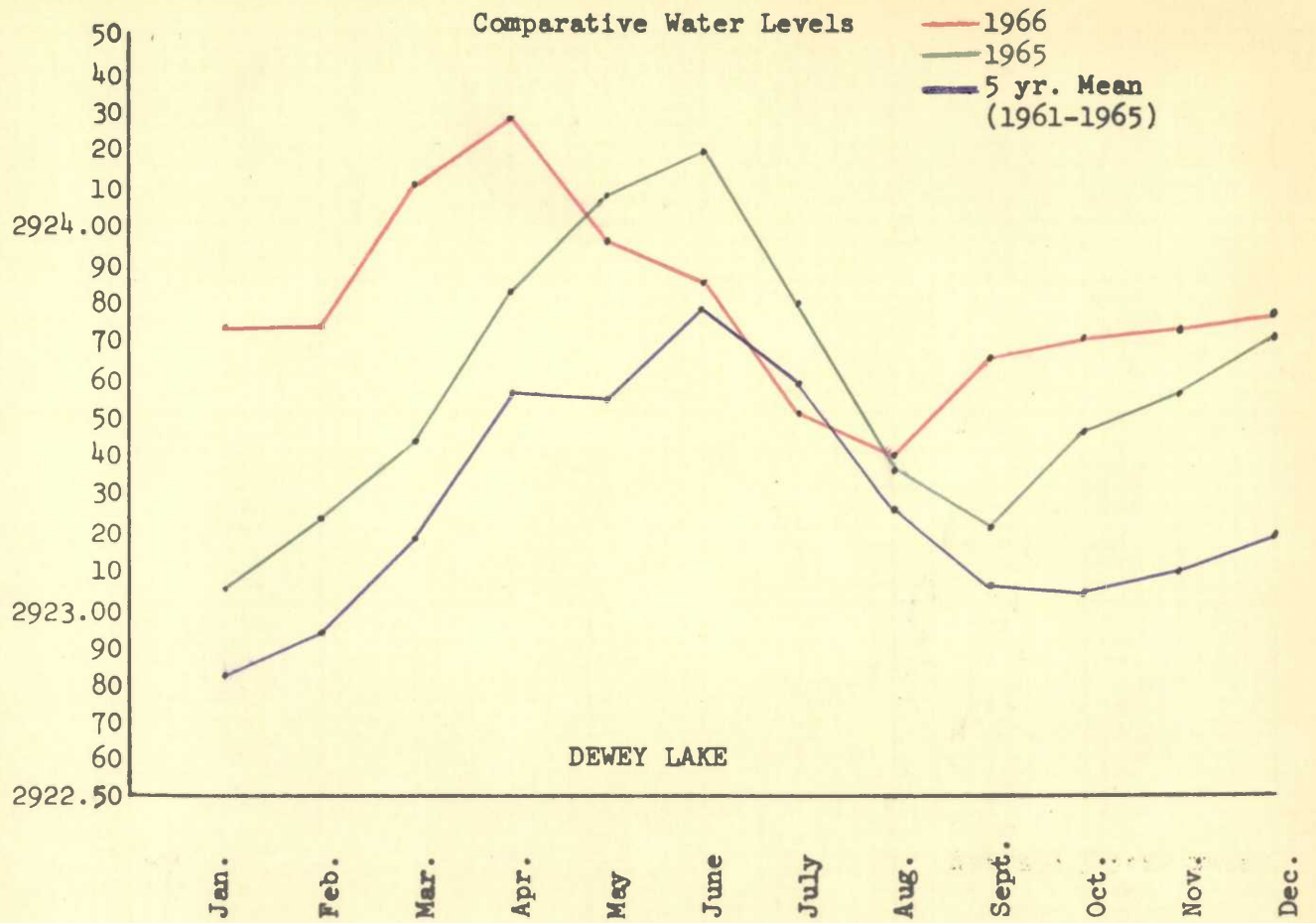


Figure 2.

in 1959 has shown clearly the relationship between carp infestations, aquatic growth, and resultant waterfowl use. It is now believed that transect data gathered every second or third year will be sufficient.

General observations made on August 23 indicated that aquatic food production was adequate for the migration, except in carp infested lakes. Notes made on that date were as follows:

Watts Lake: Good growth of submerged aquatics consisting mainly of milfoil (Myriophyllum sp.) and pondweeds (Potamogeton pusillus, P. richardsonii, and P. pectinatus), with fair seed production. Duckweeds (Lemna minor and Spirodela polyrhiza) were common in protected areas. Water was clear. No algae bloom was noted.

Hackberry Lake: Sago pondweed (P. pectinatus) was the only submergent noted. It was found in sparse beds on the lake margin in water up to four feet deep. Seed production was excellent. Water was very turbid due to heavy carp and bullhead infestations coupled with a bloom of green algae.

Dewey Lake: Abundant growths of pondweeds (P. foliosus), (P. pectinatus), and (P. pusillus) were noted. Water was clear, but laden with coarse, filamentous algae.

Clear Lake: Sago pondweed was abundant in bays and shoreline margins in water to six feet deep. Water was very clear, but choked nearly solid with suspended masses of spiral-like green algae.

Upland Food and Cover: Despite a few anxious moments, upland food and cover conditions this year were outstanding. Early spring surface moisture was excellent due to wet March and April snows. Cool season grasses and forbs were making good growths in April. A timely snow protected these species from frost when the mercury dipped to 6° on April 20. Growth continued, and by late May luxurious stands of grasses and clovers were present in the meadows.

At this time a lack of surface moisture became apparent with the drying of cool season species. Growth of warm season species was slow. The outlook for upland food and cover conditions began to fade.

However, rains began in early June. Precipitation for June, July, and August was well above normal. This stimulated growth of warm season species, resulting in tremendous stands of tall grasses and weeds to supply the best food and cover conditions in many a year.

Although fall precipitation was below normal, it was supplemented by residual surface moisture from late summer rains to produce excellent regrowth of cool season grasses and clovers. The clovers are very important as a browse for grouse and pheasants.

II. WILDLIFE

A. Migratory Birds

1. Waterfowl:

Spring Duck Migrations - Spring arrival dates for migrant ducks are on record as follows:

- 3/10 - 15 mallards
- 3/11 - 15 lesser scaup; 2 buffleheads
- 3/12 - 8 common mergansers; 50 pintails
- 3/16 - canvasback, coot, goldeneye, ring-necked duck, baldpate, green-winged teal, and gadwall first sighted.
- 3/17 - shovelers and ruddy ducks first noted.
- 3/28 - blue-winged teal first recorded.

Spring migrants began arriving in appreciable numbers with the ice break-up on March 18. Earlier flocks consisted mainly of mallards, pintails, and divers. By the second week of April estimated population had increased to 23,000. Shovelers and lesser scaup comprised the bulk of migrants at this time. Additional flights of lesser scaup, gadwall, and bufflehead arrived the following week, when the spring peak of 30,000 ducks was estimated.

The spring peak of 30,000 was down considerably from that of 70,000 for 1965. This was due mainly to a decrease of 14,000 mallards in the peak and the later arrival this year of the main flock of blue-winged teal. Also, better water conditions throughout the Sandhills may have scattered migrants more this year than last.

Duck Nesting and Production - As in the past, observations indicated that early nesting species started their efforts in late April. First duck nest of the year was found near headquarters on May 5. By the time pair counts were made starting May 30, broods of mallards and pintails were observed. Fourteen duck nests found the first week of June, mostly blue-winged teal, indicated that nesting of our primary species was in full swing. Back dating of broods observed throughout the

summer indicated a hatch peak at mid-June for blue-winged teal and at late June for gadwalls.

Total estimated breeding pairs this year were 3,500, down approximately 16% from last year. Species composition of 48% blue-winged teal, 25% mallards, and 12% gadwall followed the normal pattern.

Despite a lower breeding population, more broods were counted on the brood index surveys. It is believed that productivity was better, due to the earlier peak in spring water levels, which occurred before the majority of nesting ducks arrived. In addition, abundant water areas may have scattered breeding birds across a larger area of the Sandhills breeding range. This could have improved nesting success by reducing crowding, stress, and vulnerability to predation.

Calculated productivity, based on a 30% assumed average, was 26% this year, compared to 15% last year. Production estimates based on the productivity calculated from the brood/pair index system were 4,650 for 1966, compared to 3,700 in 1965. The brood/pair index system for estimating production will become a part of the Wildlife Inventory Plan.

Fall Duck Migration - Local ducks began flocking up during the first week in August, when a light cold snap occurred. By mid-August nearly all duck broods had reached flight stage. Soon thereafter the first increase in blue-winged teal was recorded. By September 1 the first appreciable influx of blue-winged teal, along with shovelers and gadwall had occurred. It was late September before the first flights of other species arrived. From then on, the fall migration continued at an orderly pace until the peak was reached the last week in October. Lakes froze over on November 1, then thawed and froze again several times. By mid-November the vast majority of migrant ducks had left the area. On November 9, numerous flocks of ducks were seen flying south throughout the day, indicating that the main wave of migrants passed over the refuge this year.

The fall peak of approximately 117,000 was similar to that of 114,000 recorded for 1965. This is encouraging when compared to the 1960-1964 average of 64,000. (See Figure 3).

Peak numbers by species in the fall migration are shown in Figures 4 and 5. Substantial increases were recorded for mallards and gadwalls, while the peak of canvasbacks declined by some 10,000. Other species peaked at levels comparable to 1965. The most notable concentrations in terms of recent normals were those of shovelers, which peaked at 20,000 above the 1960-64 average of 13,500, and gadwalls at 19,000 above the 1960-64 average of 7,000.

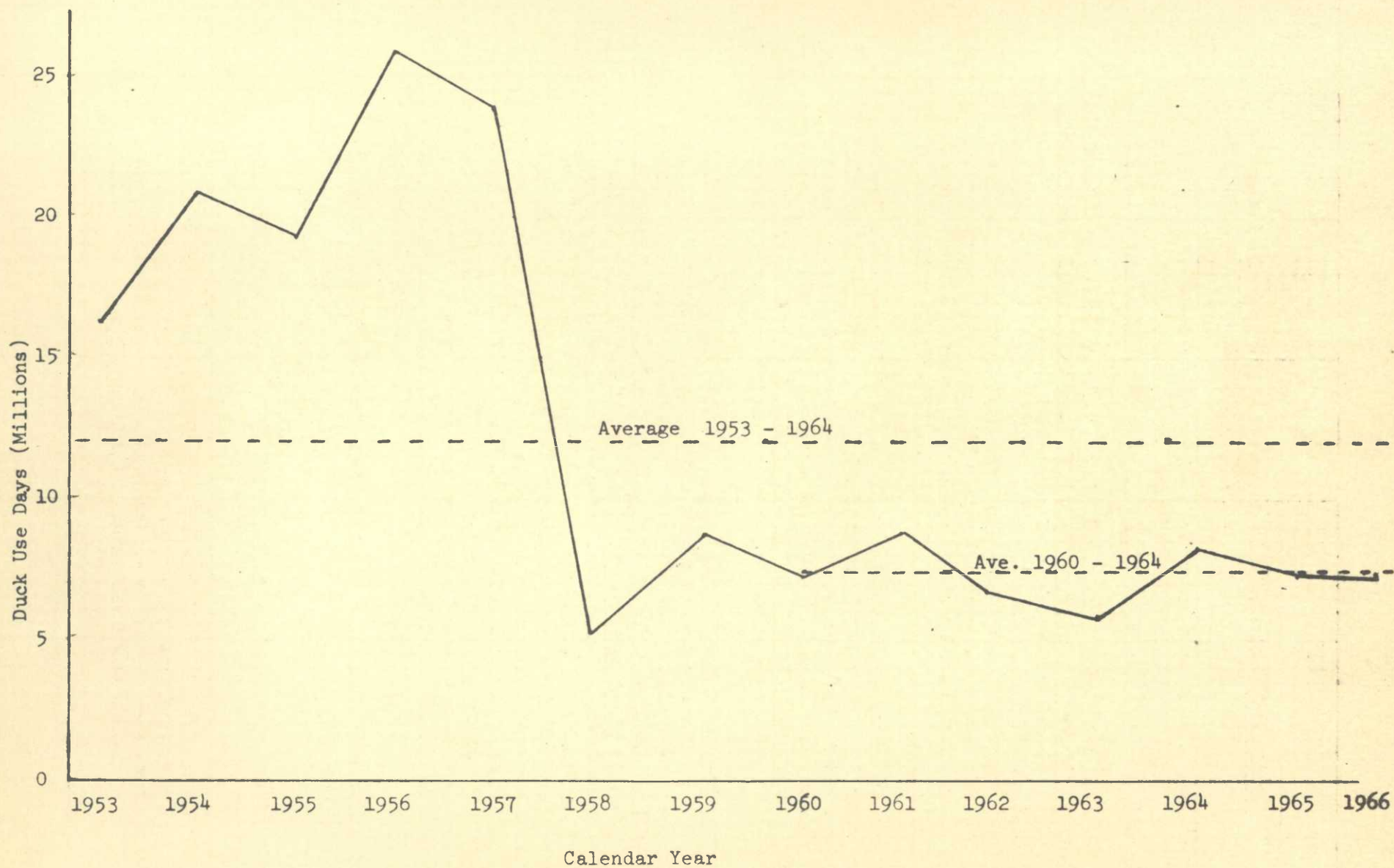


Figure 3. Duck use days by calendar year on the Valentine National Wildlife Refuge.

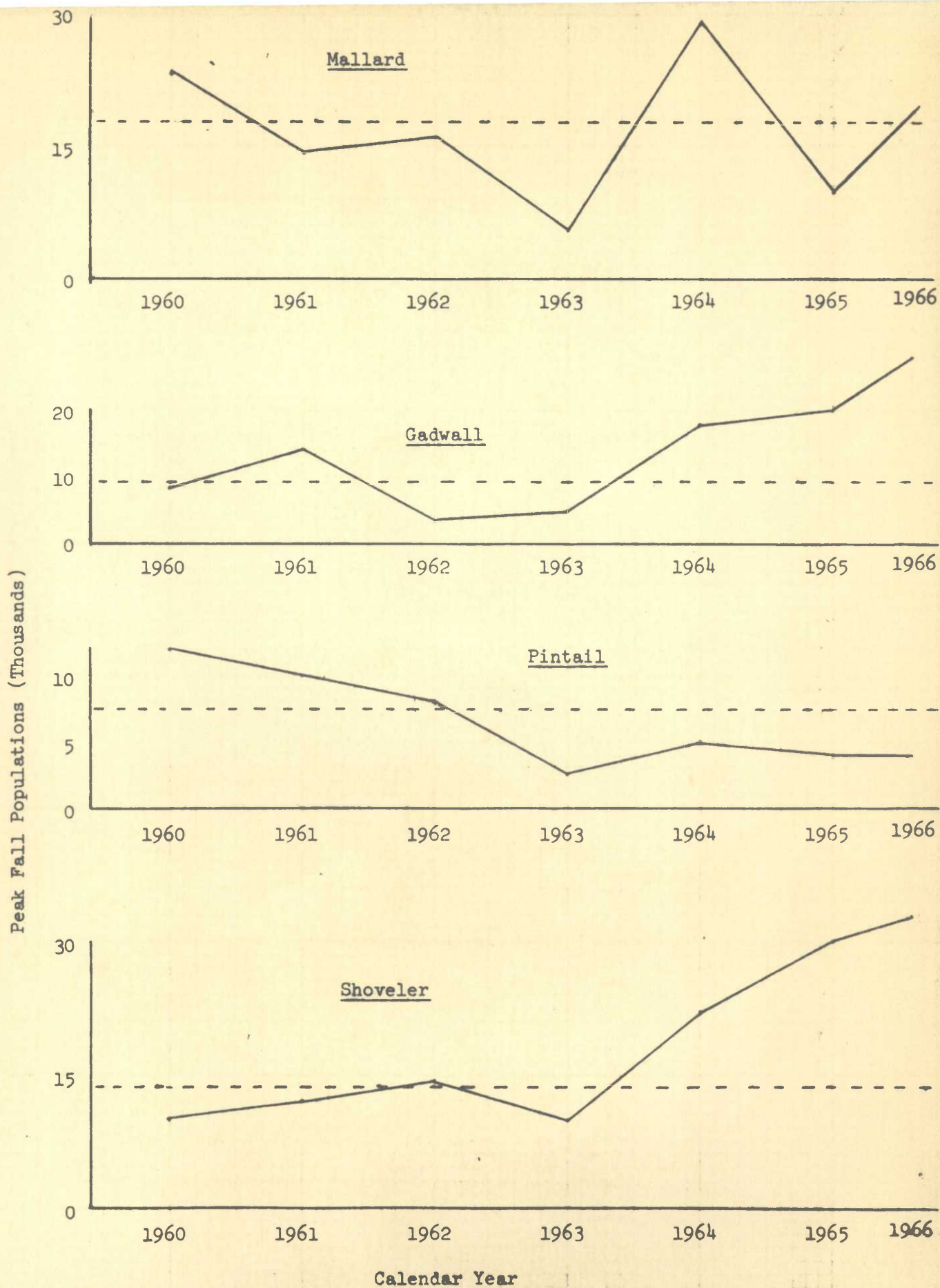


Figure 4. Comparative peak populations for various species of migrating ducks, Valentine National Wildlife Refuge. (Dash line indicates 1960-1964 average)

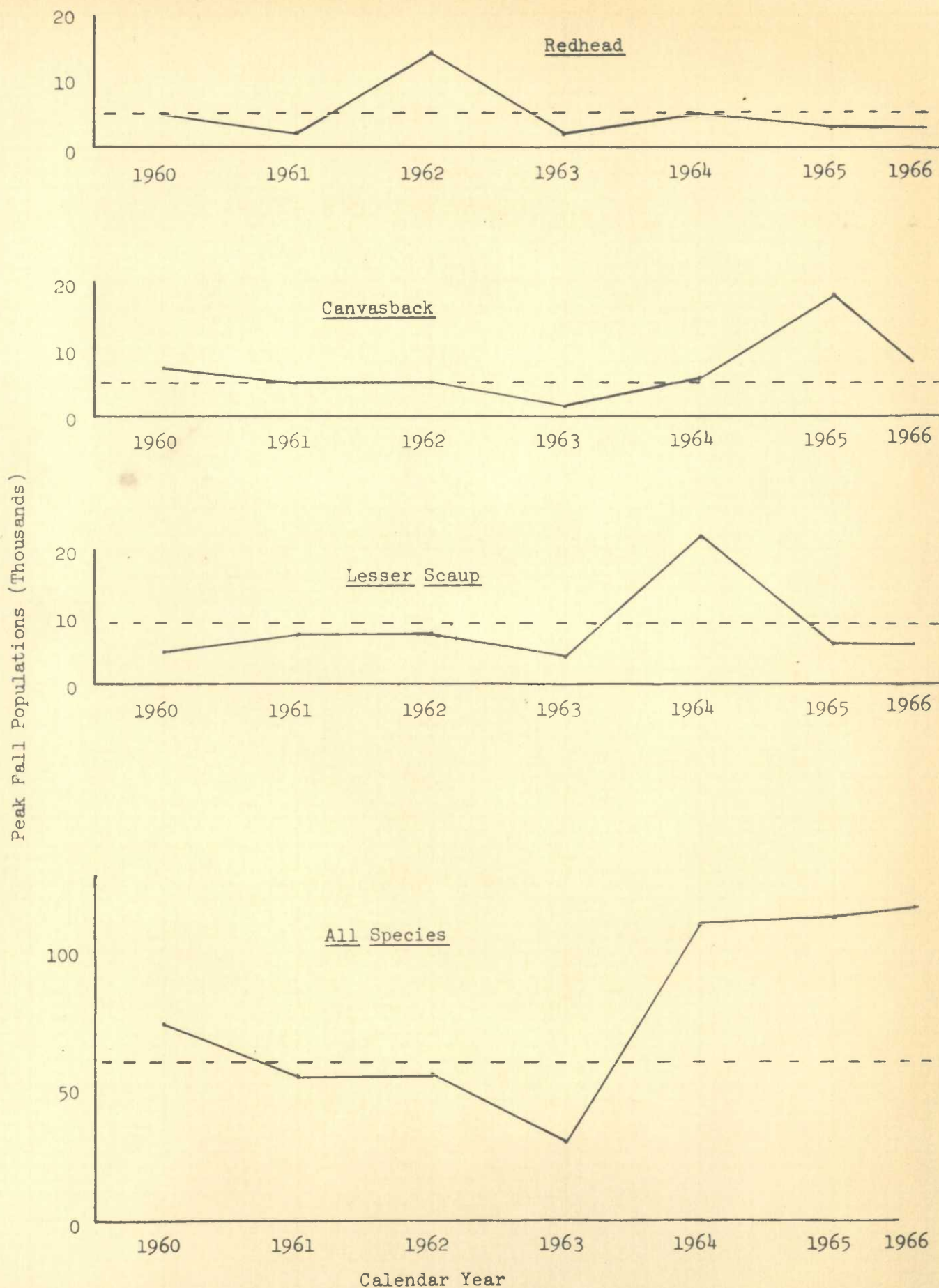


Figure 5. Comparative peak populations of various species of ducks and all species combined, Valentine National Wildlife Refuge. (Dash line indicates 1960-1964 average)

Canada Geese (Captive Flock) - The captive goose flock consisted of 100 birds as of January 1, 1966. Of these, 14 were 1963 young, 45 were 1964 young, and 41 were 1965 young. There were also 6 "free flyers" from the 1965 release that remained in the pen over winter.

Shelled corn and milo were fed during the winter months, with baled alfalfa providing green forage. The pen was mowed early in the spring and kept clipped throughout the summer to promote growth of tender grasses and clover for green browse.

The first free-flyers to return to the pen were 8 on February 12. Largest group observed in the pen were 25 geese on March 15. At this time, the flying birds began dispersing around the various refuge lakes.

Several nesting attempts were made by captive birds in the goose pen. First nests observed were on April 22. A total of six nests were started in the pen. However, three were deserted before incubation, one was incubated but did not hatch, and the remaining two produced two goslings each.

On June 27, all but the 1963 birds were wing-clipped. Red plastic bands were placed on the 14 birds of the 1963 flock to be released. Two additional wing clippings were required to hold the remaining birds in captivity.

A total of 16 geese were lost from the pen this year, with probable causes of death as follows: lightning - 6, avian predators - 4, bobcat predation - 3, snapping turtle - 1 gosling, and unknown causes - 2. It is inevitable that some predators will manage to penetrate the trapline maintained around the pen. Those that did not included 2 bobcats, 5 raccoons, 1 coyote, 1 badger, 2 great horned owls, and several skunks.

Canada Geese (Resident Breeding Flock) - As the 25 free-flyers left the captive pen to establish territories around the refuge, they may have been joined by other returning nesters. Records kept of pair observations throughout the spring were as follows:

Hackberry Lake - 1 pair
 Dewey Lake - 2 pairs
 West Sweetwater Lake - 1 pair
 Pelican Lake - 1 pair
 Watts Lake - 1 pair
 East Sweetwater Lake - 1 pair
 South Marsh Lake - 2 pairs
 Whitewater Lake - 3 pairs
 Johnson Lake (off refuge) - 1 pair
 Rat Lake (off refuge) - 1 pair

First broods observed were two with 4 and 8 young at Dewey Lake on May 17. Aerial census on May 26 revealed additional broods as follows:

Whitewater Lake - 3 pairs with 10 young.
South Marsh Lake - 2 pairs with 5 young.
East Sweetwater Lake - 1 pair with brood of 3.
Johnson Lake - 1 pair with 1 young.

Thus, up to 9 broods totalling 31 young were recorded. This was quite gratifying when compared to 1965, when only one brood of six geese was actually observed.

In the late summer and fall, the resident nesters began flocking into small groups at various locations on the refuge. Largest single day count in the fall was 87. However, some of these may have been migrants, making population estimates of the breeding flock difficult. It appears, though, that the breeding flock is increasing each year.

By the time freeze-up came, 75 free-flyers had gathered again at the captive pen. They began leaving for the winter in small groups, until the last observation of 12 was made on December 17.

Trumpeter Swans - Evidence has shown that a few of the trumpeter swans from the LaCreek Refuge flock have been pioneering into the Sandhills area. In past years, a pair has nested on Cody Lake, near the Nebraska-South Dakota border some 40 miles northwest of the Valentine Refuge.

This year, further evidence of this pioneering tendency was shown by observation of the trumpeters on the Valentine Refuge. On May 26, one pair was positively identified on North Marsh Lake during an aerial waterfowl census. This pair remained in the Marsh Lakes vicinity for the next two weeks, but were not seen thereafter. Then, on August 13, two pairs of swans were seen on North Marsh Lake and remained in the area for about a week. Positive identification was not made on the swans observed in August, but they were presumed to be trumpeters.

In early December, 3 trumpeter swans were shot on and near Schoolhouse Lake, some 32 miles west of refuge headquarters. Investigation by U. S. Game Management Agents and State Conservation Officer Zimmerman led to the conviction of a Cody man, who admitted shooting two of the birds with a .30-.30 rifle. He was fined \$705.00 in Cherry County Court.

2. Other Marsh and Water Birds: First of the year records and other data on other marsh and water birds may be found on the NR-1A form

appended. Rare observations of note in this category were as follows:

Glossy Ibis - 2 seen over east end of Watts Lake on 5/10.
Green Heron - 1 seen on Whitewater Lake on 6/1.
Snowy Egret - 1 seen at Pelican Lake on 6/24.

Records kept on other species during duck breeding pair counts in late May and early June were as follows: black-crowned night heron - 31, great blue heron - 12, American bittern - 31, long-billed curlew - 12, eared grebe - 1, western grebe - 23, double-crested cormorant - 88, avocets - 3, Wilson's phalaropes - common, black terns - abundant, and upland plovers - common. Future records to be kept while making the pair counts will be helpful in indicating population trends for these species.

A spectacular concentration of migrating Wilson's phalaropes occurred on May 4, when an estimated 5,000 were observed on Dewey Lake. Gulls moved in to clean up dead fish on Hackberry Lake when the ice disappeared. On March 28, an estimated 200 herring gulls and 300 ring-billed gulls were present there.

B. Upland Game Birds

1. Sharp-tailed Grouse: Continued winter use of elevated feeders located in the east portion of the refuge was indicated by direct observations, droppings, and amount of feed consumed. Feeders were kept filled with milo during January, February, and March. Groups of up to 45 sharptails were observed in the vicinity of feeders during that period. Beginning in November, grouse feeders were again maintained, this time using corn and milo. Groups of up to 50 sharptails were again recorded during early winter.

The spring display ground census of the sharptail breeding population was done on a sampling basis this year. Data worked up by Area Biologist Town indicated that census data gathered on the 25.3 square mile State Study Block Area could be expanded to an estimate for the entire refuge with $\pm 10\%$ accuracy. This eliminates the tremendous task of counting some 70 known display grounds scattered over approximately 94 square miles of grouse habitat.

Total breeding males estimated by this procedure were 487 in 1966, compared to 405 males counted on all grounds in 1965, or a 20% increase in breeding population.

Weather conditions throughout the nesting season were excellent, and the hatch appeared to be good. The first brood of the year was observed on June 14, however aging of juveniles in the harvest indicated that hatching had begun by the first week in June and reached a peak during the week of June 19-25.

Average brood size recorded was 6.0 this year, compared to 6.3 in 1965. This indicated very little difference in nesting success. This fact is born out further by juvenile/adult ratios in hunting season harvests, which were 2.05 in 1966, compared to 2.3 in 1965.

Grouse brood count routes established in 1962 were surveyed again this year, after a two-year lapse in data. A brood/adult index formula was devised for calculating productivity of sharptails. Based on an assumed average of 40%, the calculated productivity for this year was 48%. This figure was applied to the breeding population to arrive at an estimated production of 237 broods, or approximately 1,420 young.

2. Greater Prairie Chicken: The small population of prairie chicken is found mainly on the east portion of the refuge in Units G-33, G-34, G-35, and vicinity. Occasional observations of small groups near elevated feeders in this area indicate that the chickens continue to rely on the feeders as their main source of winter food. Additional feeders were installed at two locations in the fall, bringing the total number of feeders in the area to seven.

Census of all known spring display grounds of the prairie chicken is our best indicator of population trends. Total males counted this year was 34, essentially the same as last year's count of 35. Productivity is difficult to estimate, as brood observations of this small population are scarce. The only observations on record this year were two broods in G-35, reported by a reliable grazing permittee, Gordon McLeod. In the absence of other adequate data, the 48% productivity rate calculated for sharptails was assumed for prairie chickens. This rate was applied to the breeding population in arriving at an estimated production of 16 broods, or approximately 100 young reaching flight stage.

Evidence suggests that this small population is maintained only because of the winter feeding program. It is believed that numbers will never increase substantially unless steps can be taken to provide adequate winter food patches. A small farming program is being considered as a measure to increase the refuge population of this rare species. Special range management measures, including non-use, reduced mowing, and reduced stocking rates were initiated this year on four grazing units to provide better cover conditions. Lack of suitable tall grass cover is believed by some observers to be the limiting factor for prairie chickens on the refuge.

3. Ring-necked Pheasant: The Sandhills pheasant population is one of the largest non-cropland populations in the country. This Chinese import subsists surprisingly well on the abundance of weed seeds, grass seeds, clovers, and berries available.

Population surveys for pheasants on the refuge are presently highly inadequate. However, general observations indicated that the population fared well this year. Average brood size recorded was 7.0 this year compared to 6.3 in 1965.

A 20-mile crow count route was established this year to be run annually as an index to pheasant breeding populations. With two-minute listening stops at one-mile intervals, a total of 251 crows were heard. This figure will have meaning only as a comparative index through succeeding years. To add meaning, it is hoped that some means may be found to correlate the crow count index with a total breeding population estimate.

C. Big Game Animals

1. Deer: An estimated 125 mule deer and 60 white-tailed deer were present at the beginning of the year. Following the 1965 hunting season, deer were wary, and winter observations were comparatively infrequent. As usual, deer became more secretive with spring dispersal and the fawning season, so that summer observations became even more infrequent.

Deer did not regroup and become more conspicuous until late October. By the year's end, deer were observed in groups of up to 17. Aerial census was made on January 9, 1967, with good snow cover and visibility prevailing. Total deer counted were 81 mule deer and 16 white-tailed deer. Using ground counts in conjunction with the aerial index count, we estimate 125 mule deer and 60 white-tailed deer at year's end.

2. Antelope: There were no antelope observations on record for the refuge this year. Occasional use of the southwest corner of the refuge is suspected. Several antelope were harvested from the herd on private land adjacent to the southwest boundary this year.
3. Fallow Deer: This spring, a neighboring rancher obtained several white fallow deer from a relative in North Platte and brought them to his ranch. These deer had been penned up and were quite tame, leading the rancher to believe that they would stay in the vicinity of his place. However, they left his ranch soon after release; several sightings were reported during May in the area just north of refuge headquarters.

During late May a fallow deer buck was seen in Natural Area No. 1 during a waterfowl breeding pair count. This same buck appeared at Pelican Lake Subheadquarters in the first week of June and spent all summer there. Despite fears that the Assistant Manager's garden would become this critters primary source of food, very little damage was done. A few cedar branches, lilac twigs, moss rose, and chrysanthemums were clipped. One small cedar was badly damaged when the buck chose it for antler rubbing. This buck left the subheadquarters

area during September. No observations or reports have been made since.

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

1. Muskrats: An aerial count of muskrat houses was made on all refuge lakes on October 24. Total houses counted was 305, for an estimated refuge population of approximately 2,100 muskrats. This compares to a total house count of 1,204 and estimated population of 6,000 in 1958, the last year that house count records are available. Although muskrat populations appear to be increasing on some lakes, recent evidence indicated that hemorrhagic "muskrat disease," responsible for heavy mortality in 1958, is still present in the population. This disease may be preventing an increase of the total population to levels occurring before the die-off.

Western Illinois University Graduate Student Richard Coon had eight muskrats from Duck and Rice Lakes autopsied in conjunction with his 1965 study of muskrat home range and daily movements on the Valentine Refuge. His report was received early this year, and indicated that all eight dead muskrats showed symptoms of the "muskrat disease."

2. Beaver: Beaver were active in at least ten locations on the refuge this year. Activity could not be detected at four previously active locations. Estimated fall population was 70 beaver. Activity was particularly noticeable on Dewey, Clear, and Hackberry Lakes. A new beaver dam was constructed in the Gordon Canal west of Hackberry Lake this fall, creating a long narrow impoundment which should be quite attractive to breeding waterfowl. Extensive tree cutting on the south side of Clear Lake indicated that control is needed there.
3. Other Fur Animals and Predators: A fall population of approximately 100 coyotes, or about one per section was estimated this year. Considering our objective to maintain representative populations of all native wildlife, only limited coyote control is carried out. Coyotes are taken as necessary to protect the captive goose flock and occasionally as a public relations measure to alleviate complaints from refuge neighbors or cooperators. Local Mammal Control Agent G. M. Sawyer removed eight coyotes during the 1965-66 season.

Long tailed weasels were not quite as common this year as last. Only four observations were recorded this year compared to twelve on record for 1965.

4. Black-footed Ferret: On March 29, photographs were taken of what may have been a black-footed ferret near the east end of Dewey Lake in grazing unit G-4. Only a few quick glimpses and several snapshots were taken of the animal, which peered out of a hole several times before disappearing. From size, appearance, and actions, the animal was assumed to be a long-tailed weasel. However, closer study of the

developed prints revealed a partial black face mask on the animal which had not been noted during the few short seconds of observation.

The black face mask suggested the possibility that this animal may have been a young black-footed ferret. Therefore, photos were sent to Dr. Paul Springer, Leader of the South Dakota Cooperative Wildlife Research Unit for comments. Dr. Springer's opinion was that the animal was not a ferret, but possibly a southwestern form of the long-tailed weasel, which has a black mask and may occur in Nebraska. He later brought up another possibility, citing literature, that the Nebraska subspecies of the weasel occasionally shows a darkening of the head in front of the ears. Dr. Springer referred us to Dr. Harvey Gunderson, Curator of Zoology and Museum Records, at the University of Nebraska for further information.

Negatives were loaned to Dr. Gunderson, who made enlarged prints showing the animal in greater detail. His immediate opinion was that the animal was indeed a ferret; after corresponding with the University of Western New Mexico, Dr. Gunderson precluded the southwestern long-tailed weasel possibilities.

At year's end, Dr. Springer and others from South Dakota were still of the opinion that we have a weasel photograph. However, Dr. Gunderson is still convinced that we have a ferret record, and will try to pin down the identification.

For a look at what may be the only black-footed ferret photo ever taken on a National Wildlife Refuge, see the photo section.

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

1. Hawks: Rough-legged hawks, sparrow hawks, and marsh hawks were first recorded in February, and may have been present throughout the winter. The major migration of marsh hawks and sparrow hawks occurred from April 7 through April 12 this spring. Most notable species in the fall migration was the sparrow hawk. A heavy migration of sparrow hawks, accompanied by an influx of lesser numbers of marsh hawks, was recorded on September 10-11. These species were still common on September 18, when a few rough-legged hawks and Cooper's hawks began to show up.

An interesting observation of a Cooper's hawk feeding was made on November 16. The bird was feeding on a rooster pheasant under a cedar tree just outside the office window. The hawk was seen feeding there for two successive days after the first observation, and was still present in the headquarters area at year's end.

As usual, a few prairie falcons were present during the winter months and appeared again in December

2. Eagles: Observations of both bald eagles and golden eagles were up from last year. Table 2 gives a summary of eagle observations for both years.

TABLE 2
A Comparison of eagle observations on record for the Valentine Refuge, 1965 and 1966.

Year	<u>Bald Eagle</u>			<u>Golden Eagle</u>		
	Spring	Fall	Total	Spring	Fall	Total
1965	1	4	5	5	5	10
1966	7	6	13	6	9	15

3. Owls: As usual, a few short-eared owls were present during the early part of the year, and appeared again in December. One screech owl was present at Pelican Lake during the first week in February. The resident population of great horned owls appeared to be stable. A few continued to cause problems with the captive goose flock.
4. For information on other species in this category, see form NR-1A, appended.

F. Other Birds

First of the year observations and other notes on record for a number of species are listed below. Observations are first of the spring records unless otherwise indicated.

Tree Sparrow - Common during the winter months in headquarters area.

Red-winged Blackbird - A few wintering at Pony Lake and Dewey Marsh.

Common Redpoll - Two found dead at Pelican Lake on 3/11 following a storm.

Loggerhead Shrike - 3/28.

Yellow-headed Blackbird - 4/11.

Common Grackle - 4/12.

Mockingbird - 4/13 (rare summer visitor).

Belted Kingfisher - 4/13.

Tree Swallow - 4/19.

Myrtle Warbler - 4/24.

Rufous-sided Towhee - 4/26 (same date as 1965).

Brown Thrasher - 4/30.

Bobolink - 5/9.

Barn Swallow - 5/2.

Yellow Warbler - 5/5.
 Swainson's Thrush - 5/13.
 American Redstart - 5/14.
 Western Kingbird - 5/15.
 Eastern Kingbird - 5/15.
 Goldfinch - 5/26 (5/20 in 1965).
 Baltimore Oriole - 5/21.
 Townsend's Solitaire - First observed this winter at headquarters on
 12/9, about a month later than usual.

G. Fish

The important sport fisheries program which accounted for over 67 percent of the recreational use in 1966 is a cooperative venture between the Nebraska Game Commission, Fisheries Management Services, and the refuge. General description of the resource, utilization, and accomplishments are summarized below:

Hackberry Lake: Excellent fishing for 1/2-3/4 pound bluegills experienced in January dropped off rapidly, and oxygen tests in the first part of February revealed only .4 - 1 ppm dissolved oxygen (D. O.) content. Later census during the spring and summer revealed heavy winter kill of bass and bluegill, but surprisingly good survival of northern pike, carp, and bullheads. Prior to the winter kill Hackberry was supporting the heaviest poundage of fish, estimated to exceed 1,000 pounds per acre, ever experienced on refuge lakes by Fisheries Management Services Biologist Robinson. The loss of bass and the removal of 1,900 adult northern pike has released the predation pressure on the remaining carp and tremendous bullhead population, and the balance has irrevocably been tipped in their favor. Bullhead fishing remained good in the turbid waters through the summer and fall. Eradication with the new fish toxicant Antimycin A (Fintrol -5) is planned in 1967 to restore the decimated aquatic submergent growth and the closely related waterfowl utilization potential.

Pelican Lake: Dissolved oxygen content checked in February indicates the influence of springs and subterranean water supply within refuge lakes. Readings ranged from only 1.0 to 5.0 ppm D. O., and fishermen were catching northern pike 20 yards from readings of 1.0 ppm. Only limited winter kill occurred, if any, and the lake continued to provide good northern pike fishing in the spring and fall. Shocking tests conducted in September revealed a tremendous population of young of the year carp with evidence of at least three successful spawns. This increase, coupled with a current large population of adult carp, will necessitate renovation within the next few years.

Dewey Lake: There are some bright sides, as Dewey Lake is believed to have remained carp free since its renovation in 1960, has an expanding largemouth bass population with the major age class now weighing two to three pounds, and provided good to excellent fishing for largemouth bass, walleye pike, rock bass, and bluegills. Over 33,000 black crappie fingerlings were stocked this fall by the Valentine State Fish Hatchery in an attempt to provide the once fabulous crappie fishing experienced in the late Forty's, and still remembered by many local anglers.

Clear Lake: This carp-free lake provided excellent spring fishing for bass, but has remained poor this fall and winter. Frame net sampling in the spring revealed good populations of 14-16 inch walleye pike and 3/4 pound bass. The experimental Sacramento perch stock in 1962 appears to have been very successful with good reproduction, and the oldest age class approaching a length of 10 inches and 3/4 pound weight this spring. This represents one of the best catchable populations in the state, but no one seems to have found the secret of how to catch them, so their importance in the refuge fisheries program is uncertain. A stock of channel catfish is being contemplated in either Clear or Dewey Lake to fill an uncompetitive niche and provide greater diversity.

Watts Lake: Oxygen tests in February indicated low but spotty D. O., and winterkill was very minor. This lake provided good northern pike fishing in the spring and fair bluegill and perch fishing this fall. The major age class of perch is approaching 10 inches in length and should provide excellent fishing in the future. A fall shocking survey revealed abundant young of the year bluegill and crappie and fewer young of the year bass. Carp gained entry into this lake during the high water levels in 1962, but no young of the year carp were found again this fall.

Duck and West Long Lakes: Duck Lake supported the bulk of the ice fishing pressure with 3/4-1 pound bluegills taken out by the five gallon bucket fulls in late February and early March. Spring and fall fishing for bluegill, bass, and bullheads remained good. The small 60 acre West Long Lake also received relatively high fishing pressure for bass and perch with success varying from fair on the ice, excellent in the spring, to good in the fall.

Whitewater and Willow Lakes: The tremendous increase of alkalinity in Willow Lake in 1965 resulted in complete loss of fish, and the lake remains highly turbid and alkaline. Only one small bass was observed on a fall shocking survey of Whitewater Lake, which has gone to the carp. Carp eradication is essential to restore the waterfowl utilization potential and to eliminate the threat of contamination of Dewey Lake with carp.

Fish Stocking and Removal: Dewey Lake received over 33,000 large fingerling black crappie as previously noted. Disposition of adult fish taken from Duck and West Long Lakes was as follows: 850 bluegill, 350 crappie, 210 bullheads, and 275 perch to the Valentine Reservoir Pond; 78 bass spawners to the Crawford National Fish Hatchery; 300 bluegill spawners to the Gavins Point National Fish Hatchery; 15 perch to the Gavins Point Aquarium; and 250 adult bluegills from Duck Lake into West Long.

The Valentine State Fish Hatchery, lacking adequate facilities for holding adult bass spawners, was permitted to utilize West Twin Lake as a holding lake for bass spawners and 3,000 cannibal fingerlings were stocked this fall. Many of the National and State Hatcheries will benefit from this project. No significant disturbance to waterfowl is expected and there are no plans for public fishing in this lake.

Northern Pike Spawn Taking Program: A record number of 6,545 northern pike were handled as twenty-million eggs were again taken in operations on the refuge; one of the largest programs of this type in the nation. These eggs are utilized by National and State Fish Hatcheries in the area. Pelican Lake again supplied the majority of the spawners, with 4,275 removed and 1,920 restocked. None of the 1,900 pike taken from the stricken Hackberry Lake were returned, and after removing 370 pike from Watts Lake, 980 were returned to increase predation pressure on carp. The remaining 3,645 pike spawners were utilized by the State in stocking programs outside the refuge.

Approximately 1,500 pike spawners will be tagged in Dewey Lake this spring to determine the percentage of the adult northern pike population removed in the program. This project should yield valuable information on population dynamics and will provide a more sound basis for restocking.

Detailed records of population and production surveys by shocking, gill and trap netting and seining are maintained in refuge files for future reference.

H. Reptiles

Garter snakes were first observed this spring on April 23. Other snakes observed during the summer were bullsnakes and blue racers.

Box turtles, painted turtles, and Blanding's turtles were commonly observed during the summer months.

Snapping turtle nests were frequently observed along trails and in other sandy areas during June. On June 21, nine destroyed snapping turtle nests were counted on a two-mile stretch of the Hackberry-Dewey fishing trail. These observations lend weight to the theory proposed by some observers, who believe that the snapping turtle is an important buffer species during duck nesting season.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

1. Refuge Headquarters: Remodeling and addition to Quarters No. 5 under force account was completed. Refuge Clerk Beck moved to Quarters No. 5 from Pelican Lake on March 12. Additional work completed during the remainder of the year included installation of new kitchen cabinets, heating system ducts, and Zonalite insulation in the ceiling of the older portion.

Exterior white paint was applied to Quarters No. 1, 2, 5, the barn, pumphouse, and root cellar entrance.

Surfaced driveways and parking areas at headquarters were armor coated. Refuge personnel hauled approximately 60 tons of gravel, free of charge, from the County Yard in Valentine for this project. The State Highway Department provided approximately 1,200 gallons of road oil, oil distributor truck, gravel spreader, and over 3 man-days labor, all free of charge. With refuge equipment and labor only, this job would have required at least one man-month. However, due to the fine cooperation of the State, this job was completed in one long day.

All heating systems were serviced and inspected by Ward's Plumbing and Heating in the fall.

Complete inspection of all electrical systems and elimination of several hazards was initiated this fall by Leonard Alder, local electrical contractor.

A large sign and individual plot labels were constructed and installed at the headquarters native grass display. Maintenance of the plots and replacement of some species was performed as necessary.

2. Pony Lake Subheadquarters: New tri-plex overhead wiring from the service pole to the residence, and an automatic yard light were installed.

A coat of exterior white paint was put on the residence, and green trim was repainted in all buildings. A combination closet-cabinet was constructed in the interior hall.

Heating systems were serviced and inspected in the fall, and the shop ceiling was insulated with Zonalite.

3. Pelican Lake Subheadquarters: Safety inspection of the electrical system was made, and several hazards were corrected. New tri-plex overhead wiring was installed from the service pole to the residence.

Heating systems were serviced and inspected in the fall.

4. Roads and Trails: The Hackberry-Dewey fishing trail continued to require considerable maintenance. Emergency maintenance to permit fishing access was started shortly before Memorial Day, and continued intermittently throughout the summer. Sod and black dirt were spread in several of the most sandy spots. Over 30 truckloads and 7 haysled loads of coarse hay were hand spread to provide mulching in the more eroded areas. In addition, trail edges were mowed and hay was moved into the tracks with a side delivery rake.

Approximately 1/4 mile of the very sandy trail south of Willow Lake was hay mulched prior to the grouse season to provide hunter access.

A small, 100-yard grade was constructed at Pelican Lake subheadquarters to eliminate mud holes near the end of the oil road.

The Pony Lake road was graded several times with the Model 212 Patrol.

5. Pothole Blasting: Pothole development with AN/FO blasting was initiated on November 8 on the low sub-irrigated meadow along the southeast end of Pelican Lake. The water table was within several inches or above the soil surface of this meadow, which is normally flooded in the spring but completely overgrown with a dense stand of sedges and grasses. A total of 37 potholes were blasted in an area of approximately 200 acres, with an average distance of 125 yards between potholes. Distance of the potholes from the lake ranged from 15 to 650 yards and averaged about 260 yards.

A tractor mounted auger proved quite efficient in drilling the holes for the charges to an average depth of four feet. Digging with hand tools would have been near impossible due to the rapid sloughing of the sandy soil. Spacing between charges was reduced from a maximum of 12 feet to only nine feet to reduce heavy ridging. Many different designs were employed to provide irregular shoreline, including Z's, T's, X's, O's with raised islands in the center, and others.

Maximum depth of about six feet and an average depth of four feet was usually achieved. Average surface area was approximately 1,500 square feet, and ranged from 700 square feet with four multiple charges totalling 100 pounds of nitrate to 4,000 square feet with 19 multiple charges totalling 580 pounds. Total cost of the 37 potholes, including all materials, labor, equipment, and travel time was \$1,286, or an average of \$35.00 each.

Individual charges of 12, 25, and 40 pounds were used, with little difference in depth or surface area resulting between the 25 and 40 pound charges. Wind velocity was usually fairly low, resulting in

a considerable amount of loose material falling back into the hole. It appeared that charges placed in an irregular line were most effective, as clustered or grouped charges appeared to work against each other with a resultant decrease in depth and surface area. Frost never exceeded two or three inches, even by the 19th of December, when blasting was terminated, but even this slight amount was noted to reduce the efficiency of the blast and left large masses of earth peeled back at the very edge of the hole. Considerable difficulty was experienced with relatively ineffective or completely dead charges, 25 out of 310, and was attributed to the deterioration of the #400 primacord sticks. The natural white color of these sticks turned blue, and the incidence of unblown charges was practically eliminated by using two sticks to the charge or utilizing extra wraps of the #25 primacord around the stick.

It is suspected that between three to four foot water depth is required to retard the encroachment of dense, coarse emergent vegetation. Depth measurements will be recorded next summer as considerable sluffing of the loose sides and peeled edges of blasts in frost is expected. Mated pair census in the spring should yield some indication of the attractiveness or acceptability of the various designs and sizes, and will influence design of continued development in the future.

6. Vehicle and Equipment Maintenance and Repair: All refuge vehicles received 5,000 mile/90 day inspections, servicing, and motor tune-ups as needed. Other major jobs performed are listed below:

1962 Ford 1/2 ton 4-WD Pickup, I-54486 - complete engine overhaul, new brake linings and cylinder kits; new shock absorbers; new clutch and pressure plate; overhaul of rear end, including new ring gear, pinion, and rear axle bearing.

1966 Chevrolet 1/2 ton 4-WD Pickup, I-88715 (new) - reinforced wrap-around bumper and braced fenders; constructed and mounted trailer hitch; installed new 15-watt Motorola mobile radio.

1961 Studebaker Lark Station Wagon, I-54396 - New rear axle shaft bearing and seals; new brake linings and cylinder kits.

1952 GMC Dump Truck, I-19106 - complete valve job; new cylinder head; replaced broken manifold.

1964 Dodge 1/2 ton 4-WD Pickup, I-75882 - Valve job on left cylinder head.

1961 Ford 1/2 ton 2-WD Pickup, I-77028 (excess from Navy) - sanded, painted, and currently on loan to Nebraska Wetlands Manager David Rose.

212 Motor Patrol - removed cylinder head for valve job; cleaned fuel injectors.

TD-9 IHC Crawler Tractor - acquired excess from Fort Niobrara Refuge; overhauled hydraulic pump, hoses, and dozer; motor tune-up; bled fuel injectors and flushed fuel system; adjusted steering clutches, brakes, and tracks; used with 4-yard scraper on trails and ready for the junk pile by the summer's end.

Grassland Drill - acquired excess from Lower Souris Refuge; cleaned and overhauled for use in spreading fertilizer.

Constructed sweephead for IHC 250⁴ Tractor and front-end loader for use in trail haying operations.

Overhauled Kohler generator and moved to Pelican Lake as an emergency standby unit.

Installed Henderson tire changer (excess from Tamarac Refuge) in shop.

7. Grazing Unit Facilities:

Water Facilities: During the calendar year, Soil and Moisture funds were utilized to drill new wells and install new windmills at eight locations, as follows: G-2B, G-14A (2 locations), G-31A, G-31B, G-33, G-34C, and G-34D. These units were necessary to improve grazing distribution or permit continued proper distribution by replacement on site. Average cost of these completely new units was \$500, excluding refuge labor. Wells were either moved or replaced on site with S&M funds at five other locations. At these sites in units G-1C, G-3B, G-22A, G-28A, and G-34B, existing windmills were used. Average cost of drilling and moving windmills was \$155.

O&M funds were utilized to replace a well and windmill in G-21C, replace windmills in G-14B and G-20, repair windmills in G-8E and G-34E. Check valves were filed on all wells installed by the refuge since 1963. This was deemed necessary when it became evident that vent holes drilled in drop pipes at the time of installation may plug up and prevent drain back of water during times of no wind. Filing of the check valves will permit water to drain back when the mills are not pumping and prevent wells from freezing up.

New Fences: Approximately 1 mile of fence in G-22B, started in 1965, was completed this year. The fence runs along the north side of the Pony Lake road, and will protect the road from cattle trampling. This will reduce wind erosion along the road, as well as add a small non-use area of approximately 100 acres to the refuge habitat complex.

Another S&M fencing project completed this year was a 1.2 mile fence in the north end of G-18A. This fence will eliminate grazing from the north end of the unit, which is in poor range condition and has several active blowouts. The fence project will put approximately 150 acres into non-use, allowing improvement in range condition.

Materials were furnished to permittees J. Daniels and G. Beel for construction of approximately 1/2 mile of fence in G-1B. This fence was necessary to prevent cattle mix-up between G-1B and G-2A, and will allow permittee Daniels to feed more on the meadow instead of in the hills.

Fence Maintenance: Permittees continued to supply the labor for annual maintenance of all boundary and interior fence. Approximately 2,000 posts and 30 rolls of barbed wire were furnished by the refuge for fence maintenance this year.

Severe grazing use on private land adjacent to the small refuge non-use unit G-"A" resulted in boundary line blowouts, damage to the fence, and trespass cattle in G-"A". The fence was rebuilt through the blowout areas, and old stub posts were used as rip-rap in an attempt to reduce blowing and protect the fence from further damage.

Purchase of Permittee Equity in Grazing Unit Improvements: Many of the fences and windmills on the refuge are permittee-owned. In 1964 it was decided that the Bureau should begin buying these improvements as soon as possible. Refuge ownership of improvements is expected to put the Bureau in a better management position, as well as avoid disputes over value when a change in permittees occurs.

This station began receiving Expenses for Sales funds in F. Y. 1966, to be used for purchase of permittee equity in improvements, and for purchase of materials required in annual maintenance of improvements. Procedures for determining the value of improvements have been standardized, so that all permittees may be treated fairly. Substantial progress was made during 1966. Purchases made from seven cooperators brought improvements under Bureau ownership in the following ten grazing units: G-1, G-5, G-7, G-8E, G-10, G-12, G-14, G-15, G-16, and G-24. Records of these transactions, totalling \$2,795, are in the files.

At year's end, all improvements (except camp buildings, stackyard fences, and management fences solely for permittee convenience) were Bureau owned in 21 of the 36 refuge grazing units. At least two years will be required to purchase improvements on the remaining 15 units.

B. Plantings

1. Aquatics: None.
2. Trees and Shrubs: None.
3. Upland Herbaceous Plants: None.

C. Collections and Receipts

1. Seeds and Other Propagules: None.
2. Specimens: None.

D. Control of Vegetation

Continued efforts were made to control troublesome patches of leafy spurge at several locations on the refuge. Tordon 22K was again used, with treatment effected both in the spring and in the fall. Form NR-12 gives complete data on this control program.

E. Planned Burning

None.

F. Fires

None.

IV. RESOURCE MANAGEMENT

A. Grazing

Due to good surface moisture resulting from wet March snows, range conditions were good during the early spring months. However, by late May upland plants were beginning to suffer from lack of moisture. With May precipitation 2.32 inches below normal, prospects for summer grazing were dim. Therefore, total AUMs for summer grazing units were kept well below the maximum allowed in the Land Use Plan. As indicated in Table 3, total allowable AUMs were 74% of the total allowed in the plan. Summer turn-in date was May 23, a little later than usual.

Rainfall for June, July, and August was well above normal. This gave the slow-starting warm season grasses a tremendous boost, and most summer units held up well. However, not as much rain fell on the eastern portion of the refuge. Some units in that area were overgrazed, necessitating turn-out before allowable AUMs were used. Actual AUMs used on summer units were 69% of Land Use Plan maximums.

This was the third year for three-way summer rotational grazing on units G-8A, B, and C and the second year for G-29A₂, B₁ and B₂. This system was initiated on G-12A, 12B, and G-24B this year. The rotation allows grazing of each unit at a different time each year, and gives all forage species an equal chance for improvement. It seems to be working out well, and additional areas may be set up for rotational grazing in the future.

TABLE 3

Grazing and Haying use on the Valentine Refuge, 1965-66 and 1966-67 seasons.

<u>Type and Time of Use</u>	<u>Animal Unit Months</u>		
	<u>Maximum from L.U. Plan</u>	<u>Max. Permits</u>	<u>Use</u>
1966 Summer Use (38 Sub-units)	15,655	11,615	10,784
1966 Fall Use (16 Sub-units complete to date)	7,825	5,840	4,260
1965-66 Winter Hay Use (33 Sub-units)	35,375	33,000	31,482

Previous leases were terminated on grazing units G-3, G-14, G-31, and G-34 this year. In addition, unit G-28 had been in non-use since the spring of 1965. These vacant units were split up among several existing and new permittees. Disposition of each area was as follows:

G-3A and 3B - Leased to F. M. Reece, Jr., a new permittee. No change in stocking rate.

G-3C - Retained in non-use status.

G-3D - Leased to E. Lord, a new permittee. Reduced fall stocking rate from 350 to 200 AUMs.

G-14A - Leased to L. Harms, existing permittee. Summer stocking rate reduced from 525 to 450 AUMs.

G-14B - Leased to H. Sherman, a new permittee. Fall stocking rate reduced from 650 to 400 AUMs.

G-16A₁ - Retained by L. Harms, former permittee on all of G-16A. Hay unit stocking rate set at 150 AUMs.

G-16A₂ - Leased to R. Daniels, Jr., existing permittee. Hay unit stocking rate set at 300 AUMs.

G-16A₃ - Leased to W. Gallino, a new permittee. Hay unit stocking rate set at 450 AUMs.

G-28A and B - Leased to G. Anderson, existing permittee. Summer rates reduced from 500 to 300 AUMs, and 450 to 275 AUMs, respectively.

G-28C - Retained in non-use as a special grouse management area.

G-31A - Leased to O. Gallino, existing permittee. Set up as a special winter use grouse management area, with mowing reduced to a small area near Pony Lake Subheadquarters. Winter stocking rate reduced from 450 to 175 AUMs.

G-31B - Leased to C. Eatinger, existing permittee. Fall stocking rate reduced from 1,000 to 750 AUMs.

G-31 C and D - Leased to C. Eatinger, existing permittee. Summer stocking rate reduced from 500 to 425 AUMs.

G-34A - Leased to O. Gallino, existing permittee. Summer stocking rate reduced from 725 to 450 AUMs.

G-34B - Leased to G. McLeod, existing permittee. Fall stocking rate reduced from 700 to 575 AUMs.

G-34C - Leased to G. McLeod, existing permittee. Summer stocking rate reduced from 750 to 600 AUMs.

G-34D - Leased to O. Gallino, existing permittee. Set up as a special winter use grouse management area, with mowing reduced and stocking rate reduced from 400 to 300 AUMs.

G-34E - Leased to K. Shaul, a new permittee. Set up as a special grouse management area. To be used in rotation, with one year of light summer grazing (reduced from 750 to 200 AUMs) followed by two years of reduced mowing and winter feeding.

G-34F and G - Leased to G. Anderson, existing permittee. Fall stocking rates reduced from 350 to 150 AUMs and 275 to 225 AUMs, respectively.

B. Haying

Hay unit figures presented in Table 3 are for 1965-66 winter feeding, and thus reflect hay yields in 1965. Note that AUMs used were just under the total authorized on permits. This indicates that hay

yields were about normal in 1965, since a 50% over-run in hay unit AUMs is allowed in years of above average hay production.

Information from permittees indicated that the 1966 hay yields were about the same as those in 1965. This fact is further born out by AUM use on a few hay units completed to date.

Mowed acreage was reduced substantially on several units this year. Conversely, more than one permittee tried to take advantage of the change in managers, and mowed too high on hillsides. The offenders have been notified not to try this again.

Superphosphate fertilizer was applied on hay meadows at several locations in May. The objective was to promote the growth of clovers with higher nutrient content in an attempt to increase prairie chicken use. Fall regrowth on the fertilized areas was tremendous. However, prairie chicken use has not been recorded on these areas to date. Application rate was 100-120 lbs. per acre.

The following areas were fertilized:

Headquarters Horse Pasture - 7 acres.

G-7A - Duck Lake Meadow - 3 acres.

G-7B - West Long Meadow - 3 acres.

G-8D - Sawyer Meadow - 26 acres.

G-21A - West Twin Meadow - 31 acres.

Pony Lake Goose Pen - 3 acres (to promote growth of green goose browse).

C. Fur Harvest

G. M. Sawyer was the only permit holder for the 1965-66 trapping season. He took 167 muskrats, 6 mink, 6 raccoon, 2 beaver, 1 skunk, 1 bobcat, and 8 coyotes.

A quota of 1,040 muskrats was set for the 1966-67 trapping season. G. M. Sawyer is the only trapper signed up to date, although several other persons have expressed interest. With fur prices low, it appears that current share-division (trapper 60% and Government 40% on muskrat and beaver; 50-50 on mink and weasel) may need adjusting before trapper interest will increase.

D. Timber Removal

None.

E. Commercial Fishing

None.

F. Other Uses

None.

V. FIELD INVESTIGATIONS AND APPLIED RESEARCH

A. Waterfowl Nesting Study

As his primary summer work project, Biological Aid Max Westfahl was assigned responsibility for carrying out a study of duck nest densities on the refuge. Max received assistance as needed from other members of the refuge staff.

The objectives of this study were: (1) To determine the natural duck nest density in three land use types; including non-use areas; summer/fall grazing units, including those currently grazed and those deferred to fall grazing; hay meadow-winter feeding units, including actual mowed areas, unmowed patches in the meadows, and unmowed hills present within these units. (2) To determine a nesting value for each of the types studied by combining nesting density information for each type with survival rate data for comparable areas available from dummy nest studies at Crescent Lake Refuge. (3) To use the information gathered in setting up future studies which will allow refinements in the grazing-haying program, if such are determined to be desirable.

Study Methods: A 66-foot rope drag, with tin cans attached at 2-1/2 foot intervals was used to search for duck nests in each type. The 66-foot length made computations easy, as each 1/8 mile covered meant that one acre had been searched. The drag was pulled by two men on foot. (Up to 50 acres could be covered in a day, considering rest breaks and travel time from site to site). Pertinent information on all nests found was entered on a specially designed form. Sites were selected so that a variety of types could be searched in one day. Sites were searched only one time. Field work began on June 10 and continued for approximately two weeks. Searching was generally confined to within 100 yards of water.

Results: Success in finding nests was good during the first week of the study, when 38 nests were found on 259 acres searched. An additional 200 acres were searched the second week, and only three nests were found. Since there were small acreages of some types and large acreages of other types during this last week of poor success, analysis was performed only on the first week's sampling. Table 4 shows the results by land-use type.

Of the 38 nests found the first week, 25 or 65.7% were blue-winged teal nests, 8 or 21.0% were mallard nests, 4 or 10.5% were gadwall nests, and 1 or 2.6% was a pintail nest. Average distance of nests from water was 32.5 yards for blue-winged teal, 22.4 yards for mallards, 18.3 yards for gadwall, and 12 yards for pintail. The overall average was 28.3 yards.

TABLE 4

Duck Nesting Density Information by Land-use Type on the Valentine Refuge, June 11-17, 1966.

Land Use Type	Acres Searched	Nests Found	Acres/Nest
Mowed Meadow Units	111	11	10.0
Actual Mowed Portions	64	5	14.6
Unmowed Hills	12	1	12.0
Unmowed Patches on Meadow	35	5	7.0
Summer/Fall Grazing Units	90	18	5.0
Currently Summer Grazed	35	3	11.6
Currently Deferred to Fall Use	55	15	3.6
Non-Use Areas	58	9	6.4
Overall Average	259	38	6.8

The natural nest density information is believed to be a good measure of attractiveness of each type to nesting hens, but it does not provide any information on safeness of each type. Therefore, survival rate data from dummy nest studies on Crescent Lake Refuge were combined with the nest density information in an attempt to arrive at a nesting value index for each land-use type. This information is presented in Table 5. With a large enough sample size, and assuming that predator activity at Crescent Lake is similar to that at Valentine, this information should give a good indication of the land-use type providing the best overall nesting habitat.

Note that the summer grazing units which were deferred to fall use this year had by far the best nesting value index. This type was followed by the unmowed patches in meadows and non-use areas.

Sample size in this year's study was not large enough to provide any definite conclusions. Present plans are to expand this study and continue gathering nest density information, in addition to setting up dummy nest samples on the Valentine Refuge. Breeding pair use by land-use type will also be studied.

TABLE 5

Computation of a Nesting Value Index for Sandhills Land-use Types, Using Information from Crescent Lake and Valentine Refuges, 1966.

Land Use Type	Natural Nests Per 100 Acres (Valentine Study)		Dummy Nest Survival Rates (Crescent Study)		Nesting Value Index
Mowed Meadow Units					
Actual Mowed Portions	6.8	X	87.2%	=	5.93
Unmowed Patches	14.3	X	87.7%	=	12.54
Summer/Fall Grazing Units					
Currently Summer Grazed	8.6	X	84.1%	=	7.23
Currently Deferred to Fall	27.7	X	89.2%	=	24.71
Non-Use Areas	15.6	X	75.4%	=	11.76

B. Duck Banding

A duck banding program, carried out during April on Pony Lake, was actually an outgrowth of an excess grain situation. Over 4,000 bushels of milo had been transferred to Pony Lake Subheadquarters from Nebraska WPAs. With no outlet available for 1,500 bushels excess to our needs, it was decided that the milo might be put to good use in a banding program on Pony Lake. This lake had received considerable spring migrational use by diving ducks during the late 1950's, but the use had declined to negligible during recent years. Disposal of the excess milo on Pony Lake was carried out in an attempt to re-establish the high spring duck use of past years, thus attracting large enough concentrations to make banding feasible.

On February 28, approximately 1,000 bushels of milo were hauled onto the ice at Pony Lake and scattered in 56 piles. This grain sank to the lake bottom when the ice went out in early March. Ducks were immediately attracted to the lake. Feeding concentrations gradually increased until the first week in April. At this time an estimated 6-8,000 ducks, mostly redheads, canvasbacks, and lesser scaup, were present. Pony Lake was supporting one of the largest spring concentrations on the refuge, compared to only negligible use during recent years.

On April 1, a 10'x15' swim-in trap with a funnel-type opening and wing on one end was installed and baited at the west end of the lake. The trap was put into operation on April 2, and was checked twice daily through April 8. As shown in Table 6, 426 ducks were banded during this period. Largest single catch was 94 on the morning of April 6.

TABLE 6

Ducks Banded at Pony Lake, Valentine Refuge, 4/2 - 4/8/66.

Species	Male	Female	Total
Lesser Scaup	260	28	288
Green-winged Teal	92	19	111
Redhead	8	-	8
Mallard	4	2	6
Pintail	6	-	6
Baldpate	3	2	5
Gadwall	1	-	1
Ring-necked Duck	1	-	1
Totals	375	51	426

Figuring only the milo used to bait the trap, and not the 1,000 bushels fed, total banding costs were \$210, or \$.47 per duck.

On August 17, Malcolm assisted USGMA Purinton and Nebraska Game Commission Biologists with experimental night lighting of ducks on Dewey and Clear Lakes. The State Fisheries Division's fish shocking boat, with Homelite generator and two 250-watt spot lights was used. The lights were not bright enough and the boat too large for good maneuverability. The method appeared to have good potential if better equipment is used. In approximately five hours of banding effort, the crew caught and banded 17 blue-winged teal, 11 gadwall, and 1 lesser scaup. Nearly all were juvenile birds.

VI. PUBLIC RELATIONS

A. Recreational Uses

Fishing: Fishing use increased to 6,200 visitor days this year, an estimated 32% increase from 1965. This is our primary recreational use, and accounted for 67% of total recreational use in 1966. Heaviest fishing use occurred during May and June, when an estimated 3,200 visits were recorded. See Section II-G for discussion of fishing success on the various lakes.

Other Uses: Picknicking, usually occurring in conjunction with a family fishing outing, made up the bulk of the remaining recreational use. This was followed by sightseeing visits. The completed native grass display at headquarters was quite an attraction to those passing through for a quick look around.

B. Refuge Visitors:

<u>DATE</u>	<u>NAME</u>	<u>ADDRESS</u>	<u>PURPOSE</u>
1/5/66	Jim Monnie	FWS-LaCreek Refuge	Pick up Ammonium Nitrate
1/10	John Wilbrecht	FWS-Crescent Lake Refuge	" " "
2/16	Robert Wheeler	USGMA, N. Platte, Neb.	Routine visit
2/16	R. David Purinton	USGMA, Grand Island, Neb.	Routine visit
4/15	Curt Smith	Weather Bureau, Lincoln	Visit weather station
4/16	Doris Gates & 15 students	Chadron, Nebr.	Bird watching
6/15	Mr. & Mrs. Roy Witschy	Scottsbluff, Neb.	Photography for Centennial
6/15	Orville Kaschke	Alliance, Neb.	Photography for Centennial
7/6	Robert Wheeler	USGMA, N. Platte, Neb.	Brood Survey
7/15	R. J. Lemaire	SCS, Lincoln, Nebr.	Nature trails
7/15	R. C. Lommasson	U. of Neb., Lincoln	Nature trails
7/15	Lester Lindstrom	Kansas U.	Collecting aquatics
8/1	Harry Stokley	Co. Extension Service	Range Clinic
8/1	Jim Carr	SCS, Valentine	Range Clinic
8/1	Mick Harding	SCS, Valentine	Range Clinic
8/4	Robert Wood	Nebr. Game Comm.	Grouse data
8/4	Ken Robertson	Nebr. Game Comm.	Grouse data
8/18	Gus Bonde	USGMA, Lincoln, Neb.	Routine visit
8/18	David Purinton	USGMA, Grand Island	Routine visit
8/23	Alfred C. Fox & 8 students	S.Dak. State College	Field trip
8/23	Elvin Zimmerman	Nebr. Game Comm.	Routine patrol
8/23	Donald R. Nelson	SCS	Publication research
9/15	Donald Fortenbery	USFWS, Rapid City	Black-footed ferrett
9/16	David H. Costello	Portland, Ore.	Gathering book material
9/27	John T. Sweet	Nebr. Game Comm.	Courtesy call
10/11	Ed J. Smith	USFWS, Mpls., Minn.	Inspection
10/11	Clair T. Rollings	USFWS, Mpls., Minn.	Inspection
10/11	Bruce Stollberg	USFWS, Washington, D.C.	Inspection
10/20	Wesley Jones	USFWS, Pierre, S. Dak.	Introduction
10/20	Ernest Giese	USFWS, Pierre, S. Dak.	Visit
11/18	Don Bock	Bur. of Outdoor Rec.	Information
11/30	H. E. Bond	USFS, Halsey, Nebr.	Courtesy call
12/19	Marvin R. Kaschke	USFWS, CMRNWR, Mont.	Courtesy call

In addition to the visitors listed above, there were many visitors who stopped in several times during the year, including the Fort Niobrara Refuge personnel, Nebraska Game Commission Personnel, Soil Conservation Service personnel, and others who are not listed here.

C. Refuge Participation:

- 1/3 Mr. Koss attended the annual membership meeting of the Sandhills Rod and Gun Club at Ainsworth.
- 1/23-29 Messrs. Nelson and Malcolm attended the 1966 Regional Conference in Minneapolis.
- 3/15 Mr. Malcolm cooperated with Manager Fields of Fort Niobrara Refuge in taping a radio program for National Wildlife Week. The tape was broadcast on KVSH (Valentine) Radio's "Voice of the Sandhills" program.
- 3/18-24 Mr. Malcolm showed the movie "Woodland Manners" and presented a slide talk on waterfowl and marsh birds for National Wildlife Week at the following rural schools:
Kennedy School (District 31) - Teacher and 12 pupils.
P.H. Young School (District 20) - Teacher and 2 pupils.
Reece School (District 109) - Teacher and 9 pupils.
Ballard's Marsh School (District 178) - Teacher and 6 pupils.
- 4/3 Messrs. Nelson and Malcolm attended a meeting of Nebraska Game Commission and Bureau personnel at DeSoto Refuge to discuss plans for the 1966 refuge hunting seasons.
- 4/15 Messrs. Malcolm and Aufdengarten and families attended tree planting bee at the Nebraska National Forest, Halsey. Approximately 2,500 pine trees were planted by half of Cherry County's rural school children.
- 5/5 Messrs Malcolm and Koss attended fire meeting and demonstration of the Michigan Sandcaster at the Nebraska National Forest, Halsey.
- 5/17 Messrs. Beck and Aufdengarten attended a U. S. Forest Service fire equipment demonstration at Custer, South Dakota.
- 8/2 Messrs. Malcolm and Westfahl assisted the Cherry County Agent with a 4-H Range Judging Clinic held on the refuge.
- 8/14-16 Mr. Malcolm, on annual leave, attended the Annual Summer Conference of the Central Mountains and Plains Section of the Wildlife Society at Pingree Park, Colorado. The Nebraska delegation held a special meeting and voted to form a Nebraska State Chapter of the Wildlife Society.
- 8/19 Refuge personnel constructed a float which was entered in the Cherry County Fair parade. The float depicted Sandhills grasslands with upland gamebird mounts and marsh habitat with waterfowl mounts. Themes were prevention of range fires and preservation of wetlands.

- 9/19 Mr. Peabody represented the Bureau at a panel meeting of the Centennial Grasslands Committee at Kearney, Nebr., and viewed the premier of "Native Grasses of Nebraska," a new film produced by the Committee.
- 9/30-10/1 Messrs. Peabody and Malcolm attended an organizational meeting of the Nebraska Chapter of the Wildlife Society in Lincoln.
- 11/3 Messrs. Peabody, Beck, and Aufdengarten attended a meeting in Valentine with local fire departments and State Extension Forester regarding use of air tankers in fire suppression.
- 11/19 Mr. Peabody gave orientation talk and tour of the refuge to 10 members of a University of Nebraska Mammalogy Class, accompanied by Harvey Gunderson and Roger Sharpe of the University. The group was accommodated overnight at Pelican Lake.

Valentine Refuge personnel assisted Fort Niobrara Refuge at various times on buffalo and longhorn branding and round-up.

D. Hunting:

1. Sharp-tailed Grouse: A public grouse hunting season was held on the refuge for the second year, and will probably become an annual event. Season dates in 1966 were September 17 through October 2. The open hunting area was again limited to 40% of the refuge acreage. To avoid any significant harvest of the prairie chicken population, the open area was located on the west portion of the refuge. Bag limit was two birds per day.

Poor hunting weather was encountered on opening weekend, with cool temperatures and intermittent drizzle prevailing. Even so, hunting pressure increased substantially over 1965. Check station data provided by the Nebraska Game Commission indicated a 40% increase in the number of opening weekend hunters. However, hunter success decreased this year. Hunter hours per bird bagged were 4.6 this year compared to 3.8 in 1965, while birds per hunter day were .75 and 1.14 respectively. These average figures were deflated by the lazier, driving-type hunters who often went home empty handed. True grouse hunting potential available was reflected by success of the more ambitious hunters who bagged limits of two birds on most days.

Despite the decrease in average hunter success, the increased hunting pressure resulted in an increased total kill. Total birds tallied at the check station, operated two weekends each year, were 92 in 1966 compared to 72 in 1965. Field bag checks throughout the season indicated at least 48 birds not included in this year's check station tally. Making an allowance for unknown bag and crippling loss, the total kill was estimated at 175 this year compared to 125 in 1965. Table 7 summarizes the 1966 check station data.

TABLE 7

A Summary of Check Station Data for the 1966 Grouse Season, Valentine Refuge.

Dates	Hunters	Hunter Hours	Birds Bagged	Juv.	Adult	Unknown
9/17-9/18	75	330	76	26	15	35
9/24-9/25	32	97	16	13	3	0
Totals	107	427	92	39	18	35

2. Ring-necked Pheasant: Pheasant hunting on the refuge opened on December 14, the day following the close of the Nebraska duck season, and continued through December 31. Open area was the same as for the grouse season. Pheasant hunting pressure also increased from last year. Approximately 25 hunters were checked opening day compared to 16 in 1965. Due to very heavy marsh cover, hunting was difficult, and average hunter success was low. Opening day bag checks indicated approximately 1.5 birds per hunter. Pressure was very light following the first weekend, but a few ardent local hunters returned day after day, taking home limits of four roosters on several occasions. Total hunter bag was estimated at 100 birds, with a 25% crippling allowance bringing total estimated kill to 125.

3. Deer: In view of the extremely low hunter success in the 1965 season, it was decided not to hold a refuge rifle deer season in 1966. The 1964 and 1965 seasons attained herd control objectives for the present. Furthermore, it has become evident that an increase in the deer population will be required to permit the degree of hunter success expected in a special refuge hunt. Therefore, the population may be permitted to increase to 1964 levels of nearly 300 before another special rifle season is held.

The refuge was opened to deer archery hunting this year. Season dates were December 14 through December 31. Hunting pressure was very light, and there were no deer taken.

E. Violations:

Refuge personnel assisted in several violation cases, both on and off the refuge. All violations were turned over to State Conservation Officers for disposition in Cherry County Court. Fines were \$10 and \$5 Court Costs, unless otherwise indicated, for the following list of violators:

- 5/12 Wayland C. Flodman, Polk, Nebraska - operating motor boat on Dewey Lake - apprehended by Malcolm, case turned over to State Conservation Officer Zimmerman for disposition.
- 9/3 Thomas G. Dworak, Lincoln, Nebraska - hunting teal on refuge - apprehended by Koss, case turned over to State Conservation Officer Showalter for disposition.
- 9/17 Cecil F. Woodgate, North Platte, Nebraska - hunting grouse on refuge with unplugged shotgun - apprehended by State Officer Anderson and Malcolm.
- 9/17 Mikey L. Bergstrom, Myrna, Nebraska - killing antelope in area for which permit was not valid - apprehended on County road through refuge by State Officer Anderson and Malcolm during public grouse season patrol, fined \$20, \$5 costs, and \$300 liquidating damages.
- 9/18 Gary E Mellott, Omaha, Nebraska - hunting grouse on refuge with unplugged shotgun - apprehended by Malcolm, case turned over to State Officer Anderson for disposition.
- 10/15 Keith G. Quick and Gary W. Galloway, both of Valentine, Nebraska shooting overbag limit of ducks (3 over each) - apprehended off refuge by Peabody and Malcolm - case turned over to State Officer Zimmerman, each fined \$10, \$5 costs, and \$75 liquidating damages.
- 12/15 Donald E. Sperber, Cadott, Wisconsin - shooting deer on refuge, apprehended by Peabody, case turned over to State Officer Zimmerman for disposition.

F. SAFETY: SAFETY meetings were held at various times throughout the year and SAFETY was the topic of frequent on-the-job discussions. Items accomplished during the year to improve SAFETY were as follows:

1. All old carbon tetrachloride fire extinguishers were disposed of.
2. A locked cabinet was provided for safe storage of chemicals.
3. A new combination fog-stream nozzle was purchased for the fire truck.
4. Storage areas above the shop, office, and the barn loft were given a complete house cleaning. Several items were hauled to the junk pile, thus reducing clutter and fire hazard in these areas.
5. Complete inspection of all wiring and electrical systems by a competent electrician was initiated this fall. This project is expected to be completed during the winter. Improvements made and hazards eliminated thus far include:

- a. Replacement of old overhead wires from the service pole to residence and installation of an automatic yard light at Pony Lake.
 - b. Replacement of old overhead wires from yard pole to residence at Pelican Lake.
 - c. Replaced defective main panel in basement of Pelican Lake residence.
 - d. Eliminated excess wires causing short in floor plug of downstairs Pelican Lake residence.
 - e. Replaced defective wiring to new ceiling fixtures in Quarters # 2. Defective fixtures in Quarters # 1 and 2 will be replaced when new fixtures arrive.
6. Discussed procedures for AN/FO blasting SAFETY and provided SAFETY items in compliance with blasting regulations as follows:
 - a. Constructed warning signs for all four sides of pickup to carry explosives.
 - b. Constructed signs to warn visitors of blasting areas.
 - c. Constructed metal box lined with wood for transporting blasting caps.
 - d. Constructed storage vault for blasting caps by burying 55-gallon drum with waterproof, locked cover in horse pasture.
 7. All heating systems and chimneys were inspected and serviced prior to the heating season with the help of Wards Plumbing and Heating servicemen.
 8. Performed Fire Hazard Inspections and weighed all fire extinguishers.
 9. Vehicle SAFETY items were accomplished as follows:
 - a. Slow Moving Vehicle emblems were installed on the 212 Motor Patrol and IHC Tractor.
 - b. SAFETY vests were installed in all vehicles.
 - c. Wide angle lenses were installed on the rear view mirrors of the new Chevrolet stake truck to permit greater visibility when backing.
 - d. Stringers on the new stake truck were reinforced by welding to provide a more stable attachment of the box to the frame.

e. Installed non-skid tape on running boards of pickups, trucks, and IHC tractor.

f. Installed flares and fire extinguishers in new vehicles.

As of January 1, 1967, this station has had 5,769 days without a lost time accident.

VII. OTHER ITEMS

A. Items of Interest

Nelius B. Nelson, Refuge Manager on the Valentine Refuge since 1958, transferred to Tamarac National Wildlife Refuge on July 16. A farewell party was held for Nelius and Alma the evening of July 15, when the refuge staff extended their best wishes and presented the Nelsons with a gift.

Manager Nelson was replaced by Ned I. Peabody, who transferred from Lostwood National Wildlife Refuge in North Dakota. Ned, his wife Anne, and children Mark and Monica arrived here on August 26. Ned and family are now enjoying the balmy "Sandhills Banana Belt" winter weather.

As of July 1, management of Nebraska Waterfowl Production Areas was transferred from the Valentine Refuge to the newly formed Hastings Wetland's Office. David Rose transferred from Crab Orchard National Wildlife Refuge to assume the WPA management responsibilities. The establishment of the Hastings office was indeed welcomed here. Management of the WPAs, some 200 miles from here, required considerable travel time by the Manager, as well as other refuge personnel. More time will now be available for management activities on the refuge.

B. Photographs

Photographs are appended. Several are courtesy of Fort Niobrara Refuge Manager Fields.

C. Credits

Aufdengarten - Supplied notes for Section IIIA and kept good daily records of work accomplished.

Beck - Wrote Section IA; completed NR Forms 4, 8, and 8a; typed the entire report.

Koss - Supplied notes for Section IIA (Captive Goose Flock) and Section IIIA; kept good daily records drawn upon for various portions of the report.

Peabody - Wrote Sections IIG and IIIA (portion on pothole blasting); provided editorial supervision for the entire report.

Malcolm - Drafted all remaining sections, NR Forms, and photo captions.

Fisheries Management Services Biologist Robinson and State Fisheries Biologist Peckham supplied basic information for the fish section.

SIGNATURE PAGE

Submitted by:

Ned I. Peabody

Ned I. Peabody
(Signature)

Date: February 7, 1967

Refuge Manager

Title

Approved, Regional Office:

Date: 2-20-67

Edward J. Smith

(Signature)

Asst.

Regional Refuge Supervisor

W A T E R F O W L

REFUGE Valentine

MONTHS OF September TO December, 19 66

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Swans:	9/4-9/10	9/11-17	9/18-24	9/25-10/1	10/2-8	10/9-15	10/16-22	10/23-29	10/30-11/5	11/6-12
Whistling										
Trumpeter										
Geese:										
Canada	60	60	60	60	60	60	60	60	100	100
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	7,000	8,000	9,000	13,000	16,000	17,000	19,000	19,000	15,000	4,000
Black										
Gadwall	10,000	11,000	13,000	13,000	17,000	20,000	26,000	28,000	2,000	500
Baldpate	1,000	2,000	4,000	4,000	3,000	3,000	3,000	4,700	2,500	100
Pintail	2,000	2,000	2,000	3,000	4,500	4,000	4,000	3,500	500	100
Green-winged teal					800	400	200	200		
Blue-winged teal	9,000	7,000	5,000	2,000	500	200				
Cinnamon teal										
Shoveler	10,000	11,000	12,000	12,000	8,000	16,000	30,000	33,000	24,000	2,000
Wood	3	3	3	3	3					
Redhead	500	500	800	1,500	1,500	2,500	3,000	2,300	3,000	500
Ring-necked			300	300	800	1,500	2,000	2,300	2,000	100
Canvasback	50	100	100	100	1,000	4,000	7,000	8,000	6,000	1,000
Scaup	500	1,000	2,000	4,000	6,000	3,000	3,000	6,000	4,000	500
Goldeneye										50
Bufflehead				50	500	1,500	5,000	9,500	10,000	2,000
Ruddy	1,000	2,000	3,000	3,000	3,000	2,000	1,000	1,000	100	50
Other										
Hooded Merganser							1			
Common Merganser									200	200
Coot:	8,000	10,000	13,000	17,000	17,000	16,000	15,000	14,000	2,000	500

3-1750a

Cont VR-1

(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE ValentineMONTHS OF September TO December, 19 66

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total	
	11	12	13	14	15	16	17	18			
Swans:	11/13-19	11/20-26	11/27-12/3	12/4-10	12/11-17	12/18-24	12/25-31				
Whistling											
Trumpeter											
Geese:											
Canada	100	100	75	75	12				7,294		
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard	5,000	5,000	1,000	200	200	--Lakes Frozen Over			1,107,200		
Black											
Gadwall	20	20							983,780		
Baldpate	10								191,170		
Pintail									179,200		
Green-winged teal									11,200		
Blue-winged teal									165,900		
Cinnamon teal											
Shoveler	20	20							1,106,280		
Wood									105		
Redhead	25	25							113,050		
Ring-necked									65,100		
Canvasback	50	50							192,150		
Scaup	150	150							212,100		
Goldeneye	20	50							840		
Bufflehead	200	200	100						203,250		
Ruddy	10	10							113,190		
Other Hooded Merganser									7		
Coots: Common Merganser	50	1,500	1,500		20				24,290		
Coots:	25	25							787,850		
					(over)						

	(5)	(6)	(7)	
	Total Days Use	Peak Number	Total Production	SUMMARY
Swans				Principal feeding areas <u>Marsh Lakes, Dewey, Clear,</u>
Geese	7,369	175		<u>Willow, Pelican, Center, and "21" Lakes.</u>
Ducks	4,668,812	117,500		Principal nesting areas _____
Coots	787,850	17,000		
				Reported by <u>Jon M. Malcolm, Assistant Refuge Manager</u>

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

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1751

Form NR-1/

(Nov. 1945)

MIGRATORY BIRDS

(other than waterfowl)

Refuge.....Valentine.....Months of September.....to December.....1976.

(1) Species Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Sandhill Crane	6	10/21	150	11/2	150	11/2	(Fly-overs first seen 9/24-peak 2,000 on 11/8-last seen 11/9.)			
Great Blue Heron	Present		30	9/23	1	11/4				
Black-crowned night Heron	Present		50	9/23	4	10/5				50
Double-crested Cormorant	Present		80	9/29	4	10/20				150
White Pelican	Present		800	9/23	10	10/24				1,000
Eared Grebe	Present		100	9/23	100	9/23				100
Pied-billed Grebe	Present		250	10/5	250	10/5				250
Western Grebe	Present		600	9/8-10/5	1	10/20				600
II. Shorebirds, Gulls and Terns:										
Avocet	5	9/23	5	9/23	5	9/23				5
Killdeer	Present		150	9/18	No record					300
Common Snipe	Present		No Record		1	10/5				25
Upland Plover	Present		No Record		No Record					100
Wilson's Phalarope	Present		No Record		1	9/23				50
Ring-billed Gull	Present		100	11/21	100	11/21				300
Franklin's Gull	25	9/23	25	9/23	25	9/23				25

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u>					
Mourning dove	Present	No Record	No Record		
White-winged dove					
IV. <u>Predaceous Birds:</u>					
Golden eagle	1 9/29	9 observations on record.	Present		10
Duck hawk	2 9/29	2 9/29	2 9/29		2
Horned owl	Resident				50
Magpie	Resident				100
Raven					
Crow	Resident				75
Bald Eagle	1 11/14	6 observations on record.	1=11/27		6
Sparrow Hawk	Present-Strong migration 9/10-11; still common 9/18; no record last seen.				300
Cooper's Hawk	1 9/18	4 observations on record	Present		10
Prairie Falcon	1 12/14	Rare	Present		5
Rough-legged Hawk	1 9/19	Common	Present		25
Marsh Hawk	Present	Common	Present		50
Short-eared Owl	1 12/17	Rare	Present		5
Reported by Jon M. Malcolm, Assistant Refuge Mgr.					

INSTRUCTIONS

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

3-1752

Form NR-2

(April 1946)

UPLAND GAME BIRDS

Refuge ValentineMonths of September to December, 19 66

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Sharp-tailed Grouse	59,000					175			2,400	27,000 acres open to public hunting Sept.17-Oct.2. Estimated 150 birds bagged, plus 25 to crippling loss. 4.61 hunter hours/bird; juv./adult ratio 2.05. Flocks up to 60 observed this winter.
Greater Prairie Chicken	59,000					0			170	Open hunting area did not include the portion used by chickens. Flocks of up to 25 observed this winter.
Ring-necked Pheasant	59,000					125			4,000	27,000 acres open to public hunting Dec. 14-31. Estimated bag of 100 birds and crippling loss of 25.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

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

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

3-1753
Form NR-3
(June 1945)

BIG GAME

Refuge Valentine

Calendar Year 1966

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions	(7) Estimated Total Refuge Population		(8) Sex Ratio
			Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss		At period of Greatest use	As of Dec. 31	
Common Name	Cover types, total Acreage of Habitat	Number								Source			
Mule Deer	59,000	30									125	125	
White-tailed Deer	59,000	20									60	60	

Remarks:

Aerial count on 1/9/67 recorded 81 mule deer and 16 white-tailed deer.

Reported by Jon M. Malcolm-Assistant Refuge Manager

INSTRUCTIONS

Form NR-3 - BIG GAME

(1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.

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

(3) YOUNG PRODUCED: Estimated total number of young produced on refuge.

(4) REMCVALS: Indicate total number in each category removed during the year.

(5) LCSSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.

(6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.

(7) TOTAL REFUGE POPULATION: Give the estimated population of each species on the refuge at period of its greatest abundance and also as of Dec. 31.

(8) SEX RATIC: Indicate the percentage of males and females of each species as determined from field observations or through removals.

116000

PUBLIC RELATIONS
(See Instructions on Reverse Side)

Refuge ValentineCalendar Year 1966

1. Visits

a. Hunting 360 b. Fishing 6,200 c. Miscellaneous 2,680 d. TOTAL VISITS 9,240

1a. Hunting (on refuge lands)

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl			
Upland Game	350	27,000	BSF&W Nebr. Game Comm.
Big Game	10	71,516	BSF&W Neb. Game Comm.
Other	<u>360</u>		

Number of permanent blinds 0Man-days of bow hunting included above 10

Estimated man-days of hunting on lands adjacent to
refuge 75

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

TYPE OF AREA	ACRES	MILES
Ponds or Lakes	3,200	
Streams and Shores		

1c. Miscellaneous Visits

Recreation 2,680 Official 55*Economic Use 1,500* Industrial _____

*Not included in totals.

2. Refuge Participation (groups)

TYPE OF ORGANIZATION	On Refuge		Off Refuge	
	NO. OF GROUPS	NUMBER IN GROUPS	NO. OF GROUPS	NUMBER IN GROUPS
Sportsmen Clubs			1	60
Bird and Garden Clubs				
Schools	3	33	5	138
Service Clubs			1	40
Youth Groups				
Professional-Scientific			1	30
Religious Groups				
State or Federal Govt.			6	170
Other				

3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Press Releases	7	Radio Presentations	1
Newspapers (P.R.'s sent to)	8	Exhibits	1
TV Presentations	0	Est. Exhibit Viewers	3,000

3-1758
Form NR-0
(Rev. Jan. 1956)

Fish and wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

1966

Refuge Valentine County Cherry State Nebraska

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water- fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
			Acres	Bu./Tons	Acres	Bu./Tons			
<u>NONE</u>									
								Fallow Ag. Land	

No. of Permittees: Agricultural Operations NONE Haying Operations 17 Grazing Operations 27

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
<u>NATIVE HAY FED ON AUM BASIS.</u>				1. Cattle	Estimated 15,500	45,799.53	\$81,169.53	55,286
				2. Other				
				1. Total Refuge Acreage Under Cultivation				0
Hay - Wild				2. Acreage Cultivated as Service Operation				0

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

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

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

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

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

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

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

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

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

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

REFUGE GRAIN REPORT

Refuge Valentine

Months of January through December, 197766

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Shelled Corn	0	450	450	--	--	150	150	300	--	300	--
Oats	250	100	350	--	--	350	350	--	--	--	--
Wheat	0	160	160	--	--	160	160	--	--	--	--
Milo	3,439	450	3,889	300	--	2,789	3,089	800	--	800	--
Tall Wheatgrass	50	--	50	--	50	--	50	--	--	--	--
Mixed Grass Seed, Predominatly Sand Bluestem (lb)	420	--	420	--	420	--	420	--	--	--	--

(8) Indicate shipping or collection points Corn from DeSoto; Milo, Oats, & Wheat from Nebraska WPA.

(9) Grain is stored at Valentine Refuge Granaries.

(10) Remarks Milo transferred to Tamarac Refuge.

*See instructions on back.

REFUGE GRAIN REPORT

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

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

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

ANNUAL REPORT OF PERSTICIDE APPLICATION

Proposal Number

Reporting Year

1966

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

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
5/25, 26, 27, and 6/1.	Leafy Spurge (<u>Euphorbia esula</u>)	G-2B; G-15A, B, C; and G-31A.	2	Tordon 22K	4 lb. A. E. (2 gallons)	2 lb. A.E. per acre.	Water - 1 gal./ 50 gal.	Gas operated hand sprayer.
9/26 and 9/30	Same.	Same.	4	Same	4 lb. A.E.	1 lb. A.E. per acre.	Same.	Same.

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

Kill on areas treated with Tordon in 1965 appeared to be excellent when these areas were inspected in the spring of 1966. However, additional treatment was necessary because of numerous small patches missed in 1965. The May and June treatment was on approximately 65 scattered patches of leafy spurge, mostly in the Sawyer Meadow, G-15C. Treatment costs for the spring spraying totalled \$190, or \$98 per acre. The treatment cost includes considerable time spent in searching for the small scattered patches.

First rainfall following treatment was .21" on 5/29. This was followed by heavy rains the first week of June bringing the total to 4.71" by 6/9. Observations on 6/8 revealed that 95% of the sprayed plants were turning brown and curling, with many already dried out. Several root systems checked were dried and dead. Approximately 5% of the sprayed plants were still green but curling. A few new patches of seedlings were again found and treated at this time.

(OVER)

Fall observations on spurge areas were disappointing. A patch of approximately 3 acres in the Sawyer Meadow had been treated with Tordon in 1965 with apparently good results. However this area was infested with small, scattered seedlings when checked in September, 1966. Therefore this patch and smaller patch of about 1 acre at Pony Lake were again treated. Cost of the fall treatment, including chemical and labor was \$114 or \$28.50 per acre.

VALENTINE NATIONAL WILDLIFE REFUGE
UPLAND GAME BIRD HUNTING REGULATIONS

1966

SPECIES ALLOWED: Grouse and Pheasants. Hunting of waterfowl, or any other bird or animal is strictly prohibited.

SEASONS: Grouse: September 17 through October 2.
Pheasant: December 14 through December 31.

OPEN AREA: The open area is in the portion of the Valentine Refuge which lies west of U. S. Highway 83, south of State Spur 483, and north of a line from Dads Lake to the north side of the West Sweetwater Valley. This area is indicated on your map.

CLOSED AREAS: Closed areas include the portions east of U. S. 83, north of State Spur 483, and south of a line from Dads Lake to the north side of the West Sweetwater Valley. The areas around Refuge Headquarters and Pelican Lake Subheadquarters are closed. These areas are posted and are indicated on your map.

STATE REGULATIONS: In addition to the regulations listed here, all hunting will be in accordance with State Hunting Regulations. Check these for bag limits, hunting hours, license requirements, etc.

HUNTER ENTRANCES: Entrances to the open area will be marked by "Public Hunting Area" signs. There are four entrances on the west side of U. S. 83 and two entrances off State Spur 483 near headquarters.

VEHICLE TRAVEL: Vehicle travel will be allowed on any well defined trail within the open area. A few of these trails are shown on your map. No vehicle travel is allowed beyond posted points or off trails in meadows.

PARKING: Parking is allowed at any point along hunter trails, except on the black-topped roads to Pelican and West Long Lakes.

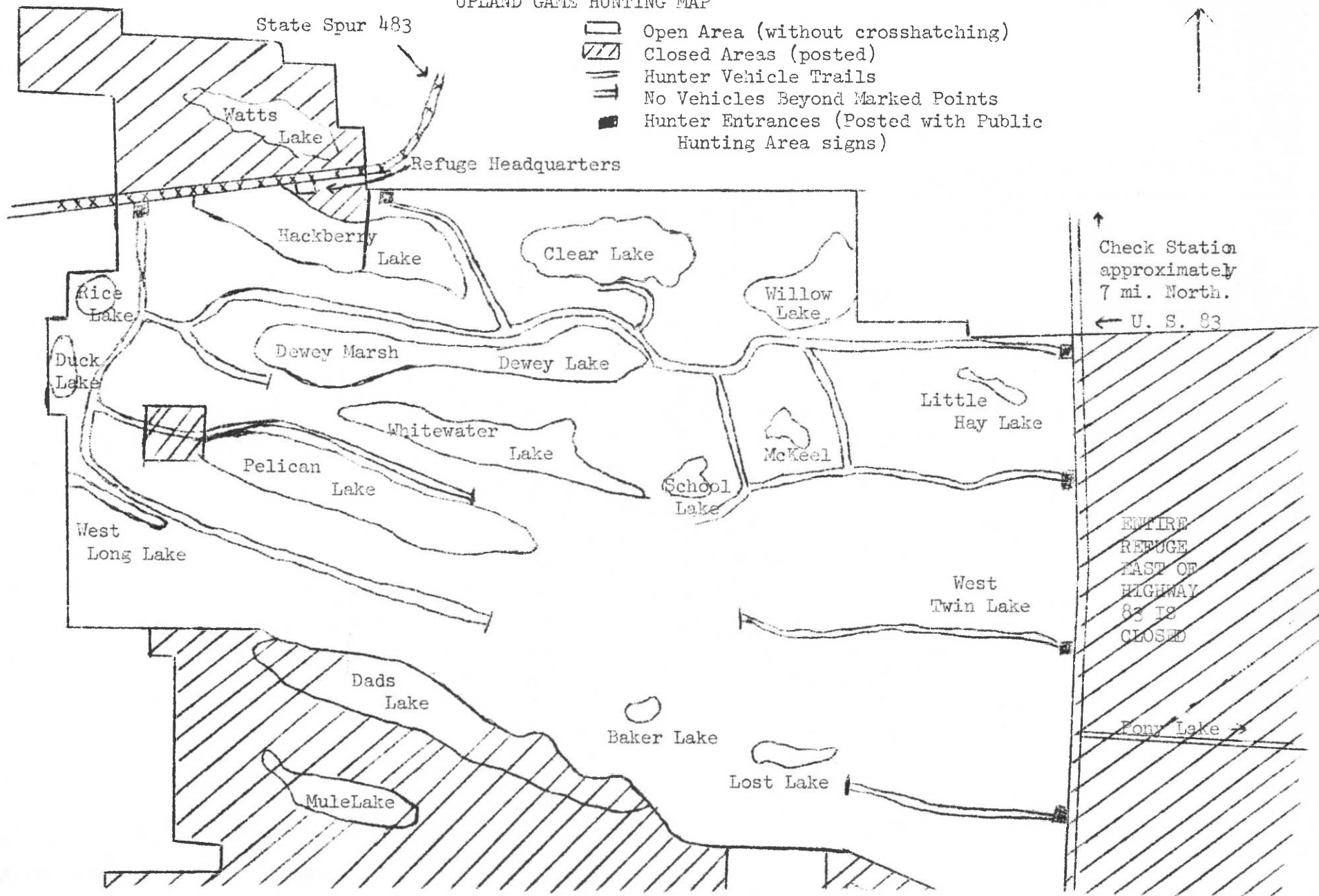
LIVESTOCK: There will be livestock in much of the open area. You are requested to use extreme caution to avoid shooting towards livestock and please keep all gates closed.

CHECK STATIONS: During weekends of the grouse season there will be a hunter check station at the U. S. 83 - State Spur 483 junction northwest of the Refuge. In order that we can evaluate the harvest and success of the season, please stop at this check station upon completing your hunting.

GOOD HUNTING - PREVENT FIRES - NO ACCIDENTS

VALENTINE NATIONAL WILDLIFE REFUGE - VALENTINE, NEBRASKA
UPLAND GAME HUNTING MAP

NORTH



Valentine Refuge Staff Members as of December 31, 1966.
Left to right: Refuge Clerk, Dewey L. Beck, Jr.;
Maintenance man, Arthur H. "Bud" Aufdengarten; Biological
Technician, R. Duane Koss; Refuge Manager, Ned I. Peabody;
Assistant Refuge Manager, Jon M. Malcolm.

R67-1-6 - 1/4/67 - Courtesy R. Fields, Fort Niobrara



This photo was printed for inclusion in the 1965 Narrative Report, but was lost in the shuffle. Three local hunters who were successful in the 1965 rifle deer season. These fellows are all ardent, "walking type" hunters. Their breed should be placed on the "rare and endangered species" list. Left to right: Rancher Elver Lord; School Teacher and Ranch-hand El Walkling; and Rancher Bob Halferty. (Negative courtesy Bob Halferty; darkroom work by Nelson).

Manager Nelson presents the keys for the remodeled Quarters # 5 to Refuge Clerk Beck and his wife, who moved in from Pelican Lake in Marsh. Shown here is the living room in the 20 x 24 foot addition built onto the old Student Trainee Quarters.

R-66-5-6, 4/66 - Nelson.



Ice break-up brought positive proof of the serious winter-kill of game fish in Hackberry Lake. The nearly complete winter kill on bass and bluegill was fully expected in light of extremely low dissolved oxygen levels during February.

R66-1-19, 3/28/66 - Malcolm.

Excellent spring water conditions, and an earlier peak than usual, were recorded with this view of the Dewey Lake auxillary spillway, which had begun overflowing by late March. Gauge reading on this date was 5.20 or 2924.50 feet elevation. Nearly two months of water release was required to bring Dewey Lake down to operating level.

R66-1-20, 3/28/66 - Malcolm.

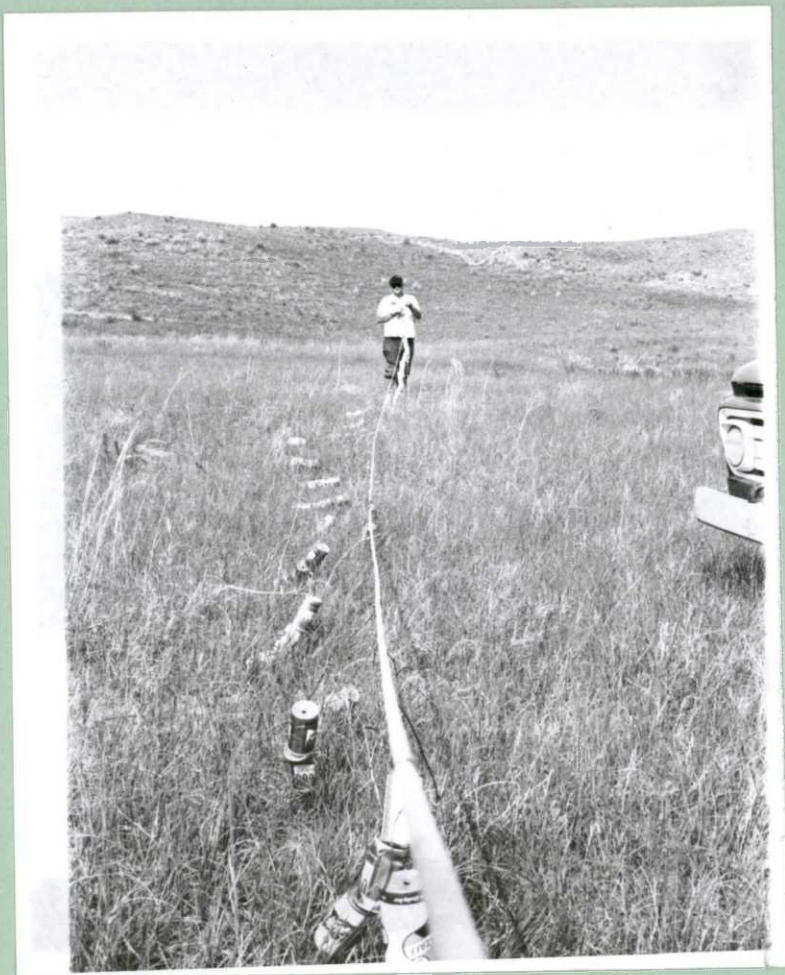


Biological Aid Westfahl displays the 66-foot rope drag used in searching for duck nests during June. A string of three beer cans was attached to the rope at 2-1/2 foot intervals. The drag was quite effective in flushing hens from nests. Some problem was experienced with the cans catching on brush and coming unfastened. However, Max was able to obtain an abundant supply of replacements at the So-braska Refuge Picnic, held in June at Fort Niobrara Refuge.

R66-3-18, 6/14/66 - Malcolm (Darkroom work by Westfahl).

Westfahl points out blue-winged teal nest location on a subirrigated range site in unit G-3D just one yard off the Dewey Lake fishing trail. Dominant cover at this nest site was Kentucky bluegrass. Seven nests were found in 33 acres searched in G-3D, a unit deferred to fall grazing this year.

R66-3-17, 6/14/66 - Malcolm (Darkroom work by Westfahl).



General view of Natural Area # 2 on the South side of Dewey Lake, looking West. One mallard nest and four blue-winged teal nests were found in 13 acres searched at this location. All teal nests were on the hillsides in sparse to moderate cover, with an average distance to water of 55 yards.

R66-2-28, 6/16/66 - Malcolm (Darkroom work by Westfahl).

Westfahl points out the location of one of the blue-winged teal nests found in Natural Area # 2. This nest was in very sparse cover high up on a choppy sands range site, some 71 yards from water.

R66-2-30, 6/16/66 - Malcolm (Darkroom work by Westfahl).



Grazing Unit G-4 in the foreground, was one of the best nest density areas found in the duck nesting study. G-4 is a summer grazing unit which was deferred to fall use this year. Eight duck nests were found in 22 acres searched. A mallard nest and a gadwall nest were found within 10 yards of each other in the dense cover immediately to the left of the windmill. The Dewey Lake fishing trail passes through the lower left hand corner.

R66-3-31; 6/14/66 - Malcolm (Darkroom work by Westfahl).

"Ferret-like weasel" or "weasel-like ferret"- take your pick. Positive identification of this critter, photographed in G-4 on the north side of Dewey Lake, is still pending. See Section IID-4 for a complete discussion.

R-66-1-23; 3/29/66 - Malcolm.



Much of our time is spent in trying to keep the Sandhills from blowing down to Kansas. Ex-grazing permittee, W. W. Piercy, used poor judgement in locating this windmill on a sandy knoll in G-34B a number of years ago. Refuge personnel are shown in the process of removing the windmill from the resulting blowout.

R66-9-12, 7/13/66 - Malcolm.

A new well was drilled and the windmill moved to a better location on solid, level ground. This is one of the S&M watering facility projects carried out during the year.

R66-9-15, 7/13/66 - Koss.



Severe overgrazing on private land adjacent to non-use grazing area "G-A" resulted in fenceline trailing causing blowouts and damage to the refuge boundary fence. Trespass cattle had been in "G-A" for some time before we became aware of the situation.

R66-9-17, 9/7/66 - Koss.

S&M funds were used to relocate and repair the fence at several locations. Old stub posts were used as rip-rap to prevent further trailing and fence damage.

R66-9-19, 9/7/66 - Koss.



Past overgrazing in the north end of G-18A has resulted in very poor range condition, as evidenced by the stand of invading green sagewort in the foreground. Fishermen traveling the Willow trail, coupled with cattle trampling, has also led to severe blowout conditions shown in the background.

R66-4-5, 7/27/66 - Malcolm.

Approximately 1.2 miles of S&M fence was installed to eliminate the north end of G-18A from grazing. This will allow healing of blowouts and improvement of range condition. The fence may also improve grazing distribution in G-18A, as a small pothole and subirrigated area thought to attract cattle has been eliminated from the unit.

R66-4-4, 7/27/66 - Malcolm.



A large sign and individual species labels were installed at the headquarters Native Grass Display this spring, completing the project. The display is a part of the 1967 Nebraska Centennial Grasslands promotion program, and will be maintained for public enjoyment and education in future years.

R66-6-17, 8/66 - Malcolm.

The grass display was quite an attraction to tourists and local people visiting the refuge this summer.

R66-8-3, 8/5/66 - Malcolm.



A Cherry County 4-H Range Judging Clinic was held on the refuge in August. Refuge personnel assisted the County Agent with the instruction. This wetland range site in G-7A was rated in excellent condition due to the preponderance of native prairie cordgrass and northern reedgrass

R66-4-14, 8/2/66 - Westfahl.

Above normal summer rainfall resulted in tremendous growths of warm season grasses and forbs, creating excellent upland food and cover conditions going into the winter. The rapid growth of warm season grasses this year is demonstrated by this view of sand lovegrass regrowth on a sands range site in G-2B, taken approximately one month after the meadow had been mowed.

R66-6-7, 8/66 - Malcolm.



Excellent cooperation by the Nebraska Game Commission and Fisheries Management Services Biologist Robinson in managing the public fishing lakes continues. An employee of the Valentine State Fish Hatchery is shown here transferring a portion of approximately 33,000 black crappie from the truck to Dewey Lake. Stocking of the crappie was recommended by fisheries biologists as a step toward providing the once fabulous crappie fishing experienced on Dewey Lake in the late 1940's.

R66-11-1, Peabody 9/22/66.

Breeding habitat improvement by pothole blasting was carried out in the Sawyer Meadow, G-8E, this fall and winter. Here, Manager Peabody sets off a 225 lb. charge.

R66-10-8, 11/10/66 - Beck.

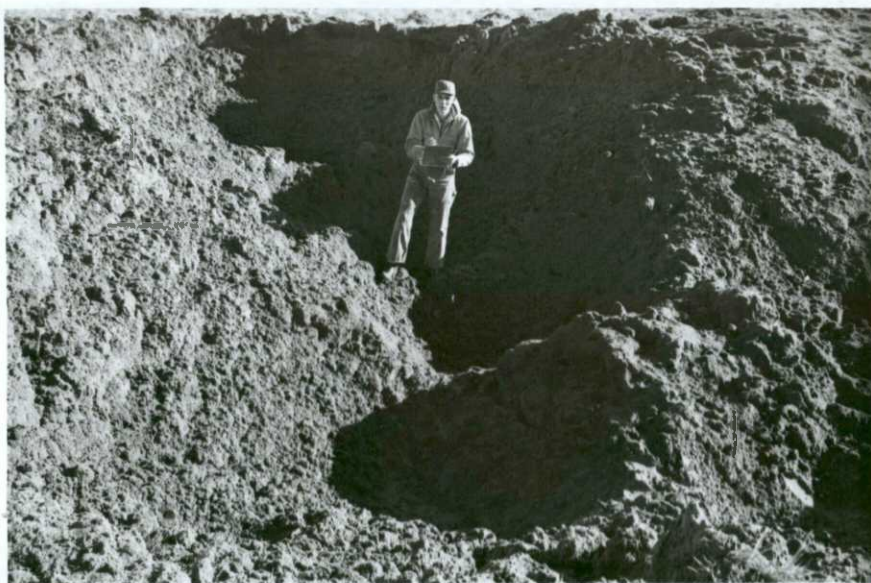


Water table was at or near the ground surface in all blasting locations. Therefore, it was necessary to place charges in the hole immediately after drilling in order to get to the bottom before sloughing occurred. This 12-inch auger worked nicely with 9-inch diameter bags.

R66-14-20, 12/19/66 - Courtesy R. Fields, Ft. Niobrara.

One wing of a Z-shaped pothole blown with 260 lbs. of AN/FO. Pothole was approximately 1,700 Square Feet, with a maximum depth of 6 feet and average depth of 4 feet. Depth and area from 25-lb. charges in the background was nearly as much as that from 40 lb. charges in the foreground.

R66-14-18, 12/19/66 - Courtesy R. Fields, Ft. Niobrara.



A V-shaped pothole blown with 260 lbs. of AN/FO; 4-40 lb. charges in a square on 9 ft. centers with 2-25 lb. charges forming each wing of the V (upper left and right). Surface area estimated at 1500 square feet, with maximum depth of 6 feet and estimated average of 4 feet. Note ridges, which will slough as the bottom settles, resulting in shallower hole. Time will tell if these potholes will be deep enough to prevent encroachment of emergent vegetation.

R66-15-4, 12/19/66. Courtesy R. Fields, Ft. Niobrara.

All phtholes filled with water within a few days after blasting. Some filled slowly. Others, as shown here, began boiling with water within a few minutes.

R66-15-4, 12/19/66. Courtesy R. Fields, Ft. Niobrara.

