

January-April, 1957

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REGULAR PERSONNEL

- | | |
|------------------------|----------------|
| 1. Raymond L. St. Ores | Refuge Manager |
| 2. Edmund J. Fromelt | Refuge Clerk |

REFUGE NARRATIVE REPORT
Waubay National Wildlife Refuge
January 1 to April 30, 1957

I GENERAL

A. Weather Conditions

The reporting period was generally cold, not too windy and with comparatively small amounts of snow. Blizzard conditions developed on two occasions, once in February and once in March. Subsequent warm spells melted the snows so that recurring drifts did not appear. In summary, the winter was cold but open and should have resulted in all game species of birds coming through in good shape.

The average temperature for January was 4.5 degrees compared with 10 degrees a year ago. Mean maximum and minimum temperatures were 15 and .06 degrees. Winds were generally light with an occasional heavy blow. An oddity did occur in that a rainbow was sighted on the 14th. Temperatures ranged from a high of 34 degrees on the 19th to a low of -26 degrees on the 20th. The thermometer registered below zero readings on 19 days. Only one day saw a temperature above 32 degrees. Total precipitation was .13 inches well below the .61 inches recorded a year ago. Only 2.7 inches of snow fell during January compared with 7.8 inches the same month in 1956.

February, 1957 was slightly warmer than the same month a year ago. Mean temperatures during this month were 21 and .7 degrees. The average temperature was 16.5 compared with 10.9 degrees in 1956. Temperatures varied from a high of 43 degrees on the 25th to a low of -21 on the 22nd. Winds were generally light with again a few gusty days occurring. Snowfall was above the 2.9 inches which fell during February, 1956. Five inches of the 9.5 inches falling this month fell on the 20th and succeeding warm days melted all of this snow. Total precipitation for February, 1957 was .45 inches compared with .20 inches during the same month a year ago.

Temperatures during March of this year varied from a high of 55 degrees on the 21st to a low of -2 degrees on the 2nd. Mean maximum and minimum temperatures during March were 38 and 18 degrees. The average March temperature this year was 28 degrees compared with a cooler 23.9 degrees during March, 1956. Winds were a little more severe this month and some road blocking occurred on the 13th when 7 inches of wet and heavy snow fell.

This snow was a life saver to potholes in the area since all previous snows had blown off and melted. A total of 7.5 inches of snow fell this month compared with 10.4 inches in March, 1956. Total precipitation was .63 inches during March 1957 and 1.14 inches during the same period a year ago.

April saw temperatures as high as 78 degrees and as low as 11 degrees. The average temperature was a balmy 43 degrees compared with 37 degrees in 1956. Refuge lakes opened on the 18th. Total precipitation was 3.72 inches this month compared with 1.31 inches for the same period a year ago. Five and seven-tenths inches of much needed snow also fell this month. Even though clouds and precipitation did occur on eleven days it was yet a nice month since temperatures were warm, winds were not severe and the appearance of early spring birds heralded the approach of the approaching growing season.

The following table shows comparative weather data for 1956 and 57 as recorded from our own refuge weather data.

| | Total Precip. | | Snowfall | | Mean Max. | | Mean Min. | | Ave. Temp. | |
|-------|---------------|------|----------|------|-----------|-----|-----------|-----|------------|------|
| | 1956 | 1957 | 1956 | 1957 | '56 | '57 | '56 | '57 | 1956 | 1957 |
| Jan. | .61 | .13 | 7.8 | 2.7 | 20 | 15 | .06 | -6 | 10 | 4.5 |
| Feb. | .20 | .45 | 2.9 | 9.5 | 21 | 27 | .7 | 6 | 10.9 | 16.5 |
| March | 1.14 | .63 | 10.4 | 7.5 | 34 | 38 | 13.5 | 18 | 23.9 | 28 |
| April | 1.31 | 3.72 | 5.3 | 5.7 | 49 | 55 | 25 | 31 | 37 | 43 |
| TOTAL | 3.26 | 4.93 | 26.4 | 25.4 | | | | | 20.4 | 23 |

B. Water Conditions

Refuge lakes opened up on April 18 well after the big goose movement had occurred. Even though the lakes opened early this year, few waterfowl were attracted since almost all the other lakes and potholes in the area had already been opened for two weeks. Water levels on the refuge are about the same as last year--generally low.

Potholes are again low this year and it is doubtful that water in them will last long. Heavy spring rains with a lot of runoff--unlikely now--is the only thing that will save them.

The dike at Barse slough was washed out at the end of the period, but has since been repaired. Rip-raping and a new spillway are yet to be added before the job is done.

Crops got off to a good start since both surface and sub-surface moisture appears good. Timely spring rains have also aided in getting crops started.

C. Fires

Fire hazards have been low with no refuge fires occurring.

II WILDLIFE

A. Migratory Birds

a. Whistling Swan

Whistling swans arrived the first week in April again this year. Five were seen on April 3 resting in the open shore waters of Waubay lake. Ten swans--the peak number--were present from then until the end of the reporting period. An estimated 250 swan days of use occurred on Waubay Refuge this period compared with a peak of 26 birds and 315 use days for the same period in 1956.

b. Canada Geese

The refuge flock of Canada geese absented the area from December 19 until March 3rd. One of 16 birds banded December 3rd was shot in the center of Texas on December 27th so it is quite possible that some of the Waubay birds wintered at or near Seymour, Texas. Previously it was thought that the Waubay flock wintered at Lake Andes. We have no concrete information on which to base this idea.

Fifty Canada geese appeared in the Springs area on March 11, following a warm spell. The number increased to 250 during the week ending April 6 after which there was a tapering off until only 50 geese remained at the end of the period. At this writing there are only 40 Canada's on the refuge. It is felt that most of the non-breeding refuge flock are at Bitter Lake just south of Waubay.

Fifteen breeding pairs of Canada geese have been located. In an area adjacent to but not a part of the refuge, a pair of Canada geese started incubating April 11. Refuge geese are all incubating now. One nest, on a muskrat house in Waubay Lake, was destroyed by high winds. It is not known if this pair has re-nested.

The 3 large nesting islands constructed in Swan pond during the winter of 1955 each have an incubating pair of Canada Geese on them. There were a few battles over the east island with the winners taking over immediately. Vegetation is slightly heavier on this island.

Canada geese, presumably but not a proven part of the refuge flock, are nesting in Bitter lake, Block slough, Bluedog lake watershed and other larger sloughs in the area.

At the close of the reporting period, Canada goose populations were identical to that of a year ago; even to nesting pairs. In general, the population is low compared to previous spring counts.

c. Blue and Snow Geese

Two snows and one blue goose used Waubay refuge this spring. These birds were crippled captured last fall, nursed back to health and banded and released this spring. They joined a flock of northward moving birds about a week after release.

The spectacular blue and snow goose migration noted during the first two weeks of April in 1956 was not witnessed this year. Sand Lake Refuge had their peak goose concentration long before we had even seen a bird at Waubay. The movement was apparently west of Waubay refuge this spring.

At the close of the period and until this writing, the smaller secondary migration of blue and snow geese occurred. Small flocks of 2 or 3 hundred birds have passed over almost daily with none of them stopping.

The first blue and snow geese recorded this spring were seen coming from the northwest at 6:15 PM March 27th. An estimated 15,000 blue and snow geese passed the refuge starting the last week in April, none stopped at Waubay refuge. Last year a peak of 400 blues and 250 snows used the refuge during the second week in April.

d. White-fronted Geese

Only 24 white-fronted geese were noted during April of 1956. None were observed this year.

e. Ducks

Duck use of this area was again light because as mentioned earlier in this report, refuge waters were frozen over during the peak migration period. Generally, duck species were in the region 2 weeks before appearing on Waubay refuge.

The first arrivals, pintails, mallards, and baldpate were recorded March 11th. A subsequent snow and cold spell stopped further migration until March 27 when the first large movement of mallards and pintails was recorded.

The second week in April heralded the arrival of small numbers of black duck, gadwall, widgeon, green-winged teal, shovelers and seaup. The following week all species of ducks, including American mergansers, common to this area had been observed.

The peak duck population this year was 2,510 compared with 1540 a year ago. Duck day use was up from 32,109 reported a year ago to an estimated 38,600 during the period of this report.

f. Coot

Coots arrived about the same time as last year--the week ending April 27. The peak of 50 birds was recorded the last week of the reporting period. Last years' peak of 200 birds was also noted the last week of the period. Coot day use was 560 this year and 1,680 days for the same period last year.

g. Water and Marsh Birds

Like last year, the main flight of shorebirds have not yet arrived. The early arrivals have of course been noted. Great blue herons have been present since April 19, black-crowned night herons since April 24, and American bitterns since April 30. One little green heron, not on the refuge bird list was observed April 22. White pelicans were first noted April 15.

Only three of the five species of grebes common to this refuge were present by the end of the period. Red-necked grebes were noted April 24, western grebes April 24, and pied-billed grebes April 19. Courtship has not yet been observed in any of the grebes.

Double-crested cormorants, the absolute sign of spring, arrived April 13 and are present in about their usual numbers. Redwing and yellow-headed blackbirds are also present in large numbers. The redwings arrived on March 21 with the yellow-heads showing up just one month later.

Herring and ring-billed gulls were first seen on March 25. An estimated 5,000 herring gulls and 500 ring-billed gulls used this refuge this period. Franklin gulls did not arrive until April 27. An estimated 200 Franklin gulls used the refuge in the 3 following days. Common terns were the only tern species present during this period. An estimated 300 common terns used this refuge during the reporting period being first observed on March 31.

Lesser Yellow-legs appeared the last day of the reporting period. Killdeer arrived first on April 3 with a large flight occurring on April 15. A few marbled godwits were noted on April 30. Willet appeared on the 25th of April and are present in small numbers. Wilson phalaropes arrived on April 26. Northern phalaropes April 12th, and Wilson plovers on April 30. One Upland plover was seen on April 30. Other shorebirds were not yet present at the end of the reporting period.

2. Food and Cover

Food conditions were ideal during this reporting period. The ground was bare all winter so that the fifty mallards wintering at Waubay found ample feed in the fields in the form of waste grains.

Cover was again more than adequate for nesting and resting waterfowl.

3. Botulism

None noted.

4. Lead Poisoning and Other Diseases

None noted.

B Upland Game Birds

The open winter was ideal for all upland game birds. There should have been little or no loss due to cold, snow or lack of food.

a. Ring-necked Pheasant

Mortality was negligible during the period with the exception of a rare bird being hit by an automobile. An excellent breeding population--200--is present on the refuge at this time. With a good breeding season, the refuge pheasant population should take a big jump this summer.

b. Sharp-tailed Grouse

Sharptails are not present on the refuge--at least none have been noted. A year ago, an estimated six sharp-tailed grouse were using the area.

c. Hungarian Partridge

An estimated 50 Huns came through the winter in excellent shape and are using the refuge at this time. These birds are now paired up and are spread thinly over the whole of the refuge with the southwest and east sides of the refuge seemingly preferred. Last year at this time only 30 birds were present on the refuge.

2. Food and Cover Conditions

As mentioned earlier, food conditions were excellent this period due to a lack of snow cover. Agricultural fields and weed patches furnished an ample and available food supply this period. Cover is never a worry on this refuge since phragmite stands are always available. Patches of lush native prairie vegetation are also available for cover.

3. Disease

None noted.

C. Big Game Animals

1. Population and Behavior

White-tailed deer are the only big game species using this refuge. A deer season to reduce herd numbers was held last fall with the result that only 20 animals are using the refuge at this time. One lone buck with the left rear leg missing is among the healthy animals of the refuge herd. It would appear that the deer like the wooded and brush areas of the refuge. The springs area, grown up to Willow and other brush appeared to be the favorite hang-out for 13 of the deer during the winter season with a movement to the more heavily wooded areas as spring approached.

No known deer fatalities occurred during the period.

2. Food and Cover

Food and cover were adequate for the small number of deer using the refuge during the reporting period. While brouse conditions have not yet fully recovered from the over population of a few years ago they are ample for the 20 deer using the refuge.

Phragmites beds and the wooded areas of the refuge offer ample cover for the present deer herd.

3. Diseases

None noted.

D. Fur Animals, Rodents & Other Mammals

a. Muskrat

The muskrat population is down from 350 a year ago to 100 this reporting period. This is about 600 below what should be the desired minimum. Since no diseased animals have been located or reported it is assumed that the recent dry years have forced the muskrat into that infamous biological law. No trapping was allowed this year.

b. Mink

The estimated 25 mink using this refuge are concentrated in the Springs area, Barse slough, and the Waubay lake side of the refuge. There has been little change in the population reported a year ago. Apparently last years increase has moved from the refuge to other nearby water areas. This species was not trapped this year.

c. Beaver

The two refuge beaver colonies are yet functioning with adequate food supplies. The beaver colony at Barse Slough was responsible again for the loss of the dike. The spillway was dammed up and the water level raised with the subsequent wash out of the dike. An estimated 10 beaver are using the refuge with the excess population apparently moving to other areas off the refuge. The refuge staff was unable to locate a trapper interested in taking beaver so none were trapped this year.

d. Foxes and Coyotes

Coyotes are no longer present on the refuge. An estimated 15 foxes, some of them young of this year, are using the refuge at this time. Better shooting on the part of refuge personnel would have reduced this number by 3 or 4. It is felt that the red foxes now using the refuge are not doing any damage.

e. Skunk

It is felt that the skunk population of last year has reduced itself to 40 animals. Refuge personnel carry on control measures on this species at all times. No disease has been noted in these animals.

f. Raccoon

An estimated 25 raccoon are present on the refuge compared with 30 a year ago. Here again Service personnel attempt control operations on a continual basis. Apparently the annual production moves off the area.

e. Weasel

Weasels are present in small numbers but seen only on rare occasions. An estimated 30 weasels now use the refuge compared with 20 a year ago.

f. Badger

Once in a while a badger is seen; their diggings are much more evident. An estimated 10 badgers now use the refuge compared with 12 a year ago.

g. Squirrels and rabbits

Fox squirrels and cottontail rabbits seem to be increasing in number since they are commonly observed. Jack rabbits are also present but prefer open fields rather than the cover afforded by the refuge.

E. Predaceous Birds

a. Crows

Crows generally do not nest in this area and are rarely present in the summer. They do however, move through this area in large numbers in the spring. First noted on February 25, the peak migration was about April 8.

b. Owls

Great-horned owls were present all winter and are still here. It is said that the screech owl is also a permanent resident at Waubay but none have been seen or heard by the refuge manager. A few short-eared owls were seen moving north during the middle of April but none remained. No snowy owls were recorded this period.

c. Eagles

Four Golden eagles were noted last year but none were recorded for the same period this year.

Bald eagles were first observed February 24, peaked at three birds March 27 and were last seen that day. The first observation last year was February 7 with the estimated total being 6 birds.

d. Hawks

Coopers and sharp-shinned present in April last year have not been observed this spring.

The peak of the red-tailed hawk migration appeared to be about April 1st. Several hundred moved through the area with only about 80 of them stopping on the refuge. This species first appeared March 26th--March 25 last year.

Rough-legged hawks accompanied the red-tails in last years' migration but were later this year being first noted on April 12 and peaking April 27.

Swainson's hawk appeared April 14, a day earlier than last year. The peak of 10 Swainson hawks was present at the end of the reporting period. An estimated 20 of this species used this refuge this period.

Sparrow hawks present March 24th last year, were not seen until the end of April this spring. Only 2 were seen the whole period. These birds either missed this area or are late in their migration this year.

e. Turkey Vulture

For want of a better place to list them turkey vultures are included with the predaceous bird section. This is only the second time that this species has been reported at Waubay. One turkey vulture was noted flying over headquarters the evening of April 25th.

f. Fish

Spring and Hillebrand lakes have only minnows in them. Waubay lake has a good assortment of game fish including walleye, northern pike, perch and sunfish as well as carp and suckers. To the best of our knowledge no fish were caught from the refuge portion of Waubay lake--no fishing occurred.

Anywinter kill at all would have been light since there was very little snow cover all winter. Very few dead fish were noted along the shores at the time of the break up. The usual concentration of gulls eating winter killed fish did not occur.

III REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

a. Buildings

A new door frame was made and installed for the office door.

A new combination screen and storm door was installed at the office.

The fire place at the residence was brought into the room and lowered in an attempt to do away with the "smoking". Results were successful.

The old clubhouse building was sold and removed.

Cleaned and rearranged all buildings

Repaired shop doors.

b. Vehicles

Repair of snowplow

Removed snowplow and undercarriage and installed dual wheels on GMC dump truck.

Sold old $\frac{1}{2}$ ton International pickup.

Purchased new Ford Courier

New brake linings on Jeep

New Grease seals on front wheels of Jeep

New tail light on Jeep

Remounted fire pump on Jeep

Routine maintenance and 5,000 and 3,000 mile checks on vehicles.

c. Farm Equipment

Transferred corn planter to Tamarac Refuge

Minor repairs and adjustment to Ford tractor.

d. Other

Snow removal operations from courts, driveways and roads.
Blading of roads.

Repairs to Water system at residence. New check valve,
schrader air valve, leathers.

Put up new mail box

Tore apart drain system in residence and cleaned.

Mowing of refuge lawns

Filled holes in refuge lawns

Cleaned furnace at office and residence.

Thawed out office drain

Repaired leak in gas pump

Pumped out pump house twice

Removed snow fences from recreation area

Checked fire extinguishers

Mounted fire ext. and first aid kit in new Courier

Removed some ~~ext~~ storm windows from Service building

Painting of irrigation outlets in lawn

Trimmed headquarters trees and shrubs

Cleaning recreation area

Salvaged ⁵⁰ ~~100~~ bushes of ear corn from unit HA-12 not utilized
by waterfowl.

B. Planting

1. Aquatic and Marsh plants

None

2. Trees and Shrubs

None

3. Upland Herbaceous plants

None

4. Cultivated Crops

Seeding is complete on all refuge farm units except HA-7 which has a green manure crop not yet high enough to plow. Four cooperators have 13 units totaling 353 acres. One hundred forty-eight of these acres will be in alfalfa-brome either in established stands or new seedings with a nurse crop. Twelve acres will have been seeded to alfalfa-western wheat grass with a nurse crop. The remaining acreage is in wheat, barley and oats. Forty acres of this acreage has been planted to speltz because of wheat restriction.

C. Collections

1. Seed or other Propagules

None

2. Specimens

None

D. Receipt of Seed and Nursery Stock

None

IV ECONOMIC USE OF REFUGE

A. Grazing

No grazing this period. The master economic use plan was amended to include unit G-5. This is a 40 acre stand of phragmites into which cattle will be released May 15 on an experimental basis. It is hoped that the phragmites stand will be opened up.

B. Haying

No haying permits have been issued. It has been decided to drop haying operations as permittees stop use since haying adds little to the waterfowl problems at Waubay. Unit H-2 will be retired this year.

C. Fur Harvest

None

D. Timber Removal

None

E. Other Uses

None

V FIELD INVESTIGATIONS OR APPLIED RESEARCH

A. Progress Report

- a. Nesting checks of Swan Pond goose islands show that all islands have a pair of incubating Canada geese on them. There were some territorial battles over the east island before the victors claimed their spoils.
- b. Establishing cover on the goose islands has been successful in a small way. There seems to be a variety of growth including sweet clover planted last year.
- c. Preferred duck nesting habitat studies were begun this period. It would appear that in order to provide ideal nesting areas at Waubay we should know what is preferred. Preliminary findings indicate that at Waubay we may have to completely revolutionize our operations and go to complete over grazing.
- d. The Roslyn Pothole transect is being run at intervals to study the status of ducks, drainage, and vegetation.
- e. Phragmites stands appear to be extremely valuable around small refuge potholes especially in snowless winters. The little snow that does fall is trapped by the phragmites instead of being blown away and makes the difference between a dry or wet pothole in the spring. Let us not be too hasty in doing away with our heavy stands of phragmites.

VI PUBLIC RELATIONS

A. Recreational Uses

Picnicking does not start at this refuge until after May 1st. Occasionally, hardy souls use the recreation area during April but generally the use is nil.

Bird watchers and sight seers have been numerous especially on warm weekends.

Ice fishing on Waubay lake was at a standstill this period.

B. Refuge Visitors

The following persons called at Refuge headquarters this period.

| <u>Date</u> | <u>Name</u> |
|-------------|---|
| 1/7 | Mr. Erickson from Indian Enemy Swim Day School |
| 2/4 | Clem Kerwald of SCS |
| 3/13 | John M. Dahl - Tamarac Refuge, Minn. |
| 3/26 | Rev. Zimmerman, Willow Lake, S.D. |
| 4/2 | Bob Burwell & Ev. Sutton |
| 4/9 | Representatives from Otter Tail Rumr Power Co. |
| 4/20 | J. Austin Beard, RO - lands |
| | Mr. Ken Black & Thompson in on numerous occasions |
| | Numerous visits by warden Doug Sallay |
| | Permittes in at various times |

C. Refuge Participation

Refuge manager attended meetings of the Webster Chapter of the Izaak Walton League.

Talked to members of the Day County weed Commissioners.

Attended spring meeting of all South Dakota Conservation personnel at Pierre.

Collected data on spring migration for the Audubon Society.

Cooperated to the fullest with the local warden assisting him in patrol work.

Many informal discussions with visitors.

D. Hunting

None

E. Fishing

No person fished on the refuge portion of Waubay lake this period. Earlier attempts met with failure and so they were not repeated.

F. Violations

1 case - fishing during closed season made on Minnewasta lake. Plea not guilty. Found guilty. Fined \$25, costs of \$12. Ten day jail sentence suspended upon payment of fine.

No others noted.

VII OTHER ITEMS

A. Items of Interest

None this period.

B. Photographs

None.

Raymond L. St. Ores
Refuge Manager

Regional Office Approval

WATERFOWL
(Continuation Sheet)

REFUGE Kauai MONTHS OF January TO April, 19 57

| (1) Species | (2) Weeks of reporting period | | | | | | | | (3) Estimated waterfowl days use | (4) Production : Broods: Estimated : seen : total | |
|---------------------|----------------------------------|-------|-------|------|--------|-------|-------|------|---|--|--|
| | 10-16 | 17-23 | 24-30 | 31-6 | 7-13 | 14-20 | 21-27 | 28-3 | | | |
| Swans: | | | | | | | | | | | |
| Whistling Trumpeter | | | | 5 | 10 | 10 | 10 | | 250 | | |
| Geese: | | | | | | | | | | | |
| Canada | 50 | 60 | 100 | 250 | 100 | 75 | 50 | | 4,800 | | |
| Cackling Brant | | | | | | | | | | | |
| White-fronted Snow | | | | | | | | | | | |
| Blue | | | | | | | | | | | |
| Other | | | | | | | | | | | |
| Ducks: | | | | | | | | | | | |
| Mallard | 70 | 70 | 100 | 500 | 400 | 200 | 300 | | 15,680 | | |
| Black | | | | 10 | 10 | | | | 140 | | |
| Gadwall | | | | | 10 | 20 | 50 | | 560 | | |
| Baldpate | | | | | 20 | 10 | 40 | | 560 | | |
| Pintail | | | 10 | 400 | 300 | 100 | 100 | | 6,440 | | |
| Green-winged teal | | | | 10 | 30 | 30 | 50 | | 980 | | |
| Blue-winged teal | | | | | | 20 | 400 | | 2,940 | | |
| Cinnamon teal | | | | | | | | | | | |
| Shoveler | | | | | 70 | 100 | 200 | | 2,590 | | |
| Wood | | | | | | | | | | | |
| Redhead | | | | | | | 10 | | 70 | | |
| Ring-necked | | | | 10 | 10 | 10 | 10 | | 280 | | |
| Canvasback | | | | | | 4 | 10 | | 100 | | |
| Scaup | | | | | 50 | 100 | 600 | | 5,250 | | |
| Goldeneye | | | | | | | 20 | | 140 | | |
| Bufflehead | | | | | | | 10 | | 70 | | |
| Ruddy <i>erg.</i> | | | | | | 200 | 200 | | 2,800 | | |
| Other | | | | | | | | | | | |
| Coot: | | | | | | 30 | 50 | | 560 | | |
| | | | | | (over) | | | | | | |

| | (5) Total Days Use | (6) Peak Number | (7) Total Production | SUMMARY |
|-------------------|-----------------------|--------------------|-------------------------|---|
| Swans | 250 | 10 | | Principal feeding areas <u>Spring Lake, Hillebrand Lake</u> |
| Geese | 4,800 | 250 | | |
| Ducks | 38,600 | 2,510 | | Principal nesting areas _____ |
| Coots | 560 | 50 | | |
| Reported by _____ | | | | Raymond L. St. Ores Refuge Manager |

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

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

3-1751

Form NR-1A
(Nov. 1945)MIGRATORY BIRDS
(other than waterfowl)Refuge Laurel Months of January to April 1957

| (1) Species | (2) First Seen | | (3) Peak Numbers | | (4) Last Seen | | (5) Production | | | (6) Total |
|---|-------------------|------|---------------------|------|------------------|----------|--------------------|------------------|----------------|---------------------|
| Common Name | Number | Date | Number | Date | Number | Date | Number Colonies | Total # Nests | Total Young | Estimated Number |
| I. <u>Water and Marsh Birds:</u> | | | | | | | | | | |
| Great Blue Heron | 2 | 4/19 | 6 | 4/27 | Summer | resident | | | | 15 |
| Black Crowned Night heron | 10 | 4/24 | 20 | 4/29 | " | " | | | | 40 |
| American Bittern | 2 | 4/30 | 2 | 4/30 | " | " | | | | 8 |
| Little Blue Heron | 1 | 4/22 | 1 | 4/22 | 1 | 4/22 | | | | 1 |
| Rednecked grebe | 4 | 4/24 | 10 | 4/29 | Summer | resident | | | | 20 |
| Eastern grebe | 2 | 4/24 | 20 | 4/28 | " | " | | | | 30 |
| Double-crested cormorant | 8 | 4/13 | 50 | 4/29 | " | " | | | | 150 |
| White pelican | 4 | 4/15 | 150 | 4/30 | " | " | | | | 200 |
| Red-winged blackbird | 2 | 3/21 | 500 | 4/30 | " | " | | | | 1200 |
| Yellow-headed blackbird | 10 | 4/21 | 80 | 4/30 | " | " | | | | 250 |
| Pied-billed grebe | 2 | 4/19 | 50 | 4/24 | " | " | | | | 200 |
| | | | | | | | | | | |
| II. <u>Shorebirds, Gulls and Terns:</u> | | | | | | | | | | |
| <u>Terns:</u> | | | | | | | | | | |
| Herring gull | 2 | 3/25 | 5,000 | 4/30 | Summer | resident | | | | 5,000 |
| Ring-billed gull | 6 | 3/25 | 200 | 4/30 | " | " | | | | 500 |
| Franklin's gull | 50 | 4/27 | 50 | 4/27 | " | " | | | | 200 |
| Common tern | 6 | 3/31 | 200 | 4/27 | " | " | | | | 300 |
| Lesser yellow-legs | 4 | 4/30 | 4 | 4/30 | " | " | | | | 10 |
| Killdeer | 1 | 4/3 | 300 | 4/27 | " | " | | | | 500 |
| Marbled godwit | 2 | 4/30 | 2 | 4/30 | " | " | | | | 10 |
| Willet | 2 | 4/25 | 10 | 4/27 | " | " | | | | 20 |
| Wilson Phalarope | 3 | 4/26 | 15 | 4/30 | " | " | | | | 30 |
| Northern Phalarope | 1 | 4/12 | 4 | 4/29 | " | " | | | | 10 |
| Wilson plover | 10 | 4/30 | 10 | 4/30 | " | " | | | | 40 |
| Upland plover | 1 | 4/30 | 1 | 4/30 | " | " | | | | 1 |

(over)

| (1) | (2) | | (3) | | (4) | | (5) | | (6) |
|---------------------------------|-----|------|-----|------|--------------------|------|-----|--|-----|
| III. <u>Doves and Pigeons</u> : | 2 | 4/10 | 150 | 4/30 | Summer resident | | | | 150 |
| Mourning dove | | | | | | | | | |
| White-winged dove | | | | | | | | | |
| IV. <u>Predaceous Birds</u> : | | | | | | | | | |
| Golden eagle | | | | | | | | | |
| Duck hawk | | | | | | | | | |
| Horned owl | | | | | Permanent resident | | | | 10 |
| Magpie | | | | | | | | | |
| Raven | 3 | 2/25 | 50 | 4/8 | Summer resident | | | | 100 |
| Crow | 1 | 2/24 | 3 | 3/27 | 3 | 3/27 | | | 3 |
| Golden eagle | 1 | 2/20 | 15 | 4/1 | Summer resident | | | | 80 |
| Marsh hawk | 1 | 4/12 | 3 | 4/27 | " | " | | | 6 |
| Rough-legged hawk | 2 | 3/26 | 20 | 4/1 | " | " | | | 40 |
| Red-tailed hawk | 1 | 4/14 | 10 | 4/29 | " | " | | | 20 |
| Swainson's hawk | 1 | 4/27 | 1 | 4/27 | " | " | | | 2 |
| Sparrow hawk | 1 | 4/25 | 1 | 4/25 | 1 | 4/25 | | | 1 |
| Turkey vulture | | | | | | | | | |
| Reported by | | | | | | | | | |

Raymond L. St. Ores, Refuge Agr.

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.

[illegible]

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

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

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

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Neubay

Year ending April 30, 1957

| (1) Species | (2) Density | | (3) Removals | | | | | (4) Disposition of Furs | | | | | (5) Total Popula- tion | |
|---|---|------------------------|-----------------|----------------|-----------------------|---------------------|-------------------|----------------------------|-------------------|-----------------|------------------------------|--------------|---------------------------------|-----|
| Common Name | Cover Types & Total Acreage of Habitat | Acres Per Animal | Hunting | Fur Harvest | Predator Control * | For Re- stocking | For Re- search | Share Trapping | | | Total Refuge Furs Shipped | Furs Donated | Furs Destroyed | |
| | | | | | | | | Permit Number | Trappers Share | Refuge share | | | | |
| Muskrat | | | | | | | | | | | | | | 100 |
| Mink | | | | | | | | | | | | | | 25 |
| Beaver | | | | | | | | | | | | | | 10 |
| Fox | | | | | | | | | | | | | | 15 |
| Weasel | | | | | | | | | | | | | | 30 |
| Skunk | | | | | | | | | | | | | | 40 |
| Badger | | | | | | | | | | | | | | 10 |
| Raccoon | | | | | | | | | | | | | | 25 |
| Jackrabbit | | | | | | | | | | | | | | 30 |
| Cottontail | | | | | | | | | | | | | | 100 |
| Fox squirrel | | | | | | | | | | | | | | 200 |
| * List removals by Predator Animal Hunter | | | | | | | | | | | | | | |

* List removals by Predator Animal Hunter

REMARKS:

Reported by Raymond L. St. Ores, Refuge Mgr.

INSTRUCTIONS

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

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