# BRANCH OF WILDLIFE REFUGES

NARRATIVE REPORT

ROUTING SLIP

DATE May 15, 1952

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SECTION OF OPERATIONS:

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SECTION OF HABITAT IMPROVEMENTS

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| REFUGE Seney   |              |  |                            |   |
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# SENEY NATIONAL WILDLIFE REFUGE

# NARRATIVE REPORT

January 1, 1952 to April 30, 1952

UNITED STATES DEPARTMENT OF THE INTERIOR FISH AND WILDLIFE SERVICE GERMFASK, MICHIGAN

# SENEY NATIONAL WILDLIFE REFUGE

LIST OF PERSONNEL

January 1, 1952 to April 30, 1952

# NAME

# TITLE

| C. J. Henry         | Refuge Manager           |
|---------------------|--------------------------|
| Edward J. Smith     | Biologist                |
| (Vacent)            | Refuge Manager (trainee) |
| John H. Nowak       | Refuge Clerk             |
| Harvey C. Saunders  | Forestry Aid             |
| Clarence W. Nelson  | Maintenance Supervisor   |
| George Orlich       | Refuge Mechanic          |
| William G. Anderson | Maintenance Man (Gen)    |
| Axel N. Mortensen   | Maintenance Man (Gen)    |

# CONTENTS

| GENERAL  | Page                       |
|--|----------------------------|
| Weather Conditions<br>Water Conditions<br>Fires  | 1<br>2<br>2                |
| WILDLIFE   |                            |
| Waterfowl<br>Shore Birds<br>Upland Game Birds<br>Big Game Animals<br>Fur Animals<br>Predaceous Birds | 2<br>5<br>5<br>6<br>6<br>7 |
| REFUGE DEVELOPMENT & MAINTENANCE   |                            |
| Physical Development   | 8                          |
| ECONOMIC USE OF THE REFUGE   |                            |
| Fur Harvest<br>Timber Removal<br>Other Uses  | 9<br>10<br>10              |
| FIELD INVESTIGATION OR APPLIED RESEARCH  | LL                         |
| PUBLIC RELATIONS   |                            |
| Recreational Uses<br>Refuge Visitors<br>Refuge Participation<br>Photographs                          | 11<br>11<br>12<br>12       |

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# Seney National Wildlife Refuge

Narrative Report

January 1, 1952 to April 30, 1952

## I. GENERAL

#### A. Weather Conditions

Climatological data for the above indicated period is as follows:

| MONTH    | SNOWFALL | PRECIPITATION | MAX TEMP | MEN TEMP |
|----------|----------|---------------|----------|----------|
| January  | 29.5     | 2.53          | 39       | -6       |
| February | 9.5      | •54           | 38       | -10      |
| March    | 19.6     | 2.69          | 47       | -12      |
| April    | 7.3      | 1.93          | 79       | 14       |
|          | 65.9     | 7.69          | 79       | -12      |

The weather for the pe riod can be classed as excellent. This is in rather sharp contrast to the preceding pe riod which produced some rugged weather and excessive precipitation.

On the 13th of April we had one of the worst snowstorm of the winter (which indidentally coincided with the peak of the spring flood). This was the last precipitation of the month, and the weather during the last 17 days of the month was perfect. April actually ended with drought conditions and severe fire hazard.

In spite of the pleasant weather during this pe riod, the total winters snowfall amounted to 137.2 inches which is only three inches less than last year when we felt quite abused. The station "normal" is 109.5 inches. Maximum snow depth for the winter was 28 inches, reached on March 22nd. The last of the snow recorded at the weather station was on April 23rd. The last of the ice on the pools disappeared on April 21st.

COMPARATIVE DATE - FIVE YEAR PERIOD

| MONTH    | MEAN | MAXIMUM | MEAN MINIMUM |
|----------|------|---------|--------------|
| January  |      | 27.0    | 12.4         |
| February |      | 30.5    | 12.3         |
| March    |      | 34.2    | 15.7         |
| April    |      | 55.8    | 31.5         |

A comparison of the above will show that January, February and April were unusually warm, while march was about average.

#### B. Water Conditions

The spring flood was moderate and failed to give us any bad moments or damage to structures. The April drought caused the flow to drop off very rapidly.

#### Unit I

All pools in Unit I in satisfactory condition and at approximately approved levels with the exception of E which is being reduced to facilitate construction.

#### Unit II

All pools in satisfactory condition. It is planned to circulate more water thru T pool than has been done in the past in an attempt to clear up the deep humus stain.

#### Unit III

The usual overwhelming grush of flood-water from the Walsh, the Marsh and the Ducey failed to materialize. There was plenty of water to bring the levels up to any desired level -- they were held at 1036.0 (one foot below crest), however, due to the condition of the dike and for biological objectives the matter was covered by letter and request made to hold at that level pending further investigations.

#### C. Fires

No fires occured in spite of a very high fire hazard during the last part of April.

#### II. WILDLIFE

#### A. <u>Migratory Birds</u>

1. Population and Behavior

## Waterfowl

With minor exceptions the numbers of spring migrants using the Seney Refuge this pe riod were as great or greater than for the same period last year. Canada geese, first arriving on March 12, are back in slightly better numbers than last year. Other slight increases were observed for blacks, ring-necked ducks and buffleheads. Those species that showed little change from the previous year include baldpates, green-winged teal, blue-winged teal, wood ducks, scaup, goldeneyes and mergansers. An apparent decrease in numbers was noted for the mallard and pintail. Birds that did not make an appearance for this periods inventory include the whistling swan, and the snow goose. Their numbers were never great but a few have almost always been seen in previous spring migrations. Only one blue goose stopped over long enought to be recorded this year.

The pattern of spring migration was characterized by a gradual influx beginning in March and punctuated by three small peaks in April. From the middle to the end of March only three species, the Canada goose, the black duck and the goldeneye, had made an appearance. From April 1 thru the 9th a general influx of these species was observed and many new arrivals such as the mallard, pintail, green-winged teal, wood duck, ring-necked duck, bufflehead and the mergansers made their presence known. Populations then became rather static for a short period. After the Easter snow storm another wave of migrants began pouring in on the 15th and dropped off sharply after the 17th. By this time peak concentrations had been reached for all species that had previously made an appearance. Later in the month of April another small influx reflected the arrival of such late comers as the baldpate, blue-winged teal and the scaup. Peak numbers for these species have been recorded for the end of the month, but, since the time of migration laps over into the next reporting pe riod, the complete picture of their population status cannot be derived yet.

A goose nesting survey of the same three pools in Unit I was again conducted on the ground this year. All islands in I, J and G pools were covered. Repeating the survey on the dame dates as last year (April 24-28) disclosed a total of 44 nests in 1952 as compared with 41 nests in 1951. All nests with the exception of two were under incubation at the time of investigation. Clutch size averaged 5.2 eggs per nest in 1952 as compared with 5.8 eggs per nest in 1951.

To derive an estimate of the total nesting goose population for the entire refuge a simple proportional equation based on last year's combined aerial and ground censuses was used. The following illustrates our computations:

| Ground Survey (I, J & G Pools                    | <u>1951</u><br>41 nests | <u>1952</u><br>44 nests |
|--|-------------------------|-------------------------|
| Total Nesting Population<br>(Canada goose pairs) | *225 pair               | X pair                  |

\*Total population based on combined aerial and ground coverage in 1951.

In 1951 the combined ground count and aerial observation determined the total nesting population of canada geese to be 225 pairs. By simple proportion, in a ratio of sample to whole, we arrive at a figure of 241 or to put it in round numbers, 240 nesting pairs estimated for 1952.

A follow-up survey of the 44 nests will be taken about the middle of May to determine fate or hatching success. First goslings are predicted to appear about May 13.

#### Shore Birds

Wilson's snipe, greater yellowlegs and the killdeer, the three most common shorebirds on the refuge, are the only ones recorded to date. The jacksnipe have been observed in all parts of the refuge and seem to be present in greater numbers than in the previous year.

#### Food and Cover

Burning of the brush piles on the cleared islands in I, J and G pools was accomplished last fall. At the time of the nesting survey this spring the new green vegetation had still not replaced the charred areas of the burn. Even though the overall number of nesting pairs was greater this year, it appeared that nesting was somewhat reduced from the full potential because of the lack of herbacious vegetation on the burned over areas. By next spring this situation should be remedied.

Small scale experiments using chemical sprays on the encroaching alder and willow vegetation will be undertaken in May to determine the effects and feasibility of chemical control over woody plants.

#### B. Upland Game Birds

## 1. Population and Behavior

Several early morning sessions with the State Conservation observer were made this spring to check <u>sharp-tail</u> <u>grouse</u> and <u>Prairie chicken</u> dancing grounds. From these observations it appears that sharptail populations remain at high status, but prairie chickens are gradually becoming more scarce. Only four chickens were sighted this year and only two booming grounds were found active.

<u>Ruffed grouse</u> have been heard and seen often enough to indicate they are still present in good numbers. The <u>Spruce</u> grouse, on the other hand, is still a rather rare bird.

Sandhill Cranes ARE SEEMINGLY ON THE INCREASE. More frequent sight observations this year by all refuge personnel during the last month lead to the above conclusion. <u>Woodcock</u> exhibit little change in number. Only occasional records of this bird have been noted this spring.

#### 2. Food and Cover

Ample food is present for all upland species throughout their respective habitats. Cover for the woodland and marsh species is adequate. However, the open upland areas frequented by the sharptail grouse and prairie chicken are gradually diminishing under the pressure of encroaching willow, aspen and other woody vegetation. State officials say they will burn this coming fall if the opportunity and weather conditions permit. Since the refuge is also interested in establishing a burn on these boundary uplands, we shall cooperate in this measure to the fullest extent possible. However controlled burning, like deer management, is still very unpopular in Michigan.

#### C. Big Game Animals

Deer were first observed out of their yards and up on refuge dikes by April 15.

Since most of the refuge herd winters over in the Blaney Park cedar swamps, a visit was made there on March 14 to check on the animal and yard condition. Cedar logging operations which have sustained the deer in thes yard in past years had been moved to another location some seven miles to the east. As predicted in previous reports the starvation loss which would occur because of the cessation in cedar cutting operations within the yard had begun to take its toll. Several starved fawns were found dead in their beds. Those deer still alive appeared to be nothing more than walking skeletons of hide and bones. The browse line on balsam was also indicative of precarious conditions. Several photos in this report illustrate the overbrowsed condition. Later in the month State Biologists checked the yard and estimated one dead deer for every eleven acres. Final tabulation on the deer losses have not yet been published.

A special hunting season on antlerless deer which would help alleviate the problem was prescribed by Michigan Conservation Officials for this area during the comingfall. Again this recommendation was turned down by the State Legislature. Which August body is obviously infinitely more interested in politics than in intelligent management of the deer herd.

No sign of bear has been observed for this reporting period.

#### D. Fur Animals, Predators, Rodents and Others

A beaver season was opened on the refuge again this spring for a period of 11 days beginning on March 27 and ending April 8. This coincided with the season set by the State of Michigan for most of the Upper Péninsula. Refuge trappers harvested only 29 beaver and no otter. The taking of otter was not permitted. A short early season was blamed for the small catch. Also the low price of pelts gave little incentive for expending much effort.

Coyote sign was observed more frequently this spring in many of the remote sections of the refuge. During the latter part of March and early April the heavy traffic of these animals along the dikes and ditch banks was very much in evidence. it is our impression that they have increased in numbers over last year's estimates. One coyote was trapped in the goose pen by refuge maintenance men.

Many of the smaller rodents are believed to have reached peak numbers, particularly the field mice. Woodchucks and red squirrels seem quite plentiful also. Porcupine were observed occasionally in pine stands along main refuge trails.

Snowshoe rabbits are still holding at a fairly high level of abundance.

The NR-4 forms in the back of this report contain the current population estimates regarding all animals under this category.

#### E. Predaceous Birds, Including Crows, Ravens, etc.

Crows were among the first of the early spring migrants to appear. Their numbers seem greater than in past years. Bald eagles were observed as winter residents throughout the period within the near vicinity of the refuge. A pair of eagles are active around the nest at M-2 pool. The raven population drops off considerably as soon as spring arrives. During the winter months ravens are a common refuge bird. One snowy owl was observed regularly along the Diversion ditch throughout the month of February by the Cusino Biologists. Great horned owls were observed on occasion and frequently heard near headquarters and along the Manistique River. Marsh hawks were first sighted on March 29 and are now present in fair numbers. The usual influx of sparrow hawks came through the lst week of April. A few rough legged hawks arrived with the wave of other migrant species during the same week.

#### R. Fish

No winter kill of fish was evident at all this year. Since the circulation of waters throughout the pool system during winter months has been practiced, the winter fish kill has been avoided. Northern pike, perch, suckers and bullheads were observed in abundance in many of the spillway control structures and flooded shallows during the spring spawning season

III. REFUGE DEVELOPMENT & MAINTENANCE

#### A. Physical Development

#### Gravel Hauling

As soon as road conditions permitted the repairs and improvements to dikes and roads was resumed. The balance of the crushed gravel held in stock pile over the winter totalling about 1200 hards was used. Most of this was placed on the main trunk line between Units I and II; this is the road that receives great abuse each November by the deer hunters. Considerable spot patching was also accomplished on the main dike roads. We are now hauling pit run gravel in continuation of improvement of the refuge dikes.

#### Bridge Repairs

In continuation of the repairs or replacement of bridges, the bridge across the F to E structure was re-decked and creosoted. The bridge across the J to H structure had the deck removed only to find that the untreated timbers were also in bad shape. These consist of  $40 - 10 \times 12$ " timbers, 12 ft. long. As it is practically impossible to purchase members of such size, at least at reasonable cost, it was necessary to "hotlog" enough pine to cut out the required timbers. These are being thoroughly treated with creosote because of their green condition; they will also be protected by a cover of heavy roofing material to keep them dry. This bridge is 110 feet long.

#### Island Clearing

A crew of two temporary laborers assisted Mr. Anderson in clearing off the islands in D pool. Due to an extraordinarily heavy stand this was probably the worst pool in the refuge. All funds allotted for the current fiscal year under this project have been expended.

#### Painting

A considerable number of signs such as are used in marking and instructing in connection with the fishing area, deer hunting, etc. were repainted. Some new signs were also made. A large refuge sign was painted and erected on the NW corner of the refuge, a point previously without such a sign.

#### Equipment Repairs

These repairs were a major item this period when outdoor working conditions were impractical until mid-April. Considerable time and effort was put into the putting of the dump trucks into shape for this years work. One of the Cletracs had a complete major overhaul including painting. The Novo and Barnes pumps also received "majors". The Lima dragline was unloaded and a start made on making repairs. The 1948 International pickup was completely overhauled. Most of the other vehicles received some attention. Two units, the 1939 Dodge dump and the 1940 Ford pickup were sold. Replacements were received, which included a GMC dump truck and a Ford pickup. Both are excellent units and are greatly appreciated.

Trips during the period included a meeting at Higgins Lake, attended by Refuge Manager Henry and Biologist Smith; a trip to Pontiac, Michigan by Mechanic Orlich; a trip to Chicago, Ill. by Maintenance Man Mortensen to pickup the GMC and Ford. A trip was also made to the Horicon Refuge by Biologist Smith to pick up a truckload of materials transferred from the Crab-Orchard Refuge

A considerable amount of time was expended in writings in addition to the regular routine reports.

Checking and handling of the spring flood also required the usual diligent attention. Several beaver dams were removed with dynamite.

Under miscellaneous a consederable amount of work was accomplished to facilitate operations when weather conditions were favorable. These included construction of new sawhorses, sharpening and repairs to tools, repainting boats and revising facilities in shops. Other activites included blacksmithing, plumbing repairs, snow removal, hauling wood, stoking fires, scaling timber and marking trees for seclective cutting.

IV. ECONOMIC USE OF THE REFUGE

A. <u>Grazing</u> - none

B. Haying - none

C. Fur Harvest

An eleven day beaver and otter season from March 27 to April 8 was permitted by the State of Michigan in the Upper Peninsula this year. Limits allowed six beaver and three otter per trapper. The refuge was opened for beaver, but not otter, on a 50-50 share trapping basis. Otter numbers on the refuge were believed too few to justify a take. Six permits garnered a total of 29 beaver.

Many trappers refused to trap at all this season because the price of pelts did not justify the efforts. Prices paid locally for beaver were much lower than last year. Blanket beaver brought \$20.00, extra large \$18.00, large \$15.00, medium \$8.00 to \$10.00 and small \$6.00. In addition to his license each trapper had to pay a tagging fee of \$2.00 to the state for each pelt.

The refuge share of beaver has not yet been sold on auction, therefore no comparison of local prices with auction prices can be made at this time. Muskrat and mink pelts harvested on the refuge in Novembet 1951 have now been sold and prices received as follows:

| 316 muskrat      | 427.30    |
|------------------|-----------|
| 41 mink          | 839.50    |
|                  | 1266.80   |
| Less auction fee | 25.34     |
|                  | \$1241.46 |

Prices paid by local fur buyers were \$26.00 for male mink, \$18.00 for female mink and \$1.60 for muskrat. The refuge share contained 26 male and 15 female mink pelts and 316 muskrat. Had the Government share been sold locally a sum of \$210.14 would have been gained over the auction price. Year afteryear it is the same old story -- a loss for the Government. We shall continue to report this situation with the hope that it may someday be investigated.

#### D. <u>Timber Removal</u>

Logging conditions during the period on the refuge from a weather standpoint could be considered as only fair. Intermittent and early thaws would not allow complete operations on some tracts. Then to add to the confusion the pulp mills found themselves over stocked and in March placed an embargo on jackpine. What jackpine the operator's had cut and banked on the refuge after that date had no market. The embargo is not expected to be lifted until early next fall. Consequently pulp operations are now at a dead standstill.

Of the ten permits on file during the period two were completed, three were in actual operation and five were inactive due to market conditions or operating difficulties.

Operations from January to April removed 932.69 cords of pulpwood for an income of \$4909.54 to the refuge.

#### E. Other Uses

Other sources of income received this period were from the sale of surplus property and the rental of lands.

| Property No.   | Item              | Amount             |
|----------------|-------------------|--------------------|
| 330326         | Ford pickup, 1940 | 260.00             |
| 330314         | Dodge dump, 1939  | 226.50             |
| Rental of land | for sawmill site  | 100.00<br>\$586.50 |

Total revenue derived from the sale of all refuge products covered by this section is as follows:

| Fall fur harvest. | • | • | • | .\$2141.46 |
|-------------------|---|---|---|------------|
| Timber Removal    | • | • | • | • 4909.54  |
| Other Uses        | ٠ | ٠ | ٠ | . 586.50   |
|                   |   |   |   | \$6737.50  |

## V. FIELD INVESTIGATION OR APPLIED RESEARCH

Time was taken during the winter months to write up the 1951 aquatic plant inventory report. Included with the data collected during the last summer is the history of development and water management in each pool and a section on conclusions and management suggestions for the twenty refuge impoundments. All that remains to be done to achieve completion of this work is the typing of the report. Sympathy cards for the Clerk are in order.

Canada goose nesting surveys were again conducted on I, J. and G pools of Unit I. The purpose of this annual survey is to provide some of the information links to derive goose production figures and to check on utilization of the cleared islands with respect to habitat improvement.

Refuge sharp-tail dancing grounds and prairie chicken booming grounds were again censused and checked for activity by the State Conservation Deaprtment this year. Mr. Raymond E. Reilly, last year's Seney Student Assistant was appointed for the work because of his previous knowledge of the area. Working from April 25 to May 3 he was able to check all known grounds and uncovered several new ones except thos situated near the inacessible portions of the Walsh Ditch. Details concerning his observations are pending submission of his report.

#### VI. PUBLIC RELATIONS

#### A. Recreational Uses

None during the period unless beaver trapping might be thus classified (Prices were so low that the few trappers that turned out did it mainly for recreation!)

#### B. Refuge Visitors

Earnest Reucker, Dist. Conservation Supervisor, courtesy call, January 3.

Leland Anderson, District Fisheries Biologist, courtesy call January 30.

Ranger Crooks and Dist. Supv. St. Amant, U. S. Forest Service, discussions on fire-fighting cooperation, March 18.

- Geo. T. Hurley, Dep. Warden in Charge, Prison Camps in the Upper Peninusla, April 3.
- Geo. T. Hurley and Hubbard, Chief Engineer, Marquette State Prison, April 8.
- O. McNaughton and party, Marquette Normal, bird study and photography, April 30.
- R. E. Rielly, Upland Game Survey for Conservation Department, 1 week.

Wahlstrom and Peters, State Game Wardens, dumerous visits concerning trapping, protection, etc.

### C. Refuge Participation

On March 5 and 6, Refuge Manager Henry and Refuge Biologist Smith attended the Conservation Department meeting at Higgins Lake. In addition to the Michigan Conservation Dept. representatives, the meeting also included the Forest Service the Soil Conservation Service and the above noted Seney personnel. This was an exceedingly profitable meeting.

D. Fishing - none

E. <u>Hunting</u> - none

F. Violations - none

VII. OTHER ITEMS

#### A. Credits

Sections I, III, VI and VII of this Narrative were prepared by Refuge Manager Henry and Sections II, IV, V by Biologist Smith.

#### B. Photographs

Some pictures portraying aspects and activities of the refuge were produced by Refuge Manager Henry and Biologist Smith and are herewith presented in the back of this report.

efuge Manage

January 8, 1952

12.

# WATERFOWL

Refuge Seney Months of January to April 19452

| (1) Species    |   | (2) (3)<br>First Seen Peak Concentration |                                   | (4)<br>Last                                 | )<br>Seen                                   | (<br>Young P            | (6)<br>Total                               |                                    |  |                         |
|----------------|---|--|-----------------------------------|---|---|-------------------------|--|------------------------------------|--|-------------------------|
| 2              | Common Name   | Number                                   | Date                              | Number                                      | Date  | Number                  | Date                                       | Broods<br>Seen                     | Estimated<br>Total                           | Estimated<br>for Period |
| I.             | Swans:<br>Whistling swan                            | standfed<br>obstitve<br>fof the          | umber uf<br>resting s<br>presting | young Produ<br>Prese Produ<br>Palatan Brook | o od - bäñed -<br>o potroks ja<br>stime bra |                         | ale jo tha a<br>ale jo tha i<br>ale in fac | tual cour<br>r nore ar<br>should b | e dui rregi<br>ese aktourier<br>reior rejue- | TUE                     |
| II.            | Geese:<br>Canada goose                              | 2  | 3/12                              | 1800  | 4/17  | a see Sure              | ware to sta                                | ulas ru er                         | a Lebolging.                                 | 4000                    |
|                | Brant   |  |                                   |   | -   |                         | The second second second second            | N                                  |  |                         |
|                | Snow goose<br>Blue goose                            | 1  | 4/8                               | BE REAUT, L                                 | 1.4 643950                                  | 1                       | 4/11                                       | ident spe                          | 1981   |                         |
| III.           | Ducks:<br>Mallard<br>Black duck                     | 22                                       | 4/1 3/21                          | 400<br>1500                                 | 4/15  |                         | 959500 6000                                | r accency                          | ne sugare ou                                 | 800<br>3500             |
|                | Gadwall<br>Baldpate<br>Pintail<br>Green-winged teal | 2 5 2                                    | 4/21<br>4/9                       | 200<br>50                                   | 4/30  | orpei Thes              | . mint                                     | g an refu                          | ge during th                                 | 400<br>100<br>200       |
|                | Blue-winged teal<br>Cinnamon teal<br>Shoveller      | 3  | 4/21                              | 50  | 4/30  | Reporte                 | 444  |                                    |  | 100                     |
|                | Wood duck<br>Redhead                                | 3  | 4/9                               | 50<br>300                                   | 4/30  |                         |  |                                    |  | 50<br>500               |
|                | Canvas-back<br>Scaup                                | 3  | 4/21                              | 50  | 4/30  | al possible             | treas this                                 | 86550B 38                          | and all in                                   | 100                     |
|                | Golden-eye<br>Buffle-head<br>Ruddy duck             | 52                                       | 3/10                              | 250 200                                     | 4/9   | eel by oon<br>barner ra | este and dee                               | All posla<br>notes                 | in mire I.                                   | 300                     |
| TT             | ana jas   |  |                                   |   | Paul K 198                                  | perfort na              | 590613                                     |                                    | 3  |                         |
| TA.            | American Merganser<br>Hooded Merganser              | 34                                       | 4/1                               | 300<br>200                                  | 4/15  | atarfowl u              | aige during                                | betrog                             | ,100 <sup>1</sup>                            | 350<br>250              |
| 3-175<br>(July | 0<br>1946)  |  |                                   | , 21  | (over)                                      |                         |  |                                    |  | Form NR-1               |

| Tota       | 1 Production:   | SUMMARIES  |  |
|------------|---|--|--|
| G          | eese  | Total w  | waterfowl usage during period 11,100   |
| D          | ucks  | Peak wa  | aterfowl numbers 5,450   |
| c          | oots <u>1968</u><br>Annalise  | Areas un   | sed by concentrations All pools in Units I, II<br>beaver ponds and seepages  |
|            | Heatheath<br>Multiproventional free R<br>California track<br>Son at | Princip  | al nesting areas this season Brushed off island  |
|            | Remi-Gaux<br>Spin-Gaux<br>Chineriku pesj                            |  | Reported by  |
|            | Greenwalneed lest   | INSTRUCTIONS   |  |
| (1)<br>(2) | Species:<br>First Seen:   | In addition to the birds listed on form,<br>reporting period should be added in appro-<br>given to those species of local and Nation<br>The first refuge record for the species do<br>period, and the number seen. This column | other species occurring on refuge during the<br>opriate spaces. Special attention should be<br>onal significance.<br>during the season concerned in the reporting<br>a does not apply to resident species. |
| (3)        | Peak Concentra-<br>tions  | The greatest number of the species presen  | nt in a limited interval of time.  |
| (4)        | Last Seen:  | The last refuge pecerd for the species du period.  | aring the season concerned in the reporting  |
| (5)        | Young Produced:   | Estimated number of young produced based<br>sentative breeding areas. Brood counts s<br>10% of the breeding habitat. Estimates h   | on observations and actual counts on repre-<br>should be made on two or more areas aggregating<br>maving no basis in fact should be omitted.   |
| (6)        | Total:  | Estimated total number of the species usi<br>may or may not be more than that used for<br>of the migrational movement.   | ing the refuge <u>during the period</u> . This figure<br>r peak concentrations, depending upon the nature  |

Note: Only columns applicable to the reporting period should be used. It is desirable that the <u>Summaries</u> receive careful attention since these data are necessarily based on an analysis of the rest of the form.

- 1

| 3–1751) (3)                              |                       | (4)            | D. Starting         | (3)                        | 0                 | (2)                         |                   |              |
|--|-----------------------|----------------|---------------------|----------------------------|-------------------|-----------------------------|-------------------|--------------|
| Form NR-1A                               | ·                     | MIGR           | ATORY BI            |                            | a fait and        | - Anting the I              |                   |              |
| (NOV. 1945)<br>Refuge                    | Sener                 | (0000          | Months              | of Jam                     | ary               | to April                    | 194 52            | III. Doves   |
|  |                       |                |                     |                            |                   |                             | ig dove           |              |
|  | (2)<br>First Scor     | (3)            | oo ng               | (4                         | 1)<br>Soon        | Proc                        | 5)                | (6)<br>Total |
| * Species                                | FIRE Seen             | Feak Nulli     | Jers                | Last                       | Deell             | Number   Tot                | al # Total        | Estimated    |
| Common Name                              | Number Date           | Number         | Date                | Number                     | <u>Date</u>       | Colonies Ne                 | sts Young         | Number       |
|  | The second            |                |                     |                            |                   | 1                           |                   | Duck he      |
| I. Water and Marsh Birds:                | 2 1/2                 |                | 1.56                | Antones                    | 3                 | usp.husH                    | . Iwo.            | Horned       |
| Pied-billed Grebe                        | 1 4/16                | 1 . 2 .        | and the             |                            |                   | Rondan                      | She franke in     | Magpie       |
| Great Blue Heron                         | 1 3/28                |                | 4/25                | 400                        | 3/33              | I I                         |                   | Crow         |
| American Bittern                         | 1 4/24                |                | 1/21                | SI .                       | 1 24              | S C                         | O.C.              | BLOB -       |
| 25                                       |                       |                | 1/15                | OS                         | es\2              |                             | August angegen    | l devall     |
| 100                                      | 1.                    |                | 4/21                | 25                         | 4/1               |                             | Nued 1            | Sparro       |
|  | AJ36                  |                |                     | 1. 2013                    | 6/18              |                             | JUSER DEAL        | 33 262       |
|  |                       |                |                     |                            |                   |                             |                   |              |
|  | sported by            |                |                     |                            |                   |                             | ALCO LAND         |              |
|  |                       | ·              |                     | 200                        | - Jones           | -                           |                   |              |
| and list group in A G.U.                 | dolfibs Der taff      | LONS Check     | ITOURTE!            | I .                        |                   |                             |                   |              |
| to the birds listed on                   | ste. In addition      | "riej"         | i smo m<br>Isearull | BE BEREDI                  | ferenes<br>remmin | 191700 SRI 08<br>IbtovA she | 000168:00         | 8 (1)        |
| II. Shorebirds, Gulls and                | reporting period      | and galand the | egulet :            | 10 znirruc                 | seise oo          | orm other s                 | 1                 |              |
| Terns: Not a local to                    | to those species o    | id be given    | luoda ac            | i attenti                  | Special           | riate spaces                | P                 |              |
| Greater valladars                        | oli 2 barred 2 4/23 e | Culls and      | <u>ano Ma</u>       | 1. <u>新聞でき</u><br>TT Shore | tsdaorn           | .eoneetingt                 | 8                 |              |
| Killdeer                                 | 1 (                   | LEBONS (COL    | 9 106 8             | III. Dove                  |                   |                             |                   |              |
| Herring Gullaberg bas sente              | 01125J2 3/20 0        | sigds (Falo    | l sucects           | berg .VI                   |                   |                             |                   |              |
| Ring-ollied wall 1198884                 |                       | a for the s    | enerie              | adt tot the                |                   | A run barre the and         | The second second | 7 (6)        |
|  |                       |                | erdede.             | 0110 IVI X                 | roosi ogu         | 101 18551 28                | 1 1000 1911       | 3 (2)        |
| .emij                                    | inited interval of    | sent in a l    | end ear             | the spec                   | number of         | he greatest                 | aak Numbers: T    | (3) P        |
|  | herrestan robens      | odt notaut     | no io com           | add and                    |                   |                             |                   | i vite       |
| 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1 | WORTOOTOD HOSPOS      | and Antibo     | seroads             | aut ici                    | DIODEL 93         | alei last eu                | 1 ; seen;         | (4) U        |
| counts.                                  | vations and actual    | ed on obser    | ced bas             | uborg gau                  | bor of yo         | stimated num                | roduction: E      | · (5) P      |
| horrooren tele                           | ide anti-             |                | ·                   |                            |                   |                             |                   |              |
| .Delleging                               | eguis annund eguis    | using the r    | (over)              | a ent to                   | al number         | stiteted tot                | a :[sto           | T (2)        |

|                         | (2)                         | (3)  | (4)                 | (5)                                     | 3-17(3)         |
|-------------------------|-----------------------------|--|---------------------|---|-----------------|
| *L                      |                             | TORY BIRDS   | MIGR                |   | Form NR-1A      |
| III. Doves and Pigeons: |                             | han waterfowl)   | (other              |   | (Nov. 1945)     |
| Mourning dove           |                             | Months of Menning  |                     | Refuge                                  |                 |
| White-winged dove       |                             |  |                     |   |                 |
|                         | G)                          | (4)  | (3)                 | (1) (2)                                 |                 |
| hotowits Lotor          | 9D PT000                    | PLAN LAST  | en Peak Numi        | scies First Sa                          | Slo             |
| IV. Predaceous Birds:   |                             | nodmult staff  | and multi shaft     |   |                 |
| Golden eagle            | 000 00100100 00100          |  | 190mm 9180          | NUMDET                                  | Comm            |
| Duck hawk               | Danit danit                 |  |                     | Shareh Rinda                            | T. Watan        |
| Horned OW1              | AND LUCKES                  |  | di di               | ODITE HEIDMI                            | 15 153 BR 1     |
| Rawon                   | Resident                    | and the second sec | 1/16                | The start                               | ker Fride baite |
| Crow                    | 1 3/13                      | 400 4/15   | 3/26                | ierom - motel                           | Oreman Otto     |
| Bald engle              | 2 4/1                       | 12 4/21  | 1/24                | ferrin I I                              | the assessma    |
| Rough legged havk       | 3 4/9                       | 10 4/21  | 4/28                | I - I - I - I - I - I - I - I - I - I - | 100J (251100    |
| Marsh Havk              | 1 3/29                      | 20 4/15  |                     |   | 25              |
| Ded tedled bed          | 1 4/1                       | 25 4/21  |                     | a state in the second second            | 100             |
| Contract Mark           | 1 4/10                      | a she had a second   | 1 4/18              |   |                 |
|                         | - 40                        |  | 4/40                |   |                 |
|                         |                             |  |                     |   | A States        |
|                         |                             |  | Reporte             | a by                                    |                 |
|                         |                             | TNSTRUCT   | TONS                |   |                 |
| (1) Species:            | Use the correct name        | s as found in the  | A O U. Checklist    | 1931 Edition and list grou              | in A.O.U.       |
| (1) Species.            | order. Avoid genera         | l terms as "seagul]  | 1". "tern". etc. :  | In addition to the birds li             | sted on         |
|                         | form, other species         | occurring on refug   | e during the report | ting period should be added             | l in appro-     |
|                         | priate spaces. Spec         | ial attention shou   | ld be given to thom | se species of local and Nat             | ional           |
|                         | significance. Group         | s: I. Water and M.   | arsh Birds (Gaviif  | ormes to Ciconiiformes and              | Gruiiformes)    |
|                         |                             | II. Shorebirds,  | Gulls and Terns (   | Charadriiformes)                        | Greater yell    |
|                         |                             | III. Doves and P   | igeons (Columbifor  | mes)                                    | MALLAGORY       |
|                         |                             | IV. Predaceous   | Birds (Falconiform  | es, Strigiformes and predac             | ceous           |
|                         |                             |  | of le               | Passeriforme                            | Ning-bille(5    |
| (2) First Seen:         | The first refuge rec        | ora for the specie   | s for the season c  | oncernea.                               |                 |
| (3) Post Numbers        | The greatest number         | of the species and   | cont in a limited   | interval of time                        | 2               |
| (3) reak numbers:       | me greatest number.         | or the specres pre   | Sent III a TIMITCEO | THE TAT OF STHE.                        |                 |
| (4) Last Seen           | The last refuge reco        | rd for the species   | during the season   | concerned.                              |                 |
| (4) 1000 0000           |                             |  | autens the boubon   |   |                 |
| (5) Production:         | Estimated number of         | young produced bas   | ed on observations  | and actual counts.                      |                 |
|                         | and a start of the start of | A State State  | A Start Start       |   |                 |
| (6) Total:              | Estimated total numb        | er of the species  | using the refuge d  | uring the period concerned              |                 |

| 3-1752<br>Form NR-2      |                                       |                      | UPLAND GAME BIRDS                         |                  |  |                 |                     |                       |  |  |  |  |  |
|--------------------------|---------------------------------------|----------------------|---|------------------|--|-----------------|---------------------|-----------------------|--|--|--|--|--|
| (April 1946)             | Refuge Seney                          | K                    |   | Month            | s of   | April , 194 52  |                     |                       |  |  |  |  |  |
| <pre>% (1) Species</pre> | (2)<br>Density                        |                      | (3)<br>Young<br>Produce                   | d                | (4)<br>Sex<br>Ratio  | R               | (5)<br>emoval       | ls                    | (6)<br>Total                           | (7)<br>Remarks   |  |  |  |
| Common Name              | Cover types, total acreage of habitat | Acres<br>per<br>Bird | Number<br>broods<br>obs'v'd.<br>Fstimated | Total            | Percentage   | Hunting         | For Re-<br>stocking | For<br>Research       | Estimated<br>number<br>using<br>Refuge | Pertinent information not<br>specifically requested.<br>List introductions here. |  |  |  |
| Grouse                   | Upland and swamp<br>fringe            |                      | ini et B<br>inteli<br>inteli              |                  | 1997 - 1997 - 1997<br>1997 - 1997 - 1997<br>1997 - 1997 - 1997<br>1997 - 1997 - 1997 |                 | aboca<br>12 a       | hard<br>hard<br>be us | 1000                                   | no change  |  |  |  |
| Sharp-tail<br>Grouse     | Semi-brush areas                      | nasn.<br>Ni rebn     | a slopat<br>betas                         | a ere            | er birnsbirg   | -retr<br>Kertit | edenno<br>TO R      | o bria<br>e arre      | 2000                                   | •  |  |  |  |
| Canada Spruce<br>Grouse  | Coniferous habitat                    | itan e               | etit, nag                                 | 6.)AL)           | AC IN LUDGO  | e ir<br>an      | -91                 | t ted                 | 50                                     | no change  |  |  |  |
| Tairie<br>Chicken        | Semi-dry barrens                      | EBORBE               | Berlq vice                                | a strike         | this of y  | ition<br>relig  | ing                 | nti qo<br>a fili      |  | * Decreasing   |  |  |  |
| oodeoek                  | Alder fringe                          | adi yari             | turb bern                                 | 040941           | h datagory   | 68 0            | 2-190               | alent 1               | 50                                     | (S) REMOVALEM  |  |  |  |
| . Ritonus                | ge during certain :                   | 101.62               | t sana a                                  | subre<br>yn 1 hy | those migre  |                 | neon<br>Birti       | d des                 | linde resid                            | ni   |  |  |  |
|                          | *Population statu<br>of densing, b    | more                 | clearly<br>and sing                       | defi             | ned pending<br>ground surv   | CON<br>Gys.     | oleti               | 60. bi<br>1709<br>20  | iicate meth                            | (7) REMARKS : 10   |  |  |  |
|                          |                                       |                      |   | · .bis           | hould be us  | ban             | 8760                |                       | q add of a                             | * Jely columns applicab  |  |  |  |
|                          |                                       |                      |   |                  |  | 4               |                     |                       |  |  |  |  |  |
| 1                        |                                       |                      |   |                  |  |                 |                     |                       |  |  |  |  |  |

#### 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<br>Form NR-4  | Patrum Somer   |  | SMALL MAMMALS   | INSTRO  | andina April   | 70 1055   |   |                 |                 |
|--|--|--|---|---|--|---|---|-----------------|-----------------|
| (June 1945)  | enargenent program;  | ance in the  | ecies of imports  | qe ila  | clude data on  | ALS (In   | MAN JIAM                                  | ин-4 - 8        | Form            |
| (1)<br>*Species  | (2)<br>Density   | in control   | (3)<br>Removals   | each sp   | to noiteingo<br>Dispos   | (4)<br>ition of                                     | betanite<br>[ Fure                        | 9<br>9          | (5)             |
| Muskrat ots<br>divid<br>slaminA<br>Common Name                             | 19,000<br>Cover Types & Total  | Acres<br>Per<br>Animal   | Hunting<br>Fur<br>Larvest<br>Predator<br>Jontrol *  | For Re-   | Share Tra  | pping<br>e.<br>gate e.                              | otal Refuge<br>urs Shipped<br>urs Donated | urs<br>estroyed | Popula-<br>tion |
| Muskrat tankeuM<br>he<br>d,<br>d,<br>ccur in<br>ruish<br>ture,<br>, bottom | over types. 000,01 <sup>n1</sup><br>afuge manager as to t<br>refuge; once submitte<br>significant changes o<br>letailed enough to fu<br>scure the general pic<br>ting agriculture land | imal [] y contract<br>from that re<br>don the f<br>scept an<br>hould ba<br>as to do<br>da, rever | te sere see see see see see see see see s   | n best<br>bestaard<br>best<br>n best<br>n | 5627         22           5628         34           5629         21           5630         28           5631         58           9632         108           5633         29 | 23<br>34<br>20<br>28<br>2<br>58<br>108<br>30        |   |                 | 900             |
| ed in<br>res sub-<br>ative<br>ould be <b>MaiM</b><br>of the                | and type symbols list<br>where pessible. Figure<br>1 counts on represent<br>mple area or 000,02 sh<br>moved since April 30   | be used to<br>be used to<br>ations and<br>ise <b>col</b> ess<br>thegory rea                      | rass preirie e<br>fee No. 7 should<br>on actual observ<br>ethod wrocsand<br>ethod wrocsand a                    | g trons<br>ist ins<br>ist is<br>devis<br>a jevru<br>Remarks<br>al numi  | 5635     15       5627     3       5628     4       5629     4       5630     6  | 15<br>316±<br>3<br>4<br>4<br>6±                     | 316                                       | RMOVILS         | 200<br>(E)      |
| Animal<br>fuge share.<br>by Service<br>f unprime-<br>agencies              | by Service Fredatory<br>r headingslisted.<br>spper's share, and re<br>including furs taken<br>s destroyed because c<br>nstitutions or other  | the retue<br>ling under<br>number, re<br>market<br>ich species<br>sted to it                     | g any taken on<br>removal not fa<br>ist the permit n<br>pelts shipped to<br>r of pelts of en<br>on, and furs do | furs 1<br>furs 1<br>ber of<br>conditi   | 5631     11       5632     6       5633     3       5635     4       412   | 11<br>6<br>2<br>5<br>41 <sup>1</sup> / <sub>2</sub> | 10 101<br>41                              | DI SPONT        | (4)             |

REMARKS: One muskrat and one mink sold by Ed Kelly permit No. 5630, half price giv (Government share \$13.80). Permit No. 5634 cancelled.

116007 -

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Reported by \_\_\_\_

|         |                           |                 | UTBA   | -     |
|---------|---------------------------|-----------------|--|-------|
|         |                           | e               | INSTRUCTIONS   | IQ.   |
|         |                           |                 | den under Seitense imax  | 36    |
| Form    | NR-4 - SMAL               | LL MAMM         | ALS (Include data on all species of importance in the management program; i. e., |       |
|         | musk                      | rats,           | beaver, coon, mink, coyote. Data on small rodents may be omitted except for      |       |
| (7)     | esti                      | mated           | total population of each species considered in control operations.)              |       |
| (2).    | CDTCITC.                  | BATH I          | O ROITING BIATOMEN BIATOMEN BIATOMEN BIATOMEN BIATOMEN BIATOMEN BIATOMEN         |       |
| Leto(1) | SPECIES:                  |                 | tailad wareal area awinnel for anyinnel white tailed isckrebbit etc              | Ferry |
| -       | 5                         | 08              | (Accorted common names in current use are found in the "Field Book of North      |       |
| stadoz  | 5                         | 19 P            | American Mammala" by H E Anthony and the "Manual of the Vertebrate Animala       |       |
| -       | No In                     | R               | of the Northeastern United States" by David Starr Jordan.)                       |       |
| norg    |                           | an line         |  |       |
| (2)     | DENSITY:                  | 11 add          | Applies particularly to those species considered in removal programs.            | int.  |
| (27     | AAA                       | AA              | Detailed data may be omitted for species occurring in limited numbers.           |       |
| al main | Part and                  |                 | Density to be expressed in acres per animal by cover types. This informa-        | in a  |
| noe     | 1.1 1 1 1                 | 13- 1 h         | tion is to be prefaced by a statement from the refuge manager as to the          | 1123  |
|         | The set of the set        |                 | 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     |       |
|         | N. C. Maria               |                 | 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.       |       |
|         |                           | 1               | Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom     |       |
|         | hardford                  |                 | land hardwoods, short grass prairie, etc. Standard type symbols listed in        |       |
|         | R. Hall                   | 316             | Wildlife Management Series No. 7 should be used where possible. Figures sub-     |       |
|         |                           |                 | mitted should be based on actual observations and counts on representative       | 1     |
| 200     | STREET.                   |                 | sample areas. Survey method used and size of sample area or areas should be      | 51.   |
|         | 1                         | 1. 1. 1.        | indicated under Remarks.   |       |
|         |                           |                 |  |       |
| (3)     | REMOVALS:                 | 1               | Indicate the total number under each category removed since April 30 of the      |       |
|         | A STATE AND               |                 | previous year, including any taken on the refuge by Service Fredatory Animal     |       |
|         |                           | LEST B          | Hunter. Also snow any removals not failing under neadingslisted.                 |       |
| ().)    | DICOOSTRION               | -               | D: On share tranned fund list the normit number tranneric share and refuse share |       |
| (4)     | DISPOSITION               |                 | Indicate the number of polts shipped to market including furs taken by Service   |       |
|         |                           | 41              | narcounel Total number of pelts of each species destroyed because of unprime-    |       |
|         | E STATISTICS              | 174             | ness or damaged condition, and furs donated to institutions or other agencies    |       |
|         | 1.2.18 2 34               | S. Intelligence | should be shown in the column provided.  | ž     |
|         |                           |                 | Tofnull Lamina Tojabara vd slavoner jel  |       |
| (5)     | TOTAL POPUL               | ATION :         | Estimated total population of each species reported on as of April 30.           |       |
|         | A PROMOVE SIG. 5 Cards of | and the         | presentation of 13, 301. Pariett No. 6624 autorillos.                            | (Che  |
|         | REMARKS:                  |                 | Indicate inventory method(s) used, size of sample area(s), introductions, and    |       |
|         |                           |                 | any other pertinent information not specifically requested.                      |       |

Reported by

116007 .

| 3-1754<br>Form NR-4<br>(June 1945)   | Refuge Seney   | SMALL MAMMALS   | ending April 30, 1952  |   |                                |
|--|--|---|--|---|--------------------------------|
| (1)<br>Species   | (anet(2)and forthco mi<br>Density  | Removals  | Disposition of   | (5)   |                                |
| North<br>North<br>elenina<br>Common Name   | Cover Types & Total Acres<br>Per<br>Acreage of Habitat Animal  | Hunting<br>Fur<br>Harvest<br>Fredator<br>Control *<br>For Re-<br>stocking<br>For Re-<br>search  | Share Trapping<br>Permit   | Notal Refuge<br>Nurs Shipped<br>Nurs Donated<br>Nurs<br>Destroyed | Popula-<br>tion                |
| Raesoon and<br>b<br>ai troo<br>data<br>Vessel ant<br>Common Skunk di ba<br>-dire ant<br>Goyote avits<br>bd bird<br>Red Fox | im 044 v cover types. 000,21 m<br>rom the refuge manager a 000,21 m<br>d on the refuge; once submitte<br>xcept as significant changes o<br>hould be detailed enough to fu<br>a 02 to becure the ge 000,02 of<br>da, rew rting agriculture land<br>da, rew rting agriculture land<br>to used where possible. Figure<br>be used where possible. Figure<br>ations and counts on represent<br>ize of sample area or areas si | pressed in acressed for a pressed in acressed for a contendent i<br>the edn corer ype four<br>need not be repeated i<br>r types. Sover types<br>rmation but not signuch<br>ent fertes No. 7 shoul<br>based on ac 32 1 of ser<br>urvey method used and<br>Bemarks. 1 | 5630     3     *       5632     1     *       5633     2     5       5635     1     *       5635     1     *       5635     1     *       5635     1     *       5636     1     *       5635     1     *       5635     1     *       5635     1     * |   | 75<br>1000<br>100<br>100<br>50 |
| Bob Cat off to<br>IsainA<br>orange estimate<br>off to<br>optimize to<br>seinges<br>• List removals by                      | tegory semoved since April 30<br>he refue by Service Fredator;<br>ling under headingslisted.<br>umber, 'rapper's share, and re<br>market including furs taken<br>ch species destroyed because o<br>sted to institutions or other<br>Partur LaminA rotabard   | al number infer each of<br>neluding any taken on<br>but any removals not far<br>fure list the permit r<br>ber of pelse shipped to<br>humber of pelse of en<br>condition, and fure do<br>in the column provided  | Indicate the tot<br>previou year, i<br>Haster. Also sh<br>UR: On share-trapped<br>Indicate the num<br>personnal. Tota<br>ness or damaged<br>stould be shown  | REMOVILS:<br>DI SPOILITION OF 1                                   | (E) <b>25</b>                  |
| REMARKS: T   | to To besoquib are alamina esent<br>of sample area(a), introducti<br>cifically requested.  | a trapper take all bas<br>ty method(s) used, site<br>and information not<br>Report  | <ul> <li>Ratimated total</li> <li>Indicate invento<br/>any other pertin</li> <li>ted by</li> </ul>   | TOTAL POPULATION  | (5)                            |

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|  |  | 3-1754   |
|--|--|--|
|  |  | INSTRUCTIONS 4-84 MIOR   |
|  | .992   | (June 1945) Refuge Seney 30.   |
| Form                                   | NR-4 - SMALL MAMMALS   | (Include data on all species of importance in the management program; i. e.,     |
| the second second second second second | muskrats, bea  | ver, coon, mink, coyote. Data on small rodents may be omitted except for         |
| (5)                                    | estimated tot  | al population of each species considered in control operations.)                 |
| (2)                                    | SPECIFC.   | Use correct common name. Fremale' Strined skunk spotted skunk short-             |
| Lacowi                                 | SI DOIDS.  | tailed weagel gray squirrel for squirrel, white-tailed jackrabbit, etc.          |
| Burnet                                 | 22 22 23   | (Accepted common names in current use are found in the "Field Book of North      |
| -stador                                |  | American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals     |
| tim                                    | R Ba   | of the Northeastern United States" by David Starr Jordan.)                       |
| and the first of                       |  | Per Takk Ga K Ga K Bernit BB   |
| (2)                                    | DENSITY:   | Applies particularly to those species considered in removal programs.            |
|  | Tel M M  | Detailed data may be omitted for species occurring in limited numbers.           |
| 75                                     | Land Beer and the  | Density to be expressed in acres per animal by cover types. This informa-        |
|  |  | tion is to be prefaced by a statement from the refuge manager as to the          |
|  |  | number of acres in each cover type found on the reluge; once submitted,          |
|  |  | this information need not be repeated except as significant changes occur in     |
|  |  | the desired information but not so much as to obscure the general nicture        |
| 1000                                   |  | Fremples: envice examp upland bardwoods reverting agriculture land bottom        |
| and a second                           |  | land hardwoode short grass prairie etc. Standard type symbols listed in          |
| 901                                    |  | Wildlife Management Series No. 7 should be used where possible. Figures sub-     |
| eese -                                 |  | mitted should be based on actual observations and counts on representative       |
| China                                  |  | sample areas. Survey method used and size of sample area or areas should be      |
| 03                                     |  | indicated under Remarks.   |
|  |  |  |
| (3)                                    | REMOVALS:  | Indicate the total number under each category removed since April 30 of the      |
| 1.2.0                                  |  | previous year, including any taken on the refuge by Service Predatory Animal     |
|  |  | Hunter. Also show any removals not falling under headingslisted.                 |
|  |  |  |
| (4)                                    | DISPOSITION OF FUR:  | On share-trapped furs list the permit number, trapper's share, and refuge share. |
|  |  | Indicate the number of pelts shipped to market, including furs taken by Service  |
|  |  | personnel. Total number of pelts of each species destroyed because of unprime-   |
|  |  | chould be chown in the column provided   |
|  |  | BHOULD DE BHOWN IN DIE COLUMN Provided   |
| (5)                                    | TOTAL POPULATION:  | Estimated total population of each species reported on as of April 30.           |
| a                                      | REMARKS:   | Indicate inventory method(s) used, size of sample area(s), introductions, and    |
|  |  | any other pertinent information not specifically requested.                      |
|  | and the second | 116007   |

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| (1)<br>Species Density |   |   |   |  |   | (3)<br>Removals Disposition of Fu            |   |   |   |  |   |  |   | be tan<br>Fure               | mtek<br>esti | towar             | (5)                |
|------------------------|---|---|---|--|---|--|---|---|---|--|---|--|---|------------------------------|--------------|-------------------|--------------------|
| Common                 | atc.<br>Morth<br>Animale<br>Name                              | d Iddards<br>to dool bi<br>otended to<br>Cover Ty<br>Acreage                                | pes & To<br>of Habits   | tal  | Acres<br>Per<br>Animal  | Hunting                                      | Fur<br>Harvest  | Predator<br>Control *   | For Re-<br>stocking                               | For Re-  | Share<br>Permit<br>Number                                       | Trappers<br>Share  | Refuge<br>share                                     | Total Refuge<br>Furs Shipped | Furs Donated | Fure<br>Destroyed | Popula<br>tion     |
| Seaver .               | orma-<br>ne<br>beur in<br>ceur in<br>ture.<br>battom<br>ed in | 000,121nf<br>er as to t<br>e submitte<br>changes o<br>bugh to fu<br>ture land<br>thure land | r types.<br>ge manage<br>uge: once<br>alfed and<br>g agricul<br>type av | toves<br>teru<br>e refu<br>e sig<br>det<br>e det<br>ertin<br>ulard | inaction the<br>rom the<br>scept an<br>sould be<br>state<br>state | t on<br>t on<br>o be<br>a as<br>toug<br>cowl | 29<br>343<br>3490<br>3490<br>3490<br>3490<br>3490<br>3490<br>3490 | ele<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1 | od in<br>l Wy<br>oh co<br>sot<br>on bu<br>graa    | osoti<br>oosti<br>boon<br>boon<br>tion<br>tion<br>sva d<br>troda | 5637<br>5640<br>5642<br>5643<br>5645<br>5646                    | 2<br>2<br>4<br>2<br>1<br>1<br>2<br>1<br>3<br>1<br>3<br>1 | 3<br>3<br>4<br>2<br>1<br>1<br>2<br>1<br>5<br>1<br>2 | 15                           |              |                   | 700                |
| ter                    | res sub-<br>stive<br>ould be<br>of the<br>Antmal              | April 30  | ra possil<br>ounts on<br>e area o<br>ed since<br>Service                | d whe<br>and c<br>eampl<br>eampl<br>temov                          | 150<br>10000  | buld<br>serv<br>nd s<br>n cs                 | 7 sh<br>1 ob<br>ed a<br>eac<br>ken                                | No.<br>ictus<br>id us<br>id us<br>id us<br>ig ts  | eries<br>1 on<br>meth<br>ts.<br>hber<br>lng s     | ent S<br>base<br>arvey<br>Remar<br>al nu<br>nclud                | Managem<br>hould be<br>d tader<br>the tot<br>year, 1            | ldlife<br>tted s<br>mple a<br>dicate<br>dicate           | n<br>n<br>ti<br>ti<br>ti                            |                              |              | VOMER             | <b>80</b><br>(g) - |
| Id at 1                | fuge share<br>by Service<br>f unprime-<br>agencies            | lated.<br>re, and re<br>ura taken<br>because o<br>or other                                  | eadingsli<br>er's shal<br>luding fu<br>estroyed<br>itutions<br>H famina | der h<br>trapp<br>inc<br>inc<br>inc<br>trac                        | ling und<br>mber, t<br>market<br>ch spect<br>ated to              | fei<br>i fl<br>of i<br>ne i<br>don<br>.bel   | ton<br>mraq<br>aqql<br>o st<br>srul<br>tvor                       | the<br>the<br>pel<br>and<br>sur   | y rem<br>list<br>f pel<br>ber o<br>tion,<br>e col | ow an<br>fure<br>ber o<br>condi<br>in th                         | Also sh<br>-trapped<br>the num<br>1. Tota<br>damaged<br>s shown | nter.<br>sinds<br>desti-<br>nosr<br>to se<br>blue        |   | 5 20                         | IOIT I P     | 01 SPO            | (#)                |

|                   |  | CALLER CONTRACTOR | PG1L-G   |
|-------------------|--|--|--|
|                   | 1952   | INSTRUCTIONS yacable and a suitef  | Form NR-4<br>(June 1945)   |
| Form              | NR-4 - SMALL MAMMALS   | (Include data on all species of importance in the management program; i  | . e  |
|                   | muskrats, bea  | ver. coon. mink, covote. Data on small rodents may be omitted except fo  | pitin manada and a   |
| (2)               | estimated tot  | al population of each species considered in control operations.)   | 10   |
| rer               | I of Marca   | Density Henoral Discover   | - 12/  |
| (1)               | SPECIES:   | Use correct common name. Example: Striped skunk, spotted skunk, short  | 8910300  |
| 2004.02-1         | T T T T T  | tailed weasel gray equirrel for equirrel white-tailed isckrabbit et  |  |
| Sumal.            | 1 1 2 2 2 2 1 3  | (Accepted common names in current use are found in the "Field Book of N  | lorth  |
| undo s            | k a a a  | American Mammala" by H E Anthony and the "Manual of the Vertebrate An  | imelo  |
|                   | Ne la la   | of the Northeastern United States" by David Starry Jordan  | . Imers  |
| mora .            | He He He   | of the Northeastern onited States" by David Starr Vordan.  |  |
| (2)               | DENICITY.  | The life continuit and the second second in moment   |  |
| (2)               |  | Applies particularly to those species considered in removal programs.  | Contron Mane   |
| the second second |  | Detailed data may be omitted for species occurring in fimited numbers.   | and the second |
| 700               |  | Density to be expressed in acres per animal by cover types. This infor   | ma-  |
|                   |  | tion 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 occ  | ur in  |
|                   | [ ] ] ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]  | the area of cover types. Cover types should be detailed enough to furn   | ish  |
|                   |  | the desired information but not so much as to obscure the general pictu  | re.  |
|                   | ar line  | Examples: spruce swamp, upland hardwoods, reverting agriculture land,  | bottom   |
|                   | 1 1 1 1 1 1 1  | land hardwoods, short grass prairie, etc. Standard type symbols listed   | in   |
|                   | and the second s | Wildlife Management Series No. 7 should be used where possible. Figure   | s sub-   |
|                   |  | mitted should be based on actual observations and counts on representat  | ive  |
|                   |  | sample areas. Survey method used and size of sample area or areas shou   | ld 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 A  | nimal  |
|                   |  | Hunter. Also show any removals not falling under headingslisted.   |  |
|                   |  |  |  |
| (4)               | DISPOSITION OF FUR:  | On share-trapped furs list the permit number, trapper's share, and refu  | ge share.  |
|                   |  | Indicate the number of pelts shipped to market, including furs taken by  | Service  |
|                   |  | personnel. Total number of pelts of each species destroyed because of  | unprime-   |
|                   |  | ness or damaged condition, and furs donated to institutions or other ag  | encies   |
|                   |  | should be shown in the column provided.  |  |
|                   |  | oy stedator animal unnter  | SINTONOT JE SI   |
| (5)               | TOTAL POPULATION:  | Estimated total population of each species reported on as of April 30.   | HIMANES  |
|                   |  | (downward above \$10.00.)  |  |
| 1                 | REMARKS:   | Indicate inventory method(s) used, size of sample area(s), introduction  | s, and   |
|                   |  | any other pertinent information not specifically requested.  | 114007   |

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A sample of the thousands of deer that die of starvation each winter because the Michigan Legislature refuses to let the Conservation Department manage the deer herd. R105-1 by Ed Smith



Photo showing the browse-line in the Blaney yard; note that most of the trees here are balsam.

not on refuge

R105-2

30

Ed Smith



Deer-yard trail and over-browsed balsam. Blaney yard, March 1952. R105-3 Ed Smith

ed balsam. Ed Smith Mot May



Maple reproduction, Blaney yard. R105-4 Ed Smith

not in refuge



Birch Reproduction R-105-5

not meterge

Ed Smith

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Unthrifty balsam as a result of deer browsing; note that large thrifty balsam in background is also browsed as high as the animals can reach.

Ed Smith

R 105-6

The following two pictures show views of the mill operated under permit on the refuge at the Walsh Siding.

R 105-7 & 8

# Ed Smith





The use of the power-saw has greatly accelerated timber harvesting operations with the final result longer periods of unemployment for the cutters.

R 105-9

Ed Smith

After the pulpwood is cut into "sticks" it is skidded to the access roads where it is later loaded into trucks. The smaller operators often cannot afford tractors to do the skidding.

R 105-10

1

Ed Smith

A typical pulp-wood cutters shack; the cutters, or in fact all residents of the upper peninsula, are often referred to as "jack-pine savages"

R 105-11

#r

C. J. Henry.



Jobber cutting and peeling cedar posts for the Horicon Refuge

R 105-12

## C. J. Henry

Peat "boulders" in the Walsh below C-3; this illustrates the cutting back of the stream resulting in the loss of excellent waterfowl marsh. The only solution is a series of substantial channel plugs to kkep the stream out of the channel. The natural tendency of the stream is to meander through marshes and it is only by virtue of a man-made drainage ditch that the stream ever started cutting.

R 105-13

C. J. Henry



The "Sno-Cat" used by the Michigan Conservation Department in winter game studies.

R 105-14

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Ed Smith

A sharp-tailed grouse trapping and banding site operated on the refuge by the Michigan Conservation Department. This is on a dancing ground

R 105-15

d Smith







Pileated woodpecker workings in a defective hard maple.

R 105-17

C. J. Henry

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Gulls on an off-shore island in Lake Michigan. There are tremendous nesting populations on these islands including several species of ducks.

R 105-18

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C. J. Henry

