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LOWER SOURIS NATIONAL WILDLIFE REFUGE
QUARTERLY NARRATIVE REPORT
NOVEMBER, DECEMBER, 1940, AND JANUARY, 1941




United States Department of the Interior
Fish and Wildlife Service
Upham, North Dakota

TABLE OF CONTENTS

| | <u>Page</u> |
|---|-------------|
| Personnel | 1 |
| General | 2 |
| Weather Conditions | 2 |
| Water Conditions | 2 |
| Wildlife | 3 |
| Waterbirds | 3 |
| Upland Game Birds | 4 |
| Big-game Animals | 5 |
| Fur-bearing Animals, Predators, Rodents, and other Animals | 7 |
| Fish | 9 |
| Refuge Development and Maintenance | 10 |
| Physical Development | 10 |
| Plantings | 11 |
| Collections | 11 |
| Public Relations | 12 |
| Recreational Uses | 12 |
| Violations | 13 |
| Economic Uses of Refuge | 14 |
| Grazing | 14 |
| Haying | 14 |
| Cooperative Farming | 17 |
| Field Investigation and Applied Research | 19 |
| Research | 19 |
| Bird Banding | 20 |
| Photographs | 24 |

PERSONNEL

| | |
|----------------------|----------------|
| Cordia J. Henry | Refuge Manager |
| Merrill C. Hammond | Biologist |
| Wilfred Anderson | Clerk |
| Harry A. Jensen | Patrolman |
| Thomas W. Lawson | Patrolman |
| Ingvald J. Martinson | Patrolman |



I. GENERALA. Weather Conditions

| <u>Month</u> | <u>1940 Snowfall</u> | <u>1940 Precip- itation</u> | <u>1939 Precip- itation</u> | <u>Maximum Temperature</u> | <u>Minimum Temperature</u> |
|--------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------------|--------------------------------|
| November | 4.5 in. | .54 in. | .09 in. | 45 | -23 |
| December | 6.0 " | .57 " | .06 " | 40 | -32 |
| January | <u>7.5</u> " | <u>.64</u> " | <u>.16</u> " | <u>40</u> | <u>-24</u> |
| Totals | 18.0 " | 1.75 " | .31 " Extremes | 45 | -32 |

The precipitation on this refuge during the past quarter has been 1.75 inches, which is .38 above the normal for the nearest reporting station (Bottineau). The precipitation records were obtained at the refuge, while the temperature records were obtained from Bottineau. At the present time the snow is 18 inches deep down in the timber where no drifting occurs. At this time last year there was approximately an inch of snow.

B. Water Conditions

The water in the units is at approximately the same levels as that given in the last report. At the present time the prospects for the spring runoff look very good as far as this immediate area is concerned. Of course much depends on precipitation during the next two months, and the manner in which the snow melts in the spring.

Summary of water conditions by units:

Rubble-masonry area. Now full with a small flow going over Dam I. Same as this time last year.

Unit 320. Gates wide open for winter. Some water trapped in west end, and a little water still in river channel. Approximately same condition as at this time last year.

Unit 326. Gates wide open. Still some water backed up by Dam 332.

Same as last year.

Unit 332. Practically full. Was full last year.

Unit 341. Lacks 2.8 ft. of being full. Lacked 2 ft. at this time last year.

Unit 357. Empty except for the main channel. Lacks over 8 ft. of being full. Lacked 4.79 ft. of being full at this time last year.

II. WILDLIFE

A. Waterbirds

1. Populations and Behavior

Mallard. There was a very heavy concentration of Mallards on the refuge during early November, reaching a maximum of possibly 750,000 birds. The concentration was probably the heaviest in the 332 unit, although birds were abundant over the entire refuge.

Pintail. A fair flock of Pintails stayed on into November, concentrating in the headquarters area where they fed principally in the goose pen and at the banding traps.

Other ducks. There were practically no other ducks here in November. The last narrative report gave the status of the various species for the fall migration period.

(b) Groups

Geese. A few Geese were noted in migration on November 9th and 10th, during and immediately following a heavy snowstorm. Otherwise they were exceedingly scarce during the entire hunting season, and absent after November 11th. Most of the full-winged refuge Geese left during November, although sixteen are spending the winter with the pinioned flock at the refuge headquarters.

Ducks. A fairly heavy snowstorm occurred on November 9th and early morning of November 10th, and strong winds on November 11th and 12th. The minimum temperature at the refuge during this storm period was 24° below zero on November 13th. There was a very heavy migration just following the snow, and preceding the heaviest wind and cold. This migration reached its peak on the morning of November 10th, when great flocks of ducks were in sight almost constantly, high in the air and headed southward in direct and rapid flight. There were very few ducks left after this storm, although a few stayed on into early January, using the few large spring holes southeast of the refuge headquarters.

2. Food and Cover

Refuge grain fields were used heavily by ducks up to the time of the early November storm. The crops were excellent, and the yield heavy. Bottineau County is supposed to have had one of the best crops in the history of the county.

B. Upland Game Birds

Prairie Chicken. As stated in the last report, there has been a good increase in the numbers of these birds, and large numbers are wintering on the refuge. These birds rarely go near a feeding station, but prefer to feed out in large open fields. They spend much of their time out in the meadows and marshes.

Sharp-tailed Grouse. These birds are abundant and appear to be in better general health than last winter, when approximately three-fourths were afflicted with a roup-like infection. This would tend to substantiate our belief that the affliction had been caused by a lack of snow for natural roosting conditions. Only one ^{light} bird has been taken this winter, and this was sent alive to Dr. Coburn. Blood

smears have been taken when practical, and a number of these have been sent to Dr. Coburn to enable him to follow the course of the blood parasite (Plasmodium) discovered in birds sent in from this refuge.

European Partridges are abundant and appear to have again showed an increase over the preceding year.

Ring-necked Pheasants are abundant, far surpassing the population of any previous year. The State is trapping here again this year, but to date have had but poor success (as might be expected). The trapped birds are being used in experimental plantings in other parts of the State.

General. Despite the heavy snows this winter, the availability of food in the refuge grain fields is very good, and great flocks of birds feed in them regularly. There is not as yet any apparent competition between the species for food, although there may well be before the winter is over. The Pheasant is the only variety that will come readily and consistently to feeding stations. The other species prefer to feed in the open, although Partridges and Sharp-tails will come to stations, where grain is not available. Feeding stations have but little if any practical value on this area where an abundance of natural cover and food is available. They are, however, valuable aids in banding operations, if placed judiciously and baited consistently.

C. Big-game Animals

Due to sickness of personnel, adverse weather conditions, and so on, it was not possible to conduct a deer census by the driving method as we did in the two previous years. On January 28th, however, Mr. Roy Bach of the North Dakota State Game and Fish Department and the refuge manager conducted a deer census by airplane. Our estimate was 1,085 deer for the entire refuge, which figure is well in line

with our previous estimates. This is an increase of 37% over our estimate for the previous year. The wooded river-bottom fairly swarmed with deer, while the Sandhills had many less than in the summer. This shows a definite trend for the deer to concentrate in the river-bottom during the winter, especially when the snow is rather deep.

The entire cost of the census by plane, including salaries, was about \$25, as compared to an estimated \$300 with CCC labor, or \$700 with hired labor. Furthermore the results of the drives are not as satisfactory, or as free from argument.

During the next month or two we intend to make careful observations on the extent of food depletion by the deer. After viewing the concentrations of deer in the river-bottom, we are led to believe that the point of over-population is approaching very rapidly.

Behavior

Under present conditions the deer have an ideal habitat on this refuge. The animals are in excellent condition and there is still plenty of food. Coyotes are the only possible predator but they evidently move off of the refuge during the winter. We doubt very much that coyotes ever kill a normal deer in this area, although they will feed on a dead one.

Deer have made extensive use of the fields of standing grain in the deer areas, feeding readily on corn, wheat, and barley. A field of barley was left standing just south of Martinson's residence, which has attracted many deer. Patrolman Martinson has been putting out a sack each of oats and ear corn every day within a short distance of his house. Each evening the deer come out to

feed, many coming within fifty feet of the house. As many as thirty six have been noted coming out to feed in this area.

D. Fur-bearing Animals, Predators, Rodents, and Other Animals

1. Population and behavior

The catch of mink during the past quarter has been 143 as compared to 68 taken during the corresponding period last year. This area is an ideal habitat for mink, and they must be kept under control or serious destruction of waterfowl will result. The mink use the entire marsh freely and are much harder to catch than in areas where they follow a definite channel. There are, therefore, always more than enough left over as breeding stock, and no excessive depletion results from the most intensive trapping efforts.

The increase of raccoons has been rapid during the past three years. These animals were trapped only in the marsh, and in the area immediately adjacent to the marsh.

Muskrats have shown little if any change in the past year. We expect rapid improvement when the mink population is lowered, when we have more water, and when marsh vegetation has completely recovered.

Beaver have increased to the point where some removal is now believed necessary.

Coyotes are very scarce on the refuge, although there were a few late last summer. They appear to leave the refuge during the winter.

House cats are now practically extinct on the refuge, only two having been taken this winter.

Foxes and weasels have shown very little, if any, change.

Two tables appear on the following page which give complete information on the predators taken during the past quarter, as well as the numbers taken during the corresponding quarter of previous winters.

Predators Taken During Past Quarter

| <u>Species</u> | <u>NOVEMBER</u> | | <u>DECEMBER</u> | | <u>JANUARY</u> | | <u>TOTALS</u> | | <u>Grand Total</u> |
|----------------|---------------------|------------------|---------------------|------------------|---------------------|------------------|---------------------|------------------|--------------------|
| | <u>Under Permit</u> | <u>By Refuge</u> | <u>Under Permit</u> | <u>By Refuge</u> | <u>Under Permit</u> | <u>By Refuge</u> | <u>Under Permit</u> | <u>By Refuge</u> | |
| Mink | 60 | 8 | 48 | 4 | 20 | 3 | 128 | 15 | 143 |
| Skunk | 53 | 24 | 15 | 1 | 4 | | 72 | 25 | 97 |
| Weasel | 18 | 15 | 18 | 11 | 12 | 9 | 48 | 35 | 83 |
| Raccoon | 13 | | 2 | | 3 | | 18 | 0 | 18 |
| Fox | | | 3 | | 3 | 1 | 6 | 1 | 7 |
| Coyote | 1 | | | | | | 1 | 0 | 1 |
| House Cat | — | <u>2</u> | — | — | — | — | <u>0</u> | <u>2</u> | <u>2</u> |
| Totals | 145 | 49 | 86 | 16 | 42 | 13 | 273 | 78 | 351 |

Comparisons of Predator Take During the Three-months Period,
November, December & January

| <u>Species</u> | <u>1936-37</u> | <u>1937-38</u> | <u>1938-39</u> | <u>1939-40</u> | <u>1940-41</u> |
|----------------|----------------|----------------|----------------|----------------|----------------|
| Mink | 19 | 13 | 31 | 68 | 143 |
| Skunk | 179 | 83 | 128 | 165 | 97 |
| Weasel | 103 | 154 | 106 | 64 | 83 |
| Raccoon* | 0 | 0 | 0 | 0 | 18 |
| Fox | 0 | 14 | 14 | 14 | 7 |
| Coyote | 7 | 5 | 7 | 4 | 1 |
| House Cat | <u>34</u> | <u>4</u> | <u>28</u> | <u>11</u> | <u>2</u> |
| Totals | 342 | 273 | 314 | 326 | 351 |

*This species is being trapped this year for the first time.

This has been the first year in which permittee trapping has been allowed for the harvest of predators. For this we have been greatly thankful, because of sickness on the part of Patrolman Lawson, and the very poor quality of this years crop of CCC trappers. The permittee trappers have been entirely satisfactory from every standpoint. On a long-time basis I am positive this is the only successful solution of the predator problem.

E. Fish

No new species of fish have been found, and the present known list is as follows:

1. Common Catfish (*Ameiurus vulgaris*)
2. Common Bullhead (*Ameiurus nebulosus* n.)
3. Common Sucker (*Catostomus commersonnii* Sucklii)
4. Northern Dace (*Margariscus margarita nachtriebi*)
5. Common Shiner (*Notropis cornutus frontalis*)
6. Spot-tail Minnow (*Notropis hudsonius* h.)
7. South-western Straw Colored Minnow (*Notropis deliciosus missuriensis*)
8. Black-head Minnow (*Pimephales promelas* p.)
9. Johnny Darter (*Boleosoma nigrum* n.)
10. Iowa Darter (*Poecilichthys exilis*)
11. Brook Stickleback (*Eucalia inconstans*)
12. Trout-Perch (*Percopsis omiscomaycus*)
13. Yellow Perch (*Perca flavescens*)
14. Common Pike (*Esox lucius*)

During the early part of the winter there was no water going over Dam I, which resulted in a very heavy concentration of fish just below the dam. This same thing happened the previous winter when an estimated 500,000 fish were placed in the deep water above the dam. On December 17 and 18, fish were again put up over the dam. A rough estimate was the best that could be obtained, which figure was 700,000. This included 400,000 small perch, 100,000 suckers, and 300,000 miscellaneous (mostly minnows). The springs are now flowing better and water levels have risen until a fair flow is now going over Dam I. We should, therefore, have no more trouble of this kind this winter.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

1. Residences

The Simengaard House in the north end of the refuge has been completed, and will be ready for occupancy as soon as a well is dug. The work on the garage is progressing satisfactorily.

The basement of the Johnson House at the refuge headquarters has been poured. The work on the septic tank is proceeding as well as could be expected during winter weather.

2. Roads

A small section of patrol road south of headquarters was graveled. Work on the public road crossing the refuge at Dam 341 proceeded until winter conditions stopped it. The fill on the east side was roughed in with drag-line, and the approaches to the bridge were put in with dump trucks.

3. Bridges

The bridge in the spur of the patrol road south of the Hillman bridge was completed. The footings of the bridge across Willow Creek were poured in early winter.

4. Fencing

The fencing of the outside boundary has almost been completed with the fencing of six miles of newly acquired tracts. Two stock easements were finished, as was one mile of pasture fence.

5. Grease Pit

The grease pit in the heated stall of the refuge service building was completed during the period.

6. Timber Stand Improvement work was done by both CCC and WPA.

This included the cleanup of about 80 acres of timber. 3,400 fence

posts were taken out.

7. Razing

Some razing was done during the quarter, when about eight sets of buildings were demolished. A quantity of old fences were taken up. This work has been carried on by both WPA and CCC.

8. Miscellaneous has included the construction of a toboggan (by WPA) for winter travel in the Sandhills area, a kitchen cabinet (by WPA) for the Simengaard place, and a goose trap (by WPA) with a 12' swinging drop door. Several boats were repaired and painted. The refuge-owned Pontiac and Ford panel were overhauled. Some of the farm machinery was painted. An air compressor was purchased and installed.

B. Plantings

An excellent stand of wild rice in 1940 resulted from the seed planted in November 1939. On November 7, 1940, we again planted wild rice, getting it in just ahead of the freeze-up. Five hundred pounds were planted, some in the 326 unit near the west end of Dam 320, and some along the west side of the 332 unit.

The rice was held for a short time before planting, immersed in sacks in fairly deep water where it kept beautifully. We then watched the weather very carefully and succeeded in planting it just a few hours before the final freeze-up.

C. Collections

1. Corn was picked by a CCC crew during the period, during which time 800 bushels of ear corn was harvested.

Some seed of trees and shrubs were stratified in preparation for spring planting.

2. Specimens put up included one Gyrfalcon, two complete Deer specimens, and two skulls only. The deer specimens were obtained from the State Game and Fish Department and were sent to Major Goldman. The Gyrfalcon was shot on a farm near Wilton.

IV. PUBLIC RELATIONS

A. Recreational Uses

1. Local Hunting

The local hunting for upland game birds was excellent. All species were more numerous than they have been for many years, while the two imported varieties were more abundant than they had ever been in this locality. This was especially true of the Pheasants. Sharp-tailed Grouse were very numerous.

The duck hunting was not very good. The hunter who was really willing to apply himself and knew how to hunt fared fairly well. The average bag of the average hunter, however, was very small. As usual the hunters raised their voices in a tremendous protest, blaming the hours, the seasons, the refuges, and so on. Considerable publicity was given the matter in the Minot newspaper, clipping of which were submitted on Form 3-599.

2. Officials and Important Visitors

| <u>Name</u> | <u>Time Spent</u> |
|---|-------------------|
| J. C. Salyer II, Fish & Wildlife Service, Washington | 1/2 da. |
| F. C. Gillett, Fish & Wildlife Service, Minneapolis | 2 da. |
| L. M. Chaney, Fish & Wildlife Service, Fargo, N. D. | 1 da. |
| Leo R. Childers, Fish & Wildlife Service, Aberdeen, S.D. | 1 da. |
| E. M. Lee, North Dakota Game & Fish Department, Bismarck | 1 da. |
| Stanley Saugstad, Roy Bach, and assistants of Pitman-Robertson project on pheasant trapping work. | |

3. Talks

On November 1 the refuge manager showed Service movie films and gave a talk to a Girl Scout group at Bottineau. On November 7 he showed movies and gave a talk to the Bottineau County Wildlife Federation.

B. Violations

1. Apprehensions

T. L. Grindberg, Surrey, 11/3/40, shooting waterfowl before sunrise.

Shumate, Esten, Omaha, Nebr., 11/3/40, hunting waterfowl without license and duck stamp.

Page, Frank, Leeds, 11/9/40, shooting duck inside of federal refuge.

Smith, Robert, Leeds, 11/9/40, shooting duck inside of federal refuge.

2. Prosecutions

Aakrann, Morton P., Minot, 10/27/40, hunting waterfowl after 4:00 P.M.

Case dropped; no prosecution.

Boll, Victor H., Russell, 10/29/40, hunting waterfowl before sunrise.

Case dropped; no prosecution.

Baumann, Albert H., Westhope, 10/29/40, hunting waterfowl after 4:00

P.M. Fined \$15; Costs \$2.50.

Henderson, Alex, Westhope, 10/29/40, hunting waterfowl after 4:00 P.M.

Fined \$15; Costs \$2.50.

Troyer, C. S., Bottineau, 10/29/40, hunting waterfowl after 4:00 P.M.

Fined \$10; Costs \$2.50.

Walker, Glen, Westhope, 10/29/40, hunting waterfowl after 4:00 P.M.

Fined \$15; Costs \$2.50.

Nees, Oliver, et al., Garske, 10/25/40, hunting waterfowl after 4:00

P.M. Case dropped; no prosecution.

Grindberg, T.L., Surrey, 11/3/40, shooting waterfowl before sunrise.

Fined \$10; Costs \$2.

V. ECONOMIC USES OF REFUGE

A. Grazing

The results of grazing during 1940 were favorable on all pastures, and no overgrazing occurred. A summary of 1940 grazing follows:

| <u>Permittee</u> | <u>Permit No.</u> | <u>Acreage</u> | <u>Total Hd. Mos.</u> | <u>Inclusive Period Of Use</u> | <u>Revenue</u> |
|------------------|-------------------|----------------|-----------------------|--------------------------------|----------------|
| Edwin Moen | 264 | 320 | 54 | 7-15/10-15/40 | \$ 18.90 |
| J. E. Westford | 914 | 400 | 90 | 7-18/11-11/40 | 41.20 |
| Andrew Kvalheim | 2993 | 1,250 | 343 | 7-16/11-9/40 | 171.50 |
| Ellard Swanson | 3015 | 160 | 76 | 7-3/11-10/40 | 18.50 |
| Peter J. Nermoe | 3035 | 800 | 196 | 7-25/11-11/40 | 98.00 |
| Ed. Latendresse | 3083 | <u>480</u> | <u>193-1/3</u> | 7-17/11-13/40 | <u>96.67</u> |
| Total | | 3,410 | 952-1/3 | | \$444.77 |

B. Haying

Tabulation of hay removed from the refuge during the 1940 season is given below.

| <u>Permittee</u> | <u>Permit No.</u> | <u>Acreage</u> | <u>Tons</u> | <u>Revenue</u> |
|---------------------|-------------------|----------------|-------------|----------------|
| Ed. Ferstad | 3097 | 8 | 8 | \$ 8.00 |
| Ted Olson | 3212 | - | - | 3.00* |
| B. T. Benson | 3213 | 50 | 30 | 45.00 |
| Fred C. Boye | 3214 | 40 | 25 | 37.50 |
| Leifur Benedicktson | 3215 | 50 | 38 | 57.00 |
| Thor Jensen | 3216 | - | - | 2.00* |
| Richard Boettcher | 3217 | - | - | 5.00* |
| S. H. Guttrud | 3218 | 55 | 37 | 55.50 |
| Fred Brandt | 3219 | 30 | 17 | 25.50 |
| Clyde Coss | 3225 | 85 | 60 | 90.00 |
| Geo. Kongsli | 3226 | 18 | 12 | 18.00 |

*No hay out; down payment forfeited.

| <u>Permittee</u> | <u>Permit No.</u> | <u>Acreage</u> | <u>Tons</u> | <u>Revenue</u> |
|-------------------|-------------------|----------------|-------------|----------------|
| John J. Ringen | 3227 | 80 | 42 | 63.00 |
| Herbert Natwick | 3228 | 60 | 34 | 51.00 |
| Julius Asmundson | 3229 | 40 | 25 | 37.50 |
| Garfield Johnson | 3230 | 65 | 40 | 60.00 |
| Wm. Fecho | 3231 | 90 | 56 | 84.00 |
| Alfred M. Boehnke | 3232 | 40 | 24 | 36.00 |
| Fred Hahn | 3233 | 35 | 22 | 33.00 |
| P. J. Nermoe | 3234 | 150 | 120 | 180.00 |
| Arne Klabo | 3235 | 20 | 8 | 12.00 |
| Andrew Kvalheim | 3236 | - | - | 5.00* |
| G. R. Garnant | 3237 | 35 | 19 | 28.50 |
| Charles Erdman | 3238 | 45 | 27 | 40.50 |
| Walter Arnason | 3239 | 30 | 11 | 16.50 |
| E. J. Evenson | 3240 | 12 | 7 | 10.50 |
| C. E. Gilmore | 3241 | - | - | 5.00* |
| H. J. Goodman | 3242 | 50 | 36 | 54.00 |
| Ellard Swanson | 3243 | 90 | 55 | 82.50 |
| Mundie Goodman | 3244 | 60 | 30 | 45.00 |
| Eddie Lehmann | 3245 | 30 | 16 | 24.00 |
| A. C. Anderson | 3257 | 10 | 3-1/3 | 5.00 |
| O. S. Lundervold | 3258 | 15 | 4 | 6.00 |
| K. C. Halley | 3259 | 30 | 17 | 25.50 |
| Chas. Lazier | 3260 | 250 | 176 | 264.00 |
| Phillip Torr | 3261 | 130 | 67 | 100.50 |
| Peter F. Hillman | 3269 | 35 | 20 | 30.00 |
| Clarence Hillman | 3270 | 30 | 18 | 27.00 |
| J. F. Hanneson | 3271 | - | - | 5.00* |

*No hay cut; down payment forfeited.

| <u>Permittee</u> | <u>Permit No.</u> | <u>Acreage</u> | <u>Tons</u> | <u>Revenue</u> |
|--------------------|-------------------|----------------|------------------|----------------|
| Adolf Johnson | 3272 | 35 | 19 | 28.50 |
| Sam Thompson | 3278 | 15 | 4 | 5.00* |
| John Bell | 3279 | 100 | 50 | 75.00 |
| John Edwards | 3280 | 45 | 27 | 40.50 |
| Henning Moen | 3281 | 20 | 12 | 18.00 |
| Ed. Ferstad | 3282 | 30 | 18 | 27.00 |
| Lawrence Kitzman | 3283 | 25 | 12 | 18.00 |
| Ben Swearson | 3284 | - | - | 10.00** |
| H. Nermyr | 3288 | 30 | 15 | 22.50 |
| Howard Lazier | 3289 | - | - | 5.00** |
| G. T. Christianson | 3290 | 10 | 4 | 6.00 |
| Ed. Latendresse | 3291 | 140 | 80 | 120.00 |
| Walter Goodman | 3292 | 20 | 11 | 16.50 |
| Barthi Goodman | 3293 | 70 | 42 | 63.00 |
| Robert Hahn | 3294 | 35 | 15 | 22.50 |
| August Burmester | 3295 | 25 | 12 $\frac{1}{2}$ | 18.75 |
| Reinhold Klebe | 3296 | 100 | 60 | 90.00 |
| Lars O. Lunde | 3305 | 20 | 9 | 13.50 |
| Arni Arnason | 3306 | 125 | 52 | 78.00 |
| Albert Getzlaff | 3311 | <u>30</u> | <u>11</u> | <u>16.50</u> |
| Totals | | 2,643 | 1,557-5/8 | \$2,371.75 |

*Final payment due (\$1.00) has not been paid by permittee.

**No hay cut; down payment forfeited.

C. Cooperative Farming

A tabulation of cooperative farming carried on during 1940 under special use permits is given below.

| <u>Permittee</u> | <u>Permit No.</u> | <u>Crop</u> | <u>Acres</u> | <u>Bu. per Acre</u> | <u>Government Share</u> | |
|--------------------|-------------------|-------------|--------------|---------------------|-------------------------|-----------------------|
| | | | | | <u>Bushels Harv.</u> | <u>Acres Standing</u> |
| Edward Ferstad | 233 | Durum Wheat | 29 | 16.6 | 121 | |
| | | Barley | 18 | 32.7 | 147 | |
| Edwin Lee | 1982 | Durum Wheat | 93 | 24.7 | 275 | 10 |
| | | Barley | 40 | 32.0 | | 20 |
| Clyde Coss | 2922 | Durum Wheat | 68 | 21.0 | | 22.7 |
| | | Barley | 36 | 32.0 | | 12 |
| | | Oats | 12 | 40.0 | | 4 |
| | | Corn | 25 | 38.0 | | 5 |
| Arni Arnason | 2923 | Barley | 55 | 29.9 | 411 | |
| | | Oats | 38 | 26.7 | 254 | |
| William Fecho | 2924 | Barley | 18 | 51.0 | | 6 |
| | | Oats | 24 | 81.2 | | 8 |
| G. T. Christianson | 2925 | Durum Wheat | 75 | 18.4 | 345 | |
| | | Barley | 10 | 37.0 | 93 | |
| | | Oats | 15 | 30.0 | 112 | |
| | | Millet | 8 | 7.5 | 15 | |
| A. C. Anderson | 2926 | Durum Wheat | 30 | 18.0 | | 10 |
| | | Barley | 18 | 37.5 | | 6 |
| | | Oats | 18 | 28.3 | | 6 |
| | | Millet | 12 | 8.0 | | 4 |
| Elmer Lundervold | 2927 | Durum Wheat | 70 | 19.3 | | 23.3 |
| | | Oats | 60 | 38.1 | | 20 |
| Arthur Dahl | 2928 | Durum Wheat | 36 | 15.0 | | 12 |
| | | Barley | 21 | 20.0 | | 7 |
| Richard Vedquam | 2934 | Durum Wheat | 30 | 20.5 | 154 | |
| | | Barley | 28 | 26.7 | 187 | |
| Herbert Liebelt | 2935 | Durum Wheat | 33 | 13.6 | | 11 |
| | | Oats | 30 | 52.5 | | 10 |
| Harold Lee | 2936 | Durum Wheat | 35 | 25.0 | 219 | |
| | | Barley | 15 | 30.0 | 114 | |
| V. J. Trimble | 2937 | Durum Wheat | 70 | 19.3 | 338 | |
| Lue Sonnenberg | 2938 | Durum Wheat | 21 | 17.3 | | 7 |

| Permittee | Permit No. | Crop | Acres | Bu. per Acre | Government Share | |
|--------------------------|------------|-------------|-------|--------------|------------------|----------------|
| | | | | | Bushels Harv. | Acres Standing |
| John Natwick | 2939 | Durum Wheat | 66 | 16.4 | 270 | |
| | | Barley | 33 | 26.7 | 220 | |
| | | Corn | 40 | 30.0 | | 8 |
| Sigvald Sivertson and | 2960 & | Durum Wheat | 257 | 25.0 | | 85.7 |
| | | Barley | 75 | 28.0 | | 25 |
| Gilbert Sivertson | 2961 | Oats | 75 | 42.6 | | 25 |
| Walter E. Klabo | 2962 | Durum Wheat | 30 | 12.5 | | 10 |
| | | Barley | 18 | 21.7 | | 6 |
| Fred F. Rice | 2963 | Durum Wheat | 42 | 5.0 | | 20 |
| | | Oats | 20 | 20.0 | | |
| | | Corn | 20 | 20.0 | | 15 |
| | | Millet | 8 | 10.0 | | |
| T. J. Jacobson | 2964 | Durum Wheat | 78 | 19.1 | 373 | |
| Morgan Erickson | 2965 | Durum Wheat | 70 | 15.1 | | 23.3 |
| Bernhard Gessner | 2966 | Durum Wheat | 80 | 15.0 | | |
| | | Barley | 25 | 10.0 | | |
| | | Oats | 30 | 23.3 | | |
| | | Corn | 45 | 28.0 | | 45 |
| Alvin Biberdorf | 2970 | Durum Wheat | 157 | 16.2 | | 52.3 |
| | | Oats | 16 | 28.1 | | 5.3 |
| Walter Brodehl | 2973 | Durum Wheat | 60 | 20.0 | | 20 |
| | | Barley | 15 | 30.0 | | 5 |
| | | Corn | 15 | 40.0 | | 3 |
| Edmund Latendresse | 2974 | Barley | 45 | 29.5 | | 15 |
| | | Oats | 50 | 21.9 | | 16.7 |
| | | Corn | 41 | 10.0 | | 8.2 |
| Peter Hillman | 2975 | Durum Wheat | 55 | 16.0 | | 18.3 |
| | | Oats | 24 | 30.0 | | 8 |
| | | Corn | 18 | 30.0 | | 3.6 |
| Bernhardt Torno | 2980 | Durum Wheat | 100 | 21.5 | 537 | |
| | | Barley | 33 | 27.0 | | 11 |
| Mrs. Kate Bellew | 2981 | Durum Wheat | 34 | 33.0 | | |
| | | Barley | 17 | 30.0 | | 17 |
| Sam Haugen | 2991 | Durum Wheat | 54 | 20.7 | 150 | 8.6 |
| | | Barley | 78 | 20.4 | | 26 |
| William Harden | 3014 | Barley | 22 | 34.1 | | 7.3 |
| | | Oats | 46 | 52.2 | | 15.3 |
| Sam Thompson | 3040 | Garden | 2 | - | | |
| | | Corn | 1 | 15.0 | | 1 |

2,986.

4335

757.5

VI. FIELD INVESTIGATION AND APPLIED RESEARCH

A. Research

1. Duck Nesting Studies. The report on duck nesting studies for the season 1940 is near completion, and should be submitted some time during February. Sickness has delayed this report.

2. Winter Mortality. Records of dead upland game birds are kept, and covey counts are also being made in the case of the Hungarian Partridge.

3. Food Habits. The stomachs of birds found dead and of birds shot during hunting season have been saved, as have the stomachs of predators. These are sent in when a sufficient quantity has accumulated. Observations on feeding of all important animals are made whenever possible.

4. Sex-ratio of mammals, especially predators, are recorded, and will be reported when of sufficient volume.

5. Sharp-tailed Grouse studies are being continued.

6. Sex and Age Determination of Ducks. During banding activities in 1940 Mr. Hammond made a careful study of Blue-winged Teal killed by mink in one of the traps. He has apparently found a satisfactory method of determining age and sex in fall specimens by plumage characteristics. Another season's work will undoubtedly complete this study.

7. Other investigations include observations on use of food crops, inventory of important species, succession of vegetation and results of plantings, collection of miscellaneous scientific specimens, observations that might contribute to life history knowledge, and so on.

B. Bird Banding

Bird banding on this refuge has suffered in the past because of more urgent work. In 1940, however, we almost doubled the number banded the previous year. Banding data for the past five years have been summarized and are included in the following tables. During the five year period we have banded a total of 8,548 birds of 85 species.

Birds banded during the quarter, November 1, 1940, to January 31, 1941, are listed as follows:

| <u>Species</u> | <u>Nov.</u> | <u>Dec.</u> | <u>Jan.</u> | <u>Total</u> |
|---------------------|-------------|-------------|-------------|--------------|
| Mallard | 420 | | | 420 |
| Pintail | 115 | | | 115 |
| Baldpate | 1 | | | 1 |
| Green-winged Teal | 1 | | | 1 |
| Black Duck | 2 | | | 2 |
| Sharp-tailed Grouse | | 43 | 136 | 179 |
| Pheasant | | 6 | | 6 |
| Hungarian Partridge | | | 31 | 31 |
| Dickie Birds | <u>29</u> | <u>110</u> | <u>54</u> | <u>193</u> |
| Totals | 568 | 159 | 221 | 948 |

Birds banded during the past five years by calendar years:

| <u>Species</u> | <u>1936</u> | <u>1937</u> | <u>1938</u> | <u>1939</u> | <u>1940</u> | <u>Total</u> |
|---------------------|-------------|-------------|-------------|-------------|-------------|--------------|
| Mallard | 306 | 347 | 338 | 918 | 1566 | 3475 |
| Pintail | 265 | 27 | 36 | 16 | 211 | 555 |
| Baldpate | 137 | 0 | 1 | 2 | 10 | 150 |
| Blue-winged Teal | 135 | 16 | 77 | 87 | 350 | 665 |
| Gadwall | 102 | 0 | 1 | 4 | 6 | 113 |
| Shoveller | 87 | 0 | 1 | 9 | 5 | 102 |
| Green-winged Teal | 18 | 0 | 1 | 39 | 11 | 69 |
| Canvasback | 8 | 0 | 0 | 0 | 1 | 9 |
| Redhead | 3 | 0 | 19 | 62 | 11 | 95 |
| Black Duck | 0 | 1 | 1 | 1 | 4 | 7 |
| Scaup | 0 | 0 | 25 | 1 | 0 | 26 |
| Total Ducks | 1061 | 391 | 500 | 1139 | 2175 | 5266 |
| Coot | 24 | 12 | 4 | 382 | 74 | 496 |
| Canada Goose | 0 | 0 | 16 | 18 | 19 | 53 |
| Whistling Swan | 0 | 1 | 0 | 0 | 0 | 1 |
| Franklin's Gull | 2 | 2 | 0 | 46 | 1 | 51 |
| Shore birds | 3 | 8 | 0 | 0 | 1 | 12 |
| Marsh Hawk | 1 | 68 | 30 | 37 | 8 | 144 |
| Other hawks | 0 | 1 | 1 | 4 | 1 | 7 |
| Golden Eagle | 0 | 1 | 1 | 1 | 0 | 3 |
| Short-eared Owl | 0 | 15 | 5 | 0 | 0 | 20 |
| Burrowing Owl | 0 | 1 | 0 | 10 | 0 | 11 |
| Bittern | 0 | 5 | 0 | 0 | 0 | 5 |
| Crow | 0 | 5 | 18 | 48 | 22 | 93 |
| Sharp-tailed Grouse | 1 | 0 | 109 | 184 | 320 | 614 |
| Hungarian Partridge | 0 | 0 | 1 | 21 | 3 | 25 |
| Pheasant | 0 | 0 | 0 | 8 | 38 | 46 |
| Prairie Chicken | 0 | 0 | 0 | 0 | 1 | 1 |
| Diokie birds | 13 | 5 | 329 | 185 | 1168 | 1700 |
| Totals | 1105 | 515 | 1014 | 2083 | 3831 | 8548 |

Summary of Returns and Recoveries

| Place | Mal-lard | Pin-tail | Bald-pate | Shov-eller | Red-head | B.W. Teal | G.W. Teal | Gad-wall | Coot | Total |
|----------------|----------|----------|-----------|------------|----------|-----------|-----------|----------|------|-------|
| Alberta | 2 | 1 | | | | 1 | | | | 4 |
| Saskatchewan | 6 | | | | | | | | | 6 |
| Manitoba | 10 | | 1 | 1 | | 1 | | 3 | 1 | 17 |
| Ontario | 1 | | | | 2 | | | | | 3 |
| North Dakota | 76 | 2 | 5 | 1 | 6 | 3 | | 3 | | 96 |
| South Dakota | 13 | 3 | | | 2 | 1 | | 1 | | 20 |
| Minnesota | 29 | 4 | 1 | 5 | 3 | 9 | 1 | 5 | 8 | 65 |
| Wisconsin | 2 | | | | 2 | 1 | | | 6 | 11 |
| Illinois | 18 | 3 | 2 | | | | | 1 | 2 | 26 |
| Iowa | 24 | 4 | 2 | 2 | | | 2 | 1 | 2 | 37 |
| Missouri | 18 | 5 | | 2 | | | | | 1 | 26 |
| Mississippi | 7 | | | | | | | | | 7 |
| Arkansas | 60 | | | | 1 | | | | | 61 |
| Louisiana | 30 | 5 | | | | 1 | | 1 | 1 | 38 |
| Texas | 35 | 4 | 2 | 1 | 1 | 2 | 1 | 2 | | 48 |
| Oklahoma | 6 | 1 | 2 | 2 | | | | 1 | | 12 |
| Kansas | 9 | | 2 | | | 1 | | | | 12 |
| South Carolina | 2 | | | | | | | 1 | | 3 |
| Alabama | 2 | | | | | | | | 1 | 3 |
| Nebraska | 5 | 1 | | | | | 2 | | | 8 |
| Tennessee | 5 | | | | 1 | | | | 2 | 8 |
| Montana | 1 | | | | | | | | | 1 |
| Georgia | 1 | | | | | | | | | 1 |
| New Mexico | | 1 | | | | | | | | 1 |
| Michigan | | 1 | | | 1 | | | | 2 | 4 |
| Virginia | | 1 | 1 | | | | | | | 2 |
| Indiana | | 1 | | | | | | | 2 | 3 |
| Ohio | | | 1 | | | | | | 2 | 3 |
| Florida | | | 1 | | | | | | 4 | 5 |
| Colorado | | | | 1 | | | | | | 1 |
| Maryland | | | | | | | | 1 | | 1 |
| California | | 1* | | | | | | | | 1 |
| Yucatan, Mex. | | | | | | | | | 1 | 1 |
| Bejucal, Cuba | | | | | | | | | 1 | 1 |
| Total | 362 | 38 | 20 | 15 | 19 | 20 | 6 | 20 | 36 | 536 |

*Released at Malheur Refuge, Oregon.

In addition to the foregoing table we have two returns on Canada Geese raised here, one from Colorado and one from New Mexico. One Canvasback was shot in North Dakota, and a Scaup in Illinois. Of 144 Marsh Hawks banded, we have only seven recoveries, four from Texas, one from Louisiana, one from British Columbia, and one from Michoacan, Mexico. A Duck Hawk banded here was captured and released ten days later in Wisconsin. A Short-eared Owl was caught in a pole-trap at the State Game Farm in Oregon. We have only two Crow recoveries, one from Kansas and one from Oklahoma.

PHOTOGRAPHS





This toboggan was recently constructed, to be used for winter travel
in the southern portion of the refuge.
R117-7 & 8, Jan. 1941





This photo of Patrolman Martinson traveling in the wooded river bottom.
The present snow depth is well illustrated.
R117-6, Jan. 1941

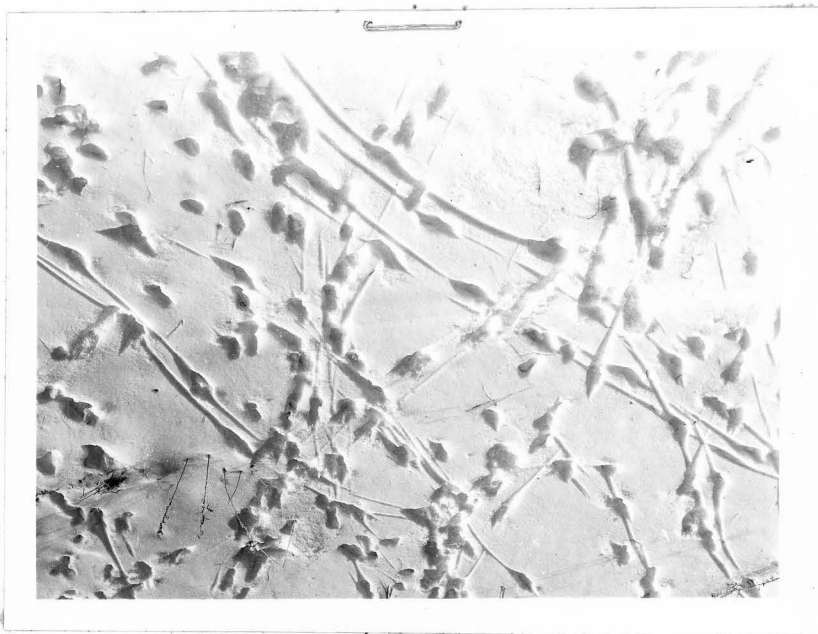


Deer tracks in fresh snow on the river taken from the Nelson bridge
R117-5, Dec. 1940



Canada Geese over the goose pen
R117-1 & 2, Dec. 1940





Deer tracks in snow taken from Nilson bridge
R117-4, Dec. 1940



Canada Goose dropping into the goose pen
R117-3, Dec. 1940

Respectfully submitted, February 4, 1941

C. J. Henry

C. J. Henry

Refuge Manager