



ANNUAL REPORT

LOWER SOURIS MIGRATORY WATERFOWL REFUGE
UPHAM, NORTH DAKOTA

FISCAL YEAR 1938

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1. Wildlife Information.

In general, wildlife is increasing on this refuge each year. As we have acquired more land and excluded livestock, the cover conditions have improved rapidly. Deer and Grouse have increased a hundred per cent at least. Nesting waterfowl and most of the other marsh birds have increased. From appearances at the present time I would say that there is an increase of at least from one-third to one-half in the numbers of ducklings over last year. Hammonds nesting studies are not yet complete so it will be impossible to give a summary at this time. A separate report on this work will be submitted late this summer.

Of the twenty-one captive Canada Geese on this refuge, five pairs nested this year with the following results.:

Nest No. 1-----	3 hatched
Nest No. 2-----	4 hatched
Nest No. 3-----	6 hatched
Nest No. 4-----	0 hatched (possibly chilled)
Nest No. 5-----	<u>5 hatched</u>
Total -----	18

All eighteen young are still alive and practically full grown. It is expected that they will all be on the wing before the end of the month.

We opened the pen this spring to prevent fighting among the nesting birds. This proved to be very successful in that every one of the geese were successfully driven back into the pen.

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1. Wildlife Information. (cont.)

Nest No. 5 was somewhere out in the marsh, unknown to us until they appeared with their five goslings. We hope to be able to open the pen earlier next year, and thus increase the possibility of our birds nesting, and also the chance of inducing wild birds to stop and nest.

Three new marsh birds nested here this year. These were the Franklin's Gull, Horned Grebe, and Western Grebe. Also we discovered our first nests of Cooper's Hawk, Sharp-shinned Hawk, Bluebird, Phoebe, and Say's Phoebe. We are not counting the Canada Geese as no wild birds nested. We now have one hundred and twelve species of birds nesting here. These include fourteen species of ducks, and all five species of North American Grebes that are common in the United States.

In order to give most of this wildlife information in a form in which certain information can be picked out quickly, I am submitting it all in check-list order with notes on status, migration, etc., on each variety. Each class will come in the following order:
Mammals, Fishes, Reptiles and Amphibians, and Birds.

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MAMMALS

Of the larger and more important mammals, we are fairly well informed. Others such as the mice, shrews, etc., have not received as much attention. It is hoped and anticipated that we will have most of this information within the next year or two.

American Elk (*Cervus canadensis*)

A large bull was reported seen by Messrs. Vogen and Shannon of the Bureau of Biological Survey in the summer of 1936. This was in the wooded portion of the 320 Unit. This may possibly have been one of a pair released at Turner a year or two previously.

Plains White-tailed Deer (*Odocoileus virginianus macrourus*)

Common now over most of the refuge, although they concentrate mostly in the wooded areas in the winter. Deer have increased at least a hundred percent since 1935.

Red Squirrel (*Sciurus hudsonicus*)

Quite common in the wooded river-bottom.

Striped Ground Squirrel (*Citellus tridecemlineatus*)

Occasional; not nearly as common as the Richardson's.

Franklin's Ground Squirrel (*Citellus franklinii*)

Quite frequent, but found almost entirely in the brushy portions of the sandhills.

Richardson's Ground Squirrel (*Citellus richardsonii*)

Very abundant over most of the prairie country, although they prefer to be as much as possible in the open. They are quite destructive to crops, roads, dikes, etc., where allowed to become very numerous.

Common Rat (*Rattus norvegicus*)

Uncommon. Were more common when we had more old buildings, but with the removal of these structures, most of the rats move out.

Mice Many varieties, some common and some uncommon.

Great Plains Muskrat (*Fiber zibethicus cinnamominus*)

In 1935 they were restricted to the narrow ribbon of water that constituted the main river-channel. When the area was flooded they had such a large area in which to expand that they were quite uncommon in 1936. However, by 1937 they were quite abundant, and even more so in 1938. Unless we are able to flood a lot more land in 1939, it is anticipated that active trapping will have to begin.

Beaver (*Castor canadensis*)

The Beaver have increased a great deal since 1935, especially in the southern part of the refuge.

Yellow-haired Porcupine (*Erethizon epixanthum e.*)
Rare; found only in the timbered and brushy areas.

Nebraska Cottontail (*Sylvilagus floridanus similis*)
Occasional along the brushy fringes of the river and marsh.

Snowshoe Rabbit (*Lepus americanus a.*)
Found only in the sandhills area; much more common in some years than in others.

White-tailed Jack Rabbit (*Lepus townsendii campanius*)
Ordinarily common to abundant almost everywhere;
were somewhat scarce in the winter of 1937-38, as compared to normal.

Coyote (*Canis latrans*)
From a comparison of the size of the coyotes trapped here, we are led to believe that we have both sub-species, *latrans* and *nebracensis*. Coyotes are found all over the area, but are probably found most often in the sandhills area. They are nowhere common, and are not a serious predator here, feeding mostly on rabbits.

Yellow-red Fox (*Vulpes fulva regalis*)
Were quite scarce the first year, but have increased a great deal since that time. Have become sufficiently common to make control measures necessary. Are most common in the Bottineau County portion of the refuge, although they extend as far south as the sandhills.

Long-tailed Weasel (*Mustela longicauda l.*)
Quite common almost everywhere; by far the most common of the weasels.

Bonaparte Weasel (*Mustela cicognanii c.*)
Occasional; possibly five to ten percent of the weasels are of this species.

Least Weasel (*Mustela rixosa r.*)
Uncommon. In our predator control operations, the boys generally bring in from three to six of these tiny weasels each year.

Mink (*Lutreola vison letifera*)
Fairly common. These animals have proved to be exceptionally destructive this spring, especially to the marsh birds.

Northern Skunk (*Mephitis hudsonica*)
Have been very abundant, but have been reduced by our control operations.

Badger (*Taxidea taxus t.*)
Rare, but increasing noticeably.

Raccoon (*Procyon lotor l.*)
This spring I saw the first distinct signs of racoon since 1935. For the most part they have been absent entirely, or at the best, very rare.

Bats are rare, but are seen once in a while. The status of moles and many other species of small mammals is still quite unknown.

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FISHES

At present, our knowledge of the varieties of fishes to be found in the waters of the Lower Souris Refuge is not very complete. Thirteen species are known to occur, but there may possibly be others. More time devoted to the work, and more complete surveys will give us this information. All fish identifications were made by Dr. Carl L. Hubbs of the University of Michigan Museums.

1. Common Sucker (*Catostomus commersonnii* Sucklii) Abundant.
2. Northern Dace (*Margariscus margarita* nachtrieb)
3. Common Shiner (*Notropis cornutus frontalis*) Common.
4. Spot-tail Minnow (*Notropis hudsonius hudsonius*)
5. South-western Straw-colored Minnow (*Notropis deliciosus missouriensis*) Abundant.
6. Black-headed Minnow (*Pimephales promelas promelas*) Abundant.
7. Common Bullhead (*Ameiurus nebulosus nebulosus*) Common.
8. Johnny Darter (*Boleosoma nigrum nigrum*)
9. Iowa Darter (*Poecilichthys exilis*) Common.
10. Brook Stickleback (*Eucalia inconstans*) Common.
11. Trout-Perch (*Percopsis omiscomaycus*) Quite common.
12. Common Pike (*Esox lucius*)
During the winter of 1935 we found parts of pike that had been eaten by mink. Since that time however, we have found no sign of any pike. It seems that they occurred most commonly during times of high water, at which time they evidently came up the river from Canada in such numbers that I don't believe half of the stories I've heard! Old timers tell of taking home wagon-loads of them. Whether our dams have blocked out the annual run of the pike remains to be seen, but it seems that this may be the case.
13. YellowPerch (*Perca flavescens*) Were noted for the first time in 1937, when a few dead perch were found after the break-up. They are more common in 1938, as is indicated by the numbers found dead. Some nice fish have been caught by the public south of the refuge, but none of us have yet had the time to see what we have in our own waters in the way of "eatin' sized" perch.

REPTILES

In regards to the reptiles, I need only quote from my report of December 31, 1936: "No further findings have been made concerning the Reptilia. There are two species of Turtles and two of Snakes, so far as we know at the present time."

Turtles:

Painted Turtle (*Chrysemys picta belli*) Fairly common.

Snapping Turtle (*Chelydra serpentina*) Occasional, in the wooded river channel, but rare in the marsh. Not sufficiently numerous to give us any degree of success in trapping them. We find the most successful method of control is to take an occasional boat trip up the river on a suitable day, and to shoot them with a springfield rifle. A motor must be used, as they are alarmed by the oars from quite a distance. These turtles reach an enormous size in the Mouse River.

Snakes:

Garter Snake (*Thamnophis*) Fairly common.

Hog-nosed Snake (*Heterodon contortrix*) Occasional in the sandy areas. Known locally as "Sand Adder", and believed by almost everyone to be poisonous.

AMPHIBIANS

The Amphibia are well represented by an abundance of frogs, toads and salamanders. As yet, practically nothing has been done with the identifications of these animals, but it is hoped that we will soon have time to find out what we have here in this class.

We know that the following occur here:

Leopard Frog (*Rana pipiens*)

Swamp Toad (*Pseudacris nigrita septentrionalis*)

Tiger Salamander (*Ambystoma tigrinum*)

Common Toad (*Bufo americanus*)

Bird List

July 1, 1935 to July 1, 1938

1. Common Loon (*Gavia Immer*)
First observed here on May 26, 1937, and on a very few occasions thereafter.
2. Holboell's Grebe (*Colymbus grisegena holboelli*)
A rather rare migrant in 1936. Although still not common in 1937, they had increased considerably. A few nested here in 1937, one nest hatching on June 21st. In 1938 they showed a slight increase over the previous year. Arrived May 3, 1937; April 26, 1938.
3. Horned Grebe (*Colymbus auritus*)
First noted April 26, 1936 in Deep River. They stayed in that locality for a few days and then disappeared. None were seen in 1937. In 1938 they appeared in good numbers, and nested in our 328 and 357 units.
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4. Eared Grebe (*Colymbus negricollis*)
Have been a fairly common nesting bird ever since the area was first flooded in 1936. Arrival dates--May 3, 1936; April 23, 1937, and May 4, 1938.
5. Western Grebe (*Aechmophorus occidentalis*)
First seen in summer of 1936, and then only an occasional single bird. Only slightly more common in 1937. Only a few more in 1938, but this last year they nested here for the first time in the 332 unit.
6. Pied-billed Grebe (*Podilymbus podiceps*)
Nested here sparingly, even before the area was flooded (see previous reports). Now a common nester, increasing each year. Arrival dates; April 22, 1936; April 22, 1937, and April 16, 1938.
7. White Pelican (*Pelecanus erythrorhynchos*)
A fairly common migrant, and non-breeding summer resident. We have reason to believe that the birds circulate between the Upper and Lower Souris Refuges. Spring arrival dates--April 28, 1936, April 18, 1937; and April 21, 1938.
8. Brown Pelican (*Pelecanus occidentalis*)
On the 6th day of August, 1937, a Brown Pelican was observed by M. C. Hammond and Max Jensen. They reported seeing the bird twice that day in Deep River at the edge of the refuge. Later I observed the bird myself, in about the same place although it was then on the refuge. I had the opportunity to study it at close range with the aid of a Bausch and Lomb 7 x 35 binoculars. I could readily make out every detail, and from the dull greyish color of the gular pouch decided that it was the eastern variety (*Pelecanus occidentalis occidentalis*) It seemed to prefer to be alone, and carefully avoided the company of the numerous white pelicans present. So far as we are able to determine, this is the first record of a Brown Pelican in this state.

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9. Double-crested Cormorant (*Phalacrocorax auritus*)
The only 1935 record was a single bird observed near the Hillman Bridge in August. A few birds and small flocks stopped here each spring in 1936 and 1937, but very few stayed over the summer. However in 1938, quite a number of birds were summer residents. Spring arrival dates: May 8, 1936; April 27, 1937; April 28, 1938.
 10. Great Blue Heron (*Ardea Herodias*)
Previous to 1937, Great Blues were observed only in migration, being much more common in the fall than in the spring. In 1937 a pair nested in the timber near Dam #1, and then returned and built a new nest in the same large Elm again in 1938. Arrived April 17, 1937 and May 5, 1938.
 11. Black-Crowned Night Heron (*Nycticorax nycticorax*)
A common summer resident. Spring arrival dates: May 19, 1936; May 14, 1937; and May 2, 1938.
 12. American Bittern (*Botaurus lentiginosus*)
A common summer resident. Arrived May 11, 1936; May 8, 1937; and April 28, 1938.
 13. Whistling Swan (*Cygnus Columbianus*)
Stops here during migrations, especially in the spring. Arrived April 15, 1936; April 9, 1937; April 11, 1938.
 14. Canada Goose (*Branta canadensis*)
So far, this Goose has appeared here only as a migrant, being much more common in the spring than in the fall. Five pairs of our captive geese nested here this year, four pairs in the goose pen and another pair out in the marsh. Those in the pen hatched and reared 13 young. The pair out in the marsh have five young. Arrival dates April 14, 1936; April 9, 1937; and March 19, 1938.
 15. Lesser Canada Goose or Hutchins' Goose
Another common spring migrant among the geese, especially in 1937, is this smaller edition of the Canada Goose. It is a smaller goose with a high-pitched call, but I am not sufficiently well acquainted with them to determine whether they are *leucopareia* or *hutchinsi*, or both.
 16. White-fronted Goose (*Anser albifrons*)
First noted here on October 2, 1936. Are a common spring migrant, and a fairly common fall migrant each year. Arrived April 12, 1937; and April 5, 1938. In the fall they appear here during October.
 17. Snow Goose (*Chen hyperborea*)
First noted on this area April 17, 1937, and stayed until May the 18th. Reached a maximum of almost 600 birds. Fed almost entirely in the NE $\frac{1}{4}$ of Section 32; T160N-R78W, and obtained their gravel on Avocet Island. In 1938 they arrived sparingly the first part of April, being observed at the Eaton

- 17 (cont.) Meadows on April 1st. On the refuge these birds reached a maximum of approximately 2000 birds around the 9th and 10th of May, but disappeared almost entirely shortly after that.
18. Blue Goose (*Chen caerulescens*)
The first Blue Goose record for this refuge was April 16, 1937. In 1937 they stayed until May 18th, which was the last date on which they were observed. With the exception of April 17, 1937 when several large flocks were observed, the Blue Geese were never nearly so common as the Snows. Almost every large flock of Snows has a few Blues included.
19. Mallard Duck (*Anas platyrhynchos*)
Fairly common nester in 1935. Fifth most common nester in 1936 (35 nests), and fourth in 1937 (86 nests). Nesting success 46.9% in 1936 and 60.4% in 1937. First arrivals April 10, 1936; April 7, 1937; and March 17, 1938. First nest found in 1937 on April 26th, and in 1938 on April 22nd. Here in great numbers during fall migrations, resting on the refuge and feeding in the surrounding grain fields. In the fall of 1937 some birds remained here well after the freeze-up, or until about December the fourth.
20. Black Duck (*Anas rubripes*)
Rare or accidental visitor. Mr. E. R. Kalmbach saw one during the summer of 1936. A juvenile male was trapped and banded November 6, 1937, and was retrapped again on November 13th. So far, these are the only records over the three year period.
21. Gadwall (*Chaulelasmus streperus*)
Common nester; 3rd most common in both 1936 (72 nests) and in 1937 (91 nests). First 1937 nest found June 8th; first 1938 nest found on May 27th. Nesting success 64% in 1936; 74.7% in 1937. First arrivals May 2, 1936; April 12, 1937; and April 7, 1938.
22. Baldpate (*Mareca americana*)
Were a few nesting here in 1935. 6th most common nester in 1936 (23 nests) and in 1937 (40 nests). First 1937 nest found May 21st, and first 1938 nest found on May 20th. Nesting success 58% in 1936 and 70% in 1937. First arrivals April 17, 1936; April 13, 1937; and March 26, 1938.
23. Pintail (*Dafila acuta*)
Our most common nester in 1937 but only fourth in 1936, due most likely to the fact that a much later start took place in 1936. (149 nests in 1937 and 69 in 1936). First 1936 nest found on April 27th; 1937 on April 29th; and 1938 on April 22nd. The Pintail is our earliest nesting duck, although a few Mallards start about as early. Nesting success 52.7% in 1936; and 66.4% in 1937. Arrival dates: April 11, 1936; April 7, 1937; March 16, 1938.
24. Green-winged Teal (*Nettion carolinense*)
Only two birds were observed during 1935, but they have been quite a common duck here since then. Eighth most common nester in 1936 with nine nests and 7th most common in 1937 with 7 nests. Nesting

success 44.5% in 1936 and 71.4% in 1937. First 1937 nest was discovered on June 11th; first 1938 nest on May 16th. First arrivals May 2, 1936; April 13, 1937; and March 26, 1938.

- 25. Blue-winged Teal (*Querquedula discors*)
Quite a common nester in 1935. Our most common nesting duck in 1936 (84 nests) and 2nd in 1937 (97 nests). First nest found May 22 in 1937 and on May 20th in 1938. Nesting success, 35.1% in 1936 and 78.3% in 1937. This radical change indicated that the Blue-winged Teal in this area is especially susceptible to nest destruction by Skunks. The poor results of 1936 were due to the fact that the area was over-run by Skunks, but in 1937 results were very satisfactory after we had removed well over four hundred skunks. Arrival dates: April 19, 1936; April 18, 1937; April 16, 1938.
- 26. Cinnamon Teal (*Querquedula cyanoptera*)
Accidental. Only one record, that of a pair of birds in the 320 Unit on May 9, 1938.
- 27. Shoveller (*Spatula clypeata*)
A common bird on this area. Second most common nester in 1936 with 78 nests and fifth in 1937 with 54 nests. Nesting success 58.9% in 1936 and 62.9% in 1937. First 1937 nest, May 14th and 1938, May 10th. First arrivals; April 17, 1936; April 12, 1937; April 14, 1938.
- 28. Redhead (*Nyroca americana*)
A fairly common nester. Since nesting studies have been conducted principally on dry ground, diving ducks have not been fairly represented in numbers. 13 nests were discovered in 1936 and 4 in 1937. Nesting success 55.6% in 1936 and 50% in 1937. First 1937 nest May 26th and first 1938 nest May 20th. First noted on April 20, 1936; April 12, 1937 and March 26, 1938.
- 29. Ring-necked Duck (*Nyroca collaris*)
Not common. A few migrants observed each year. First arrival noted in 1937 was on April 18th; and in 1938 on April 13th.
- 30. Canvasback (*Nyroca valisneria*)
One family of an adult female and two young was seen in 1935. Eight nests found in 1936 and three in 1937. Nesting success 85.7% in 1936 and 33.3% in 1937. First nest found in 1937 on May 27th. First arrivals April 20, 1936; April 13, 1937; April 9, 1938.
- 31. Greater Scaup (*Nyroca marila*)
Probably a fairly common migrant and rare nester. A few of these birds were shot by hunters on Deep River near the refuge in Nov. 1937. One Greater Scaup nest was found by Kalmbach and Hammond in 1937.

32. Lesser Scaup (*Nyroca affinis*)
A few birds were observed in 1935. Common during migration in 1936 and 1937. Especially abundant during April 1937. One destroyed nest believed to be that of the Lesser Scaup was discovered in 1935. Two nests were discovered in 1936 and two in 1937. Nesting success 100% each year. First 1936 nest found on June 18th; 1937 on May 27th. Arrival dates for "scaups": April 15, 1936; April 11, 1937; March 29, 1938.
33. American Goldeneye (*Glaucionetta clangula*)
Occasional during migrations with a few stopping to nest in the wooded river-bottom. No nests have been discovered, although we see broods each year. Quite a marked increase in the number of broods in 1938. First arrival records: April 17, 1936; April 13, 1937; March 24, 1938.
34. Bufflehead (*Charitonetta albeola*)
A rather rare migrant, but a few more are seen each year. Arrival dates; April 18, 1937 and April 12, 1938. No records for spring migration of 1936; first refuge record was in fall of 1936.
35. Old Squaw (*Clangula hyemalis*)
One record, that of an adult male collected on Deep River near the refuge on October 25, 1937. An old squaw (probably the same bird) was observed in the same area just a week previously.
36. Ruddy Duck (*Erismatura jamaicensis*)
Quite common and increasing each year. Previous to 1938, no active nests were discovered. However this year we have found quite a few. Broods of young Ruddies have been observed occasionally in 1936 and more frequently in 1937. Arrivals May 2, 1936; April 24, 1937; May 3, 1938.
37. Hooded Merganser (*Lophodytes cucullatus*)
Occasional. Nests in the wooded river-bottom. First arrival records; May 2, 1936; April 18, 1937; May 4, 1938.
38. American Merganser (*Mergus merganser*)
First observed in late fall migration of 1936. Were more common in 1937. First noted as spring arrivals; April 14, 1937; March 17, 1938.
39. Red-breasted Merganser (*Mergus serrator*)
Rather rare; first observed here on April 24, 1937. Again on April 9, 1938, a large flock was observed feeding in front of the Headquarters.
40. Turkey Vulture (*Cathartes aura*)
The only record is that of a bird shot by a farmer near the refuge on September 23, 1936.
41. Goshawk (*Astur atricapillus*)
Uncommon. One positive record on April 16, 1936; March 13, 1937; and March 9, 1938.
42. Sharp-shinned Hawk (*Accipiter velox*)
Occasional during migration. Earliest date April 16, 1936. On June 9, 1938, I discovered a pair of these birds nesting in an Aspen grove just outside of the refuge boundary north of Bantry.

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43. Cooper's Hawk (*Accipiter cooperi*)
Rare to occasional during migration. Have been observed on May 2, 1936; June 7, 1937; and Sept. 6, 1937. On May 15th, 1938, Mr. Kalmbach and I found a Cooper's Hawk nesting on the refuge ("Cole place") in a green ash about 30 feet above the ground.
 44. Red-tailed Hawk (*Buteo borealis*)
Have always been common here during late summer, but it was not until 1937 that we noticed any nests. Quite a large number nested here that year, and even more nested in 1938. Can now be classed as a common nester on the refuge. Habits beneficial. First noted April 11, 1937; and April 12, 1938.
 45. Broad-winged Hawk (*Buteo platypterus*)
An uncommon straggler, noted only during migrations. May possibly be more common than we expect.
 46. Swainson's Hawk (*Buteo swainsoni*)
Common, especially during late summer. A few pairs nest in the wooded parts of the refuge; increasing as a nesting bird on the refuge. Habits are very beneficial as their diet seems to be restricted almost entirely to ground squirrels. Earliest arrival date, April 15, 1936.
 47. Rough-legged Hawk (*Buteo lagopus*)
A winter resident, usually arriving in October. The height of the spring migration hits us in mid-April. Feeding habits seem to be beneficial, and confined principally to mice.
 48. Ferruginous Rough-legged Hawk (*Buteo regalis*)
Somewhat rare on the refuge; observed on the refuge mostly during late summer. Nest quite commonly in the vicinity of Antler, about fifteen miles west of the northern portion of the refuge.
 49. Golden Eagle (*Aquila chrysaetos*)
It is most interesting that no Golden Eagles were seen by us here until the fall of 1936, when they suddenly became quite common. They were entirely absent in the winter of 1935-36. Can now be considered a fairly common winter resident in the Sandhills area. In the winter of 1936-37 their diet apparently consisted principally of rabbits, but during the winter of 1937-38, they began to take quite a few grouse. This is undoubtedly due to the relative abundance of rabbits and the increase of grouse.
 50. Bald Eagle (*Haliaeetus leucocephalus*)
A rare migrant. Two records; April 16, 1936 at the "Sandhill Slough", and May 13, 1938 at the Kitzman Slough.
 51. Marsh Hawk (*Circus hudsonius*)
A very common summer resident; increasing as a nesting bird. Arrived March 18, 1936; March 19, 1937; and March 16, 1938. Of the sixty-eight young banded here in 1937, we received returns on five; three from Texas, one from Louisiana, and one from Mexico. From our observations we have seen very little evidence that they may be a serious predator of game birds in this area.

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52. Gyr Falcon (*Falco rusticolus*)
Only one record, a dark-colored bird near Kramer, January 23, 1936.
 53. Prairie Falcon (*Falco mexicanus*)
Occasional during a large part of the year, especially during late summer.
 54. Peregrine Falcon: Duck Hawk (*Falco peregrinus*)
Occasional during migrations. In 1938 first noted on May 7th; May 9, 1936; March 14, 1937, at which time a Duck Hawk was observed eating a freshly killed Prairie Chicken.
 55. Pigeon Hawk (*Falco columbarius*)
Occasional during migrations; was especially common in 1937; no records at all for 1938. Commonly arrived about first week in May.
 56. Sparrow Hawk (*Falco sparverius*)
Fairly common, especially during late summer. Increasing as a nesting bird in the wooded parts of the refuge.
 57. Prairie Chicken (*Tympanuchus cupido*)
Fairly common, and are to be found here during every month of the year. Almost every October we see a few large flocks flying over, evidently migrating southward. In general they have shown only a slight increase if any, since the establishment of the refuge. Their habitat seems to be restricted to the meadowland and the stubble-fields.
 58. Sharp-tailed Grouse (*Pediocetes phasianellus*)
A very common resident. There has been a marked increase in their numbers since 1935, especially in the Sandhills area which is their ideal habitat. In this area there has been at least a hundred percent increase since I^x have made observations in this area. For detailed information on this species see Hammonds report submitted on April 1, 1938.
 59. Hungarian Partridge (*Perdix perdix*)
This fine little resident game bird is well established, and apparently increasing.
 60. Ring-necked Pheasant (*Phasianus colchicus*)
Fairly common in certain areas, especially near water where the cover is good. These birds do not winter as successfully as the native game birds or the Hungarian Partridge. During the course of our winter feeding-station experiments, we fed heavily in the winter of 1937-38. The pheasants especially were "star boarders" when plenty of feed was available. They wintered especially well this last winter, but this may not have been due entirely to the feeding as this last winter was exceptionally mild and free of blizzards.
 61. Sandhill Crane (*Grus canadensis*)
Occasional seen flying over in migrations. Stopped on the refuge for the first time to our knowledge, in the spring of 1938. One or two birds stayed around rather late in the spring; it was hoped that they would nest, but nothing more has been seen of them.
Arrivals: April 18, 1936; April 10, 1937; and March 27, 1938.

62. Virginia Rail (*Rallus limicola*)
None seen in 1935. Very rare in 1936, 1937, and 1938. Wings and feet of a Virginia Rail were found in the nest of a Short-eared Owl on May 18, 1937.
63. Sora Rail (*Porzana carolina*)
A very common summer resident. Arrived May 14, 1936; May 8, 1937; and May 2, 1938.
64. Coot (*Fulica americana*)
Quite rare in 1935. After flooding in 1936, they came here by the thousands, nesting in every favorable location. However they were not quite so common in 1937 or 1938, although there were still possibly four thousand pairs on the area. Arrived April 20, 1936; April 14, 1937; and April 13, 1938.
65. Piping Plover (*Charadrius melodus*)
First noted here on June 13, 1937, at which time it was evidently nesting on Avocet Island and seemed much concerned about my presence; I did not have time to locate the nest or nests.
66. Semipalmated Plover (*Charadrius semipalmatus*)
Most common during late summer. Quite a number of them were observed on May 3, 1938, and for the next few days thereafter.
67. Killdeer Plover (*Oxyechus vociferus*)
A very common summer resident. Arrived April 11, 1936; April 10, 1937; and March 17, 1938.
68. Golden Plover (*Pluvialis dominica*)
Occasional during migrations. Arrived May 18, 1936; May 10, 1937; and May 8, 1938. A few birds pass through also in the fall migration.
69. Black-bellied Plover (*Squatarola squatarola*)
Quite common during migrations, both spring and late summer. Arrival dates; May 18, 1936; May 10, 1937; May 13, 1938.
70. Wilson's Snipe (*Capella delicata*)
Common in migration, especially in late summer. Arrived April 20, 1936; May 2, 1937; and April 24, 1938.
71. Upland Plover (*Bartramia longicauda*)
A summer resident in fair numbers, and seems to be increasing slightly each year. Nests in the Sandhill meadows and in the meadows adjacent to the Sandhills. Arrived May 12, 1936; May 9, 1937; and May 13, 1938.
72. Spotted Sandpiper (*Actitis macularia*)
A common summer resident. Arrival dates May 6, 1936; May 4, 1937; and May 11, 1938.
73. Solitary Sandpiper (*Tringa solitaria*)
Very common during migration. Arrived May 10, 1936; May 3, 1937; and April 24, 1938.
74. Western Willet (*Catoptrophorus semipalmatus inornatus*)
Common summer resident. Arrived April 30, 1936; April 30, 1937; April 24, 1938.

75. Greater Yellow-legs (*Totanus melanoleucus*)
Uncommon; noted occasionally during migrations. Earliest date of arrival, April 17, 1937.
76. Lesser Yellow-legs (*Totanus flavipes*)
A common migrant, sometimes very abundant during late summer. Arrived April 23, 1936; April 13, 1937; and April 23, 1938. Latest fall record, November 12, 1937.
77. Pectoral Sandpiper (*Pisobia melanotus*)
Common during migrations. Arrived April 20, 1936; May 18, 1937; April 17, 1938.
78. White-rumped Sandpiper (*Pisobia fusicollis*)
Evidently a rather common migrant, but overlooked before May 22, 1938, when they were quite common. A bird with a broken wing was captured as a specimen.
79. Baird's Sandpiper (*Pisobia bairdi*)
Evidently a common migrant; however it is often difficult to identify them.
80. Least Sandpiper (*Pisobia minutilla*)
Common during migration. Noted May 4, 1936 and May 8, 1938.
81. Red-backed Sandpiper (*Pelidna alpina sakhalina*)
An uncommon migrant.
82. Dowitcher (*Limodromus griseus*)
Occasional during spring migration. Very abundant during late summer. First spring records: May 4, 1936; May 18, 1937; May 3, 1938.
83. Stilt Sandpiper (*Micropalama himantopus*)
Occasional during migration. Earliest spring record, May 8, 1937.
84. Semipalmated Sandpiper (*Ereunetes pusillus*)
Common during migration. Earliest arrival dates; April 19, 1936 and May 8, 1937.
85. Marbled Godwit (*Limosa fedoa*)
A fairly common summer resident. Arrived April 25, 1936; April 22, 1937; and April 23, 1938.
86. Hudsonian Godwit (*Limosa haemastica*)
A flock of eight birds was noted on a small flat near Dam 332, on April 19, 1936. They remained in this same spot for four days. In the spring of 1938 they were more frequently seen than previously. Four were seen on April 17th and six on May 8th.

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87. Sanderling (*Crocethia alba*)
Only one record; a single bird observed on September 26, 1936.
 88. Avocet (*Recurvirostra americana*)
None observed in 1935. The only record for 1936 was that of two birds observed on May 3rd. In 1937 they were much more common and a number of pairs nested here, especially on Avocet Island. In 1938 there was a marked decrease, probably being only about one-third as many as in 1937. Arrival dates: May 3, 1936; May 6, 1937; May 3, 1938.
 89. Wilson's Phalarope (*Steganopus tricolor*)
A common summer resident. Arrived May 8, 1936; May 6, 1937; May 13, 1938.
 90. Northern Phalarope (*Lobipes lobatus*)
Occasional during spring migrations. Earliest spring record was May 18, 1937.
 91. Herring Gull (*Larus argentatus*)
Not especially common; a few birds are observed each year during migration. Arrived April 27, 1936; April 9, 1937; March 21, 1938.
 92. California Gull (*Larus californicus*)
Only one record; two birds in the 320 Unit on May 11, 1938.
Possibly more common than we suspect, but conditions must be ideal for field identification.
 93. Ring-billed Gull (*Larus delawarensis*)
A fairly common migrant. Stayed with us all summer in 1937 (non-breeding birds) but not in 1938. Arrival dates: April 21, 1936; April 5, 1937; and March 21, 1938.
 94. Franklin's Gull (*Larus pipixcan*)
Very abundant during late summer of 1936. Not quite so numerous in 1937, although they stayed in large numbers all summer, evidently non-breeders. In 1938 quite a large colony nested here (probably between two and three hundred nests). However bad luck pursued this colony until it was finally wiped out shortly after hatching time. Mink caused more damage than anything else. These blood-thirsty little devils seemed to delight in killing the incubating bird on the nest by simply crushing the skull--nothing more, and then in some cases smacking the eggs. Then around the fourth of July a series of cloudbursts concentrated in that area and put the finishing touch on what the mink had almost accomplished. Arrival dates: May 7, 1936; April 16, 1937; and April 23, 1938.
 95. Bonapartes' Gull (*Larus philadelphia*)
Rare. Only record is that of a flock of approximately 20 birds observed here September 21, 1937.
 96. Forster's Tern (*Sterna forsteri*)
Occasional, but difficult to distinguish from Common.

- 97. Common Tern (*Sterna hirundo*)
A white tern, presumably this bird although it might be Forster's, nested here for the first time in 1937, and again in 1938, on Avocet Island. Quite a common migrant. Generally arrive here about May 12th.
- 98. Black Tern (~~#~~ *Chlidonias nigra*)
A common summer resident. Arrived May 12, 1936; May 14, 1937; May 13, 1938.
- 99. Mourning Dove (*Zenaidura macroura*)
A fairly common summer resident. Arrived April 17, 1936; April 26, 1937, and April 17, 1938.
- 100. Black-billed Cuckoo (*Coccyzus erythrophthalmus*)
A common summer resident in 1935, uncommon in 1936 and 1937, but again common in 1938. Earliest spring record, May 31, 1938.
- 101. Barn Owl (*Tyto alba*)
Very rare. One record, July 18, 1935, east of Bantry.
- 102. Screech Owl (*Otus asio*)
A resident in the wooded river-bottom.
- 103. Great Horned Owl (*Bubo virginianus*)
A resident in the wooded areas. Seems to be somewhat more common in winter, at which time it is to be found also on the meadows wherever trees and brush are present. Takes some birds, but mostly rabbits, etc.
- 104. Arctic Horned Owl (*Bubo virginianus subarcticus*)
One positive record in the Sandhills, November 15, 1937.
- 105. Snowy Owl (*Nyctea nyctea*)
A winter resident; was more common in the winter of 1937-38 than during the two previous winters. Rather an undesirable bird when common as it is quite destructive to game birds.
- 106. Burrowing Owl (*Speotyto cunicularia hypugaea*)
A fairly common summer resident. Arrived April 27, 1936; April 22, 1937; and April 29, 1938. One of our beneficial owls.
- 107. Long-eared Owl (*Asio wilsonianus*)
Occasional through the wooded areas where it is a resident.
- 108. Short-eared Owl (*Asio flammeus*)
A resident of the meadowlands and marshes, but is much more common in summer than in winter.
- 109. Night Hawk (*Chordeiles minor*)
Occasional; nests in the Sandhills area. Arrives about the last of May. Earliest record is May 30, 1936.
- 110. Ruby-throated Hummingbird (*Archilochus colubris*)
Rare. Two birds were seen in a grove in the Sandhills on May 21, 1936. (Geo. Smith place)



111. Belted Kingfisher (*Megaceryle alcyon*)
Occasional. Arrival dates: April 20,1936; April 26,1937; April 24,1938.
112. Yellow-shafted Flicker (*Colaptes auratus*)
A not too common summer resident; quite common during migration.
Arrival dates: April 22,1936; April 24,1937; April 8,1938.
113. Yellow-bellied Sapsucker (*Sphyrapicus varius*)
Occasional to frequent in migration. Earliest arrival date May 1,1936.
114. Hairy Woodpecker (*Dryobates villosus*)
A resident in the wooded areas.
115. Downy Woodpecker (*Dryobates pubescens*)
Resident in the wooded areas; more common than the Hairy.
116. Eastern Kingbird (*Tyrannus tyrannus*)
A very common summer resident. Arrival dates: May 12,1936;
May 14,1937; May 13,1938.
117. Arkansas Kingbird (*Tyrannus verticalis*)
A very common summer resident. Arrived May 8,1936; May 8,1937; May 12,1938.
118. Phoebe (*Sayornis Phoebe*)
Nested quite commonly along the wooded-riverbottom in 1938; previous to that time had been quite rare, but this may have been partly due to lack of work and observation in that area. A nest at the cole ford had 3 eggs on May 13,1938. Earliest spring record, April 14,1938.
119. Say's Phoebe (*Sayornis saya*)
Occasional during migrations, and an uncommon summer resident.
One nest found on May 16,1938. First record in 1936 was on May 9th;
April 28th in 1937; and May 8th in 1938.
120. Alder Flycatcher (*Empidonax traillii*)
A not uncommon summer resident in willows in the flooded areas.
121. Least Flycatcher (*Empidonax minimus*)
A common summer resident. Arrived May 18,1936;
May 20,1937; and May 23,1938.
122. Pewee (*Myiochanes virens*)
An uncommon summer resident in the wooded areas.
123. Horned Lark (*Otocoris alpestris*)
Horned Larks have been observed during every month of the year but are generally very uncommon during the coldest part of the winter. They are very abundant during migration, and are a common nesting bird. (All specimens submitted for identification are of the Saskatchewan Horned Lark---*Otocoris alpestris enthemia*).

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124. Tree Swallow (*Iridoprocne bicolor*)
A fairly common summer resident. In 1936 first noted on May 4th; April 24th in 1937; and April 26th in 1938.
 125. Bank Swallow (*Riparia riparia*)
A summer resident, locally common to abundant. Arrived May 18, 1936; May 11, 1937; May 16, 1938.
 126. Rough-winged Swallow (*Stelgidopteryx ruficollis*)
A summer resident. Earliest arrival date May 8, 1938.
 127. Hirundo erythrogaster Barn Swallow.
A common summer resident. Arrived: May 5, 1936; May 4, 1937; May 3, 1938.
 128. Cliff Swallow (*Petrochelidon albifrons*)
Spasmodic. Nests in small colonies under eaves of chosen barns. However, it is becoming more uncommon on the refuge as barns are being razed. First noted May 24, 1936 and May 18, 1937; none seen in 1938.
 129. Purple Martin (*Progne subis*)
A rather rare migrant. Nests in a few scattered localities outside of the refuge, but not on the refuge to our knowledge. First record was May 12, 1936 at the Refuge hq. Another bird was observed on June 18, 1937.
 130. Blue Jay (*Cyanocitta cristata*)
A not too common resident, restricted to the wooded river bottom.
 131. Magpie (*Pica pica*)
A fairly common resident in the sandhills. One nest that we destroyed had eight young Magpies in it, better than half grown. More common in winter than at any other time.
 132. Crow (*Corvus brachyrhynchos*)
A common summer resident. Often very abundant during migration. Is entirely absent from November to March. Arrived March 11, 1936; March 18, 1937; and March 15, 1938. Takes quite a number of duck nests each year, but does not seem to be nearly as serious as the skunk, and perhaps the fox.
 133. Black-capped Chickadee (*Penthestes atricapillus*)
A fairly common resident in the wooded areas.
 134. White-breasted Nuthatch (*Sitta carolinensis*)
Resident in the wooded river-bottom.
 135. Red-breasted Nuthatch (*Sitta canadensis*)
Occasional during migration; most common in autumn.
 136. Brown Creeper (*Certhia familiaris*)
An uncommon migrant. One record Sept. 20, 1937 and another May 9, 1938.
 137. House Wren (*Troglodytes aedon*)
Summer resident. Earliest records; May 12, 1936; May 12, 1938.

- 138. Long-billed Marsh Wren (*Telmatodytes palustris*)
A summer resident that evidently has always nested here in small numbers, but is increasing with improved cover conditions. They arrive in May, and a few stay on into October.
- 139. Catbird (*Dumetella carolinensis*)
A fairly common summer resident. Arrived May 21,1936; May 24,1937; and May 13,1938.
- 140. A fairly common summer resident. Brown Thrasher (*Toxostoma rufum*)
Arrived May 14,1936; May 8,1937; May 6,1938.
- 141. Robin (*Turdus migratorius*)
Is fairly common as a migrant, but not so common as a nesting bird. Arrived April 16,1936; April 12,1937; March 22,1938.
- 142. Hermit Thrush (*Hylocichla guttata*)
Frequent during migration. Arrival dates: May 2,1937; April 14,1938.
- 143. Olive-backed Thrush (*Hylocichla ustulata*)
First definite refuge record was May 19,1938. They were very abundant for a few days.
- 144. Grey-cheeked Thrush (*Hylocichla minima*)
First definite refuge record was May 19,1938. They were very abundant for a few days; the first real large thrush migration we have had since I have been here.
- 145. Wilson's Thrush (*Hylocichla fuscescens*)
A summer resident frequently observed, but more often heard, in the darkest most dense portions of the wooded river-bottom. Earliest spring record May 8, ~~1937~~ 1937.
- 146. Bluebird (*Sialia sialis*)
Generally quite rare, but were resident in the south-eastern portion of the refuge this year. Earliest spring record, March 27,1938.
- 147. Mountain Bluebird (*Sialia currucoides*)
One record on September 23,1936; another record August 25,1937.
- 148. Golden-crowned Kinglet (*Regulus satrapa*)
Occasional during migration. Earliest spring record was that of a bird banded and the refuge headquarters on March 21,1938.
- 149. Ruby-crowned Kinglet (*Corthylio calendula*)
Frequent during migration; usually most common in september. Earliest spring records: May 1,1937 and May 4,1938.
- 150. American Pipit (*Anthus spinoletta*)
Common in migration, especially during the fall. Earliest spring record, April 22,1936.

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151. Sprague's Pipit (*Anthus spraguei*)
Sprague's Pipits were very rare on the refuge in 1936. The large nesting colony of 1935 was completely without pipits. Evidently they do not always return to the same area each year to nest. They were fairly common in 1937 and 1938 in small colonies. Earliest spring record was April 29, 1938.
152. Cedar Waxwing (*Bombycilla cedrorum*)
A not too common summer resident, quite erratic in appearance. No nests have yet been found, although it is believed that they nest in the wooded areas.
153. Northern Shrike (*Lanius borealis*)
We generally see a few each year, always in the winter, in the bushy fringes of the river channel and in the sandhills. The latest record was that of a specimen taken on April 9, 1937.
154. Migrant Shrike (*Lanius ludovicianus migrans*)
A summer resident, more common in 1935 and 1938, than in '36 and '37. The white-rumped shrike may also be present, but the above identification was based on a specimen submitted to the U. of Mich. Museums. Earliest spring record April 23, 1938.
155. Common Starling (*Sturnus vulgaris*)
The first record for this part of the country was that of a single bird observed about a mile SW of headquarters on March 30, 1938. Several more have been seen since that date, including three in one flock about five miles north of Towner. Another single bird was observed about fifteen miles north-west of Minot, on April 11, 1938. Several times I noticed a Starling fly into the "Oscar Anderson" grain elevator in Upham, one time with food in its mouth. There is a possibility that they may have nested in that elevator this year.
156. Red-eyed Vireo (*Vireo olivacea*)
A common summer resident in the wooded and brushy areas. Arrival dates: May 30, 1936; May 31, 1937; and May 31, 1938.
157. Warbling Vireo (*Vireo gilvus*)
A common summer resident in the wooded areas. Arrived May 21, 1936; May 26, 1937; and May 25, 1938.
158. Black and White Warbler (*Mniotilta varia*)
Occasional during migration, especially during August and September. There is a good possibility that they nest here, but as yet we have no evidence to that effect. Earliest records: May 9, 1937; May 13, 1938.
159. Tennessee Warbler (*Vermivora peregrina*)
Occasional during migration; Arrived May 21, 1936; May 26, 1937; and May 13, 1938.
160. Orange-crowned Warbler (*Vermivora celata*)
Quite frequent during migrations; Arrival records; May 4, 1936, May 2, 1937, and April 30, 1938.

161. Yellow Warbler (*Dendroica aestiva*)
A common summer resident. Arrived May 12, 1936; May 13, 1937; May 9, 1938.
162. Magnolia Warbler (*Dendroica magnolia*)
One record, a single male at the headquarters, May 23, 1938.
163. Cape May Warbler (*Dendroica tigrina*)
Only one record, a male at Dam I, May 25, 1938.
164. Myrtle Warbler (*Dendroica coronata*)
Very abundant during height of migration periods. The peak of the fall migration generally arrives here during the first week of October.
Arrival dates: April 27, 1936; May 2, 1937; April 23, 1938.
165. Chestnut-sided Warbler (*Dendroica pennsylvanica*)
Occasional to rare during migrations.
166. Black-pollled Warbler (*Dendroica striata*)
Quite a common migrant. First noted May 12, 1936; May 8, 1937; May 9, 1938.
167. Palm Warbler (*Dendroica palmarum*)
Quite common during migration. Earliest spring records: May 8, 1937 and May 1, 1938.
168. Oven-bird (*Seiurus aurocapillus*)
A summer resident in the wooded river-bottoms. Earliest record was a bird banded at Hq. May 19, 1938. May 31, 1937.
169. Northern Water-thrush (*Seiurus noveboracensis*)
A common migrant. Most of these birds at least are probably Grinnell's Water-thrush (*S.n.notabilis*); there seems to be considerable variation.
Migration dates: May 8, 1937; May 9, 1938; July 10, 1937; October 24, 1937.
170. Mourning Warbler (*Oporornis philadelphia*)
Only one record, a specimen secured on June 2, 1936.
171. Yellow-throat (*Geothlypis trichas*)
A common summer resident. Arrived: May 24, 1936; May 22, 1937; May 25, 1938.
172. Wilson's Warbler (*Wilsonia pusilla*)
One record, at Hq. May 26, 1938.
173. American Redstart (*Setophaga ruticilla*)
A summer resident in the wooded areas; most common during migrations.
In 1936 first noted on May 31st; May 28th in 1938.
174. English Sparrow (*Passer domesticus*)
Resident; quite common, especially around farm buildings and granaries. Migrates out into the grain fields in summer and early fall.
175. Bobolink (*Dolichonyx oryzivorus*)
A summer resident. Arrived May 8, 1936; May 13, 1937; May 9, 1938.

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176. Western Meadowlark (*Sturnella neglecta*)
An abundant summer resident.
Arrived March 19, 1936; March 29, 1937; and March 17, 1938.
 177. Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*)
A summer resident; quite rare in 1935; abundant in 1936 after flooding.
Arrived May 3, 1936; April 28, 1937; April 23, 1938.
 178. Red-winged Blackbird (*Agelaius phoeniceus*)
An abundant summer resident. First arrival appeared on March 19, 1936; April 10, 1937; and March 23, 1938. Approximately ten birds wintered at our feeding stations here during this last winter (1937-38).
 179. Baltimore Oriole (*Icterus galbula*)
A summer resident nesting in favorable localities.
Arrived May 21, 1936; May 20, 1937; May 21, 1938.
 180. Rusty Blackbird (*Euphagus carolinus*)
Very common during migration.
Arrived April 20, 1936; April 16, 1937; April 14, 1938.
 181. Brewer's Blackbird (*Euphagus cyanocephalus*)
A common summer resident.
Arrival dates: April 26, 1936; May 2, 1937; April 14, 1938.
 182. Bronzed Grackle (*Quiscalus quisqualis*)
A summer resident, but is not especially common.
Arrival dates: April 17, 1936; April 23, 1937; April 16, 1938.
 183. Cowbird (*Molothrus ater artemisiae*)
A summer resident, fairly common, especially during migrations.
Arrived April 25, 1936; April 16, 1937; and May 4, 1938.
 184. Rose-breasted Grosbeak (*Hedymeles ludovicianus*)
Occasional. A summer resident in the heavily wooded portions of the river bottom. Earliest records; May 20, 1937 and May 23, 1938.
 185. Purple Finch (*Carpodacus purpureus*)
Observed rather uncommonly and only during migration. May 13, 1938.
 186. Pine Grosbeak (*Pinicola enucleator*)
One record, that of two female birds, November 14, 1935, in the wooded river-bottom.
 187. Common Redpoll (*Acanthis linaria linaria*)
A very common winter resident. Arrive in November and stay until March and April.
 188. Greater Redpoll (*Acanthis linaria rostrata*)
Only one record. A large flock of birds was observed in the south end of the Sandhills east of Bantry on November 4, 1935. One specimen was taken, identified, and made into a study skin, but was later destroyed by a cat that found its way into the barracks.

- 189. Pine Siskin (*Spinus pinus*)
No records previous to 1938, due no doubt to lack of time for observations
Several Siskins were noted in the wooded area on May 25,1938.
- 190. Goldfinch (*Spinus tristis*)
A summer resident; especially common during migration.
Earliest spring records; May 18,1937; and May 25th,1938.
- 191. White-winged Crossbill (*Loxia leucoptera*)
Two records as follows: One bird, and adult male, picked up in emaciated
condition, November 1,1937, by H. W. Lundeen at the CCC camp west of
Kramer. Bird died two days later and was made into a specimen. The
second record was that of a young male collected near Upham on
November 6,1937.
- 192. Towhee (*Pipilo erythrophthalmus*)
One record on June 2,1936, south end of refuge.
- 193. Spotted Towhee (*Pipilo maculatus*)
The only record is that of a bird found dead near the headquarters
tower on May 23,1938; saved as a specimen.
- 194. Lark Bunting (*Calamospiza melanocorys*)
A summer resident on the open prairie country; usually nesting in
colonies. Earliest spring record was May 22,1938.
- 195. Savannah Sparrow (*Passerculus sandwichensis*)
A summer resident, the most common sparrow on the meadowland.
Arrived May 2,1937 and April 23,1938.
- 196. Grasshopper Sparrow (*Ammodramus savannarum*)
An occasional summer resident in the meadows. Arrived May 31,1937;
May 31,1938.
- 197. Bairds' Sparrow (*Ammodramus bairdi*)
A fairly common summer resident in the meadows. Arrived May 13,1937;
and May 12,1938.
- 198. LeContes Sparrow (*Passerherbulus caudacatus*)
One good sight record by Hammond on May 4,1938.
- 199. Nelson's Sparrow (*Ammodramus caudacuta nelsoni*)
None here, or were overlooked in 1935. Became a summer resident
after flooding in 1936. First noted on May 31,1936. A very
inconspicuous little bird that is very likely to be overlooked.
- 200. Western Vesper Sparrow (*Poocetes gramineus confinis*)
An abundant resident. Arrived April 22,1936; April 24,1937; April 21,1938
- 201. Lark Sparrow (*Chondestes grammacus*)
Nests sparingly in the northern end of the Sandhills. Earliest record
May 12,1938.
- 202. Slate-colored Junco (*Junco hyemalis h.*)

- Very common during migrations. During the winter of 1935-36 they disappeared on February 15th, and re-appeared on March 23rd. Ordinarily they do not stay so far into the winter. In 1937 they appeared on April the ninth, and on May 17, 1938.
203. Tree Sparrow (*Spizella arborea*)
Very common during migration. Absent during coldest part of the winter.
204. Chipping Sparrow (*Spizella passerina*)
An uncommon summer resident. Arrived May 1, 1936; May 2, 1937; May 9, 1938.
205. Clay-colored Sparrow (*Spizella pallida*)
A common summer resident. Arrived May 3, 1936; May 8, 1937; April 30, 1938.
206. Field Sparrow (*Spizella pusilla*)
Very rare. Two records in late summer of 1935, and another record on August 3, 1936.
207. Harris's Sparrow (*Zonotrichia querula*)
Very abundant during migration. Arrived May 5, 1936; May 8, 1937; and May 3, 1938. Abundant during September and October.
208. White-crowned Sparrow (*Zonotrichia leucophrys l.*)
Uncommon during migration. Arrived May 5, 1936; April 23, 1937; and April 30, 1938.
209. Gambel's Sparrow (*Zonotrichia leucophrys gambeli*)
Abundant during migration. Arrivals same as No. 208 above.
210. White-throated Sparrow (*Zonotrichia albicollis*)
Very common during migration. Arrived May 2, 1936; May 1, 1937; and April 25, 1938. Abundant during September and October.
211. Fox Sparrow (*Passerella iliaca*)
An uncommon migrant. Earliest record was May 2, 1937.
212. Lincoln's Sparrow (*Melospiza lincolni*)
A common migrant. Earliest spring record was April 14, 1938.
213. Swamp Sparrow (*Melospiza georgiana*)
A rare and inconspicuous migrant; a very few have been banded; otherwise we would not know they were here. We have never heard one sing here. Records on October 5, 1936 and May 6, 1938.
214. Song Sparrow (*Melospiza melodia*)
A common summer resident in the wooded river-bottom. Arrived April 18, 1936; April 17, 1937; and April 14, 1938.

- 215. Lapland Longspur (*Calcarius lapponicus* l.)
Extremely abundant during migration. They generally appear in March and April. In the fall, especially during October, they come through by the tens of thousands.
- 216. Alaska Longspur (*Calcarius lapponicus alascensis*)
Noted occasionally during migration, especially during late fall. Specimens have been identified by the U. of Mich. Museum.
- 217. Chestnut-collared Longspur (*Calcarius ornatus*)
A common summer resident.
Arrived April 17, 1936; April 29, 1937; and April 11, 1938.
- 218. Snow Bunting (*Plectrophenax nivalis*)
An abundant winter resident. Arrives in October and leaves in March, with a few stragglers sometimes lingering on into April.

II. Use Made of Refuge.

All islands and dikes were planted with Sweet Clover early in 1937. Most of this made a satisfactory start in 1937, and in 1938 came into maturity. The clover is now in bloom, and each structure is a solid mass of yellow. At the present time we are harvesting grass seed so as to have seed with which to plant the dams and dikes. It is believed that the grass will then eventually replace the clover. We consider clover a fine cover crop largely because it "catches" easily and produces a fine stand. However we much prefer grass, and hope eventually to induce grass to replace the clover.

As to the variety of grass; we find it impossible to secure paying quantities of the most desirable varieties and will therefore find it necessary to start with those that are easy to harvest, such as Brome Grass and Crested Wheat grass.

Practically all of the islands are being used to a certain extent by birds for nesting. Their use is rapidly increasing each year. However, it is believed that they will not produce near maximum production until covered with grass. Those islands that were gravelled in the 326 unit were not used to any great extent this year due to the fact that the unit was not sufficiently flooded. Avocet Island in the 332 unit was again used by Terns, Shorebirds, and quite a few pairs of ducks.

Our islands as yet have not produced results that would warrant their construction, because of the lack of water. When the units are filled, we anticipate some wonderful results.

The artificial nests constructed of brush and marsh hay have not been used to any great extent as yet, due also to the lack of water, and to the fact that geese have not yet commenced to nest here. Mallards are about the only duck that like this sort of a place to nest. In areas where these islands were not in water, they have provided sanctuary for predators, especially skunks, Mink, and weasels.

Use of the Units by Waterfowl.

Rubble-masonry unit. Cover conditions in this unit are greatly improved over last year, which along with the complete elimination of haying and grazing has given us a much more attractive unit, and a great increase in the numbers of nesting ducks.

Unit 320 .

Although far from full, this unit is a very attractive one and, despite being a new area, is producing a lot of birds.

Unit 326.

About the same as last year, except for better cover conditions and a fair increase in the numbers of broods.

Unit 332.

Slightly more water than last year, and better cover conditions. A very fair increase in the numbers of birds.

Unit 341.

Empty this year. Did not produce very well in 1937, and slightly worse in 1938. It has not been since 1936 that water levels sufficiently high to make this unit acceptable to waterfowl.

Unit 357.

Another new unit that has produced quite a number of birds.

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despite rather low water levels. The birds like this area very much and it is anticipated that it will be a wonderful unit when once filled.

Shelters for Upland Game.

Results of our studies of the habits of upland game birds in winter during the last three winters have helped us formulate the following conclusions:

1. That upland game birds will not use the artificial shelters unless provided with grain, especially corn.
2. The shelters and gravel alone are not sufficient to attract them. They prefer to take their gravel from some exposed location such as road, dike, or gravelled island.
3. Corn is by far the favorite grain, and this is preferred on the cob. The grouse much prefer to have their corn on spikes, well above the ground. When feeding they like to be up where they can have a good view of the surrounding country.
4. There is naturally a tendency for the concentration of wild-life at the stations to attract predators. We do not yet have sufficient information to know the seriousness. Future studies are planned.
(See Hammond's report submitted on April 1, 1938)

Thirty-nine sharp-tailed Grouse were banded at our stations. From these we hope to secure some information on dispersal and migration.

Use for Hay.

In the summer of 1937, we issued more than 50 permits to cut hay on this refuge. This brought in \$3,020.75. There is such an abundance of feed this year that we are not having as much demand for hay, and will probably only sell about half as much.

Share-cropping.

To date we have made out better than twenty share-cropping permits involving over 1300 acres of refuge lands. This is mostly for the growth

of grain on shares, but also includes the cutting of volunteer clover for seed.

No permits have yet been issued for grazing or fishing, although it is anticipated that we will be ready for both in 1939. A few people have fished off of the main highway bridges, and many more on Deep River adjacent to the refuge. Deep River is also a favored hunting ground which attracts many hunters, and ducks as well. It might be noted that Deep River was dry previous to the flooding of the refuge, but is now flooded deeply for several miles.

Many people use our small recreation area near the Freeman bridge for picknicking. It has been used by possibly 800 people this last fiscal year.

3. Plantings:

A. Summary of Field Plantings

1. Fall of 1937.

Choke-cherry	200
Juneberry	250
Aspen	575
Tartarian Honeysuckle	100
Green Ash	40
American Elm	40
Caragana	250
Box Elder	50
Woodbine	30
Total	<u>1535</u>

2. Spring of 1938.

Chinese Elm	140
Caragana	200
Roses	75
Red-Osier Dogwood	100
Box Elder	500
Cottonwood	300
Green Ash	775
American Elm	250
Aspen	200
Silverberry	167
Total	<u>2707</u>

To date approximately 90% of the spring plantings have grown. The fall plantings as usual are not quite so successful, giving us to date about a 60% stand. The total spring plantings were not nearly as high as we would like, principally because we found it necessary to confine our efforts to digging and bundling stock in preparation for shipping to other refuges. Trees and shrubs shipped to other refuges are as follows:

Medicine Lake Refuge.

Caragana	1500 (fall 1937)
Box Elder	700 (fall 1937)
Caragana	4500 (spring)
American Elm	3000
Green Ash	5000
Box Elder	1000

Upper Souris Refuge	Caragana	2,500
Des Lacs Refuge	Caragana	3,000
	Green Ash	2,000
Lost Wood Refuge	Caragana	3,000
	Green Ash	2,000
	Box Elder	2,000
Lake Bowdoin	Caragana	1,500
	Green Ash	1,000
Ronan, Montana	Caragana	7,500
	Box Elder	2,000
Red Rock Lakes	Caragana	200
Billings, Montana	Caragana	3,000
M. O. Steen	Caragana	6,700
	Box Elder	1,000
LaCreek Refuge	Caragana	2,000
Sturgis, S. Dak.	Caragana	3,000

TOTAL ----- 58,100

Large quantities of seed has been planted in the nursery both last fall and this spring. Excellent results has been had with some varieties, while others appear to be much slower. On the whole, fall planting has been most successful. The different varieties of seeds planted in the nursery are as follows:

Caragana	Yellow Flowering currant
Juneberry	Russian Olive
Chokecherry	Basswood
Fragrant Sumac	Thornapple
Staghorn Sumac	Juniper (Red Cedar)
Cotoneaster	Canadian Yew
Buckthorn	American Hazel
Ginnala (Dwarf)Maple	Highbush Cranberry
Tartarian Honeysuckle	Black Haw

Evergreens lined out in Nursery.

In Beds:

Jack Pine	880
Ponderosa Pine	2720
Red Cedar	1296
Blue Spruce	850

In Rows.

Jack Pine	960
Scotch Pine	1100
Ponderosa Pine	2445
Red Cedar	4945

Other Trees and Shrubs lined out in Nursery.

transferred from old camp nursery when it was finally discontinued.

Choke Cherry	5,000
Hackberry	450
Bur Oak	600
Silverberry	100
Box Elder	600

Aquatic Plantings.

Because of the necessity of concentrating efforts on the more urgent forms of development work, aquatic plantings have been sorely neglected this last year. Furthermore, no newly flooded areas were available for planting; some were partially flooded but not full enough to warrant planting. We planted between four and five hundred pounds of Wild Rice this spring with very fair results. In the upper reaches of the Rubble Masonry unit it again succeeded, and we have a very pretty stand in that area. It has also grown in one part of the 332 unit.

Results of our 1936 and 1937 plantings are showing up wonderfully well in certain places, especially in the 332 unit where we have been able to maintain fairly steady water levels. Bulrushes are showing up very well in most places. Of the pondweeds, Sago does the best, with Narrow-leaved Pondweed (*P. foliosus*) a close second. Redhead Grass (*P. perfoliatus*) is also doing well. Pondweeds now fairly fill the waters in many areas. Of the Smartweeds, only the swamp Smartweed and Pale Smartweed show great success, and these only in areas of fluctuating water levels. Water Smartweed has shown up very nicely in one area. Arrowhead (*Sagittaria*) is showing up very nicely in many places. Prairie Bulrush (*Scirpus Paludosis*) has not succeeded here despite the huge quantities that have been planted. It is very likely that the area is not sufficiently alkaline.

Food Crop Plantings and Harvest.

Our 1937 crops were fair despite grasshoppers and hail. The corn was excellent. Although we left most of the crops stand for the birds to harvest, we combined about 200 bushels of wheat, 750 bushels

of Barley

Food Crop Plantings and Harvest. (cont.)

150 of Rye. We also picked about 48,500 pounds of ear corn. Of this grain, we shipped 27,290 pounds of ear corn to Girard in Ronan, Montana; and 3,200 pounds of ear corn and 60 bushels of Barley to Sully's Hill Refuge. We also let the Upper Souris Have 40 Bushels of Wheat for seed. We fed large quantities ourselves, especially during a severe cold snap this spring.

Food Crop Plantings for this Last Fiscal Year are as follows:

<u>Kind of Seed</u>	<u>No. Acres</u>
Fall Rye (1937)	67
	Total-----67
Duram Wheat (1938)	109
Wheat and Sweet Clover	12
Wheat and Alfalfa	6
	Total-----127
Barley	104
Barley and Sweet Clover	60
	Total-----164
Millet	15
Amber Cane	10
Crested Wheat Grass (&Oats)	15
	Total-----40
Corn	85
	Total-----85

TOTAL ACREAGE FOR FISCAL YEAR-- 483

IV. Predator Control

When the refuge was started in 1935, we had very little idea as to what predators were here, and as to the status of each. We have considered this one of our most important problems, and have done considerable work to learn as much as we could about it. Although as usual, we still have a lot to learn, we feel that we have a fairly thorough understanding of the present status of the predators in this area.

In 1938, Mink have for the first time caused serious damage among our marsh birds. The boys have found several places where the mink have killed appreciable numbers of ducks. But even worse, they wiped out our Franklin Gull colony. Here they first started on the incubating birds and killed them just for the joy of killing as very few were eaten. They simply crushed the skull, and then went to the next one. The birds persisted until shortly after the young were born, when the mink put on the finishing touches. They may have been aided at the end by a series of heavy cloudbursts that raised the water two or three inches in the immediate area.

We have always taken some mink each winter as we felt that they should not be allowed to become too numerous. However, after our observations this summer, we feel that we should make every effort to reduce their numbers to a minimum.

Of all our predators, the skunk still heads the list, although we have been able to reduce their damage to duck nests, from thirty percent to less than ten percent. Foxes are also serious when as numerous as they have been the last few years.

Weasels were bad here the first year or so, but our control efforts were so success ful that we haven't even noticed them this year. Coyotes don't seem to bother us at all here, being quite scarce, and working principally on rabbits. However, we must trap some each year in order to keep the neighboring farmers satisfied.

Of all the hawks and Owls that use this refuge, the only one that has shown a tendency to work on game birds to any great extent, is the Snowy Owl. Ordinarily they are not sufficiently numerous to be serious. The crow takes some duck nests each year, but probably is not sufficiently serious to cause us any great concern. A few days each spring devoted to cleaning up the nesting birds will do away with most of the damage . Golden Eagles took some grouse last winter, but ordinarily they concentate pretty well on rabbits. Rabbits were scarce last winter.

Results of our predator control activites during the last fiscal year are contained in the following list.:

Weasels -----	203
Skunks -----	186
Red Fox -----	28
Mink -----	17
Coyote -----	5
House Cats -----	5
Common Rat -----	18
	<hr/>
Total -----	462

Of the above predators, 280 were trapped in season and the pelts were sold on bid bringing \$396.76. These were good skins, and in a year of decent prices would have brought a very good sum of money.

In addition to the above mentioned predators, we have found it necessary to poison and shoot, gophers (Richardson's ground squirrels) in the vicinity of our dikes and corn fields.

In order to keep on "speaking terms" with our farmer neighbors, we have had to cooperate with them in attempted grasshopper control. We constructed two poison spreaders and covered an area of fifteen or sixteen thousand acres.

V. Refuge Improvements and Development.

Practically all of this work was done with the CCC labor, although W.P.A. gave valuable assistance on fencing and island gravelling.

Dam 357. was completed in November 1937. This is a splendid structure, and the men who built it are justly proud of the job.

Dam I. Was completed last winter with the addition of a flash-board control structure, a clay core-wall on the upstream wall of the dam, and adequate protection by class C and class A rip-rap.

Fencing. Mr. Lundeen reports that a total of 16,390 rods of boundary fence was put in during this last fiscal year. Just figuring roughly, I would say that we have 125 miles of boundary fencing completed.

Nursery. The nursery is rapidly being whipped into shape, and for all practical purposes can be called complete. An area of 300' X 175' is watered b means of an overhead sprinkling system, while the rest of the nursery receives its water from an elevated irrigation ditch. A summary of the plantings will be found in a previous part of this report under "Plantings".

Lookout Tower. Two lookout towers were erected, one in the Sandhills, and one near Highway # 5.

Fire-breaks. were plowed last summer to give protection to the parts of the refuge that were in greatest danger of fire, principally the Sandhills area.

Patrol Roads. A total of thirty-four miles of truck trail was constructed, twenty-one miles of which has already been gravelled.

State Highway No. 5. was raised, ~~skipped~~, gravelled, and the sides covered with class C rip-rap. This was a big job, and one that we are glad to have out of the way.

An Overnight Cabin was erected in the Sandhills, at the location of the lookout tower. This was a small two-room house that was moved in and re-worked and painted.

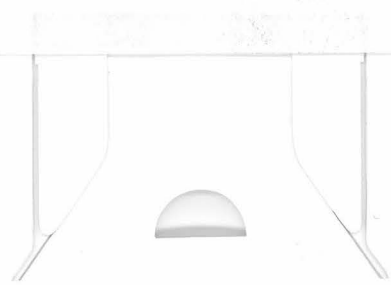
Gauging Stations. were constructed near Westhope, near Verendrye, and near the Nelson Bridge east of Bantry. Improvements were also made on the station on the wintering River. This work was carried on principally by W.P.A., but most of the engineering had to be done by our technical staff at the camp.

Cover Mapping. has been carried on when we could find the time to do it. Most of this work was done by Max Jensen and M. C. Hammond. Approximately twenty-six sections have been completed.

Timber-stand improvement. has been carried on in the south end of the refuge, where necessary thinning and clean-up has been carried on. This provides us with some much-needed fence posts and fuel.

Razing Buildings. Seventy-three old buildings have been taken down. Also thirty-seven miles of old fence has been removed. All materials have been transported to camp, where they are either used, transferred, or stored.

Water Control Structures. seven in number, have been installed between Dam 357 and the Canadian border. These are regular stop-log sections, and include also the necessary excavation, sloping, and rip-rap in connection with their construction. These are designed to control the water, so that we can put it back into the channel where we want it.



Additional Rip-Rap and Repair has been made on some of the older structures where it has not been thick enough, or has not weathered well.

Boundary Signs and Markers have been constructed, and some have already been installed.

Boat Houses three in number, and movable in design, have been completed at the camp.

Habitat Improvement includes the gravelling of two large islands, and the construction of several new upland game shelters and the repair of the old ones.

Boats. As usual, all of the refuge boats were cleaned up and painted during the winter months.

Painting. Some painting has been done in the last fiscal year, but it has not yet been completed.

VI. Scientific Progress.

The most important scientific work being carried on here is the duck nesting--predator relationship studies that have been carried on here during the last three years (1936,1937,1938). We will have complete histories on more than 1500 nests at the end of this season. From these studies we have learned a great deal concerning predators that are important in nest destruction, habitat preference of nesting birds, cover type preference, etc.

In order to have a thorough understanding of our upland game and its winter life and problems, we have been studying the habits, food and cover requirements, and enemies of these animals during the winter months especially.

As stated before in this report, we have completed the cover-mapping of about 26 sections of refuge land. In this, we are including observations on plant type succession, and an inventory of the refuge flora. It is planned to work up all of our plant material and to submit a complete report on it this coming winter. We have also been working to obtain as complete as possible an inventory of the refuge fauna. Most of this material has been included in the first section of this report. This includes population and migration studies and information.

Food Habits studies have also been conducted, especially in connection with waterfowl and other game species, and predators. We have saved or collected hundreds of stomachs, pellets, etc., most of which has gone to the Denver Laboratory.

Considerable experimental work has been done with Aquatic plantings, results of which will be found under "Plantings" in this report. Considerable bird banding has been done but, due to the fact that this an activity

requiring considerable time, we have not done full justice to this work.

VII. Law Enforcement.

Our law enforcement problem here has not been a serious one. Our efforts have been bent toward prevention rather than cure, and in education and good will rather than in an effort to make arrests.

Only one arrest was made, that of two young men from Westhope who were caught shooting on the refuge by our patrolman Eric Lawson. This case has recently been dropped without prosecution.

VIII. Water Conditions.

We still lack a lot of being full, but on the whole are in a lot better shape than we were last year. A summary of the condition of each unit is listed below:

Unit I. (above Rubble-masonry Dam I.)

Unit is now full with ten or fifteen second-feet flowing over spillway. Flow caused by early July rains.

Unit II.

Lacks about eight inches. Not filled because nesting was already under way when water arrived. There is a slight flow throught the unit.

Unit 320.

Lacks about four feet, but plenty of water to carry through the summer.

Unit 326.

Lacks almost four feet, but plenty of water for present cover conditions, and to carry through summer.

Unit 332.

Lacks about a foot, but we plan to fill it as soon as the nesting season is over.

(cont.)

Unit 341.

Empty, except for the main river channel.

Unit 357.

Lacks about seven feet, but there is sufficient water to carry through the summer.

I have given only the present condition, not taking into account the water expected from the Upper Souris this late summer and fall.

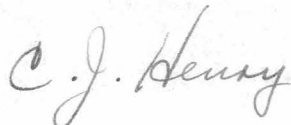
IX. Public Relations.

We are in a rather out-of-the-way location here as far as the public is concerned. However, we do often have interested groups, or individuals come to visit us from considerable distances.

We recently had the pleasure of cooperating with the Extension Service of the State College Station of Fargo, in preparing a series of transcriptions on wildlife, and refuge work. I was very much surprised at the amount of favorable publicity we received from the broadcasts that were given over stations K-F-Y-R, Bismarek, and W-D-A-Y at Fargo. It is planned to prepare another similar series in the fall.

Respectfully submitted,

July 19, 1938;



C. J. Henry,
Ass't Refuge Manager.