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ANNUAL REPORT

OF THE

LOWER SOURIS MIGRATORY WATERFOWL REFUGE
UPHAM, NORTH DAKOTA

FOR THE

FISCAL YEAR 1939

C. J. HENRY

ASST. REFUGE MANAGER

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PERSONNEL

1.	Cordia J. Henry	Refuge Manager
2.	Merrill C. Hammond	Biologist
3.	Thomas W. Lawson (1)	Patrolman
4.	Eric B. Lawson (2)	Patrolman
5.	Andrew J. Meyer (3)	Clerk
6.	Harry A. Jensen (4)	Patrolman
7.	Arnold M. Bye (5)	Patrolman

(1) Mr. Thomas W. Lawson was seriously injured on this refuge on July 29, 1938, since which time he has been under a doctor's care and hospitalized, being off duty on sick leave, annual leave, and leave without pay.

(2) Mr. Eric B. Lawson was one of the refuge patrolmen at the beginning of the fiscal year 1939, but he was transferred to the Lostwood Refuge on September 1, 1938.

(3) Mr. Andrew J. Meyer reported for duty on the Lower Souris Refuge on September 1, 1938.

(4) Mr. Harry A. Jensen reported for duty on the Lower Souris Refuge on September 16, 1938.

(5) Mr. Arnold M. Bye is under temporary appointment and reported for duty on the Lower Souris Refuge on March 27, 1939.

ANNUAL REPORT

LOWER SOURIS MIGRATORY WATERFOWL REFUGE
UPHAM, NORTH DAKOTA

FISCAL YEAR 1939

I. Wildlife Information.

In describing the Lower Souris of 1939, it is very difficult to refrain from attempting to become poetic and sentimental. The changes accomplished here by nature in less than four years are no less than a miracle. How such a barren gumbo flat could ever become the vast marsh of today is almost too wonderful to comprehend. The famous waterfowl paradise of a quarter-century past has once more come into its own.

The generous run-off of this past spring was sufficient to bring each unit up to its most productive level, creating in effect a continuous marsh of more than thirty-five miles in length. It should therefore be easy to understand the principal reason for the increase of 157% in the numbers of ducks over last year (late spring resident population).

As stated previously in a separate report submitted about the first of June, we again attempted to take an inventory of the late spring duck population. This report reads as follows:

"SPECIAL REPORT ON SPRING WATERFOWL POPULATIONS

ON THE LOWER SOURIS REFUGE

"During the last of May, we attempted our second annual spring waterfowl census. As is readily understood by everyone acquainted with this refuge, an accurate count is an impossibility. This is primarily due to the size of the area, and to the nature of the marsh and the vegetation. As one waterfowl authority once told me, any such estimate is at least better than a wild guess. It is realized that our results may or may not be very accurate, and they are given only for what they are worth.

"Most of this work was done by, and under the direction of, our biologist, Mr. Merrill C. Hammond.

"The census of 1938 gave us an estimated total of 26,060 ducks, while the census of 1939 gave us an estimated total of 67,000 ducks. In addition to the sharp rise in the total population, there has been a striking increase in the numbers of redheads and canvasbacks. The reasons for the general increase are due to the following possible reasons:

"1. Large increase of flooded areas.

"2. Increase of duck population.

"3. Better food and cover conditions.

"4. Natural increase by return of birds reared here.

"5. Extensive spring feeding.

"6. Change in spring flight resulting in more birds passing through this area.

"The increase in the numbers of redheads and canvasbacks is not quite so easy to understand. There is the possibility, however, that extensive spring feeding may have accounted for a part of this increase. These birds, redheads especially, responded exceedingly well to both flooded fields and to scattered grain.

"The following table shows annual population comparisons for 1938 and 1939:

Location	Total Ducks 1938	Total Ducks 1939	Total Coots 1939
Unit 320	5,500	10,200	3,400
Unit 326	3,000	17,291	3,000
Unit 332	12,060	17,600	835
Unit 341		7,644	1,365
Unit 357	4,200	11,750	3,000
Area south and east of Unit 320	1,300	2,515	400
Total	26,060	67,000	12,000

"Throughout this work, a careful count was made of the various species, insofar as was possible. From these figures the following percentages were derived (Table on Page 5):

Specie	Percent of Total	Nesting Percentage 1937-1938
Blue-winged Teal	15.9	18.6
Pintail	15.6	24.5
Mallard	12.6	15.9
Redhead	12.6	4.3
Shoveler	11.9	11.0
Gadwall	8.4	14.1
Ruddy Duck	7.0	(.7)
Widgeon	6.0	7.7
Scaup	5.0	.5
Canvasback	4.8	.9
Green-winged Teal	.8	1.4

"Other ducks observed were: American and Hooded Mergansers; American Goldeneyes.

"The above figures also are subject to inaccuracies due to the retiring habits of certain ducks, and to the flocking of the males of pintails and mallards by this time."

In four years' time we have recorded the following thirty varieties of waterfowl on the Lower Souris Refuge:

Swans:

1. Whistling Swan.

Geese:

1. Canada Goose.
2. Lesser Canada, or Hutchin's Goose.

3. Snow Goose.

4. Blue Goose.

5. White-fronted Goose.

Ducks:

1. Mallard.

2. Black Duck.

3. Pintail.

4. American Widgeon.

5. European Widgeon.

6. Gadwall.

7. Green-winged Teal.

8. Blue-winged Teal.

9. Cinnamon Teal.

10. Shoveller.

11. Redhead.

12. Canvasback.

13. Ring-necked Duck.

14. Lesser Scaup.

15. Greater Scaup.

16. American Goldeneye.

17. Buffle-head.

18. Old Squaw.

19. Surf Scoter.

20. White-winged Scoter.

21. Ruddy Duck.

22. Hooded Merganser.

23. Red-breasted Merganser.

24. American Merganser.

New bird records for the fiscal year 1939:

1. Raven (Corvus corax). Observed by Merrill C. Hammond in cotton-wood tree at refuge headquarters on September 14, 1938.

2. Surf Scoter (Melanitta perspicillata). An adult male surf scoter stayed on the headquarters bay for two days (November 2 and 3, 1938). In this time, it was observed by C. J. Henry, Merrill C. Hammond, Adrian C. Fox, and S. S. Baldwin (Last two named are of the Soil Conservation Service).

3. White-winged Scoter (Melanitta deglandi). A female or immature bird on the headqjarters bay on November 5, 1938.

4. Red-shafted Flicker (Colaptes cafer). First positive record of this bird was on April 16, 1939.

5. European Widgeon (Mareca penelope). An adult male in the west end of the 320 Unit on May 5, 1939, and again an adult male near the Freeman Bridge on May 22, 1939.

6. Red-headed Woodpecker (Melanerpes erythrocephalus). Only one record, a single bird observed near the Hillman Bridge on June 12, 1939.

7. Dickcissel (Spiza americana). First observed on June 10, 1939. A few pairs nested over various parts of the refuge in 1939.

This record brings the known number of nesting species to 113, and the total bird list to 225.

The time does not permit the inclusion of detailed and complete lists, with status and other information, as was submitted with the Annual Report a year ago. It is planned to send in such lists next winter in the form of a special report.

A few species should be mentioned, however, because of important changes in their status. These appear below in outline form:

Mammals:

Plains White-Tailed Deer (Odocoileus virginianus macrourus). On Page 8 of the Lower Souris Quarterly Report indluding November, 1938, will be found a detailed account of the deer census taken on November 8, 1938, and November 9, 1938. At that time, we estimated the total deer population on the refuge was 600. This is about one deer to every twenty-two acres. This is a very satisfactory increase when compared to the population here when the refuge was first established, at which time there were possibly around 100 deer on the entire area.

Mule Deer (Odocoileus hemionus h.). Of the 152 deer actually counted in the above-mentioned deer inventory, three were definitely identified as Mule Deer. This was the first definite record, although we had for some time suspected that there were a few on the refuge.

Muskrats (Fiber zibethicus) have continued to increase very rapidly. Some harvesting of these animals should be undertaken next winter.

Beaver (Castor canadensis) have continued to increase, especially in the southern part of the refuge where they are causing some damage to the timber. As an experiment, we propose to live-trap beaver in the timbered area, and transplant them farther north, into the marsh units, where a certain amount of control of willows and cottonwoods is essential.

The Snowshoe Rabbit (Lepus americanus) has shown some increase this past year.

Mink (Lutreola vison) have increased this past year, as may be evidenced by the increased catch this past winter, and also the increased sign, and sight records.

Badger (Taxidea taxus) have shown a marked increase, but may still be considered uncommon.

R Raccoon (Procyon lotor). There has occurred a rather sudden and spectacular comeback of the raccoon on the Lower Souris Refuge. With the exception of a single track observed in the summer of 1935, there has been no further sign of these animals previous to the fall of 1938. Raccoon sign is now commonly observed along the river in the wooded portions of the refuge. During this past winter, four "coons" were taken in mink traps. Three of these were released, while a fourth was made into a specimen and submitted to the Washington Office.

Fish:

Yellow Perch (Perca flavescens). This fish has again shown a very sharp increase. During early winter, large numbers were seen under the ice. Some of these fish were of very good size.

Birds:

Grebes. All five species of grebes that nest on this refuge have shown a marked increase.

Geese. All geese, except the white-fronted, were much more common this spring than previously. The Blues and Snows (about one Blue to ten Snows) were here in large numbers, reaching a peak of about 15,000 birds. The Canadas (including sub-species) may have reached a peak of between two or three thousand. There was, however, quite a sharp decrease in the numbers of White-fronted Geese over last year.

Upland Game Birds have all shown an excellent increase, due in part at least to the large quantity of corn and durum wheat left standing in the fields.

Sharp-tailed Grouse are definitely on the upswing of their cycle, and must be nearing the peak.

Prairie Chicken were much more common here this past winter. There was undoubtedly some increase in local birds, but we feel that our grain fields held many birds that would otherwise have passed on through.

The Pheasants and Hungarian Partridges have increases principally, we believe, because of improved food and cover conditions, and the end of the drought.

Franklin's Gulls nested here for the first time in 1938, at which time there was a fair colony in the 332 Unit. In 1939, this same colony is active, but enlarged many times. There is also a good-sized colony in the 326 Unit less than a mile from the refuge headquarters. These birds are great favorites of the farmers because they take so many injurious insects, such as, grasshoppers and cut-worms. Their presence on the refuge in such large numbers helps a great deal to "sell" our project to the farmers.

II. Uses Made of the Refuge.

A. Nesting Islands.

In the 332 Unit especially, where the islands have been surrounded by water for some period of time, the white-top grass (Fluminea) is beginning to replace the sweet clover. The grass shows up first at the water's edge, and then spreads rapidly inward over the island. This is a much more favorable type of nesting cover than the clover. The use of these islands by nesting birds is increasing some each year.

It is an interesting fact that those islands that have been treated with gravel and rock are more attractive to nesting ducks than those islands that support a good

stand of vegetation. Whether or not this will always be the case we hesitate to predict, but at the present time, at least, the ducks show a decided preference for the gravel and rock islands. The white terns and shore birds also take to these graveled islands very readily. In addition to their use for nesting purposes, these artificial islands are favorite resting places for many kinds of marsh birds.

As a result of our share-cropping of hay during 1938, we have a few stacks of hay that were flooded this year. Our biologist recently made an inspection of six of these stacks, and on them he found the nests of eight mallards. The mallards also use, to a certain extent, the small brush and hay islands that we built here in the winter of 1935-36.

B. Shelters.

During this past winter, we again made a detailed study of our upland game birds. From these studies, we have again found that wildlife shelters serve very little useful purpose in this area. By far the majority of the birds studied fed in fields, principally in the grain fields left standing on the refuge. The birds show but little desire to use these shelters unless there is no other feed available in the vicinity.

For artificial feeding of upland birds, we find that the preferred grain is either ear corn or wheat in the bundle, placed on racks well above the ground where the birds may have a good view of the surrounding country.

During this past winter, in connection with these studies, we banded 193 sharp-tailed grouse, 22 Hungarian partridges, and 8 pheasants. A detailed report, Winter Upland Game Studies, Lower Souris Refuge, by Merrill C. Hammond, was submitted by this office on June 15th. Much additional information on this subject will be found in that paper.

C. Nesting Boxes.

We have not yet found the time to make a complete survey of all of the nesting boxes that have been put up on this refuge. We have seen enough of them, however, to know that a few at least have been used each year by Hooded Mergansers and American Goldeneyes.

D. Use During Hunting Season.

It is quite an old story of the way all game birds, and especially ducks, flock to the refuge during hunting season. It takes the birds only a short time to learn also the hours during which they are safe to leave the refuge to feed in the stubble fields. Shortly after four o'clock each evening, great masses of birds leave the refuge to feed in fields, sometimes ten or twenty miles from the refuge. After securing their fill of waste grain, they return to the refuge to spend the night. This same procedure is repeated in the mornings, when the birds leave the refuge at day-break and return before seven o'clock to spend the rest of the day. The only exceptions to this routine are on exceptionally wet or stormy days, especially during a snow

storm. The birds then sometimes leave the refuge at all hours of the day, and good shooting may then be had in some of the stubble fields in this locality.

E. Haying.

During 1938, we issued a total of fifty-six permits to cut hay on the refuge, including three under share-cropping agreements, and three that did not cut hay and forfeited their down payment.

A total of 982.8 tons of hay was cut, at $1.50 for grass and $1.00 for clover. The total income was $1,421.75. This is less than half of the income for the previous year. The reason was primarily an abundance of feed, with a greatly lessened demand for hay.

The field administration of the hay was handled for us by a local farmer. His total salary for the 1938 season was $84.00.

F. Recreation.

The small recreation area at the Freeman Bridge is frequently used by groups of picnickers. No fishing area has yet been approved for this refuge, although a small amount of fishing is sometimes indulged in from the public roads. Once an area has been opened to fishing, it is believed that this refuge will attract fairly large crowds of people to enjoy this sport. The refuge now has plenty of water and a wonderful stand of vegetation, and it is our belief and recommendation that extensive plantings of fish should be undertaken here as soon as possible.

III. Plantings.

A. Nursery.

The following seeds were planted in the refuge nursery in the fall of 1938:

Tartarian Honeysuckle	3 lbs.	(Rows)
Pincherry	4½ lbs.	(Beds)
Juneberry	½ lb.	(Beds)
Chokecherry	25 lbs.	(Beds and rows)
Plum	5 lbs.	(Beds) Treated*
Plum	8 lbs.	(Rows) Not treated
Thornapple	5 lbs.	(Beds) Treated
Black Haw	18 lbs.	(Beds) Not treated
American hazel	20 lbs.	(Beds and rows) Treated
American hazel	40 lbs.	Not treated
Red Cedar	5 lbs.	(Beds) Treated
Sumac	10 lbs.	(Beds) Treated
Rose	8 lbs.	(Beds) Treated

*Refers to treatment with Sulphuric Acid.

The following seeds were planted in the refuge nursery in the spring of 1939:

Caragana	32 lbs.	(Rows)
Tartarian Honeysuckle	4 lbs.	(Rows)
Tartarian Honeysuckle	13 lbs.	(Beds)
Red-osier Dogwood	1 lb.	(Bed) T & S
Plum	30 lbs.	(Rows) T & S

Thornapple	10 lbs.	(Beds) T & S
Silverberry	½ lb.	(Beds)
Red Cedar	10 lbs.	(Beds) T & S
Russian Olive	20 lbs.	(Beds and rows) T & S
Buffalo Berry	10 lbs.	(Beds) T & S
Total	130½ lbs.	

T & S - Treated and Stratified

The following is a list of all stock lined out in the nursery in the spring of 1939:

Mountain Ash	95	1 year
Russian Olive	600	1 year
Caragana	3,500	1 year
Lilac	6,150	Suckers
Tartarian Honeysuckle	19,000	1 year
Dogwood	5,000	Cuttings
Ponderosa Pine	2,332	
Scotch Pine	515	
Black Hills Spruce	1,976	
Red Cedar	3,852	
Colorado Blue Spruce	500	
Colorado Blue Spruce	500	
Total	25,020	

During the fall of 1938, we dug and heeled in the following nursery stock:

Caragana	18,600
Tartarian Honeysuckle	11,450

Green Ash	18,375
Choke Cherry	2,575
American Elm	48,825
Box Elder	475
Cottonwood	350
Total	100,650

All of this stock was field planted in the spring of 1939 on the refuge, except:

American Elm	23,000	Transferred to other refuges
American Elm	10,000	Transferred to U. S. Forest Service.
Green Ash	11,000	Transferred to other refuges

In addition to the spring transfer of nursery stock, the following was shipped out in the fall of 1938:

American Elm	11,000	Transferred to other refuges.
Green Ash	4,000	Same
Caragana	13,000	Same
Tartarian Honeysuckle	8,750	Same
Choke Cherry	2,000	Same
Total	38,750	

The condition of the nursery at the present time is good, and the prospects quite favorable. Extremely dry weather during May caused some loss among the lining out stock. During June, the weather became quite cool, with generous precipitation.

B. Field Plantings.

During the spring of 1939, we field planted a total of 19,500 trees and shrubs. These were planted in pot-holes, old groves, around residences, and so on. The results to date have been very satisfactory. A list of each species planted is as follows:

Caragana	4,412
American Elm	6,750
Chinese Elm	550
Green Ash	2,210
Tartarian Honeysuckle	2,061
Box Elder	590
Choke Cherry	780
Cottonwood	300
Red-osier Dogwood	476
Aspen	662
Juneberry	169
Rose	77
Virginia Creeper	36
Willow	50
Balsam Poplar	64
Currant	10
Pincherry	4
Jack Pine	93
Red Cedar	153
Ponderosa Pine	3
Total	19,500

Willow Cuttings 12,665 planted along toe of Dams 320, 326, and 341.

Nursery and field Planting summary:

Seed - trees and shrubs in nursery	290½ lbs.
Stock lined out in nursery	25,020
Total stock shipped to other refuges	82,750
Total stock field planted on refuge	19,500
Willow Cuttings - field planted on refuge	12,665

C. Seed Collection.

Brome Grass Seed	60 bushels
Crested Wheat Grass Seed	20 bushels
Little Blue Stem	15 bushels
Blue Grama	10 bushels

D. Seed Received.

Bushy Pondweed (plants and seeds) From Tamarac Lakes	190 lbs.
Prairie Bulrush (Paludosus) From Long Lake	about 6 tons
Crested Wheat Grass Seed From Waubay	100 lbs.
Red Cedar From Medicine Lake	17 lbs.
Russian Olive From Medicine Lake	7 lbs.
Russian Olive From Upper Souris	10 lbs.

E. Seed Shipped Out.

Crested Wheat Grass To National Bison Range	15 bushels
Blue Grama To National Bison Range	10 bushels

Little Blue Stem 15 bushels
To National Bison Range

Sweet Clover Seed (scarified) 500 pounds
To Medicine Lake Refuge

Sweet Clover Seed (scarified) 500 pounds
To Des Lacs Refuge

Prairie Bulrush (S. paludosus) 1,000 pounds
To Lostwood Refuge

Prairie Bulrush (S. paludosus) 1,000 pounds
To Des Lacs Refuge

Prairie Bulrush (S. paludosus) 500 pounds
To Tule Lake Refuge

Brome Grass Seed 15 pounds
To Nampa, Idaho

F. Grain Received from Share-croppers, and delivered to our granaries:

Barley	1,109 bushels
Wheat	1,553 bushels
Oats	1,001 bushels
Millet	12 bushels
Total	3,675 bushels

G. Grain Delivered to other refuges:

Oats	320 bushels	To Sullys Hill Game Preserve
Wheat	280 bushels	To Long Lake Refuge
Barley	250 bushels	To Lostwood Refuge
Corn (ear)	20 bushels	To Lostwood Refuge
Wheat	265 bushels	To Lostwood Refuge
Barley	250 bushels	To Lostwood Refuge
Total	1,385 bushels	

H. Seed Planted.

Bushy Pondweed (plants and seeds)	190 pounds
Prairie Bulrush	300 pounds
Brome Grass Seed	55 bushels
Crested Wheat	8 bushels
Duram Wheat	40 bushels
Oats	10 bushels

Summary of results of past plantings:

Wild Rice. No seed planted in the past year, but a very fine stand re-seeded in and below Diversion Channel at Dam I.

Bulrushes. Bulrush plantings are expanding rapidly, and making a wonderful growth.

Wild Celery. No evidence of success (suggest another attempt as water conditions are now much better).

Pondweeds. Sago pondweed, leafy pondweed (foliosus), and redhead grass (perfoliatus) are all thriving (mostly from natural propagation).

Water Millet. Still thriving in a few favorable spots.

IV. Predator Control.

The predator problem is always a delicate one. Any control activities should be based on conclusive knowledge derived from rather extensive research and observation. As has so often been stated, the skunk is by far our worst predator on this area.

The red fox, weasel, and mink also require some control. The coyote has not yet proved to be of any consequence, but must be controlled to a certain extent for public relations purposes.

In outline form, we are submitting as follows the total list of predators taken during the past fiscal year:

Months	Skunks	Mink	Weasel	Coyote	Fox	House Cats
July, 1938	11	1				
Aug., 1938	1					
Sept., 1938						
Oct., 1938						
Nov., 1938	76	12	49	3	6	26
Dec., 1938	51	11	30	3	4	1
Jan., 1939	1	8	27	1	4	1
Feb., 1939	5	1	4			
March, 1939	39	1	7			
April, 1939	9	2				
May, 1939	28*					1
June, 1939	3					1
Total	224	36	117	7	14	30

*Note: Does <u>not</u> include 27 embryos found in pregnant female skunks.

Predator totals:

Skunks	224
Mink	36
Weasels	117
Fox	14
Coyote	7
House Cats	30
Total	428

Miscellaneous predators:

Snapping turtles	2
Magpies	17
Crows (May and June)	34 adults, 13 young, and 20 eggs*

*from "Crow-free" areas.

It should be noted that our control of mammalian predators has resulted in the removal of only one animal for every 135 acres of refuge land. Our efforts serve principally to "knock off the peak" of predator populations or concentrations, and is not by any means aimed at extermination.

On this area, ducks are not extensively taken by predators. The mink occasionally proves to be locally very destructive. The duck hawk is increasing here, and frequent victims of this bird are found in the field. The fox occasionally takes a duck, especially when the birds are feeding in fields of standing grain. The golden eagle has been ob-

served in the act of harassing flocks of waterfowl, but has never been observed to make an actual kill. A weasel occasionally takes a duck, especially a female sitting on the nest. There are a very few snapping turtles on the refuge, but no evidence of a kill by these reptiles has yet been observed.

The total amount of predation that ducks are subjected to on this refuge is not a serious quantity and is fortunately somewhat amendable to management.

The upland game birds have quite a variety of natural enemies, but none of which may be considered especially serious. The larger predatory birds, such as, golden eagles and snowy owls, take quite a few of the birds. Neither species of these predators are ordinarily very abundant.

The deer evidently have no natural enemies left on the refuge, unless it be rarely a coyote. The coyotes are, however, far from common and confine their activities primarily to rabbits.

It has been found that a certain amount of rodent control is necessary here each year. This activity is confined primarily to the Richardson's ground squirrel, and has been conducted for four reasons:

1. To protect our dykes and dams from their burrowing activities.

2. To protect the nursery and landscaping from damage.

3. "To knock off the peak" in areas where these rodents have become greatly over-abundant and destructive to grassy vegetation.

4. To keep on friendly terms with farmers adjacent to refuge areas where these rodents have become over-abundant.

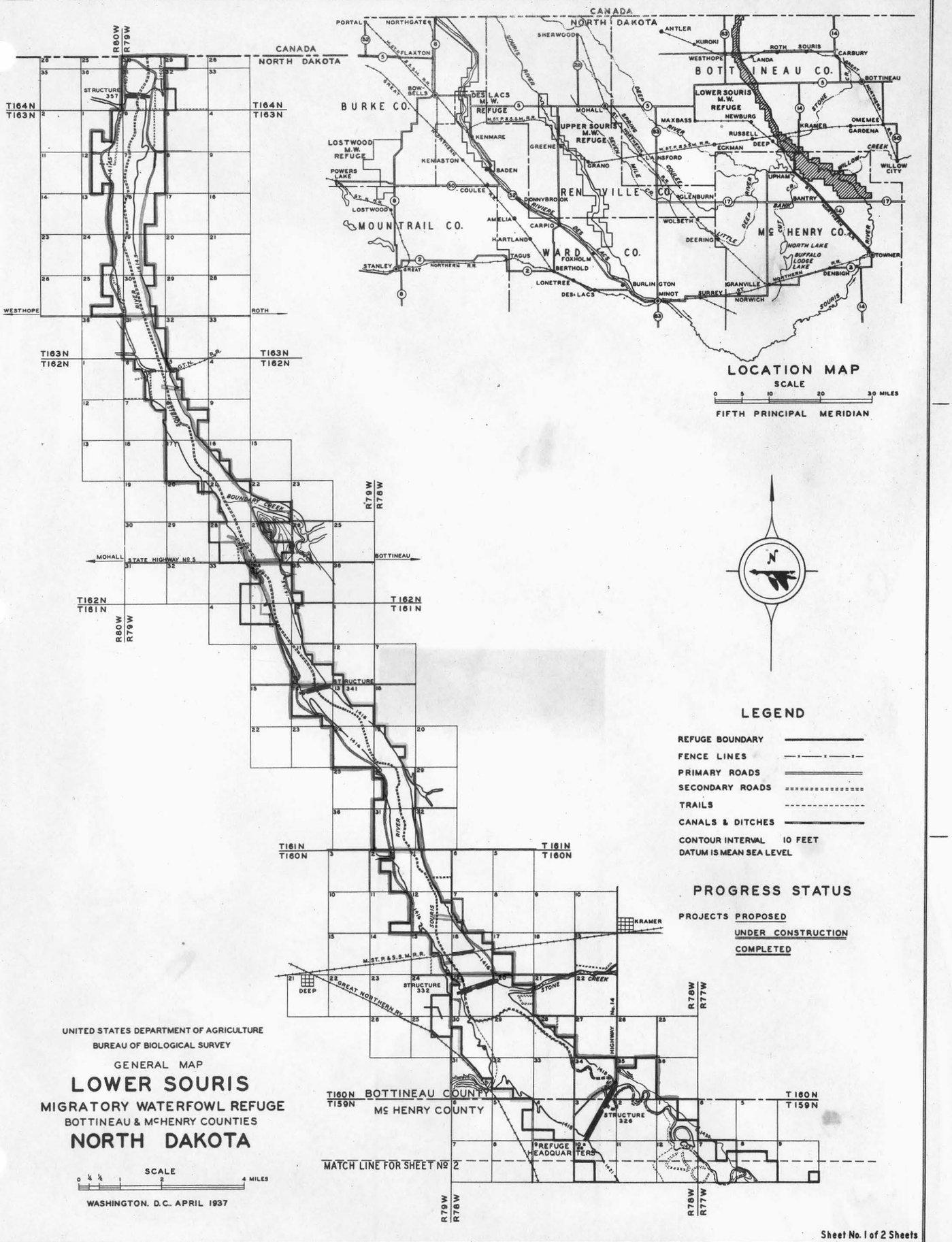
We never plan to go beyond this because it is felt desirable to have a moderate population of these rodents to serve as a stable food supply for predators, and thus serve as a buffer for many game species.

V. Refuge Improvements.

The construction of Patrol Roads, and the erection of the Boundary Fence may still be classified as two of the most important projects incompleted on the refuge. A fairly complete system of well-built patrol roads, plus a thorough job of fencing, will be of inestimable value in refuge administration and maintenance.

To date, we have completed approximately 145 miles of fencing.

It is believed that a report of miles completed during the past fiscal year will mean but little to the reader. Therefore, on the following pages will be found a map illustrating completed patrol roads in blue, and completed fences in red. Fences yet to be erected are shown in yellow, while in green is illustrated the partially completed or most important roads to be completed.



UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF BIOLOGICAL SURVEY

GENERAL MAP

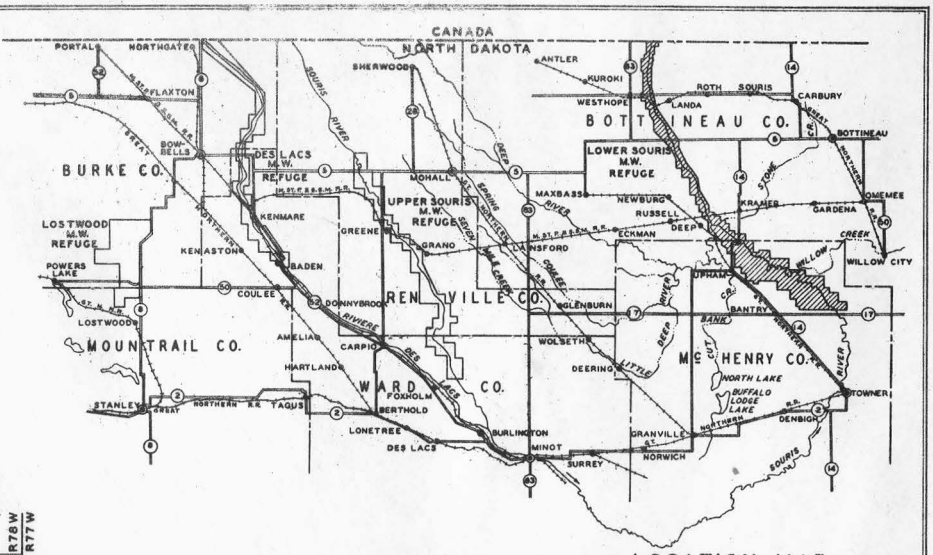
LOWER SOURIS
MIGRATORY WATERFOWL REFUGE
BOTTINEAU & McHENRY COUNTIES
NORTH DAKOTA

SCALE
0 ¼ ½ 1 2 4 MILES

WASHINGTON, D.C., APRIL 1937

Sheet No. 1 of 2 Sheets

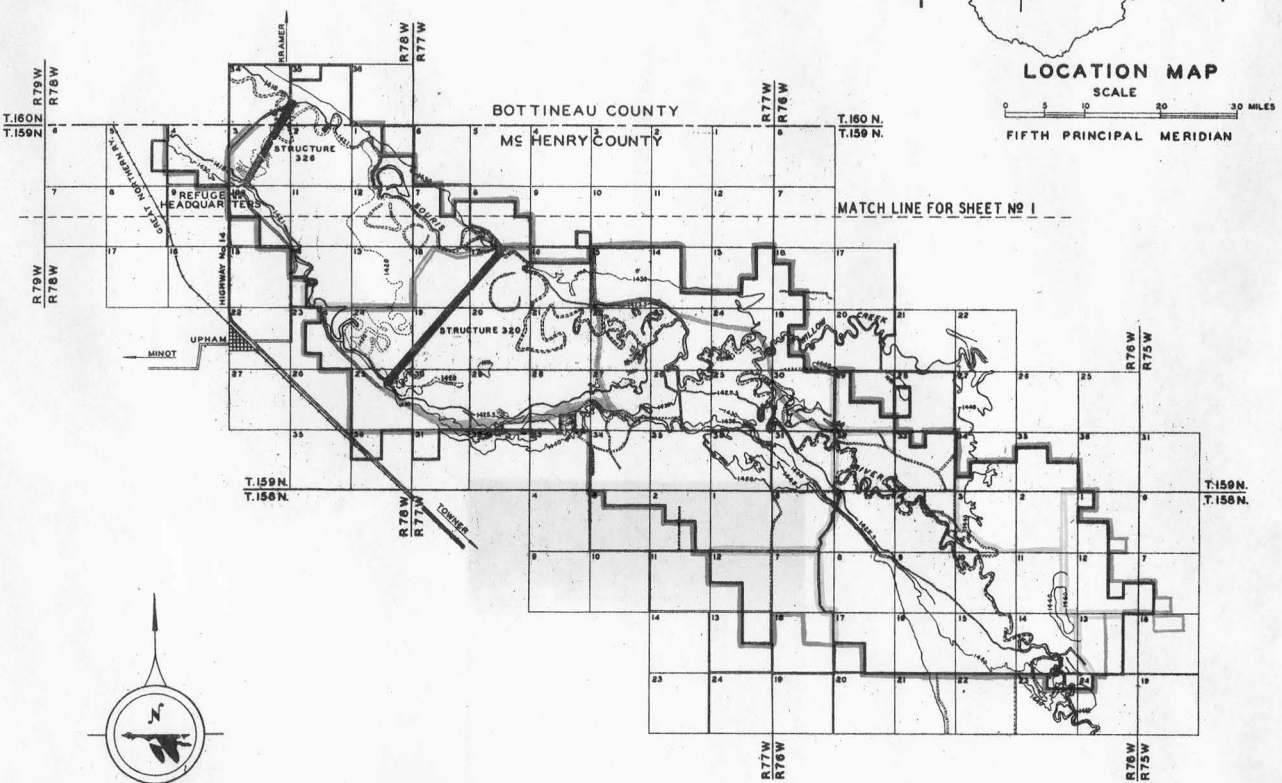
74 LOW 21



LOCATION MAP

SCALE 0 5 10 20 30 MILES

FIFTH PRINCIPAL MERIDIAN



LEGEND

REFUGE BOUNDARY

FENCE LINES

PRIMARY ROADS

SECONDARY ROADS

TRAILS

CANALS & DITCHES

CONTOUR INTERVAL 5 FEET

DATUM IS MEAN SEA LEVEL

PROGRESS STATUS

PROJECTS PROPOSED

UNDER CONSTRUCTION

COMPLETED

UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF BIOLOGICAL SURVEY

GENERAL MAP

LOWER SOURIS

MIGRATORY WATERFOWL REFUGE

BOTTINEAU & McHENRY COUNTIES

NORTH DAKOTA

SCALE 0 ½ 1 2 4 MILES

WASHINGTON, D.C., APRIL 1937

Sheet No. 2 of 2 Sheets

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All of the patrol road work has been done by CCC. All of the boundary fencing during this past fiscal year was done by CCC, although WPA erected several miles of interior fencing.

In connection with the patrol road work, a number of very fine cement culverts were constructed at the camp last winter. This proved to be an excellent winter project, and it is our sincere hope that another similar project may be carried out this coming winter.

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The project for the erection of boundary signs and markers was completed.

A telephone line, extending from the refuge headquarters to the Sand Hills tower and overnight cabin, was completed during this period.

Considerable progress has been made on the construction of living quarters for refuge patrolmen in the Sand Hills, and in the Westhope area.

A large number of old buildings and many miles of old fencing were removed. All usable material was hauled to the camp for storage, refuge use, or transfer. This project was conducted by both CCC and WPA.

Considerable additional rip-rap has been placed on some of the dams, especially Dams 320 and 326.

A small cement dam of stop-log design (Dam III) was built late last summer, in the upper end of the 320 Unit.

Two granaries were constructed this past spring; one located at the refuge headquarters, and one near the west end of Dam 320.

The interior painting of the headquarters residence was finished last fall, while the exterior painting of all the headquarters buildings was done last summer.

Additional fire lines were built last summer, giving us a fairly complete system.

Some grading, clean-up, and planting has been done at the recreational area site in preparation for the project.

Additional timber stand improvement was done in the timbered areas last winter. The logs removed were used for fence posts, construction work, and fuel.

Considerable new construction and improvement was done at the CCC camp in order to increase efficiency.

Some improvements were made by WPA at the refuge headquarters during the winter. These included a drafting table and map filing device, a shelving and storage system in the service building, movable storm sheds for the office and service building, a swinging stairway to the loft over the service building shop, and so on.

VI. Scientific Progress.

A. Duck Nesting Studies are being conducted for the fourth successive year, although not on quite as large a scale as previously. We are getting a true picture of the

crow pressure in an area where both crows and ducks frequent the same area. The preliminary work indicates that we have somewhat of a different picture than that secured in the relatively crow-free areas.

B. Upland Game Bird Studies. Considerable progress has been made toward securing a true picture of our upland game birds, as well as the values of feeding and other management practices. As was mentioned in a previous part of this report, a separate report on this subject was submitted about a month ago. Another paper on winter mortality is to be submitted almost simultaneously with this report.

C. Food Habits. Food habits materials are collected, and food habits observations are made and noted at every opportunity. A considerable quantity of predator stomachs have been saved.

D. Banding and Migration. Some banding is being done each year, so far as the time permits. Observations are made on migration, and records kept. This has been fairly complete on waterfowl, but rather sketchy on some of the smaller birds.

E. Inventory. We are still endeavoring to accumulate records and material that will enable us to work out rather complete lists of the flora and fauna of this refuge.

F. Vegetation. The succession of vegetation is being studied, especially in the flooded areas. Some experimental plantings have been done, and the results studied.

Many other trends are being carefully observed, but detailed studies not yet undertaken. This would include such as the deer, beaver, and muskrat problems.

VII. Law Enforcement.

The law enforcement problem is one of the less serious problems on this refuge. No violations of any consequence occurred during the past fiscal year.

On one occasion, two grouse hunters accidentally entered the refuge. This was obviously a mistake (and on unpaid-for land), so no prosecution was undertaken.

A dead deer was found on the refuge, November 9, 1938, with a broken loop of snare-wire around its neck. We are still angling for clues, but as yet have found nothing worth while.

A load of salvaged wire was taken from the refuge recently. We have fairly good clues in this case, and hope to apprehend the violators very soon.

A school teacher entered the refuge on January 4, 1939, hunting jackrabbits. We secured a signed confession, but no legal action was taken against him.

There have also been some cases of petty thievery from some of the old buildings. We have so many of these scattered over so wide an area, and to date an inadequate personnel for patrol, that we have been unable to watch them properly. The best solution is to raze these structures as rapidly as possible and thus remove temptation.

VIII. Water Conditions.

On the whole, we have but little to ask for in the way of water conditions. A summary of each unit as of June 27, 1939, is as follows:

Unit I. (Above Rubble-masonry Dam I) Unit is now full with a small flow still going over spillway.

Unit II (Rubble-masonry marsh area). Entirely full.

Unit 320. Lacks a little less than a foot of being entirely full.

Unit 326. Lacks about one and four-tenths feet of being full, which we find is the best level for this unit.

Unit 332. Lacks a little more than an inch of being full. Splashes over with south wind.

Unit 341. Lacks about one and one-third feet of being full -- a very good level for this unit.

Unit 357. Lacks about two and three-fourths feet of being full. We have just finished filling the Canadian dams and are still in fine shape.

IX. Other Information.

A. Road Closing work has been completed in Poplar Grove, Mouse River, and Willow Creek Townships, and we expect to successfully finish this work in Meadow Township this summer.

B. Public Relations. The program of "selling" the refuge to the public has progressed very satisfactorily.

All newspaper opposition and criticism has been broken down, and the editors won over to our side. Quite a number of wildlife men visited this refuge this past year. Such visits are increasing rapidly as the area becomes better developed and more successful.

C. Captive Canada Geese.

Through an oversight, no mention was made of these birds in the previous portions of this report.

The pinioned Canada Geese, twenty-two in number, were received here in April, 1937, too late to nest that year. One bird died in November, 1937 of lead poisoning.

In 1938, five pairs of these geese nested, producing eighteen young birds. One of these died of aspergillosus, and another of unknown cause. All were banded. Fourteen young went south, while two stayed here all winter with our twenty-one pinioned birds. There are now a number of full-winged birds on the marsh, some of which we believe are our young birds returned.

In 1939, we turned the birds out earlier than in 1938, and believe that some have nested out on the marsh. We have observed at least three different broods. Efforts are now being made to get these birds back into the pen so that the young may be banded and the adults brought back under control. One adult goose was killed by an automobile this spring on Highway No. 14.

To date we have re-captured three adult geese, and five young, all of which are now in the goose pen. The others we expect to have back in captivity before July is over.

Respectfully submitted, June 30, 1939

C. J. Henry

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Asst. Refuge Manager

CONSIDERATION OF	INITIAL
MAUSEK	✓
FURNESS	✓
GILLETT	✓
LICKING	
HUMBLE	
PROPERTY	
PAYROLLS	
PREVIOUS	
FILE	

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