BRANCH OF WILDLIFE REFUGES NARRATIVE REPORTS

MR. SALYER _____ MISS BAUM _____

MR. GRIFFITH _____

Operations

~~MR. REGAN~~ MSR _____ MR. DuMONT _____

Land Management

MR. ACKERKNECHT _____ DR. LORLEY _____

Habitat Improvement

DR. ERICKSON _____ MR. STILES WBS

MR. KUBICHEK _____

Stenographers

_____ _____

REFUGE LOWER SOURIS PERIOD SEPTEMBER-DECEMBER 1955

PERSONNEL

Donald V. Gray - - - - - - - - - - - - - - - - - Refuge Manager

John R. Frye - - - - - - - - - - - (Refuge Mgr.) Farm Planner

Dean R. Johnson - - - - - - - - - - - - Asst. Refuge Manager

Roy W. Carlson - - - - - - - - - - - - - Mechanic, Heavy Duty

Alvin Brandt - - - - - - - - - - - - - - Foreman, Mixed Gang

Raymond F. Badke - - - - - - - - - - - - Mechanic's Helper

Charles I. Varty - - - - - - - - - - - - - - - Maintenanceman

William J. Schmitz - - - - - - - - - - - - - - Refuge Clerk

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Merrill C. Hammond - - - - - Wildlife Management Biologist

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I. GENERAL

A. Weather Conditions

The following is a tabulation of temperature extremes and recorded snowfall and precipitation for the period, as noted at the official Weather Bureau Station at refuge headquarters.

Month	Snow	Precipitation		Temperature Max.	Temperature Min.
September		1.21		97	20
October	1.5	.57		84	10
November	13.5	.67		59	-20
December	5.5	.21		39	-33
Totals	20.5	2.66	Ext.	97	-33

September and October this year had exceptional good weather much to the disappointment of the hunter and joy to station personnel working on island construction. Blue bird weather was the general weather picture for those two months.

For November and December the weather picture was much different. Extreme cold and blowing snow were the general rule after our first storm of November 1 and 2. Average lows for the last two months were a + 2 (average minimum temperature) for November and -6 for December. November was one of the most severe on record.

90% of the marsh froze up this year on November 1 and 2 with a 100% freeze over the following week.

High winds and blowing snow were recorded on November 1, 2 and December 12, 13 and 14. High winds up to 50-60 miles per hour were recorded on December 13 with roads temporarily blocked following this storm.

Snow accumulation on the ground is 17 inches. This must be an estimated total as snow rarely stays on the level in N. Dak.

B. Water Conditions

Rubble-Masonry Unit: Held at a low level in an attempt to kill out cattails. This unit fluctuates with the level of the river.

320 Unit: The gates on this unit have been open the entire season for island construction and are being left open all winter according to approved practices. There is water in the river channel only which is at a 19.16 level.

326 Unit: 326 has fluctuated between 16.74 in September to a high of 19.00 at the end of the period. This level is being held throughout the winter.

332 Unit: At the end of the period all gates are closed and water is passing over gates at a depth of 2 inches. Gauge reading is 17.50.

341 Unit: Held at a low level of near 14.00 all period to allow marsh farming operations. At the end of the year one gate is open 4 inches and the water level is at 14.05.

357 Unit: One gate partially open to allow the minimum of 20 c.f.s. flow to Canada. Water level at the end of the period is 13.00.

C. Fires

No fires on the refuge during the period.

II. WILDLIFE

A. Migratory Birds

1. Populations and Behavior.

Local birds and early migrants were plentiful this year with a peak population of 183,000 in early September. Aerial counts showed this number had decreased to 136,000 by October 1 and then down to 70,000 by October 14. Coot, Mallard and Pintails constituted the greater part of the population throughout the period. Mallards and Pintails were down in numbers from last year. Local population of divers was good but the mass migration of these passed us by with the storm of November 1.

The peak goose population was noted just prior to the opening of hunting season. At that time 9,425 (mostly White-fronted) were using the refuge. As the season progressed, the numbers dropped rapidly and the last goose was seen on the refuge Nov. 6.

An early storm with cold temperatures, wind and snow on November 1 and 2 precipitated the big migration of birds, both from the north and from the refuge. Migrating birds stopped

just long enough to realize that winter had reached Lower Souris and were joined by the local birds in their southern flight. With no stop-over of migrant birds and the early migration of local birds, the days use of ducks and geese for 1955 was 6,128,250 an appreciable drop from last years 7,775,735. Total use days remained relatively high due to the great number of coots in September.

Production data for 1953-1955 are as follows:

Lower Souris production data

	1953			1954			1955		
Unit	Pairs	Broods	Success	Pairs	Broods	Success	Pairs	Broods	Success
357	1984	477	.24	887	230	.26	619	337	.54
341	1905	375	.21	515	275	.53	611	330	.54
332	1552	1100	.71	1413	495	.35	1170	830	.71
326	1141	656	.57	760	415	.55	1290	575	.45
320	680	315	.46	371	150	.40	441	185	.42
R.M.	281	87	.31	138	50	.36	144	150	1.00
E. end	E230	E77	.33	E150	E50	.33	E225	E75	.33
Total	7673	3087	.40	4234	1665	.39	4500	2482	.55

(Predator control experiment in 332 unit, 1953 and 1955)

2. Food and Cover.

Natural food in marshes and waste grain in fields were abundant this year until November 1 when snow covered stubble fields and freezing temperatures froze marshes. A good crop of corn was experienced this year in the area and Mallards and Geese used the harvested fields quite extensively. Geese were observed using surrounding fields heavily but after hunting season started they stayed close to refuge fields. Goose preference was grain fields that had been disced and then sprouted.

3. Disease.

There was no evidence of disease during this period.

4. Depredations.

Little or no depredations occurred this year. Good aquatic food in the marshes, grain feeding stations and early harvest were responsible for the absence of damage to crops. Actually, the threat of depredations was over on September 8 and artificial feeding was discontinued on that date, with a total of 13,015 bushels of grain fed during the depredation period. After feeding was discontinued

SEPT-DEC 1955

Mallards and Pintails fed on the remaining natural foods until early October when they began using grain stubble and corn fields.

5. Trapping and Banding.

Trapping and banding of ducks was discontinued while feeding stations were being utilized. After the threat of depredations was over one successful boom trap shot was made and 120 Mallards and Pintails were banded. Total ducks banded for the year was 245. Banding of juvenile doves continued until September 21, with a total of 120 banded for the year.

6. Experimental Predator Control.

The following few paragraphs are a very brief summary of Mr. Hammonds report of this experiment published this fall. Space will not allow the use of his many excellent graphs, charts and conclusions found in that paper.

Objective of the experiment was to evaluate the seriousness of egg eating predators on ground nesting waterfowl. Data on this experiment are not conclusive evidence due to inadequate cover of check area for broods, difference in sampling methods and lack of studies on nests for predation.

The plans for this experiment, started in 1953, included the following:

1. 332 unit to receive predator control by the use of poisoned eggs previous to nesting season.
2. 357 and 320 units to be used for check areas.
3. Measuring results by brood counts, comparison of production with previous years, comparison of experimental unit and check areas, nesting studies and sampling predator populations.

As mentioned before, nesting studies were not used due to lack of available time and predator populations were to be measured by comparing trapping records. This method of measuring predators would have shown their populations but the abilities and ambitions of the two trappers or the change of trappers in a unit make for a poor comparison.

320 unit was not used for a check area as it was slated to be drained for island construction. 357 unit, used for the comparison, did lend itself well dispite the difference in topography. The physical characteristics of 357 gives it an

advantage in brood success over 332, so gains in broods and populations can be contributed more to control of predators than other biological factors.

If the apparent differences in nesting success were due entirely to predator control the net gain in 332 of ducks produced for the three years is:

1953----------49% increase (heavy predator control)
1954---------- 9% " (little predator control)
1955--------- 28% " (moderate predator control)

Age of broods and size of broods shows the most evidence of the success of nesting by control of egg eating predators. Larger broods and advanced age of young in 332 over 357 suggests a lower degree of predation. Renesting efforts show older and smaller broods at a given time, which has been the case in 357.

A factor entering into the success of the experiment is the late spring floods that destroy bottom nesting ducks in 332 unit. This unit is much more subject to this damage than is the check unit 357 due to the difference in amount of bottom nesting habitat. A July flood in 1953 as an example destroyed all bottom nesting ducks of which 90% would have hatched according to the data assembled to that time. This compares to a 40-50% hatching success of previous years when no predator control of this nature had been done. This increase of success, if floods hadn't intervened, could have been attributed to predator control in 332 unit.

If approval is given for further study 357 will receive predator control by use of poisoned eggs and 332 will be used as a check area. At that time will this experiment give conclusive results.

The data assembled in Mr. Hammonds report suggests that the intensive control program lead to increase in both populations and production in 332 unit. Continued research and better quantity of data must be undertaken before definite conclusions are to be drawn.

B. Upland Game Birds

Pheasants: Evidence of a good spring hatch and light kill during the 2½ day season this year allowed the pheasant to show an appreciable gain in numbers over previous years. Approximately 1,000 are now using refuge shelterbelts and other suitable habitat. Sex ratio of Pheasants around headquarters show a very high surplus of cocks. Some method should be devised to

get rid of these surplus birds and leave the food and cover for more hens.

Sharp-tailed Grouse: The population of this species is comparable to last year. Very little hunting pressure on this bird in the area and those who hunt them find them quite hard to get.

European Partridge: Many of this species are observed and they show a definite increase over previous years. Again they are not hunted very much in this area so hunting is not the limiting factor in their numbers.

Pinnated Grouse: None of this species has been observed in the area.

Food and Cover

Food and cover was abundant until November 1. Since then all upland game birds have been pressed for adequate food due to the heavy snow, extreme cold and blowing and drifting snow. However, there is no evidence of starvation. Pheasants are using feeding stations located near headquarters shelterbelts. These stations are spread with stacked millet, millet screenings and ear corn. Pheasants and sharptails are also utilizing an unpicked cornfield near headquarters. The food situation is not expected to be relieved as the winter continues to be severe and all available means will be used to supply adequate food. Cover is at premium also as most shelterbelts in the area are too narrow to offer protection in a real hard blizzard. Many of these belts are full of snow at this time.

C. Big Game Animals

The annual big game census was made on December 27 with the cooperation of the North Dakota Game & Fish Department which furnished the aircraft and Glen Orton, Pilot-Warden, to fly it; Mgr. Gray flew as observer. 210 deer, 43 bucks, 79 does and 87 yearlings, were counted with an estimated 70% of total population counted. From this it is estimated that the herd numbers 300 deer, doubling the 1954 estimate. There was no gun season on or near the refuge this year, but the surrounding area was open for an archery season during October. Needless to say, few deer were taken by the archers.

Food and Cover

There is an adequate amount of natural foods for the deer.

While waste grains may be difficult to find because of snow, browsing conditions remain to be excellent.

Diseases

None in evidence.

D. Fur Animals, Predators and Other Mammals

Beaver

Beaver on the refuge are abundant and a season has been set by the State. Season on this species extends into May so trappers at this time are putting their efforts on other species. The October 4 beaver count showed 30 houses on the river as compared with 37 in 1954 and 21 in 1953.

Muskrat

Muskrat are abundant, but very few have been taken due to an early freeze and a severe winter. Only 19 were trapped during the regular season as compared with 229 last year.

Mink

Mink are very common and trappers are making special efforts to catch this species. They are having fair results, although severe weather conditions have curtailed the number ordinarily expected.

Raccoon

Raccoons are abundant, but again, very few are being caught as the cold temperatures are keeping these animals in their dens.

Badgers

Badgers are seldom seen or taken in traps this time of the year but the diggings of their fall activities would indicate them to be common.

Skunk

Still fairly abundant after control measures of this year. Very few of the stinkers show up in trappers' catches.

Fox

Many fox seem to be moving into the refuge for protection. Tracks are seen everywhere. Trappers have had poor success in catching fox as drifting snow makes traps ineffective. 14 were observed during the aerial deer census on December 27.

Rabbits

Jacks are scarce, while Cottontails are abundant in suitable habitat. Showshoes are noticed in the Sandhills area.

Porcupine

Common in the Sandhills area.

Coyote

Very rare and seldom seen.

E. Predacious Birds

Hawks were common in the early part of this period, but few are around at this time. The first Snowy Owl was reported November 2 and the build-up of the species is continuing. One Snowy Owl was seen taking a Hungarian Partridge on December 19 near hiway 5. The peak crow population was in mid-October with about 1,000 noticed in one migrating flock. There are very few if any in the area at this time. However, the magpie is noted in sheltered areas near headquarters and along the river bottoms. One short-eared owl has been seen in the old CCC nursery.

F. Fishing

Fishing on the refuge was closed from September 15 to December 15. Some success on northern pike, which make up the bulk of the catch, was had just before the closing time at 341 and 357 public fishing areas. These were the only areas that were used much by fishermen. No ice fishing has been noted since the season has re-opened and no permits for fish houses have been issued.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Developments

Project 712-R

Marsh Rehabilitation: Water levels were low enough during the period to permit equipment operation in 341 unit. 100 acres of emergents were mowed in 326 and 341 units, but early snowfall did not permit burning. Of the 82 acres in 341 unit previously mowed and burned, 50 acres were plowed and disced to prepare the area for seeding. Breakdown of the old Cletrac tractor halted the plowing operation. This area was to have been seeded during this period but we were unable to secure wild millet seed. It is planned to seed the plowed area to tame millet by use of the aircraft in the spring.

Dike Repairs: Work accomplished during the period was mainly the completion of sandblasting and painting operations at 357 structure. Remaining work on dike tops, fill, etc. will be completed in the spring.

Ditching: The dynamite for ditching in 326 and 341 units has been purchased, but no ditching has been accomplished to date.

Steel Sheet Piling - Freeman Bridge: Piling has been purchased and delived and will be driven as soon as conditions permit.

Project 712-C-5

Construct Nesting Islands - 320 Unit: Island construction and rehabilitation work was carried on through the early part of December. Five new islands were constructed, mainly by use of the D-7 and dozer, and 5 of the old islands were rebuilt using the Lorain dragline. In addition, eight small push-up islands were made with the dozer in the cattail belt and a 100 ft. wide cut was dozed out to cut off and isolate one island from the river bank. Approximately 50,000 cubic yards of earth has been moved during the operation. Following the stoppage of construction activity hay was hauled out to the islands and anchored there for possible use for nest materials by geese next spring.

Project 170

Soil and Moisture: The shelterbelt planting north of Westhope was cultivated twice and a crew hoed between the trees once, a back-breaking job.

40 acres in grazing unit No. 53 and 70 acres in grazing unit No. 55, previously fenced out due to poor pasture conditions, were seeded to alfalfa by Johnson and Frye during the

period. 1900 pounds of field run alfalfa, harvested from refuge farming units, was broadcast seeded with a jeep-mounted Wikomi electric seeder and later dragged in to cover the seed.

Miscellaneous Accomplishments

1. Hauling, feeding and storing grain in connection with depredation activities.

2. Constructed set of mats for Lorain dragline out of logs cut in river bottom.

3. Replaced damaged signs around refuge and at Lords Lake Easement Refuge.

4. Shelterbelt cultivation between rows and in rows (by hand) necessary twice.

5. Sewer cleanout and maintenance at buildings 29, 32, 40 and 61.

6. Hauled millet and alfalfa seed to Bantry for cleaning, bagging and later shipped to several designated points.

7. Measured wood for permittees cutting on refuge.

8. Cut and stockpiled about 200 posts for use in fence maintenance.

9. Posting of public hunting areas and retrieving zones.

10. Considerable cleanup work was done at the boneyard, improving appearance and safety considerably.

11. Building maintenance, included plumbing and electrical wiring repairs, isolating, digging out and repairing break in water line in sub-zero weather, minor changes in storage and closet space in Qtrs. #10-4.

12. Started remodeling attic in Qtrs #6 to provide additional bedroom so sorely needed in this residence.

13. Completed insulation of shop ceiling with vermiculite insulation.

14. Mowed 3 acres cattails in 326 unit as an experiment in cattail control.

15. Mr. Frye completed delivery of new pickup from Janesville, Wisconsin.

16. Completed installation of new jet pump in well replacing piston pump that had given considerable trouble.

17. Under safety and fire prevention - checked and refilled all fire extinguishers on the station, checked all furnace installations and replaced defective pipes where necessary.

18. Put in frost plug at 357 gate structure.

19. Trip to Tamarac Refuge by Mr. Gray to pick up bottle gas stove and refrigerator for Willow Lake Cabin.

Equipment Repair and Maintenance

1. Removed motor from autocar for complete motor overhaul and replacement of cracked block.

2. Safety and preventive maintenance checks according to schedule.

3. Track repairs to D-7 dozer and Cletrac tractor.

4. Uninterrupted operation of dragline on island construction job for which due credit is given to the operators and Mr. Carlson.

5. Miscellaneous repairs to Buick sedan, 1949 Ford pickup, Dodge pickup, Diamond T stake, GMC stake, 1950 Jeep pickup, Cletrac tractor, mowing machines and pumps.

6.. Equipment moves between the Loop refuges with Federal truck-tractor.

7. Transfer of D-7 cat from Crab Orchard Refuge and 6 yard scraper from Mingo Refuge to Lower Souris accomplished by Messrs. Carlson and Badke.

Sale of two trucks - FWD I-19281 and Diamond T I-16889 also the 4 cylinder Evenrud Light-four 10 h.p. outboard motor.

B. Plantings

1. Aquatics and Marsh Plants

Nothing accomplished as we were unable to secure seed prior to the early freeze-up.

2. Trees and Shrubs

9.5 acre shelterbelt planting was cultivated twice and hoed between rows once.

3. Upland Herbaceous Plants

No plantings.

4. Cultivated Crops

Fair to good yields were common during the period. The relative absence of stem rust made increased yields on hard wheat and durum common. Barley yields (the normal refuge share is taken in barley) were recorded from fertilized plots up to 38 bushels per acre. Excellent stands of alfalfa, oats, corn, rye and millet were also present on the refuge. In addition 10,373 pounds of alfalfa seed were harvested from farming units and the refuge share received was 4,758 pounds. See NR-8 for production and share division data.

C. Collections

1. Seed or other Propagules

The refuge share of 195# of clean bluegrass seed from stripping operations conducted by the Lang Bluegrass Farm, Benson, Minnesota, has not been received to date.

2. Specimens

None.

D. Receipts of Nursery and Seed Stock

None.

IV. ECONOMIC USE OF REFUGE

A. Grazing

Spring surveys indicated that, in most cases, further reduction in AUM's was not necessary. Fall observations near the end of the grazing period showed most of the range was in good condition, but recommendations for the 1956 season are being withheld pending receipt of the range site surveys conducted for all units by SCS technicians last summer.

5698.29 AUM's were utilized during 1955 with a total cash return of $5,698.29.

B. Haying

Haying operations were not normal this year as cutting dates were delayed until August 1 and by that date harvest operations were underway. Consequently less hay was harvested in 1955. 71 permits were issued and 3507.59 tons of hay were harvested with a gross return to the Government of $5343.41.

Many of the units were hayed for the last time in 1955 as many of the dry upland hay meadows are being changed to grazing units effective next year.

C. Fur Harvest

Four trapping permits have been issued to local trappers. Early freeze-up and heavy snowfall made trapping difficult and few fur bearers have been removed as is indicated in the following tabulation.

Unit	Beaver	Muskrat	Raccoon	Badger	Skunk	Mink	Weasel	Fox
1-5	1	1			15	10	2	2
6-7		18	1	1	2	7	1	5
8-9			1		1	9	9	
10								
Total:	1	19	2	1	18	26	12	7

All furs have not been divided as yet, complete results of fur harvest will be included in the January-April report.

D. Timber Removal

Early snowfall stopped most planned wood cutting operations before they got started. Four permits were issued but the only wood cut was one cord of ash poles.

E. Gravel Removal

One permit was in effect during this period. The following is a tabulation of gravel permits issued during 1955. Eight permittees removed 19,645.5 cubic yards of gravel with a gross return to the Government of $1,964.50.

Gravel Sales

Permittee	Permit	Amount Cu. Yds.	Charge	Total Receipts
Ostby Twp.	24574	1782	.10	178.20
Magnusson, S. F.	24301	20	.10	2.00
Struksness Const.	24133	1281	.10	128.10
Lindteigen Const.	24135	15702.5	.10	1570.25
Badke, Fred	24134	20	.10	2.00
City of Upham	22070	100	.10	10.00
Elysian Twp.	24138	720	.10	72.00
Carlson, Roy	24570	20	.10	2.00
Willow Creek Twp.	24129	Incomplete.		

V. FIELD INVESTIGATION OR APPLIED RESEARCH

A. Fertilizer Plots

Experimental applications of fertilizers on agricultural units were completed this year, with generally excellent results as indicated in the accompanying tabulation. 14 plots were established and all were sampled except 3 which were hailed out. Barley yields from fertilized plots showed increases up to nine bushels per acre over unfertilized check plots with an average increase of 5.23 bushels per acre. Yields of hard wheat from fertilized plots average 4.49 bushels per acre more than yields from unfertilized plots. Soil samples taken from all sample areas were analyzed at North Dakota Agricultural College and from them we have received recommendations for future fertilizer application for these areas.

B. Goose Browse Preference

All observations of feeding geese were in grain stubble, corn (standing and stubble) or summer fallowed fields. Birds were apparently feeding on waste grain, sprouted grain and assorted green weeds present in agricultural fields.

C. Use Of Herbicide

The only spraying done in 1955 was for control of Leafy Spurge (Euphorbia esula) on upland sites.

TABLE III

PERMITTEE	UNIT	CROP	SIZE OF SAMPLE	FERTILIZED TEST WEIGHT	FERTILIZED % DOCKAGE	FERTILIZED CALC. YIELD BU/ACRE	UNFERTILIZED TEST WEIGHT	UNFERTILIZED % DOCKAGE	UNFERTILIZED CALC. YIELD BU/ACRE	DIFF.
Olson, Theo	A-10	Barley	1/8 acre	41.0	2	27.99	44.0	2	22.42	∔ 5.57
Vedquam, Richard	A-12	Barley	1/8 acre	43.0	2	31.91	43.5	2	23.76	∔ 8.15
Scheflo, Rudolph	A-13	Barley	1/8 acre	43.0	3	27.86	42.0	4	24.14	∔ 3.74
Teske, Max	A-15	Barley	1/8 acre	44.0	2	24.62	45.5	2	26.43	∔ 1.81
Rubbert, Lloyd	A-17	Barley	1/20 "	46.5	1	38.21	46.0	1	31.88	∔ 6.33
Dagner, Raymond	A-19	Wheat	1/16 "	56.0	11	11.54	55.0	26	5.21	∔ 6.33
Fitchner, August	A-22	Wheat	1/16 "	61.0	10	15.56	60.0	8	12.76	∔ 2.80
Brandt, Gideon	A-28	Barley	1/16 "	44.0	3	22.98	44.0	2	(?)41.40	-18.42
Latendresse, Orville	A-34	Wheat	1/16 "	58.0	10	18.14	57.0	17	13.81	∔ 4.33
Natwick, Raymond	G-37	Barley	1/16 "	41.0	3	33.83	41.0	4	24.42	∔ 9.41

SUGGESTED PROCEDURE FOR OBTAINING ACCURATE YIELD DETERMINATIONS WHEN THRESHING IS DONE BY A FARM COMBINE

1. A sample from a 1/8 or 1/4 acre block will be adequate to give a representative yield figure. These blocks should be selected from a representative area of the field and both the fertilized or treated area and the check block should be taken from comparable areas.

   Use the first full windrow on either side of the dividing line between the fertilized or treated area and the check block, skipping the windrow that overlaps the two areas.

   Mark the windrows to be threshed for yield determinations at the time of windrowing. Otherwise it may not be possible to identify the various areas.

2. For a 1/8 acre area, thresh a length of windrow in feet equal to 5445 divided by the width of the windrower in feet or the width of the combine if the grain is straight combined.

3. For a 1/4 acre area, thresh a length of windrow in feet equal to 10890 divided by the width of windrow in feet or combine if straight combined.

4. The following chart shows the length of windrow in feet required for the common widths of combines for a 1/32, 1/16, 1/8 or a 1/4 acre block.

WIDTH OF CUT	LENGTH OF WINDROW			
	1/32	1/16	1/8	1/4
6 feet	227 feet	454 feet	908 feet	1816 feet
8 feet	170.25	340.5	681	1362
10 feet	132.3	272.6	545	1090
12 feet	113.5	227	454	908
14 feet	97.25	194.5	389	778
16 feet	85	170	340	680

5. Run the combine until empty before starting to thresh the measured length. Thresh the windrow measured above and run the combine until it is again empty after reaching the end of the windrow. Catch the output in sacks so it can be weighed and test weights determined later. The combine tank need not be emptied if sacks are used.

6. Multiply the yield of grain from this area by 8 or 4 to get the yield per acre.

The leafy spurge was sprayed only once, early in June with plants in the bud stage with 20% of plants flowered. 360 acres were sprayed by a privately owned aircraft.

Density of the spurge on various areas sprayed varied from scattered to very dense, with all graduations in between. The spurge was found mainly in association with prairie grasses, but small clumps of Wolfberry (Symphoricarpus alba) were present.

The herbicide used in spurge control was the ester of 2,4-D in diesel fuel carrier, applied at the rate of 1.5 pounds acid equivalent per acre mixed 15 gallons of 2,4-D in 85 gallons of diesel fuel. This mixture was applied at the rate of 2.8 gallons per acre, 2.4 gallons of which was diesel fuel.

All spraying was done on June 1 and 2, 1955.

100% top kill was the immediate result of the spray application followed later by extensive regrowth. Of the sprayed area, 88 acres were later grazed and 178 acres were cut for hay by refuge permittees.

RECORDED 11/705

Total costs of the operation is itemized below:

2,4-D	190 Gals. @	2.44	$46.36
Diesel Fuel	1175 Gals. @	.158	185.65
Application	360 acres @	.70	252.00
	Total Costs;		$484.01

Herbicides on hand at the end of the year include 150 gallons of 2,4-D ester and 18 gallons of 2,4,5-T.

VI. PUBLIC RELATIONS

A. Recreational Uses

Public use of refuge facilities showed a substantial decline from previous years, attributed mainly to relatively poor fishing at open areas and a hunting season cut off early in November after an early freeze-up causing mass movements of waterfowl out of this part of the state. No permits have been issued for putting fish houses on the refuge and very little ice fishing activity has been noted.

Visitor use days compiled over the year from observations of Refuge Personnel are as follows:

1. Hunting Use - 2,500
2. Fishing Use - 7,000
3. Miscellaneous Use 2,100

11,600

B. Refuge Visitors

Date	Name	Affiliation	Purpose
9/10	R. Murdy	S.Dak. Dept.	Visit
9/10	L. Ramelli	Crescent Lake Mgr.	Visiting Fireman
9/26	J. D. Smith	Ass't Supvr. Game Mgt.	Courtesy Call
9/26-27	Rod Brevig	U.S. Game Mgt. Agent	Hunt regulations
10/3	H. Dill	Sand Lake Refuge Mgr.	Pick up boom traps
10/7-8	C.T. Rollings	Ass't Refuge Supvr.	Inspection
	Mr. Olson	Fargo Forum	Newspaper Article
	Mr. Lindell	" "	" "
10/24	M. Worcester	PRC Dist. Agent-Bismarck	Pred control
	R. Henderson	" " Minot	" "
	E. Zahn	" " Granville	" "
11/7	R. Brevig	U.S. Game Mgt. Agt. Minot	Law Enforcement
11/10	E. Zahn	PRC - Granville	Trapper Inst. Meeting
12/20	R. Warden	Dow Chemical Co.	Chem Weed Control
12/27	G. Orton	N.D. Game & Fish Dept.	Deer Census

C. Refuge Participation

9/15 Frye and Gray attended hearing befor International Joint Comm. on use of Souris River water.

9/23 Gray and Frye appeared on Hunting and Fishing Club over KFYR-TV in Bismarck.

9/27 Gray and Hammond were on discussion panel at VFW Hunting Smoker in Minot.

9/30 Gray and Hammond presented talk on hunting regulation, gun safety, etc. to Upham High School Students.

10/1 Gray and Hammond participated in road block game checking station at entrances to Minot.

10/12 Frye on KLPM program "Wildlife Review".

10/20 Gray supervised Upham Troop 24, Boy Scouts, on over-nite camp on refuge.

11/2 Gray and Hammond attended session of Missouri Basin Inter. Agency Committee in Minot - later appearance on Weekly "Wildlife Review" program on radio station KLPM.

D. Hunting

Hunter use days were down from previous years. Public shooting areas on the opening weekend were crowded with hunters though numbers were not comparable to 1953, the first year they were opened. Hunters in the area discovered that public shooting areas offered no better shooting than surrounding private land, if a person could find unposted lands in the area. Public shooting areas are used most heavily by inexperienced hunters, who have only gun and shells for equipment, dress-ed in oxfords and sport slacks, hoping to get their Thanksgiving goose.

Their enthusiasm dies after the first few days and seasoned goose hunters take over the chase. The afore mentioned individual is usually the one who wants station personnel to put him on a spot where a goose kill is assured.

Good weather prevailed during the month of October and little hunting was done on public shooting areas, boundary lines or private lands. Some geese and ducks were taken by hunters in stubble and corn fields however. Possibly many ducks could have been taken but North Dakota hunters prefer to by-pass them in hopes for a goose. Those hunters using water areas for duck shooting had to be content with fewer mallards than they were used to. Nice weather put these cagy birds out of range and most hunters bags showed predominently shovellers and gadwalls. Very few redheads, scaups or canvas-backs were taken, though scaup were numerous in the 357 area.

To summarize, hunting was poor to start, became proressively worse up to November 1, and ceased on November 2.

The following data collected by refuge personnel is presented for comparison to previous years.

Year	Visitor Days	Duck/H.D.	Goose/H.D.	Estimated Total Kill	
1953	5,694	.46	.19	Ducks	1,340
				Geese	613
1954	1,000	.40	.13	Ducks	1,000
				Geese	325
1955	700	.39	.09	Ducks	700
				Geese	250

Upland game bird hunters fared well if any effort was made in walking heavy cover. Road hunters after partridge and pheasants were not very successful. The 2½ day season on pheasants did not come close to harvesting the surplus cocks on private land around the refuge. Hunting pressure for pheasants was fairly heavy but posted land around the refuge cut down on the kill. Sharptails were plentiful but the kill was also small on this species due to light hunting pressure. Few European Partridge were taken in the area although they are fairly common.

Refuge personnel carried out law enforcement patrol and bag checks for the first two weeks but only occasionally the rest of October, as hunting was at a standstill. A general freeze-up curtailed all hunting of ducks in the area after November 1 and goose hunting by November 6.

There was no season for deer on the refuge or in the area this year, as the entire Souris River Loop was closed to deer hunting.

E. Fishing

See VI, A - Public Relations

F. Violations

Name	Violation	Disposition
Patnoude, Leroy	Hunting on Federal Refuge	Juvenile, loss of license 15 days
Miller, Darrell	" " " "	" "
Harmel, Norman	" " " "	$50.00, $5.00 costs, $15.00 suspended
Harmel, Donald	" " " " & Hunting ducks with auto.	$50.00, $5.00 costs, $15.00 suspended

VII. OTHER ITEMS

A. Items of Interest

Melvin R. Johnson, Refuge Clerk (Stenographer) GS-5 was promoted and transferred to the position of Administrative Asst, GS-7, Great Lakes Fishery Investigations, Ann Arbor, Michigan after 13 months at Lower Souris. We all wish Mel the best in his new assignment.

William J. Schmitz, Refuge Clerk (Typing) GS-5 assumed his duties at Lower Souris, replacing Mr. Johnson on December 20, 1955 transferring from Upper Souris Refuge. Their loss is our gain.

B. Photographs

All photographs in this report were taken by Mr. Hammond, and Mrs. Dean Johnson.

Credits

Johnson:	Sections I, II, parts of V & VI, NR 1, 1a, 2, 3, 5, 6, 7, 9
Frye:	Sections IV, VII, parts of III, V, VI, NR 8, 8a, 10 and 11
Gray:	Parts of section III
Schmitz:	Typing and assembling
Hammond:	Photographs

Respectfully submitted,

Donald V. Gray

Donald V. Gray
Refuge Manager

January 10, 1956

APPROVED:

Ira Burnett

Dragging field to locate nests prior to mowing.

Duck nest located by dragging.

Permittee trapper Adams' 1955 spring catch.

Unsprayed wheat.

Sprayed wheat - straight combining experiment.
Note lack of broad leafed plants.

Harvest operations by refuge personnel - straight combining experiment.

Aerial view of artificial nesting islands in 326 unit constructed by D-7 and dozer in 1953.

Control of marginal vegetation by borascu to provide loafing sites.

Cutting marginal vegetation with scythette for opening feeding areas (Johnson).

Use of feeding area by ducks during depredation season.

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE Lower Souris MONTHS OF September TO December, 19 55

(1) Species	(2) Weeks of reporting period: 9/3 (1)	9/10 (2)	9/17 (3)	9/25 (4)	10/1 (5)	10/8 (6)	10/16 (7)	10/22 (8)	10/29 (9)	11/5 (10)
Swans:										
Whistling				4	59	59	2,221	2,221	2,211	
Trumpeter										
Geese:										
Canada	300	360	600	430	1,000	1,000	1,275	1,275	1,275	300
Cackling										
Brant										
White-fronted		200	500	400	8,425	8,425	3,178	825	825	
Snow										
Blue					3	3	140	200		
Other										
Ducks:										
Mallard	72,000	60,000	60,000	25,000	25,000	25,000	30,000	30,000	22,000	1,500
Black	100	100								
Gadwall	11,000	10,000	10,000	10,000	10,000	10,000	2,000	2,000	500	
Baldpate	10,000	10,000	10,000	10,000	10,000	10,000	2,000	2,000	500	
Pintail	50,000	20,000	20,000	15,000	15,000	15,000	20,000	20,000	10,000	
Green-winged teal	200	1,000	1,000	1,000	500	200				
Blue-winged teal	10,000	10,000	10,000	2,000	1,000	300	200	200		
Cinnamon teal										
Shoveler	2,000	3,000	3,000	4,000	5,000	5,000	3,000	2,000		
Wood										
Redhead	2,000	2,600	2,600	3,000	5,000	6,000	2,000	2,000	500	
Ring-necked	10	10								
Canvasback	500	3,500	3,500	3,500	8,000	8,000	4,000	4,000	1,000	
Scaup	500	4,200	4,200	4,200	10,000	10,000	10,000	10,000	5,000	
Goldeneye										
Bufflehead										
Ruddy	400	400	400	1,000	1,000	1,000	100	100		
Other										
Coot:	26,000	70,000	70,000	50,000	30,000	30,000	1,000	1,000	500	

Int. Dup. Sec.,
Wash. D. C.

3-7150a
Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Lower Souris MONTHS OF September TO December, 1955

(1) Species	(2) Weeks of reporting period: 10/12	11	12	13	14	15	16	17	18	(3) Estimated waterfowl days use	(4) Production: Broods seen	(4) Production: Estimated total
Swans:												
Whistling										47,285		
Trumpeter												
Geese:												
Canada										54,705		
Cackling												
Brant												
White-fronted										159,446		
Snow												
Blue										2,422		
Other												
Ducks:												
Mallard		700								2,458,400		
Black										1,400		
Gadwall										458,500		
Baldpate										451,500		
Pintail										1,295,000		
Green-winged teal										27,300		
Blue-winged teal										235,900		
Cinnamon teal												
Shoveler										189,000		
Wood												
Redhead										179,900		
Ring-necked												
Canvasback										250,000		
Scaup										396,700		
Goldeneye												
Bufflehead												
Ruddy										30,800		
Other												
Coot:										1,949,500		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	47,285	2,221	
Geese	216,573	9,428	
Ducks	5,974,400	158,710	
Coots	1,949,500	70,000	

SUMMARY

Principal feeding areas 326, 332, and 341 Units.

Stubble fields on and off refuge.

Principal nesting areas

Reported by Refuge Personnel

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

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C. 37944
1953

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(Other than waterfowl)

Refuge Lower Souris Months of September to December 1945

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Sandhill Crane	2	8/3	Common	Sept.						
White Pelican			Common	Sept.						
Western Grebe			Common	Sept.						
Great Blue Heron			Abundant	Sept	1	11/1				
Black-crowned Night Heron			Common	Sept						
Cormorants			Common	Aug.						
II. Shorebirds, Gulls and Terns:										
Wilson Snipe			Common	Sept.						
Avocet			Abundant	Sept.						

(over)

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove	Abundant	9/15			Few	10/15		
White-winged dove								
IV. Predaceous Birds:								
Golden eagle	Winter resident							
Duck hawk	2	9/15						
Horned owl	Winter resident							
Magpie	Winter resident							
Raven								
Crow	~~Winter resident~~		1000	10/4				
Snowy Owl	1	11/5	Common	November				

Reported by Donald V. Gray

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

Interior—Duplicating Section, Washington, D. C. 82362

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Lower Souris Months of September * to December, 1954

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant									1,500	
European Partridge									400	
Sharp-tailed Grouse									1,500	

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

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

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

3-1753
Form NR-3
(June 1945)

BIG GAME

Refuge Lower Souris Calendar Year 1955

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re-stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
White-tailed Deer	f_1b 2960 f_2b 6945 M-G 39820 H_1 5210 A 3990	120	NONE				NONE			NONE		300	300	2:1

Remarks:

Reported by Donald V. Gray

INSTRUCTIONS

Form NR-3 - BIG GAME

(1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.

(2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated total number of young produced on refuge.

(4) REMOVALS: Indicate total number in each category removed during the year.

(5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.

(6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.

(7) TOTAL REFUGE POPULATION: Give the estimated population of <u>each</u> <u>species</u> on the refuge at period of its greatest abundance and also as of Dec. 31.

(8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

116008

3-1755
Form NR-5
(April 1946)

DISEASE

Refuge Lower Souris Year 1954/55

Botulism

Period of outbreak NONE

Period of heaviest losses

Losses:

	Actual Count	Estimated
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Areas affected (location and approximate acreage)

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.

Conditions of vegetation and invertebrate life

Remarks

Lead Poisoning or other Disease

Kind of disease NONE

Species affected

Number Affected Species	Actual Count	Estimated

Number Recovered

Number lost

Source of infection

Water conditions

Food conditions

Remarks

3-1756
Form NR-6
(April 1946)

FISH

Refuge Lower Souris Year 19 55

Species	Relative Abundance	Sport Fishing		Commercial Fishing		Restocking		Number removed for Restocking
		Man days Fishing	Number Taken	No. of Permits	Pounds Taken	Number Stocked	Area Stocked	
Common Sucker	Common							
Common Bullhead	Occasional							
Northern Dace	Present							
Common Shiner	Present							
Northern Pike	Abundant	7,000 use days						
Walleyed Pike	Present							
Yellow Perch	Present							

REMARKS:

3-1757
Form NR-7
(April 1946)

PLANTINGS
(Marsh - Aquatic - Upland)

Refuge Lower Souris Year 1954 55

Species	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount & Nature of Propagules	Date of Planting	Survival	Cause of Loss	Remarks
NONE								

TOTAL ACREAGE PLANTED:

Marsh and aquatic.....
Hedgerows, cover patches.....
Food strips, food patches.....
Forest plantings.....

3-1758
Form NR-8
(April 1946)

CULTIVATED CROPS

Refuge Lower Souris Year 1955

Permittee (If farmed by refuge personnel, so indicate)	Permit No.	Unit or Location	Crops Grown	Avg. Yield per Acre	Permittee's Share		Government's Share or Return				
							Harvested		Unharvested		Compensatory Services, or Cash Revenue
					Acres	Bu. Harvested	Acres	Bu.	Acres	Bu.	
Lee, Selmer		A-1	Wheat	20	59	1180					
			Barley	28	28	784	25	700			
			Oats	20	24	480					
			Millet	19			12	228			37 acres fallow
Sivertson, Gilbert		A-2	Wheat	12	54	648					
			Barley	15	1	15	29	435			
			Oats	30	12	360					25 acres fallow
Sivertson, Alfred		A-3	Wheat	18	70	1260					
			Barley	30	56	1680	49	1470			71 acres fallow
Grann, Lawerence		A-4	Barley	25	10	250	4	100			
			Oats	40	7	280					
			Alfalfa		7	7 tons					14 acres fallow
Lee, Lester		A-5 & 7	Durum	16	37	587					
			Wheat	13	24	475	16	150			
			Barley	27	28	815	12	280			
			Flax	7	67	484					21 acres fallow
Anderson, Alden		A-6	Barley	12	25	300	8	96			30 acres fallow
Deschamp, Frank		A-8 & 9	Wheat	10	18	180					
			Barley	12	17	204	16	128			
			Flax	8	20	160					

This image contains all information on the document.

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS

Crops Report Form NR-8 should be prepared on a calendar-year
rops harvested or utilized during the calendar year and sub-
December 31 refuge report.

- List each permittee separately. If lands of the refuge are
e personnel or hired labor, this should be indicated in the Per-

- List the number of the Special Use Permit issued to the in-

ation - The Unit No. or name specified in the Economic Use Plan
d in this column.

n - A separate line of the form should be used for each crop
ermittee or by refuge personnel. This is important, since if
by each operator is not specifically enumerated, the report
alue for statistical purposes.

eld per Acre - It is important that the average yield per acre
own by each operator should be shown.

s Share - Only the number of acres harvested or utilized by the
is own benefit should be shown under the Acres column, and only
ushels of farm crops harvested by the permittee for himself
under the Bushels Harvested column. It is requested that all
be reduced to bushels wherever possible, or, as in the case
ting of seed such as that of sweet clover, alfalfa, bromegrass,
harvested crop in pounds may be shown. Timothy, alfalfa, or
sted by the permittee should be shown on Form NR-10 and should
the Permittee's Share column.

's Share or Return - Harvested - Show the number of bushels har-
Government and the acreage from which this share is harvested,
raised by refuge personnel and by permittees. Unharvested - show
r of acres of crops allowed to remain unharvested as food and
ife. An estimate of the number of bushels of grain that is avail-
ldlife in such unharvested crops should be shown in the Bushels

y Services, or Cash Revenue - Show other services received by
in cooperative farming activities, the number of acres of food
for wildlife, the amount of wildlife crops not otherwise re-
planted by cooperators for the Service, or the cultivation of
tions. If the permit is on a fee basis, the total cash revenue
Service.

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3-1758
Form NR-8
(April 1946)

CULTIVATED CROPS

Refuge Lower Souris Year 1955

Permittee (If farmed by refuge personnel, so indicate)	Permit No.	Unit or Location	Crops Grown	Avg. Yield per Acre	Permittee's Share		Government's Share or Return				
							Harvested		Unharvested		Compensatory Services, or Cash Revenue
					Acres	Bu. Harvested	Acres	Bu.	Acres	Bu.	
Olson, Theo		A-10	Barley	24	35	840	11	264			15 acres fallow
Krogen, Selmer		A-11	Wheat	10	15	150					
			Barley	20	3	60	11	220			
			Alfalfa		15	2½ tons					13 acres fallow
Vedquam, Richard		A-12	Durum	12	30	360					
			Barley	25			10	250			
			Oats	25	34	850	11	275			
Scheflo, Rudolph		A-13	Wheat	12	9	110					
			Barley	19	3	47	5	94			
			Alfalfa		5	5 tons					10 acres fallow
Teske, Max		A-15 & 16	Wheat	14	35	500					
			Barley	11	21	250	9	170			
			Millet	3			10	30			10 acres fallow
Rubbert, Lloyd		A-17	Wheat	20	26	525					
			Barley	33	12	408	12	400			33 acres fallow
Dagner, Raymond		A-19	Wheat	8	33	264					
			Barley	10	2	20	15	150			
			Alfalfa		11	11 tons					44 acres fallow
Brandt, Harold		A-18	Wheat	4	45	180	15	60			
			Barley	8	30	240	10	80			30 acres fallow

This image contains all information on the document.

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS

Crops Report Form NR-8 should be prepared on a calendar-year
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is own benefit should be shown under the Acres column, and only
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under the Bushels Harvested column. It is requested that all
be reduced to bushels wherever possible, or, as in the case
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Government and the acreage from which this share is harvested,
rated by refuge personnel and by permittees. Unharvested - show
r of acres of crops allowed to remain unharvested as food and
life. An estimate of the number of bushels of grain that is avail-
ldlife in such unharvested crops should be shown in the Bushels

y Services, or Cash Revenue - Show other services received by
in cooperative farming activities, the number of acres of food
for wildlife, the amount of wildlife crops not otherwise re-
planted by cooperators for the Service, or the cultivation of
tions. If the permit is on a fee basis, the total cash revenue
Service.

8-NR Form
(April 1942)

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3-1758
Form NR-8
(April 1946)

CULTIVATED CROPS

Refuge Lower Souris Year 1955

Permittee (If farmed by refuge personnel, so indicate)	Permit No.	Unit or Location	Crops Grown	Avg. Yield per Acre	Permittee's Share		Government's Share or Return				
							Harvested		Unharvested		Compensatory Services, or Cash Revenue
					Acres	Bu. Harvested	Acres	Bu.	Acres	Bu.	
Brandt, Dayton		A-20	Wheat	4	18	72					
			Barley	5	22	110	14	68			18 acres fallow
Moum, Daryl		A-21	Barley	6	15	90	5	30			
Fitchner, August		A-22	Wheat	9	13	107					
			Barley	16	16	203	9	113			11 acres fallow
Moen, Orris		A-25	Barley	22	38	760	12	300			44 acres fallow
Hanson, Rolf		A-26	Wheat	10	16	160					
			Barley	28	36	1000	11	230			
			Millet	8			9	75			
			Alfalfa		7	9 tons					20 acres fallow
Faa, Berry		A-27	Barley	18			5	90			
			Oats	23	15	350					
Brandt, Gideon		A-28	Wheat	12	47	564					
			Barley	15	10	150	17	375			
Benidictson, Leifur		A-29	Wheat	11	59	625					
			Barley	22	35	770	38	725			
			Oats	29	10	288					
			Corn		10	25 tons					
			Alfalfa		20	20 tons					
					10	1055#	10	1055#			30 acres fallow

This image contains all information on the document.

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS

l Crops Report Form NR-8 should be prepared on a calendar-year
rops harvested or utilized during the calendar year and sub-
December 31 refuge report.

- List each permittee separately. If lands of the refuge are
e personnel or hired labor, this should be indicated in the Per-

- List the number of the Special Use Permit issued to the in-

ation - The Unit No. or name specified in the Economic Use Plan
d in this column.

n - A separate line of the form should be used for each crop
ermittee or by refuge personnel. This is important, since if
by each operator is not specifically enumerated, the report
alue for statistical purposes.

eld per Acre - It is important that the average yield per acre
own by each operator should be shown.

s Share - Only the number of acres harvested or utilized by the
is own benefit should be shown under the Acres column, and only
ushels of farm crops harvested by the permittee for himself
under the Bushels Harvested column. It is requested that all
be reduced to bushels wherever possible, or, as in the case
ting of seed such as that of sweet clover, alfalfa, bromegrass,
harvested crop in pounds may be shown. Timothy, alfalfa, or
sted by the permittee should be shown on Form NR-10 and should
the Permittee's Share column.

's Share or Return - Harvested - Show the number of bushels har-
Government and the acreage from which this share is harvested,
raised by refuge personnel and by permittees. Unharvested - show
r of acres of crops allowed to remain unharvested as food and
ife. An estimate of the number of bushels of grain that is avail-
ldlife in such unharvested crops should be shown in the Bushels

ry Services, or Cash Revenue - Show other services received by
in cooperative farming activities, the number of acres of food
for wildlife, the amount of wildlife crops not otherwise re-
planted by cooperators for the Service, or the cultivation of
tions. If the permit is on a fee basis, the total cash revenue
Service.

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3-1758
Form NR-8
(April 1946)

CULTIVATED CROPS

Refuge Lower Souris Year 1955

Permittee (If farmed by refuge personnel, so indicate)	Permit No.	Unit or Location	Crops Grown	Avg. Yield per Acre	Permittee's Share		Government's Share or Return				
							Harvested		Unharvested		Compensatory Services, or Cash Revenue
					Acres	Bu. Harvested	Acres	Bu.	Acres	Bu.	
Rice, Fred		A-30	Wheat	7	34	240					
			Barley	20	11	220	14	80	6	120	
			Alfalfa		16	900#					
Latendresse, Leo		A-31 & 32	Wheat	12	40	500					
			Barley	25	30	750					
			Corn		20	2 tons			4		
			Alfalfa		10	10 tons					15 acres fallow
Hillman, Cris		A-33	Wheat	11	75	812			14		
			Barley	18	6	110	22	370			
			Oats	30	18	540					
			Rye	22	20	450					
			Corn		20	10 tons					
			Millet	7			4	30			
			Alfalfa		16	12 tons					14 acres fallow
Latendresse, Orville		A-34	Wheat	9	34	320					
			Millet	12			10	120			6 acres fallow
Hillman, Pete		A-35 & 37	Durum	12	17	200					
			Wheat	15	15	220					
			Barly	22	16	400	18	355			
			Oats	30	16	480					

This image contains all information on the document.

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS

Crops Report Form NR-8 should be prepared on a calendar-year
ops harvested or utilized during the calendar year and sub-
December 31 refuge report.

- List each permittee separately. If lands of the refuge are
personnel or hired labor, this should be indicated in the Per-

- List the number of the Special Use Permit issued to the in-

tion - The Unit No. or name specified in the Economic Use Plan
in this column.

- A separate line of the form should be used for each crop
rmittee or by refuge personnel. This is important, since if
by each operator is not specifically enumerated, the report
lue for statistical purposes.

ld per Acre - It is important that the average yield per acre
wn by each operator should be shown.

Share - Only the number of acres harvested or utilized by the
s own benefit should be shown under the Acres column, and only
ushels of farm crops harvested by the permittee for himself
under the Bushels Harvested column. It is requested that all
be reduced to bushels wherever possible, or, as in the case
ing of seed such as that of sweet clover, alfalfa, bromegrass,
harvested crop in pounds may be shown. Timothy, alfalfa, or
ted by the permittee should be shown on Form NR-10 and should
the Permittee's Share column.

s Share or Return - Harvested - Show the number of bushels har-
Government and the acreage from which this share is harvested,
raised by refuge personnel and by permittees. Unharvested - show
of acres of crops allowed to remain unharvested as food and
fe. An estimate of the number of bushels of grain that is avail-
ldlife in such unharvested crops should be shown in the Bushels

y Services, or Cash Revenue - Show other services received by
n cooperative farming activities, the number of acres of food
or wildlife, the amount of wildlife crops not otherwise re-
planted by cooperators for the Service, or the cultivation of
ions. If the permit is on a fee basis, the total cash revenue
Service.

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3-1758
Form NR-8
(April 1946)

CULTIVATED CROPS

Refuge Lower Souris Year 1955

Permittee (If farmed by refuge personnel, so indicate)	Permit No.	Unit or Location	Crops Grown	Avg. Yield per Acre	Permittee's Share		Government's Share or Return				
							Harvested		Unharvested		Compensatory Services, or Cash Revenue
					Acres	Bu. Harvested	Acres	Bu.	Acres	Bu.	
Hillman, Pete		A-35 & 37	Corn		16	8 tons					
			Alflafa		4	7 tons					
Natwick, Raymond		A-36	Wheat	20	88	1760					
			Barley	14			38	526			
			Oats	20	16	320	20	338			
			Rye	20	40	800					105 acres fallow
Christianson, G.T.		A-38	Wheat	16	28	450					
			Barley	21			18	380			
			Oats	28	4	112	9	275			
			Rye	18	22	400					
			Corn		16	45 tons					
			Alflafa		26	50 tons					
Focho, Edwin		A-39 & 40	Barley	11	60	430	20	280			20 acres fallow
Atkinson, Harlin		A-41	Durum		5	14	70				
			Wheat		8		9	70			
			Alflafa		14	6 tons					30 acres fallow
Brandt, Calvin		G-33	Durum	9	8	72					
			Wheat	10	46	460					
			Barley	13	38	543	30	360			

This image contains all information on the document.

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS

Crops Report Form NR-8 should be prepared on a calendar-year
rops harvested or utilized during the calendar year and sub-
December 31 refuge report.

- List each permittee separately. If lands of the refuge are
e personnel or hired labor, this should be indicated in the Per-

- List the number of the Special Use Permit issued to the in-

ation - The Unit No. or name specified in the Economic Use Plan
d in this column.

n - A separate line of the form should be used for each crop
ermittee or by refuge personnel. This is important, since if
by each operator is not specifically enumerated, the report
alue for statistical purposes.

eld per Acre - It is important that the average yield per acre
own by each operator should be shown.

s Share - Only the number of acres harvested or utilized by the
is own benefit should be shown under the Acres column, and only
ushels of farm crops harvested by the permittee for himself
under the Bushels Harvested column. It is requested that all
be reduced to bushels wherever possible, or, as in the case
ting of seed such as that of sweet clover, alfalfa, bromegrass,
harvested crop in pounds may be shown. Timothy, alfalfa, or
sted by the permittee should be shown on Form NR-10 and should
the Permittee's Share column.

's Share or Return - Harvested - Show the number of bushels har-
Government and the acreage from which this share is harvested,
raised by refuge personnel and by permittees. Unharvested - show
r of acres of crops allowed to remain unharvested as food and
ife. An estimate of the number of bushels of grain that is avail-
ldlife in such unharvested crops should be shown in the Bushels

ry Services, or Cash Revenue - Show other services received by
in cooperative farming activities, the number of acres of food
for wildlife, the amount of wildlife crops not otherwise re-
planted by cooperators for the Service, or the cultivation of
tions. If the permit is on a fee basis, the total cash revenue
Service.

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3-1758
Form NR-8
(April 1946)

CULTIVATED CROPS

Refuge Lower Souris Year 1955

Permittee (If farmed by refuge personnel, so indicate)	Permit No.	Unit or Location	Crops Grown	Avg. Yield per Acre	Permittee's Share		Government's Share or Return				
							Harvested		Unharvested		Compensatory Services, or Cash Revenue
					Acres	Bu. Harvested	Acres	Bu.	Acres	Bu.	
Goodman, Svein		G-39	Durum	12	27	324	8	96			
			Barley	20	7	140	5	100			
			Oats	25	30	750	12	300			

Summary of Crops Grown:	Crop	Acreage	Permittee's Share		Government's Share				Total Revenue	
			Acres	Bushels	Harvested		Unharvested		$	Ave. Yield
					Acres	Bu.	Acres	Bu.		
Interior Duplicating Section, Wash.D.C.	Durum	133	125	1,613	8	96				13
	Wheat	937	870	11.762	61	280	6	120		13
	Barley	1,694	611	11.428	483	9.464				19
	Oats	237	169	4,908	67	1,188				26
	Rye	82	82	1,650						20
	Millet	52			52	503				10
	Flax	87	87	644						7

Interior—Duplicating Section, Washington, D. C. 84268

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS

Cultivated Crops Report Form NR-8 should be prepared on a calendar-year basis for all crops harvested or utilized during the calendar year and submitted with the December 31 refuge report.

Permittee - List each permittee separately. If lands of the refuge are farmed by refuge personnel or hired labor, this should be indicated in the Permittee column.

Permit No. - List the number of the Special Use Permit issued to the individual.

Use or location - The Unit No. or name specified in the Economic Use Plan should be listed in this column.

Crops Grown - A separate line of the form should be used for each crop grown by each permittee or by refuge personnel. This is important, since if each crop grown by each operator is not specifically enumerated, the report will be of no value for statistical purposes.

Average Yield per Acre - It is important that the average yield per acre of each crop grown by each operator should be shown.

Permittee's Share - Only the number of acres harvested or utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. It is requested that all crops harvested be reduced to bushels wherever possible, or, as in the case with the harvesting of seed such as that of sweet clover, alfalfa, bromegrass, etc., the total harvested crop in pounds may be shown. Timothy, alfalfa, or other hay harvested by the permittee should be shown on Form NR-10 and should not be shown in the Permittee's Share column.

Government's Share or Return - Harvested - Show the number of bushels harvested for the Government and the acreage from which this share is harvested, both for grain raised by refuge personnel and by permittees. Unharvested - show the exact number of acres of crops allowed to remain unharvested as food and cover for wildlife. An estimate of the number of bushels of grain that is available for the wildlife in such unharvested crops should be shown in the Bushels column.

Compensatory Services, or Cash Revenue - Show other services received by the Government in cooperative farming activities, the number of acres of food strips planted for wildlife, the amount of wildlife crops not otherwise reported that are planted by cooperators for the Service, or the cultivation of wildlife plantations. If the permit is on a fee basis, the total cash revenue received by the Service.

3-1570
NR-8a

REFUGE GRAIN REPORT

Refuge Lower Souris Months of May through December, 1955

(1) Variety*	(2) On Hand Beginning of Period	(3) Received During Period	(4) Total	(5) Grain Disposed of				(6) On Hand End of Period	(7) Proposed or Suitable Use*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Mixed Grain	20,260	600									
Durum		96									
Wheat		3,592									
Barley		14,609									
Oats		1,752									
Rye		178	41,087			13,015	13,015	28,072		28,072	
Tame Millets	588		588	136		20	156	433	200	85	148
Alfalfa Seed	4,758#		4,758#	500#	1900#		2,400#	2,358#			2,358#

(8) Indicate shipping or collection points

(9) Grain is stored at Refuge bins.

(10) Remarks Grain received from Des Lacs, Lostwood, Upper Souris, and Long Lake Refuges.

*See instructions on back.

16—61482-1

NR-8a

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

(1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR–9.

(3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.

(4) A total of columns 2 and 3.

(6) Column 4 less column 5.

(7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.

(8) Nearest railroad station for shipping and receiving.

(9) Where stored on refuge: "Headquarters granary," etc.

(10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

16—61482-1 U. S. GOVERNMENT PRINTING OFFICE

3-1760
Form NR-10
(April 1946)

HAYING AND GRAZING

Refuge Lower Souris Year 194/55

Permittee	Permit No.	Unit or Location	Actual Acreage Utilized	Animal Use Months	Tons of Hay Harvested	Period of Use From - To	Rate	Total Income	Remarks
Anderson, A.C.	24131	G-9		39.87		7/16 - 11/15	1.00	39.87	
Atkinson, H. J.	24318	G-47		57.00		6/1 - 11/15	1.00	57.00	
Bell, John	24311	G-58		35.80		6/1 - 11/15	1.00	35.80	
Benson, J. K.	24561	G-34		252.30		6/1 - 11/15	1.00	252.30	
Block, Wm.	24313	G-54		129.00		6/15 - 11/15	1.00	129.00	
Boehnke, Robert	22079	G-36		240.00		6/15 - 11/15	1.00	240.00	
Brandt, Gideon	24137	G-30		24.99		9/9 - 11/15	1.00	24.99	
Brandt, John	24306	G-28&29		135.00		6/1 - 11/15	1.00	135.00	
Ellsworth, L.	24567	G-55		147.00		6/15 - 11/15	1.00	147.00	
Evenson, Justin	24565	G-23		174.00		7/16 - 11/15	1.00	174.00	
Ferstad, Julius	24319	G-17		22.50		7/16 - 11/15	1.00	22.50	
Fraser, John	24107	G-2		226.69		7/16 - 11/15	1.00	226.69	
Getzlaff, Albert	24315	G-53		359.00		6/15 - 11/15	1.00	359.00	
Gibbs, Percy	24309	G-56		30.48		6/1 - 11/15	1.00	30.48	
Halley, K. C.	24316	G-51		270.00		6/15 - 11/15	1.00	270.00	
Hoff, Sam	24314	G-43		246.00		6/1 - 11/15	1.00	246.00	
Haugen, Henry	24130	G-10		32.00		7/16 - 11/15	1.00	32.00	
Hegg, Orvin	24310	G-8		63.00		7/16 - 11/15	1.00	63.00	
Jensen, Thor	24576	G-26		148.20		7/16 - 11/15	1.00	148.20	
Johnson, Emil	24302	G-41		32.00		6/15 - 11/15	1.00	32.00	
Kitzman, L.	24564	G-46		241.50		6/7 - 11/15	1.00	241.50	
Klabo, Walter	24907	G-16		72.33		7/16 - 11/15	1.00	72.33	
Klebe, Robert	24308	G-44		84.00		6/1 - 11/15	1.00	84.00	
Kvalheim, A.	24126	G-21		296.00		7/16 - 11/15	1.00	296.00	
Lee, Selmer	24092	G-1		22.0		7/16 - 11/15	1.00	22.00	
Latendresse, Ed.	24061	G-35&38		256.69		7/16 - 11/15	1.00	256.69	

This image contains all information on the document.

3-1760
Form NR-10
(April 1946)

HAYING AND GRAZING

Refuge Lower Souris Year 1954/55

Permittee	Permit No.	Unit or Location	Actual Acreage Utilized	Animal Use Months	Tons of Hay Harvested	Period of Use From		To	Rate	Total Income	Remarks
Liebelt, Herbert	24317	G-48		38.00		6/15	-	11/15	1.00	38.00	
Matthews, C. A.	24132	G-2		37.40		7/19	-	11/15	1.00	37.40	
Miller, Carl	24563	G-52		455.11		6/1	-	11/15	1.00	455.11	
Moen, Edwin	24579	A-24		78.76		7/16	-	11/15	1.00	78.76	
Natwick, Herbert	24304	G-50		501.00		6/1	-	11/15	1.00	501.00	
Natwick, Ray	24305	G-40		188.50		6/15	-	11/15	1.00	188.50	
Nermyr, Palmer	24572	G-13		142.50		7/16	-	11/15	1.00	142.50	
Peterson, Fred	24312	G-49		195.00		6/15	-	11/15	1.00	195.00	
Prellwitz, Walter	24307	G-59		61.00		6/1	-	11/15	1.00	61.00	
Schelflo, Rudolph	22030	G-22		37.67		7/16	-	11/15	1.00	37.67	
Solseng, Lester	24568	G-12		38.00		7/16	-	11/15	1.00	38.00	
Scheflo, S. M.	24562	G-19		18.00		7/16	-	11/15	1.00	18.00	
Swanson, Ellard	24303	G-42		270.00		6/1	-	11/15	1.00	270.00	

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3-1760
Form NR-10
(April 1946)

HAYING AND GRAZING

Refuge Lower Souris Year 1954 55

Permittee	Permit No.	Unit or Location	Actual Acreage Utilized	Animal Use Months	Tons of Hay Harvested	Period of Use From - To	Rate	Total Income	Remarks
Almquist, J. O.	24130	G-33					1.50	12.50	Dep. forfeited
Asmundson, Julius	24066	H-12&17			29.5	8/1 - 2/29	1.50	44.05	
Atkinson, H. J.	24119	H-22			63.0		1.50	94.50	
Badke, Fred	24136	H-10			37.0		1.50	55.50	
Bell, John	24089	H-24					1.50	20.00	Deposit forfeited
Benson, J. K.	24096	H-5 & G-33			75.67		1.50	113.50	
Biberdork, John	24076	H-22			60.0		1.50	90.00	
Biberdorf, L.	24078	H-22			13.5		1.50	20.25	
Biberdorf, Wm.	24077	H-22			38.0		1.50	57.00	
Bjokne, Rueben	24095	G-2					1.50	15.00	Deposit forfeited
Boye, Walter J.	24069	G-39			87.0		1.50	130.50	
Boehnke, Alfred	24086	13,15,16			163.00		1.50	244.50	
Brandt, Ephraim	24577	G-33			13.67		1.50	20.49	
Brandt, Gideon	24093	A-28			66.0		1.50	99.00	
Cook, Johann	24088	H-23			48.0		1.50	72.00	
Dreyer, Hugo	24129	H-21			35.0		1.50	52.50	
Ellsworth, L.	24111	H-23			57.5		1.50	86.25	
Erdman, Ernest	24070	H-16			58.0		1.50	87.00	
Einarson, Joe	24067	H-17 & 19			55.0		1.50	82.50	
Faa, Berry	24082	G-32			8.5		1.50	12.75	
Fecho, Edwin	24075	H-16 & 17			280.0		1.50	420.00	
Ferstad, Nick	24320	G-14 & 17			23.0		1.50	34.50	
Fraser, John	24108	G-2					1.50	5.00	Deposit forfeited
Garnant, G. R.	24068	H-17			52.0		1.50	78.00	
Getzlaff, Melvin	24080	H-16			168.0		1.50	252.00	

This image contains all information on the document.

3-1760
Form NR-10
(April 1946)

HAYING AND GRAZING

Refuge Lower Souris Year 1954 55

Permittee	Permit No.	Unit or Location	Actual Acreage Utilized	Animal Use Months	Tons of Hay Harvested	Period of Use From - To	Rate	Total Income	Remarks
Gibbs, Morris	24117	H-23			80.0	8/1 - 2/29	1.50	120.00	
Goodman, Alex	24575	H-17			53.0		1.50	79.50	
Goodman, Barthi	24065	H-17			163.0		1.50	244.50	
Goodman, H. J.	24125	H-9			20.0		1.50	30.00	
Goodman, Mandie	24123	H-10			28.3		1.50	42.45	
Goodman, Ole	24074	H-17			17.0		1.50	25.50	
Hanson, Rolf	24101	G-33			9.75		1.50	14.63	
Halley, K. C.	24112	H-23			77.5		1.50	116.25	
Hoff, Sam	24228	H-23			36.0		1.50	54.00	
Jensen, Thor	24102	5,6,7, G-32			34.25		1.50	51.37	
Hovland, Morris	24573	H-16			44.0		1.50	66.00	
Johnson, Emil	24113	H-17			57.0		1.50	85.50	
Johnson, Garfield	24121	H-17			35.0		1.50	52.50	
Kitzman, L.	24580	G-46			29.4		1.50	44.10	
Kitz man, W.	24081	H-23			45.0		1.50	67.50	
Klebe, Robert	24115	H-16			150.0		1.50	225.00	
Klebe, Edwin	24104	G-39			53.0		1.50	79.50	
Klabo, Walter	24098	G-18			5.0		1.50	10.00	Deposit exceeded bil
Lashman, Wm.	24071	H-23			103.0		1.50	154.50	
Latendresse, Ed.	24085	H-8			28.0		1.50	42.00	
Lehman, Ed.	24061	H-16			61.0		1.50	91.50	
Lazier, Chas.	24064	H-17					1.50	5.00	Deposit forfeited.
Lee, Selmer	21640	H-2					1.50	15.00	Deposit forfeited.
Liebelt, Herbert	24118	H-21			48.0		1.50	72.00	
Lervik, Harold	24083	A-19			20.0		1.50	30.00	

This image contains all information on the document.

3-1760
Form NR-10
(April 1946)

HAYING AND GRAZING

Refuge Lower Souris Year 19 55

Permittee	Permit No.	Unit or Location	Actual Acreage Utilized	Animal Use Months	Tons of Hay Harvested	Period of Use From - To	Rate	Total Income	Remarks
Matthews, C. A.	24090	G-2				8/1 - 2/29	1.50	5.00	Deposit forfeited.
Moen, Edwin	24578	A-23			32.0		1.50	48.00	
Moen, Rueben	24124	G-25			21.0		1.50	31.50	
Natwick, Herbert	24062	H-20 & 23			132.0		1.50	198.00	
Natwick, Raymond	24127	H-22			9.0		1.50	13.50	
Nermoe, Jesse	24105	G-24			6.0		1.50	10.00	Deposit exceeded bill.
Nordmarok, Ted	24106	G-11			8.4		1.50	12.60	
O'Brien, E. E.	24099	G-32			26.0		1.50	39100	
Prellwitz, W.	24110	H-23			63.0		1.50	94.50	
Resler, Arthur	24109	H-16 & 18			75.0		1.50	112.50	
Roalkvam, L.	24122	H-23			68.25		1.50	102.37	
Ringen, Olaf	24114	H-16			39.0		1.50	58.50	
Rognlien, M.	24063	H-23			65.0		1.50	97.50	
Shafer, Fred	24116	H-23			54.0		1.50	81.00	
Scheflo, Rudolph	24087	A-13			4.5		1.50	8.00	Deposit exceeded bill.
Sivertson, G.	24164	H-1			45.0		1.50	67.50	
Solseng, Lester	24569	G-24			27.9		1.50	41.85	
Stigen, Raymond	24073	H-23			24.0		1.50	36.00	
Swanson, Ellard	24079	H-17			137.5		1.50	206.25	
Teske, Max	24094	G-24			9.5		1.50	14.25	
Torr, Cecil	24072	H-23			32.0		1.50	48.00	

Totals:

Acreage grazed 22,981 Animal use months 5698.29 Total income Grazing 5698.29

Acreage cut for hay 7,367 Tons of hay cut 3507.59 Total income Haying 5343.41

10 9 G / 5 6 / 5.3 H.

3-1761
Form NR-11

TIMBER REMOVAL

Refuge Lower Souris Year 1955

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
Atkinson, Harlin	22076			11 cords	2.50	27.50		Ash (fuel)
				9 cords	5.00	45.00		Ash (poles)
Bell, John	22064			1.4 cords	2.50	3.50		Aspen
Goodman, Barthi	22074			4 cords	5.00	20.00		Ash (poles)
				2 cords	.50	1.00		Aspen
Hillerud, Stoner	22305			5 cords	5.00	25.00		Ash (poles)
Johnson, Earl	22077			½ cord	5.00	5.00		Ash (poles)
Johnson, Henry	22075			3.5 cords	5.00	17.50		Ash (posts)
Klebe, Wallace	21633			10 cords	5.00	50.00		Ash (posts)
Lovly, Theo	24134					4.00		Deposit forfeited
Natwick, Herbert	22072			11 cords	5.00	55.00		Ash (poles)
				1 cord	.50	.50		Aspen
Raddatz, Herman	22073			9 cords	.50	4.50		Aspen
Shafer, Fred	24163			1 cord	5.00	5.00		Ash (poles)
Torr, Emery	24162					5.00		Deposit forfeited

Total acreage cut over..... Total income $ 268.00

No. of units removed B. F..... Method of slash disposal.....

Cords 68.9

Ties.....

.....

Interior—Duplicating Section, Washington, D. C. 24316

BRANCH OF WILDLIFE REFUGES NARRATIVE REPORTS

MR. SALYER _____ MISS BAUM _____

MR. GRIFFITH _____

Operations

MR. ~~REGAN~~ _____ MR. ~~DuPONT~~ PHD

Land Management

~~MR. ACKERMECHT~~ WA _____ ~~MR. [illegible]~~ Ken

Habitat Improvement

MR. ERICKSON R.C.E. MR. STILES _____

MR. KUBICHEK _____

Stenographers

_____ _____

REFUGE LOWER SOURIS PERIOD May-August 1955

PERSONNEL

Donald V. Gray . . . . . Refuge Manager

John R. Frye . . . . . Farm Planner
Refuge Manager

Dean R. Johnson. . . . . Assistant Refuge Manager

Roy W. Carlson . . . . . Foreman Mechanic

Alvin Brandt . . . . . .Foreman, Mixed Gang

Raymond F. Badke . . . . . Mechanic Helper

Charles I. Varty . . . . . Maintenanceman

Melvin R. Johnson. . . . . Refuge Clerk

****

Merrill C. Hammond . . . . Wildlife Management Biologist

Harold F. Duebbert . . . . . .Student Assistant
(June, July, and August)

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No photographs this period. Some were taken and will be shown in next report.

APPENDIX

News Releases - Sent to local Newspapers and Radio Stations.

I. GENERAL

A. Weather Conditions

Month	Precip.	1892-1952 Average	Maximum	Minimum
May	2.17	2.19	90	30
June	1.71	3.55	92	37
July	2.31	2.51	99	37
August	1.56	2.08	98	40

The average moisture for the period covered by this narrative is slightly lower than the 50 year average and considerably lower than 1954. Less moisture fell in June than normally is expected but July and August rains made moisture conditions adequate for good crops. Heavy rains fell in June northeast of Refuge and a good flow from river kept units in flooded conditions up into July. Harvest was not hindered by rains this year with harvest over 10 days to two weeks earlier than previous years.

Temperatures were not extreme during the period. The last frost occurred on May 10, 7 days earlier than 1955. The hottest day was July 21 when the temperature reached 99 degrees.

A damaging wind and a severe hail storm occurred on July 11. Damage to crops was limited to a 3 mile strip in the central portion of the Refuge.

B. Water Conditions

High water levels were prevalent throughout May and June. Flow in the river tapered off beginning early in July and Units were down at or near approved elevations by the first part of August. All radial gates at all structures were open wide at the beginning of the period and were not shut down until late in July when Units reached approved elevations.

Rubble-Masonry Unit: Water levels were very high in this Unit until late in July and as the flow in the river slacked off the Unit reached the approved lower elevations. This Unit is allowed to fluctuate with the river elevation until river falls below bottom of structure at Dam II.

320 Unit: All gates were kept opened wide throughout the period and levels were at or near approved elevation through the goose nesting season. This Unit was allowed to drain completely in order that the goose nesting islands can be

repaired or rebuilt as soon as it is possible to get heavy equipment into the Unit. The elevation varied from a high of 1424.30 on May 10 to the low of 1419.80 on August 30. At the present time the only water remaining in 320 Unit is in the river channel and in a few deeper sloughs and bays.

326 Unit: All gates were open wide until levels began dropping on July 18. Since that time gate adjustments have held this Unit at or near approved elevation. Water levels varied from 1419.84 to 1417.32 with an elevation of 1417.90 at the end of the period.

332 Unit: Gates in this Unit were also open wide to pass flood water through until the flow slacked off in the river. Gates were shut down beginning July 17 and the Unit has been held near approved elevation since that time. Approved elevation for this Unit was 1416.00 and elevations have varied from 1417.77 to 1415.05 during the period.

341 Unit: Levels were high through July 24 when the elevation dropped near approved elevation of 1413.50 and gate adjustments have held near this elevation since that time. This Unit is being held low to permit marsh farming operations in the southern portion.

357 Unit: High water levels were gradually lowered during May and June to near approved elevation of 1412.75. Then flow was constricted during construction of a new bridge on State Highway #5 and the elevation dropped rather suddenly to 1410.86 on July 6 after which levels were again raised to near the approved elevation. Pool elevation is 1412.90 at the end of the period.

C. Fires

None

II. WILDLIFE

A. Migratory Birds

1. Population and Behavior

a. Breeding Population

The following table presents and compares breeding population counts made on identical routes each year during the period from 1953 to 1955.

Species	1953	1954	1955
Mallard	81	22	24
Gadwall	64	34	33
Pintail	15	15	26
Baldpate	17	4	4
Green Wing Teal	3	2	0
Blue Wing Teal	166	58	78
Shoveller	22	7	10
Redhead	35	33	36
Canvasback	31	8	1
L. Scaup	27	24	24
Ruddy	22	11	16
Coots	30	5*	25
Totals	513	223	277

* Coots arrived late after census.

		% Dabblers	% Divers	% Coots
1953:	513	72	23	5
1954:	223	64	34	2
1955:	277	63	28	9

Breeding population in 1955, as indicated by this data, showed a slight increase over 1954 which had the lowest total in the past seven years. Though this makes breeding pairs at a low over 1953, brood data showed a large percentage of nesting ducks had successful broods.

The Coots were very numerous on the Refuge this year as shown by the large percentage in breeding population.

B. Aerial Waterfowl Populations

Three aerial counts of the entire area were obtained. The results of these counts appear on the following three pages.

During July the most abundant ducks seen were Gadwalls and Baldpates. The buildup of Mallards, Pintails and Blue Wing Teal was between August 2 and August 16. The last aerial count on August 29 indicated 117,000 Mallards and Pintails out of a total population of 182,000. Aerial counts on Aug. 30 in 1954 indicated 183,000 total population.

August 2, 1955
Kjos-pilot
Hammond - observer

WATERFOWL CENSUS

Lower Souris Refuge

Note: This census does not include all broods, as it was impossible to take time to scan water areas for them. Pintails and mallards estimated. It was apparent that some geese were missed.

	Total Ducks*	Est. Pin & Mallards	Canada Geese
Rubble masonry unit	100		
320 Unit	16,350	12,000	184 (1 swan)
326 Unit	10,350	3,000	
332 Unit	8,100	4,600	4
341 Unit			
So. Newburg road	4,900	2,500	
No. Newburg road	23.000	17.000	
	27,900	19,500	
357 Unit			
341 - #5	500		6
#5 - RR	7,600	4,000	
RR - West.-Landa road	150		
West.-Landa road - 357	700	200	
	8,950	4,200	
	71,750	43,300	194

Saw several flocks of bluewings
About 200 flightless and flying redheads in 357 Unit.

* and coots. Still many flightless ducks.

Plane check. A ground count in the Rubble Masonry Unit on 8/3 & 8/4 gave 225 adults, 44 brood hens with 288 young - 557 as compared with 100 estimate from the air.

August 16, 18, 1955
Boeker and Hammond
N754

Waterfowl Census

Lower Souris Refuge

	Total ducks and Coots	Estimated Pin. & Mall.
Rubble masonry unit	1,220	700
320 unit	12,880	7,000
326 unit	14,000	6,000
332 unit	19,500	15,000
341 unit		
South of Newburg road	5,700	3,000
North of Newburg road*	25,750	15,000
	31,450	18,000
357 unit		
341 to #5 highway	16,300	10,000
#5 to RR crossing	26,600	15,000
RR crossing to West.-Landa crossing	1,050	500
West.-Landa crossing to 357 dam	4,750	2.000
	48,700	27,500
North of 375 dam	450	200
River and sloughs, dam I to Thompson	250	
	128.450	74,400

* 12,650 in first two miles north of Newburg road.

70 geese seen in 320 unit

Photo and count at certain feeding stations:

320 dike - 4,500 on 8/16 (no photo)
R.M. - 700 on 8/16 (no photo)
Airport - 1,200 " "
Hdq. - none " "
Lenning - 2,000 " "
Cutbank - 4,000 on 8/16. Photo #4,5: Boeker 3500, MCH 2500 E of line
Deep - 5,000 to 6,000 on 8/16. 8-18, 5,000 total & 3700 total
Photos #5, 6. Boeker, 6,000
MCH 4,500
Boundary creek - 8/18, est. 6,000 by both Boeker and MCH. Photo 7, Hammond estimated 3,000 in photo
Anderson - 700 on 8/18

Species: Bluewings and coots follow Pintails and mallards. Bluewings well flocked and migration still in progress.

August 29, 1955
Boeker & Hammond
N754

Waterfowl Census
Lower Souris Refuge

	Total ducks and coots	Estimated Pin & Mall.
Rubble masonry unit	3,850	3,800
320 unit	27,250	27,250
326 unit	18,500	10,000
332 unit	41,150	33,000
341 unit		
South of Newburg road	6,150	2,000
North of Newburg road	22,350	10,000
357 unit		
341 to #5 highway	9,600	4,000
#5 to RR crossing	27,550	20,000
RR crossing to W. L. road	3,500	1,000
Westhope Landa road to 357 dam	21,000*	5,000
North of 357 dam	850	800
River and sloughs, dam I to east end	500	300
	182,000	117,000

* A considerable influx during the past day or so, apparently accompanying the present cold front.

Aerial counts at feeding stations by Boeker on 8/28 and 8/29 (using the highest count:)

R. M. unit	20,000	
320 dike	18,000	
Lenning (326)	3,000	20,000 in Boundary creek area.
Airport	1,500	
Cutbank	15,000	
G. Brandt	100	Baldpates common, many B W & Coots, divers in 357.
Deep river	18,000	
South Evenson	100	
North Evenson	1,000	
341 Dike	7,000	
Boundary creek	16,000	
Anderson	1,000	
	100,700	

C Aerial counts indicate that the late summer buildup was in middle August, similar to 1954.

Redheads and Ruddy ducks were more plentiful this year than previous. The Blue Wing Teal migration began during the last two weeks in August and is still continuing at the end of August.

C. Brood Counts and Production

The following table lists broods by species actually counted on Brood Counts, adjusted for broods uncountable at time of count. General opinion at this station is that more young were produced than this table indicates.

Species	Broods	Young Per Brood	No. of Young
Mallard	127	6.52	828
Gadwall	281	7.09	1,992
Baldpate	20	6.36	127
Pintail	75	6.1	458
BW Teal	398	6.8	2,706
Shoveler	25	6.33	158
Redhead	390	6.31	2,460
Canvasback	42	6.18	259
Ruddy	118	5.34	630
Scaup	34	5.88	200
Ring-neck	6	6.4	39
Unidentified	150	6.36	955
	1,667		10,812

Breeding population count presented earlier in this narrative showed a slight increase in breeding pairs. On the basis of this evidence and brood counts, more young were produced this year than last and fewer than 1953. Observations indicate that several thousand young Coots were produced.

D. Canada Geese

A total of 48 nesting pairs was located during the spring survey. By using brood observation and known nesting success production was estimated at 200 young. This correlates with a fall count of 300 birds. This number is a substantial increase from 1953 and 1954.

Year	Production
1952	220
1953	125
1954*	125
1955	200

* included 41 hand raised goslings.

E. Trapping and Banding

Banding program for the period has not been too extensive. Trapping of Mallards and Pintails is underway with projected net traps on feeding areas.

These following list of ducks were captured in drive traps. Most of them were juvenile birds. The majority of doves banded were nestlings. Some adults were caught by bait trapping.

Blue Wing Teal	53
Mallard	1
Gadwall	6
Redhead	10
Scaup	7
Coot	7
Doves	108

F. Duck Depredations

Duck depredation was almost non-existent during the period. Only one complaint was received at headquarters and this area was relieved of depredation by one evening patrol and harvest of the field the following day. Other complaints to individual patrols were taken care of as received.

Depredation patrol was run regularly by refuge managers and pilot biologist but it was not necessary to use the full refuge force on depredation patrol this year.

Mallards and pintails were numerous on the refuge but feeding areas, plus good aquatic food in the units, were effective in holding the birds on the refuge. The Coots, especially in 326 Unit, also enjoyed the feedings.

In 1953 one feeding area was started by Hammond and Jensen, GMA, Jamestown. Nine feeding areas were used in 1954 and 11 in 1955. These areas, located on the waters edge, offer feeding and loafing areas and are very effective in holding grain eating birds on the Refuge.

These feeding sites are selected in areas where it is thought they will be most effective in attracting and holding the grain eaters on Refuge. These areas are prepared by mowing and burning the weeds back from the waters edge and the cutting of cattails and bulrushes to open water. Grain is then fed on these areas by dump box trucks. First feedings usually have to be spread near waters edge but as the birds get used to feeding in the area subsequent feedings are spread further back on dry land.

In 1955 small feedings by pickup (30 bu.) were begun on August 4. Larger feedings by dump box trucks began Aug. 8 as more grain was swathed and a buildup of birds began. Feedings continued until Sept. 8. A total of 13,015 bushels were fed this year.

Aerial counts showed as many as 80,000 pintails and mallards using the feeding area at one time.

Good harvesting weather was also an important factor for the lack of duck depredations.

Food and Cover

Pondweed seed production and the general conditions of marshes was very good except 320 Unit which has been lowered for island construction. June floods kept fresh water in all Units and little bloom of suspended algae (aphanizomenon) resulted. Some algae bloom was experienced in pools left from the draining of Unit 320. Algacides were used in controlling this menace. See Section V.

357 Unit: Pondweed seed production was good.

341 Unit: The extent of pondweed beds was less than in 1954 as this Unit is being held at a lower elevation for marsh farming operations.

332 Unit: Pondweed seed production at same high level as in 1954.

326 Unit: This Unit showed an excellent production of aquatic food. Many divers and coots are using this Unit.

320 Unit: Very little aquatic vegetation is present as this Unit has been drained to permit construction of nesting islands. Many ducks and geese are using the exposed flats as loafing areas.

Waste grain in stubble fields provides ample food for field feeding waterfowl.

Botulism

None in evidence.

Lead Poisoning and Other Diseases

None

Migratory Birds Other Than Waterfowl

Mud flats exposed as the flood waters receded made conditions for shorebirds excellent this year. The usual heavy migration of shorebirds moved through the area during August with more than normal numbers still present at end of this period.

Sandhill cranes were first observed on August 5. The largest number, 15, were observed on August 31.

Mourning doves were again abundant nesters in the headquarters area. The 108 doves banded were all caught in baited wire traps or were banded as nestling around headquarters. Doves are still nesting at this time and banding of nestlings is still being continued. An abundance of grain makes bait trapping difficult at this time. The largest concentration of doves was seen during the week of August 21-27.

Franklin Gulls were present in large concentrations throughout the period.

B. Upland Game Birds

Pheasant: Populations on and near Refuge remain high. Numerous broods are observed around headquarters and along patrol roads evidence a good hatch. A two and one-half day season is planned for area this fall.

Sharptails: Sharptails are observed frequently and it is believed that our population is comparable to 1954. (1954 population of 750).

Hungarian Partridge: populations show a slight increase over previous years in this area. A hunting season of 30 days has been set by the State this year.

Pinnated Grouse: None have been observed.

2. Food and Cover

Food and cover abundant for upland game birds for period covered by this narrative.

3. Diseases

No diseases have been noted among upland game species.

C. Big Game Animals

1. Population and Behavior

The last census made of White-tailed deer last January was estimated at 150 animals on the Refuge. Natural increase since that time would put the herd between 200 and 225 animals. Hunting season is planned in this area but it has been recommended not to open the Refuge this year.

2. Food and Cover

There is food and cover available for larger herd than now present.

3. Diseases

None noted.

D. Fur Animals, Predators and Other Mammals.

Beaver

More Beaver taken in 1955 trapping season than previously but animals remain relatively abundant.

Muskrat

The muskrat population remains abundant on the Refuge. Many are seen in borrow pits along roads and dikes. Three albinos observed frequently along Highway #14, north of Refuge.

Raccoon

Coons are abundant and control measures are being continued.

Badger

Indications of their digging in fields and patrol roads would lead one to believe that they are common.

Skunk

Still many seen after extensive control measures.

Mink

Common

Red Fox

Foxes are fairly common. Many seen along patrol roads.

Rabbits

Jacks are relatively scarce. Cottontails are very abundant in desirable habitat.

Porcupines

Rare except in Sandhill area.

Coyotes

Rare

E. Predacious Birds, Including Crows

The Hawk and Owl populations are aboutaverage for this area except a large number of Burrowing owls noted this year. Prairie Falcons were sighted occasionally and later this year duck hawks were a little more than commonly seen.

The most common species are Marsh Hawks, Swainson Hawk, Rough-legged Hawks, Short-eared Owls and Horned Owls.

The crow population was low during the breeding season. Crows began to show up in numbers in the middle of August. As high as 40 were observed feeding with ducks on one feeding area.

During marsh burning 20 Hawks (Swainson, Marsh, Rough-legged, and Red Tailed) were seen hovering over the burned area. Twenty-three hawks were observed by D. Johnson two days later in stubble field.

F. Fish

Fishing on the public fishing area has been poor since May and early June. Nice catches were made off bridges crossing the Refuge soon after season opened. Low water conditions made fishing poor later in season.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

1. Marsh Rehabilitation - Proj. 712R, F.Y. 1956.

Mowing of drained areas was started in 341 Unit in August. The vegetation was so dense that it would be impossible to work it up without mowing. At the end of August 82 acres had been cut, dried out and burned. The next operation will be to break up the heavy sod and root mats and then disc it down.

2. Dike Repairs

320, 326, 332 and 341 dikes were patrolled, all runs made by muskrats and beaver dug out and filled in. One 357 dike all willows between the spillway and structure were cut, as well as most of the willows on the dike to the west of the structure.

One gate in 357 structure was sandblasted, etched with CUSO4 and given three coats of Rust Oleum paint. A new seal was cut from a bridge plank for the bottom of the gate, and the rubber seals on the sides of the gate replaced. Several rivets holding the corrugated metal to the angle irons were broken, so were burned out and replaced with steel bolts. There are two more gates to be painted in this structure, and each will require about the same work as listed above.

The Rust Oleum Co. sent a representative to the refuge in June to make an inspection of the gates painted in 1954 as to why the paint flaked off so badly. The inspection revealed that even tho the gates were thoroughly sandblasted, enough galvanizing remained in the pores of the metal to cause the flaking of the paint. We were advised that each gate should have been thoroughly etched with copper sulfate following sandblasting and prior to painting.

The recommendation for the gates that had areas where paint had flaked off were to scrape and wire brush the areas, etch with CU SO_4 and then apply rust-oleum paint with a brush. Each year this procedure should be followed until time when the entire gate should be repainted.

The Rust-Oleum Co. has now provided us with paints other than that used in the 3-coat system for the other two gates in 357 structure. One is to be applied to the gate without etching the galvanize, the second a new type to be used

following etching. The life of the paints on the three gates can then be easily compared.

Ditching. Project 712-R

Dynamite has been ordered, but not received for ditching in Units 320, 326 and 341 to speed up drainage of isolated pockets of water when the Units are dried out.

Project 712-C-5

320 Unit - Rebuild Islands

No work has been undertaken on this project except that the Lorain Dragline was moved over from Upper Souris to here in the last week of August and is undergoing a checkup, steam cleaning and minor repairs.

Project 170.

Soil & Moisture

With a marked reduction in allotted funds for Soil and Moisture work, it was believed that existing improvements should receive adequate maintenance and new developments be delegated second place. With this purpose in mind fences around water developments in sandhills pastures were stretched and repaired as needed; the fence around the eroded area in Unit G-55 was repaired as required and the shelterbelt improvement north of Westhope was cultivated and hoed twice. New developments accomplished during the period include fencing croplands out of pasture Units G-18 and fencing out a problem 40 acre area in pasture Unit G-53 which should be late seeded to grasses. Soil samples collected from 14 fertilizer experiment plots were forwarded to N.D.A.C. for analysis.

Fiscal Year 1955

Project 622R

Soil & Moisture

Jobs completed under this project during the period included improvements to three watering facilities in sandhills pastures, the fencing out of two old farm shelterbelts, and cultivation and maintenance of the shelterbelt improvement north of Westhope.

Rehabilitate Residence - Quarters #4

A special allotment to complete renovation and repair of the above residence was received and the following jobs accomplished:

1. Install furnace, blower, heat risers, cold air ducts and outlets.
2. Remove loose plaster and replaster.
3. Install new sink, and new laundry tubs.
4. Completion of bathroom and plumbing.
5. Check electrical system and replace or repair defective parts.
6. Did some grading around building.
7. All interior painting done by Mr. Frye, the occupant, on his own time with supplies furnished from Refuge stocks.

The completion of this job makes a very fine addition to the buildings at headquarters, and was well worth the funds expended.

Grain Storage Building - 622-C-5

Funds in the amount of $4,000.00 were allotted for the purchase of a metal grain storage building and bids solicited. The Butler Co. was successful bidder and furnished a 32 x 60 metal building with straight sides capable of holding approximately 18,500 bushels. An additional sum of $500.00 was received for the purpose of constructing a concrete floor slab and foundation.

Mr. Art Jamieson, Construction Foreman, supervised the job and a very fine floor slab was completed in late June. The building was received on August 4 and completed on Aug. 17. Grain was first put in on Aug. 18 as grain storage space was at a premium.

This building gives us storage space for 18,500 bushels and in other metal grain bins we have storage for 15,800 bu. or a total of 34,300 bushels. This amount is estimated to provide sufficient grain for two years of depredations at a very heavy rate of feeding, including the 12-15,000 expected annual refuge share of grain. All our old wooden buildings used for grain storage were in need of major repairs and the present storage facilities should last indefinitely.

Boundary Fence

Reconstruction of the Upham-Willow City Road required moving 3¼ miles of boundary fence back to the new easement line. In addition five new sets of concrete gate posts replaced the old wooden ones most of which were badly rotted.

Paint Buildings

All cinder block buildings were repainted with Bondex paint and trim repainted. In addition the barracks quarters and Quarters #6 were repainted.

Miscellaneous Activities

1. Emergency repairs to washout on shoulder of Upham-Willow City Road.

2. Repaired washout in 332 dike.
3. Cultivated shelterbelt three times by tractor between rows and by hand in rows.
4. Mowed all patrol roads north of Headquarters, plus mowing of feeding areas.
5. Maintenance of patrol roads including claying, gravelling and blading.
6. Touch up painting of 326, 332 and 341 gates.
7. Dozed spilbanks on waterhole rehabilitation for three waterholes.
8. Dig out, clean and repair and fill in sewer from barracks septic tank to outlet.
9. Constant repairs to track and rollers on shop doors.
10. Built set of dragline mats for possible use in excavation in 320 island building.
11. Practically completed overhaul of Unit Crane.
12. Minor motor repairs to GMC Dump, Autocar tractor, and miscellaneous repairs to several of the lighter units.
13. Major motor overhaul on Plymouth Suburban I-19029.
14. Major motor overhaul on Chev. Sedan-Delivery driven by Construction Foreman, Art Jamieson.
15. Moved Lorain dragline from Long Lake to Upper Souris and from Upper Souris to here.
16. Innumerable small maintenance jobs on buildings and headquarters setup.
17. Marked all property items including buildings, dikes, gate structures, towers, etc.
18. Roof repair, install laundry tubs and other miscellaneous maintenance on Quarters #6 by Mr. Brandt.

B. Plantings

1. Aquatic and Marsh Plants

Marsh farming operations were not carried on this spring due to flood conditions during the spring months. 341 Unit is being held low this year and the work accomplished to date includes mowing and burning off 82 acres of marsh for seeding to wild millet in the fall. It is planned to work the soil well on this field prior to seeding millet.

2. Trees and Shrubs

There have been no additional plantings this year but the shelterbelt planted north of Westhope in 1954 has been cultivated three times and hoed twice during the period. Hoeing has been found necessary due to a rank regrowth of quack grass in the tree rows.

3. Cultivated Crops

All refuge farm units were farmed under cooperative agreement by local farmers this year. Refuge crops of barley, wheat, durum, winter rye and Proso Millet were fair to good with most barley yields excellent. Spring moisture was abundant and favorable weather permitted early maturity with 95% of the harvest completed by the end of August, about one month earlier than usual. Complete crop reports are not available for refuge units at this time but will be included in our next narrative report.

In addition, 380 acres of Class III, IV and VI croplands were seeded to permanent grass during the period.

C. Collections

1. Bluegrass Harvest

The high bidder for bluegrass harvesting operations on the refuge was Lang Bluegrass Farms of Benson, Minn., who agreed to deliver fifteen pounds of cleaned seed for every 100 pounds of green seed harvested. Severe hail just prior to stripping operations destroyed most of the seed crop and only 1297 pounds of bluegrass seed was harvested. The refuge share, 195 pounds of clean seed, has not been delivered to date.

IV. ECONOMIC USE

A. Grazing

A reconnaissance of sandhills pastures was made in early May by Wilson and Frye and most areas seemed in good shape and no further reductions in allowable AUM's were required. Several problem areas remain in certain pasture units but it is hoped that re-seeding, fence-outs, and lower utilization will remedy the situation.

Refuge pastures have shown much improvement in the last few years due mainly to current and past water developments, re-seeding, and decreased utilization but these areas must be kept under constant surveillance to prevent any future over-utilization.

B. Haying

High water levels early in the summer flooded hay meadows in the Willow Creek area again this year, but other areas on the refuge are producing good hay crops. The cutting date on all hay units was delayed to August 1 this year making most hay permittees quite unhappy. It so happened that the early harvest complicated things and as a result there remains much hay yet to be cut.

Several upland hay units are being cut for the last time this year as under our revised Economic Plan, grazing is replacing haying on most upland and marsh edge areas beginning in 1956.

V. INVESTIGATION AND RESEARCH

A. Fertilizer Plots

Fourteen experimental fertilizer plots were established on fourteen refuge farm units. Applications approximated 120 to 130 lbs. per acre of 11-48-0 fertilizer broadcast with a lime spreader. Soil samples were taken from all test plots and have been sent to the Soils Department of North Dakota Agricultural College for analysis. Grain samples have been collected from all experimental plots except one that was hailed out on July 18. A detailed report will be submitted in the next narrative following completion of the project.

B. Nesting Study - Alfalfa Strips

To prevent needless destruction of waterfowl and upland game bird nests, it is required that all alfalfa strips in refuge croplands must be dragged prior to cutting if haying operations commence before August 1.

Dragging was accomplished with a rope, with cans or short pieces of chain attached, pulled between two vehicles. When a bird was flushed the nest was located and an area to be left unmowed was staked out around the nest, the unmowed plot to be not less than 1/10 acre in area. Dragging is most effective when done in early morning as the hens are most likely to be on the nest at that time.

Fourteen refuge hay strips were dragged and nests were found in eight of these strips. See accompanying table summarizing results of dragging.

It is interesting to note that one stubble field grown up to weeds was dragged late in June prior to seeding to millet, and nine nests were located. Suitable size plots were left unplowed around these nests.

From data gathered this one year it appears that nests located by dragging and then left in islands of cover were as successful as nests in undisturbed cover. Further information will be gathered in future years as more farming units get into the grass-legume rotations.

C. Small Grain Harvesting Experiment

The motive behind this experiment was to find if spraying growing grain fields with 2,4-D would make straight combining possible. Straight combining of grain instead of swathing, which is the usual harvest practice in this area, would help relieve duck depredations. This experiment was run in conjunction with the N.D.A.C. of Fargo.

This experiment used 20 plots, 500 feet long. Ten plots were treated with 2,4-D and 10 were not treated. Ten plots were swathed of which 5 were treated with weed spray and 5 were not treated. Ten plots were straight combined of which 5 were treated and 5 were not. Grain swather used was a 12 foot and the combine a 60" Allis Chalmers. This combine was a little small for handling the 12 ft. swath efficiently.

Plots were sprayed on June 12 with Weedar 64 at a rate of one-half pound (1 pint) per acre. Wheat growth was just

Unit No.	Strip	Acreage	Date	Crop	Nests	Plot Left	Species	Fate
A-2	7	20	6/23	Alfalfa	0			
A-4	2	7	6/29	Alfalfa	0			
A-9	5	19	6/23	Alfalfa	1	30' x 30'	Gadwall	Destroyed (Fox)
A-11	1	15	6/23	Alfalfa	1	30' x 30'	Gadwall	Destroyed (Fox)
A-13	4	5	6/23	Alfalfa/brome	0			
A-19	4	11	7/2	Alfalfa/brome	3	30' x 30'	Gadwall	Successful
						30' x 30'	Gadwall	Destroyed (Skunk?)
						30' x 30'	Mallard	Successful
A-26	8	7	6/27	Alfalfa	0			
A-28	4	?	7/7	Sw. Clover	0			
A-29	B	10	6/27	Alfalfa	1	40' x 40'	Gadwall	Nest not located
	H	10	6/27	Alfalfa	2	30' x 80'	Mallard	Successful
							Pintail	Successful
	2	12	6/27	Stubble/weed	7	30' x 30'	Gadwall	Successful
						180' x 210'	BWTeal	Destroyed (Fox)
				Seeded to Proso Millet		(4 nests)	BWTeal	Successful
				About 7/1			BWTeal	Destroyed (Fox)
							BWTeal	Successful
						20' x 30'	BWTeal	Successful
						20' x 20'	Gadwall	Destroyed
	2	12	6/29	"		6' x 15'	BWTeal	?
						180' x 210'	Gadwall	?
A-31	1-A	6	7/5	Alfalfa	4	30' x 30'	Gadwall	Deserted
						30' x 50'	Mallard	Destroyed (Fox)
						30' x 30'	Gadwall	Destroyed (Fox)
						30' x 30'	Gadwall	Destroyed (Fox)
Airport	Runway	20	7/5	Brome	2	25' x 60'	BWTeal	Successful
						25' x 25'	BWTeal	Successful
A-33	10	16	7/11	Alfalfa	0			
A-35	4	4	7/11	Alfalfa	0			
A-38	2-d	7.5	6/23	Alfalfa	0			
H-14		24	6/23	Alfalfa	1	30' x 30'	Gadwall	Unknown
A-41	1	14	6/27	Alfalfa	0			

MAY-AUG 1955

past the 5 tiller stage. Mustard was killed 98% and all other weeds were set back.

Plots were swathed on August 5 and combined on August 11 and 12.

Conclusions

These fields were selected to be free of low spots and provide even ripening. The problem was to be strictly one of analyzing weed control on level fields as a means of encouraging straight combining.

The experiment demonstrated that straight combining was practical in fields free of weeds. The damage due to the early wind couldnot have been avoided by swathing, but losses due to the August 8 and 9 winds were suffered by allowing the grain to stand longer to ripen for straight combining. These later losses included both shattering and stem breakage (the latter of small importance on sprayed plots, however).

It was the feeling of the persons involved in the experiment that there would have been advantages in straight combining a field similar to the sprayed portions of the samples (yields good, grain dry enough for storage, no danger of running rocks into combine, threat of duck damage).

There is little doubt that most farmers would still have preferred to swath to avoid danger of shattering and wind damage, however. The individual farmer's decision would also be governed by the time element. If he had ample time to swath he would probably swath. If all, or most of his fields became ripe before he got around to swathing he might straight combine.

We cannot be sure from the sample data that swathed yields would not have been larger than straight-combined yields if a larger combine were used.

The problems of unevenly ripened fields due to contour variations did not enter this experiment.

There was no evidence of the "shattering lossesx in swathed grain" which were reported for the 1954 experiment.

Suggestions

Since it appears that our problem applies to whole fields with all their individual variation, rather than level, controlled plots it is suggested that future experiments be de-

signed with a somewhat more practical slant.

(1) Select fields and crop varieties more or less at random, but favor barley, durum, and the more easily shattered hard wheats. Fields should have both low and high spots.

(2) Straight combine entire fields, or divide into about equal halves for yield comparisons. If necessary combine in two operations--hitting the high land first and the low areas later.

(3) Entire fields would be sprayed for straight combining (2).

Data from such a plan would not lend itself to statistical analysis, but would be of greater value as a demonstration for the farmer.

D. Delrad Experiment

A Hercules Powder Co. Algacide, Delrad, was used experimentally. The product was received too late for early application, but results were promising in the control of filamentous forms.

Filamentous algae along the Upham-Willow City road ditch were sprayed with back-pack pump on June 28. Within 48 hours the algae had disintegrated, with only traces remaining.

Delrad paste set out in floats were used in 332 Unit. A slight flow of water was present. Control here was good in a zone "below" the individual floats, apparently modified by water movement and diffusion. It was evident that, where heavy pondweed stands and a current are present, spray application is much more effective.

On July 14 approximately 50 acres of pondweed with surface algae in 326 Unit were sprayed by air. By July 18 it was apparent that both control and sprayed algae were dying from natural causes. At this late stage in development Delrad did not cause any disintegration of the filamentous algae. Within this stand of unidentified algae were small "spots" of Anabena which were killed by spraying, but appeared on the control. This species was apparently in an early growth stage when the area was sprayed.

Delrad in recommended concentrations caused the suspended algae, Aphanizomenon to disintegrate in 24 hours in jars in the laboratory. A .2 acre corner of 320 Unit was treated by

boat and later using drip cans along the margins. Neither method resulted in elimination of the algae, possibly because of a current moving through the area which prevented the proper concentrations from developing. There was an appreciable reduction for a day or two following the boat treatment.

Delrad resulted in nearly a complete kill of aquatic animal life, but these forms reappeared within a week or so later.

It is likely that water movement and excessive dispersion of the treated water mass were responsible for most of the poor results. Treatment early in the growth stages was recommended by the Company and its advantages demonstrated from our experiments.

E. Pothole Seeding Experiment

As was previously reported, Agricultural Unit A-38 was selected as a demonstration area to show strip cropping operations and for an experimental seeding of sod-forming grasses and legumes in potholes which hinder operations in wet years.

The potholesselected comprises approximately 4.5 acres and was seeded to five grasses in nine block areas as illustrated in the accompanying sketch map. The pothole was plowed and then disced three times prior to seeding to prepare a good firm seed bed. Seeding was done on May 16 and 17 and a companion crop of barley was over-seeded on May 17. The entire pothole was seeded except a small area in the west end that was too wet to work.

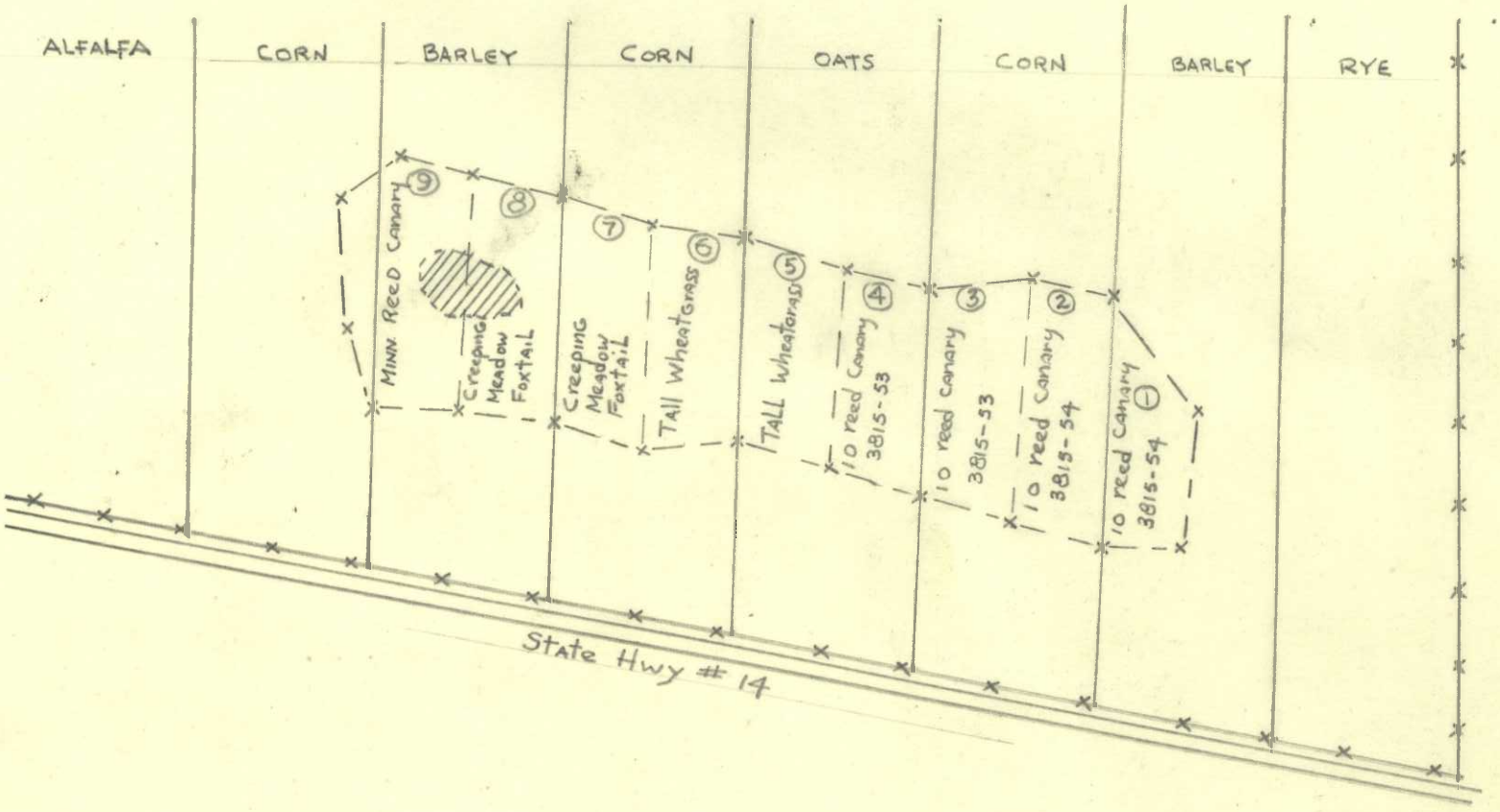
In addition to the grasses, six legumes were over-seeded in ten foot strips across the pothole in blocks 3, 5 and 7. Legumes planted are as follows:

1. Alsike clover
2. Ladens Clover
3. Medium red clover
4. NDL Birdsfoot trefoil
5. Empire birdsfoot trefoil
6. Astragulus rubyi (Ruby milk vetch)

All seed was supplied by Mr. John McDermand, S.C.S, Plant Materials Technician.

Fair stands of all plantings resulted, especially the medium red clover. It will be interesting to see which of the plantings survive to show up next year.

Ag. Unit No A-38



Pothole Seeding Experiment - 1955

VI. PUBLIC RELATIONS

A. Recreational Uses

Recreational facilities in the form of tables, grills and toilets were established at the Freeman Bridge area, Fishing Area No. IV, but fishing was poor at this site in 1955 and very limited use was made of the area. Best catches during the season from refuge waters were at the 341 crossing, Area No. IX. The 357 area, No. XI, produced fair catches of bullheads but few northern pike. The best fishing in this vicinity has been on Deep River, a tributary of the Souris, just west of the refuge boundary. Fishing on refuge waters closes September 15.

B. Refuge Visitors

Date	Name and Affiliation	Purpose
5/8	David A. Munro, Chief Ornithologist, Canadian Wildlife Service, Ottawa	Birding
5/8	John R. Carter, Canadian Wildlife Service, Summer ass't., Ottawa	Birding
5/?	Mr. Ralph McCleary, 33 Lake Promenade, Long Branch, Toronto 14, Ont.	Birding
5/17	D. Campbell, SCS, Towner	Farm Plans
5/17-21	Dr. & Mrs. R. W. Storer, U. of Mich. Ann Arbor	Grebe study
5/?	Alan R. Fiers, Ford Fellowship, Mpls.	Grebe study
5/18	Messrs. Taylor, Jorgenson, Gillett, Dougall, Randall, Sypulski & Goodwin FWS	Water conditions
5/31	USGMA, Brevig, Minot, N. D.	Dove coo count
6/8	R. W. Dougall, FWS, Mpls., and McHenry Co. Bd. of Commissioners	Freeman Bridge repairs & discussion of road mtce.
6/8	Arthur Jamieson, FWS, Const. Foreman	Slab for grain bldg.
6/22	E.G. Randt, Milw. Wis. Rust-Oleum Co. representative	Gate painting problems

Date	Name & Affiliation	Purpose
7/11-12	J.J. Wilson, Snake Cr. Ref. Riverdale N.D. Major Walker, Shirley Von Eschen, R. Laribo Roy Dore - Corps of Engr. Riverdale	Refuge Tour
7/17-18	Elinor Hayward, Elizabeth Goâterman, Sarah Jo Springer & Alberta Bolinger, St. Louis, Missouri	Bird Observations.
7/27	H. Huenecke & K. Dybsetter, Des Lacs and Lostwood Refuges	Equipment use & grain hauling
7/27-29	Dr. Petrides & 8 Wildlife Mgmt. Students, M.S.C., East Lansing, Mich.	Refuge Tour
8/9-30	Pilot-Biol. Erv. Boeker, FWS, Mpls.	Depredations
8/15-16	Dr. Allen Stokes & Mr. Bob Smith, Utah Utah State Ag. College	Look over Refuge
8/17	U.S.G.M.A. Brevig, Minot	Banding, dep. etc.
8/29-30 -31	Dunc Campbell, SCS, Towner Hugh Cosby, Range Conservationist, SCS, Minot	Range site surveys, Sandhills area.
8/30	John McDermand, Plant Materials Tech., SCS, Bismarck, N. D.	Pothole seedings.
8/31	Messrs. Burwell, Gillett, Davis, Hawkins, Williams, Stoudt, Jensen & Brevig, FWS	Ref. insp., dep., etc.

C. Refuge Participation

On May 18, Refuge Manager Gray attended Vocational Guidance series and discussed Wildlife Management as a vocation with 24 2nd year classmen of North Dakota School of Forestry at Bottineau.

Also on May 18 the Souris, N. D. High School biology class spent the afternoon on the Refuge under guidance of Refuge Manager Frye.

On June 2 Wildlife Mgmt. Biologist Hammond & Refuge Manager Gray had a date to address the 4H Conservation Campers

encamped at Lake Metigoshe State Park. A rain the night before on a newly constructed road sans gravel mired them down when within three miles of their destination. Thus the meeting was not reached, and regrets tendered by letter.

Refuge personnel - Gray, Frye, D. Johnson and M. Johnson participated in five Wildlife Review radio programs over KLPM, Minot, N. D. directed by Russ Smith, station Sports Director.

Refuge Manager Gray was guest speaker at the August 23 noon meeting of the Kiwanis Club, Minot, N. D.

Refuge Manager Frye attended and successfully completed the Water Safety Instructor's course in Boating conducted by the American Red Cross in cooperation with the Corps of Engineers, in July, at Garrison Reservoir, Riverdale, N. D. It is hoped that he will be able to fully apprise refuge personnel of the safety factors involved in small boat handling.

D. Violations

None during period.

VII. OTHER ITEMS

A. Personnel

Refuge Manager J. J. Wilson was promoted to GS-9 and transferred to Riverdale, N. D. on May 19 to inaugurate operations of the Snake Creek Refuge on an arm of the Garrison Reservoir. Jerry did a very fine job on S & M and economic use programs while here as well as on all other phases of refuge work. All here at Lower Souris wish him well on the new assignment which is a challenging one.

Refuge Manager John R. Frye was promoted to GS-7 to fill the position vacated by Mr. Wilson and has been carrying on in a most creditable manner the various tasks assigned.

Mr. Dean Johnson was appointed from the register to the position of Refuge Manager, GS-5 and reported for duty June 20. Dean is a graduate of S. D. State College and has had experience with the South Dakota Department. He has dug in and is doing very well on the various jobs he tackles.

Mr. Harold Duebbert reported for duty as Student Ass't. IGS-2 on June 6. Harold, a graduate student of the U. of Missouri has shown a lot of enthusiasm for the work here and at Upper Souris, Des Lacs and Lostwood. Aside from his regular duties he is a decoy maker of very fine skill and decorated

the transient quarters with an excellent sample of a green head Mallard.

Pilot Biologist Erv Boeker on his first assignment after reporting for duty in Region III did an excellent job on the flying patrol during depredations season. Besides the morning and evening patrol he completed various assignments at Des Lacs, Lostwood, Upper Souris, Long Lake and Sullys Hill Refuge easements on botulism checks, waterfowl censuses and aerial photography. He also assisted on biological problems at Lower Souris with Hammond and Duebbert as well as regular refuge activities as time permitted. He certainly impressed all he met with his enthusiasm for the work and his piloting is superb. We hope he will be able to come often.

2. Murder

On July 24, the Mouse River became notorious for something besides a source of pins and mallards that oftentimes bother Farmers' swaths of grain. On that date, following by only a few hours the lowering of refuge gates at 341 thus cutting the discharge rate, the body of a 16 year old Minot, N. D. boy was found under the 341 or Scheflo Bridge. He was weighted down with stones and an autopsy disclosed that he had been murdered and his body placed there. It was found three days after he had disappeared off a Minot street. To date the murderer(s) have not been found and few clues on which to proceed.

Credits: Gray: Section IIIA; VI B, C, D; and VII A, B.
Frye: Section IB; IIIB; IIIC; IV; VA, B, E, VIA
Johnson, D. : IA; IIA, B, C, D, E, F; IIB, IIC, IID, II E, and II F. NR Forms.
M. C. Hammond: Waterfowl aerial census figures; VC, D.

Respectfully submitted,

Donald V. Gray

Donald V. Gray
Refuge Manager

APPROVED:

L. E. Jorgensen

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE Lower Souris MONTHS OF MAY TO AUGUST, 1955

(1) Species	(2) Weeks of reporting period 1	2	3	4	5	6	7	8	9	10
Swans:	100	10								
Whistling										
Trumpeter										
Geese:										
Canada	250	150	150	150	150	150	150	300	300	300
Cackling										
Brant										
White-fronted										
Snow	20,000	2,000								
Blue	30,000	3,000								
Other										
Ducks:										
Mallard	300	400	500	500	500	500	500	500	500	500
Black	~~1,500~~	~~1,500~~	~~1,500~~	~~1,500~~	~~1,500~~	~~1,500~~	~~1,500~~	~~1,500~~	~~1,500~~	
Gadwall	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Baldpate	500	500	200	100	200	200	200	200	200	200
Pintail	400	400	600	800	800	800	800	800	800	800
Green-winged teal	50	50	25	25	25	25	25	25	25	25
Blue-winged teal	1,500	1,500	1,500	1,800	1,800	1,800	1,800	1,800	1,800	1,800
Cinnamon teal										
Shoveler	150	200	200	300	300	300	400	400	400	400
Wood										
Redhead	1,500	1,500	900	600	500	500	500	500	500	500
Ring-necked	50	50	10	10	10	10	10	10	10	10
Canvasback	700	700	300	200	200	200	200	200	200	200
Scaup	3,000	3,000	1,000	700	700	600	500	500	500	500
Goldeneye										
Bufflehead										
Ruddy	300	300	300	300	300	300	300	300	300	300
Other										
Coot:	5,000	4,000	4,000	3,000	3,000	2,000	2,000	2,000	2,000	2,000

Int. Dup. Sec.,
Wash. D. C.

3-7150a
Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Lower Souris MONTHS OF MAY TO AUGUST, 1955

(1) Species	(2) Weeks of reporting period: 11	12	13	14	15	16	17	18	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	300	300	300	300	300	300	300		28,850	-	200
Cackling											
Brant											
White-fronted											
Snow									154,000		
Blue									251,000		
Other											
Ducks:											
Mallard	1,000	1,000	1,000	23,000	30,000	45,000	72,000		1,243,900	36	828
Black				100	100	100	100		2,100		
Gadwall	1,500	1,500	1,500	3,500	10,000	11,000	11,000		385,000	80	1,992
Baldpate	300	300	300	2,800	10,000	10,000	10,000		253,400	6	127
Pintail	1,200	1,200	1,200	20,300	28,000	36,400	57,000		1,080,800	19	458
Green-winged teal	25	25	25	25	100	200	300		5,810		
Blue-winged teal	2,300	2,300	2,300	6,400	8,000	8,000	10,000		394,800	113	2,706
Cinnamon teal											
Shoveler	500	600	600	1,400	1,400	2,000	2,000		80,850	7	158
Wood											
Redhead	600	600	600	1,000	2,000	2,000	2,000		114,100	110	2,480
Ring-necked	10	10	10	10	10	10	10		1,050	2	39
Canvasback	200	300	300	500	500	500	500		42,700	12	259
Scaup	500	500	500	500	500	500	500		101,500	10	200
Goldeneye											
Bufflehead											
Ruddy	300	100	100	100	100	400	400		31,500	34	630
Other Unidentified										42	955
Coot:	2,000	2,000	2,000	10,000	10,000	10,000	10,000		525,000		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese			200
Ducks			10,812
Coots			

SUMMARY

Principal feeding areas

Principal nesting areas

Reported by

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

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C. 37944
1953

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Lower Souris Months of May to August, 1945

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ringnecked pheasant									1,000	
Hungarian Partridge									400	
Sharptail grouse									1,500	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

Lower Souris National Wildlife Refuge
Upham, N. D.

NEWS RELEASE! March 23, 1955

A waterfowl band return has been received from Russia it was announced by Mr. J. R. Frye, Ass't. Refuge Manager in charge of banding operations at Lower Souris Refuge, Upham, North Dakota. The band was from a Pintail duck banded at Lower Souris Refuge on September 10, 1952 and was reported taken on May 31, 1953 at Khabarovski Administratien Unit, Chukotskii Peninsula, 69° 28' N; 171° 22' E, Union of Soviet Socialist Republics. This information was received in a letter dated November 15, 1954 from a Mr. A. Malinonskii, Head, Administration of National Parks and Game Management, Bureau of Banding, Moscow 139, USSR.

This wandering Pintail, an immature female at time of banding, was captured in the cannon projected net trap set up on a waterfowl banding station on refuge lands farmed by Mr. Leifur Benedictson, Upham, North Dakota, near the end of the feeding period in 1952. This area is located in NE¼SE¼ Section 5, T. 159 N., R. 78 W., approximately one mile northwest of refuge headquarters.

The Chukotskii Peninsula, where this bird was taken, is located across the Bering Strait from Alaska and some question arises as to how it reached that area. Records of band returns on file at the Refuge office show that each year several pintails are taken in the Canadian Provinces north of the banding station shortly after banding, suggesting some northern movement normally occurs in late summer and early fall months. It is also known from band returns that several Pintails are shot each year in California a few months following banding in North Dakota. The Pintail that reached the USSR probably moved north and west after being banded, migrated south in the Pacific Flyway, and then remained in that flyway when it moved north to the breeding grounds in the spring of 1953. Previous long distance returns for Pintails include one from Alaska, and one from Panama.

Other species of waterfowl also travel long distances in their normal life span. A Blue-winged teal banded at Lower Souris Refuge on August 20, 1953 was shot in Peru, South America on January 21, 1954, only five months later.

Waterfowl are banded on one leg with numbered aluminum bands. Each band bears, in addition to the serial number, the following message: "Advise Fish and Wildlife Service, Washington, D. C.". Persons finding banded birds are urged to send the band to Washington together with information regarding how, where and on what date the band was secured. The band will be returned as a souvenier if so desired. In addition the Bird-Banding Office of the Fish and Wildlife Service will advise the sender where and when the bird was originally banded.

Waterfowl banding is a continuous operation at Lower Souris Refuge, with 1,000 to 1,500 birds being banded each year. Waterfowl banding was initiated at Lower Souris Refuge in 1936 and since that time 3,030 waterfowl band returns have been received for all species banded at this station. Included in this total are returns from 36 states, Alaska, 5 Canadian Provinces, 10 Latin American countries, and now, from Russia.

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Lower Souris National Wildlife Refuge
Upham, N. D.

NEWS RELEASE!

May 2, 1955

As spring farming operations are getting underway it might be well to look back over operations on the Lower Souris Refuge during the past fiscal year, says Don Gray, Refuge Manager.

Of the 58,650 acres comprising the Lower Souris Refuge 31,375 acres are being managed to provide the best economic utilization according to wise land use practices. Of this total, 4,085 acres are in crop land, 18,635 acres are in pasture and 8,655 acres are hayed.

During 1954 40 permits for grazing on the refuge were in effect during the 5½ month grazing period. 5,536 animal use months were utilized with gross receipts to the Government of $5,540.81. 77 haying permits were issued and $5,614.91 was received for the 3,743 tons of hay cut. Four trappers were issued permits for share-trapping on the refuge during the state trapping season. The Government share of furs was sold at public auction for $777.55. Also during 1954 3 permits for removal of gravel and 9 permits for wood cutting were issued with receipts totaling $438.30. 22,463 pounds of blue grass seed were harvested by Rudy Patrick Seed Co. of Kansas City, Mo., the high bidder. The government share was 2,470 pounds of clean seed, of which six hundred pounds was kept for use in seeding on the Refuge. The remaining 1,870 pounds were sold to high bidder for $1,028.50.

From the above it will be seen that total cash receipts from various economic uses on the refuge in 1954 were $13,401.07.

Gray notes that 25% of the above $13,401.07 received in fiscal year 1955 will revert to Bottineau and McHenry Counties for schools and roads. This policy was initiated to compensate local governments in lieu of tax income lost when the lands were acquired by the Fish & Wildlife Service. 25% of gross receipts for fiscal year 1954 gave Bottineau Co. $1,354.39 and McHenry Co. $2,342.08. Gray explains that these receipts are pro-rated on basis of acreages of the refuge in each county.

In addition to the above noted revenue 35 cooperators operated 4,085 acres of Refuge crop land under share crop agreement. In 1954 there was a reported harvest of 42,426 bushels of small grains from Refuge crop lands, of which the Cooperators' share totaled 31,911 bushels. The Refuge share, 10,515 bushels, is to be used for feeding waterfowl in the fall during periods when grain crops on private lands are being damaged or destroyed by depredating waterfowl.

"It can be seen from this analysis of refuge economic uses", says Gray, "that the Lower Souris Refuge makes a substantial contribution to the local economy in Bottineau and McHenry Counties."

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Lower Souris National Wildlife Refuge
Upham, N. D.

NEWS RELEASE!

May 9, 1955

FISHING ON THE LOWER SOURIS REFUGE TO OPEN SOON

Local sportsmen are reminded that it will soon be time to try their skill on the Public Fishing Areas of the Lower Souris National Wildlife Refuge, Jerald Wilson, Assistant Refuge Manager, reports.

There is no change in the fishing areas from last year. All areas are marked with signs denoting boundarys. Persons desiring more information are invited to stop at the Refuge Office located three miles north of Upham on Highway No. 14.

Many excellent catches of pike were taken on the refuge last year. Popular baits were dark colored single piece pikie minnow type plugs, red and white spoons and live bait. A small spinner attached in front of artificial baits when casting proved successful, Wilson noted.

High water levels have flooded banks upon several of the fishing areas and fishermen are warned that wading along the shoreline will require extreme caution. Attention should be paid to the new 1955 fishing regulations as set forth by the North Dakota State Game & Fish Department which affects both size and daily limit of Great Northern Pike which is the major game fish taken on the refuge. Legal size limit on pike is 18 inches with a daily limit of 3 fish. All State and Federal regulations will be enforced.

BRANCH OF WILDLIFE REFUGES NARRATIVE REPORTS

MR. SALYER _____ MISS BAUM _____

~~MR. GRIFFITH~~ PEG _____

Operations

MR. REGAN _____ MR. DUMONT _____

Land Management

MR. ACKERKNECHT _____ DR. MORLEY _____

Habitat Improvement

MR. KUBICHEK _____ MR. STILES _____

Stenographers

_____ _____

REFUGE LOWER SOURIS PERIOD JAN-APR 1955

PERSONNEL

Donald V. Gray - - - - - - - - - - - - - - - - - Refuge Manager

Jerald J. Wilson - - - - - - - - - (Refuge Mgr.) Farm Planner

John R. Frye - - - - - - - - - - - - - - - Asst. Refuge Manager

Roy W. Carlson - - - - - - - - - -Supervisory Refuge Mechanic

Alvin Brandt - - - - - - - - - - - - - - Maintenance Supervisor

Raymond F. Badke - - - - - - - - - - Maintenance Man (Equip.)

Charles I. Varty - - - - - - - - - - - Maintenance Man (Gen.)

Melvin R. Johnson - - - - - - - - - - - - - - - - -Refuge Clerk

****

Merrill C. Hammond - - - - - -Wildlife Management Biologist

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I. GENERAL

A. Weather Conditions

The following tabulation shows snowfall, precipitation and temperature extremes during the period as compared to the same period in 1954. All observations were recorded at the official weather station at Refuge headquarters.

Month	Snowfall	Precip.	Temperature Max.	Min.
January	8.0	.39	34	- 27
February	T	.10	38	- 36
March	4.0	.86	50	- 33
April	T	.85	81	25
1955 totals	12.0	2.20	ext 81	- 36
1954 totals	19.5	2.60	ext 77	- 40

The past winter was generally cold with below normal precipitation and snowfall. The last sub-zero temperatures were recorded on March 26 following an extended cold period. Pleasant spring weather came in with April and the maximum temperature for the period was recorded on April 10. There were several days with very high winds during the latter part of April and some soil blowing occurred.

B. Water Conditions

The spring run-off began in the last week of March and continued through the first ten days of April. Boundary Creek began running on March 31, the peak flow was reached on April 2, and the flow has been tapering off the rest of the month.

Flow in the Souris River has remained high and all units were raising until peak elevations were reached on April 18. All radial gates at all structures have been wide open since early in April but all units are above approved elevations at the close of the period. There has been water running over the spillways at 332, 341 and 357 dikes.

Rubble-Masonry Unit

This unit was low over winter but, as it is allowed to fluctuate with the river, has been under water through most of April.

320 Unit

Structure gates have been open wide since the regular

drawdown last fall. Water levels climbed gradually all spring and a peak elevation of 1424.35 was reached on April 13. A lessening flow in the river dropped levels to 1423.90 on April 19 but, since that date, levels have been raising again. At the end of the period the gauge at 320 read 1424.30. Approved elevation for this Unit is 1423.70.

326 Unit

All gates have been open wide throughout the period but elevations have been above approved levels since April 6. Peak elevation, 1419.80, was reached on April 15 and the level has been dropping slowly since that date. Approved elevation for 326 Unit is 1418.50.

332 Unit

Gates were raised gradually beginning March 31, until all were wide open on April 9. Peak elevation, 1419.17, was reached April 10 followed by a drop of .75 foot in 48 hours. Investigation showed a washout in the dike between the structure and the spillway. The washout was sandbagged and plugged and water levels dropped slowly the rest of the month and the gauge height was 1417.42 on April 30. Approved elevation for 332 Un Unit is 1416.50.

341 Unit

The peak elevation, 1416.98, was reached on April 10 and all gates were open wide by April 13. This dike also had a leak, reported by a permittee trapper, but it was discovered, dug out and filled in before the dike washed out. Levels had dropped to 1415.82 by the end of the month. Approved elevation for 341 Unit is 1413.50. It had been planned to hold this Unit low for marsh farming operations this year but it will be impossible to accomplish anything until fall due to the high water levels.

357 Unit

All gates were wide open by April 12 but there was a discharge over the spillway during most of April and this Unit remains high at the end of the period. The peak elevation, 1415.70, was reached on April 15 and levels have dropped to 1414.40 at the end of the period. Approved elevation for 357 Unit is 1412.75.

Water damage to dikes and structures included the washout in 332 dike, the muskrat run through 341 dike that was repaired before it resulted in a washout, and a small washout at the bridge at Dam #2.

C. Fires

No fires occurred on Refuge lands but the usual spring burning of grain stubble was accomplished on adjourning private lands.

II. WILDLIFE

A. Migratory Birds

1. Population and Behavior

Canada Geese

The first of our resident flock arrived on March 12 when 28 were seen near Upham and numbers had reached 91 by March 15. These geese remained in the area through a bad storm with blizzard conditions March 22 and 23.

Lesser Canada and Richardson's Geese

The first small Canada geese were seen April 1 near 320 Unit. The spring population was much less this year than in preceeding years. Peak population in 1955 was 650 as compared to 2200 in 1954. Only a few of these geese are still in the area at the end of the period.

White-fronted Geese

White-fronts were first seen on April 4 near the Refuge airport. The spring flight of these geese was also much lower this year with a peak population of 1,500 as compared to 2,800 in 1954.

Snow-Blue Geese

The first Blues and Snows were seen on April 6 with an estimated 1,000 birds seen south of Upham. Peak populations in this area approximated that of 1954 with 150,000 birds recorded. Use of the Refuge was very limited however due to high water levels in Refuge Units and an abundance of field water on adjacent lands in the vicinity. A marked buildup of Blue and Snow geese in this area was noted beginning April 12. Most birds were concentrated in Westhope and Kramer areas.

Whistling Swans

Swans were first seen on April 3 and the peak population was reached by April 9. The peak in 1955 was 450 as compared to 1,700 in 1954.

Arrival dates for common waterfowl and marsh birds for 1955 as compared to previous years are as follows:

Species	Arrival Dates 1955	1954	1953
Mallard	April 3	March 23	March 26
Gadwall	April 6	April 23	April 1
Widgeon	April 5	April 8	March 31
Pintail	April 1	April 5	March 26
Green-wing Teal	April 6	April 8	March 27
Blue-wing Teal	April 12	April 9	April 23
Shoveler	April 4	April 6	March 28
Redhead	April 6	April 14	March 31
Ring-necked Duck	April 4	April 9	April 9
Lesser Scaup	April 6	April 9	March 30
Canvasback	April 6	April 9	April 1
Bufflehead	April 12	April 16	April 1
Ruddy Duck	April 12	April 26	April 23
American Merganser	April 4	April 8	April 11
Killdeer	April 3	March 25	April 7
Western Willet	April 28	April 26	April 26
Marbled Godwit	April 26	April 13	April 23
Mourning Dove	April 7	April 6	April 13
Great Blue Heron	April 7	April 5	April 22

Most spring arrival dates were about the same as in previous years although most ducks arrived one to two weeks earlier than in 1954. Spring waterfowl populations have been very low this year with an estimated peak of 16,000 as compared to a peak of 30,570 in 1954. Pintails and Mallards were especially conspicuous by their small numbers during the spring flight.

Most of the ice was out of all Refuge Units by the middle of April. Some damage from gouging accurred on 357 dike.

Goose Nesting

Nesting islands in 320, 326 and 332 Units were checked for predatory mammals in early April by Brandt, Frye and Wilson. At this time eight skunks were removed from 326 Unit islands. Intensive predator control operations in 332 Unit were resumed this spring around the perimeter and in the interior. To date nine skunks and one coon have been taken.

The first goose nest was located on April 12 on Horseshoe Island in 332 Unit. 38 Canada goose nests were seen on April 25 by Hammond and Smith during a flight for an aerial waterfowl

estimate, and it was estimated that there was a total of 48 nesting pairs on the Refuge. Of the 38 nests observed 23 were in 320 unit, 9 were in 326 Unit, and 6 were in 332 Unit.

One deserted nest containing 7 eggs was found by Hammond and Gray on Gravel Island on April 29. It is believed that this nest was deserted as a result of disturbance by a permittee trapper who was after beaver.

2. Food and Cover

Refuge Units supply an abundance of aquatic foods for the waterfowl concentrations present. Waste grain in stubble fields provides ample food for field feeding waterfowl.

B. Upland Game Birds

Ring-necked Pheasant

Populations on and near the Refuge remain at high levels and winter losses appear to have been negligible. One large flock wintered near the granaries at the old C.C.C. camp and several are commonly seen near Refuge headquarters.

Sharp-tailed Grouse

Dancing ground surveys were rather disappointing this spring as few dancing birds were observed. Sharp-tails are observed frequently however and it is believed that our breeding population is comparable to that in 1954.

Pinnated Grouse

None have been observed for the last two years and dancing grounds have not been heard. The future looks dark for the Prairie Chicken.

Food and Cover

The open winter with little snow accumulation made available food and cover abundant in most areas of the Re fuge.

C. Big Game Animals

An aerial census of white-tailed deer was conducted on January 17 and 18 by Hammond and Robert Nelson, Pilot with the State Game & Fish Dept., in the state-owned aircraft. As snow conditions were poor at the time of the flight, it was believed that many deer were not seen. It was estimated that the Refuge deer herd numbers 150 animals.

Food and Cover

An ample supply of food and cover is available for a herd of this size.

D. Fur Animals. Predators and other Mammals

Beaver

These animals are relatively abundant on the Refuge but remain underharvested. Higher fur prices this year resulted in more incentive showed by trappers and more beaver were taken in 1955.

Muskrats

The muskrat population remains locally abundant in the interior of 332 Unit and in the vicinity of roads and dikes in all Units. Most dikes and road grades have been extensively honeycombed by burrowing muskrats. As mentioned earlier, muskrats were responsible for a washout in 332 dike and the leak in 341 dike.

Raccoon

Coons remain abundant and control measures must be continued.

Badger

Seldom seen but their presence is often felt when driving Refuge patrol roads.

Skunk

Skunk populations apparently remain at a fairly low level and few are seen.

Mink

Mink are apparently rather numerous on the area but few were taken during the trapping season.

Red Fox

Although foxes are fairly common, few are taken by trappers.

Rabbits

Jacks, Snowshoes, and Cottontails are present and locally abundant. Many of the small trees and shrubs about Refuge head-

quarters have been girdled by rabbits this past winter.

Porcupines

These animals are rather rare except in the sandhills area.

E. Predacious Birds Including Crows

Snowy owls were seen frequently during the period but were not as common as in 1954. The last recorded observation was April 18 as compared to May 5 one year ago.

Spring flights of hawks through the area were normal. Marsh Hawks were first seen on March 11 and were common by March 15. The first Red-tailed Hawk was observed March 28, and Swainson's Hawks were reported on March 31. American Rough-legged Hawks were first seen March 11 and peak numbers were reported during the period April 8-10. During this time many dark-phase birds were seen.

Sparrow hawks were first seen on April 13 and soon were common. One large unidentified falcon was observed on February 27.

Great Horned Owls & Short-eared Owls, were present during the period in about the usual numbers.

Few eagle observations have been recorded this spring and it is believed that number of both Golden and Bald Eagles are lower this year.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

Job 622-C-4. Nesting Islands

No work has been possible on this job due to high water conditions, and it appears that continued high river flow will make any operations on this job impossible before June 30.

Project 622-R

Paint Gates

No work has been done on gate painting, due to inability to control weather and water. Upon raising the gates this

spring we were much downhearted to note that the paint was not adhering to the gates and considerable areas of paint had scaled or flaked off 320, 332 and 341 gates. Every recommendation of the manufacturer was followed in preparation of the surface, application of the various coats, time for drying, etc., and we were much surprised to see the condition of the paint upon raising the gates. Sufficient paint is on hand for 357 structure but no further action will be undertaken until we determine the cause of the scaling. A request has been made for an analysis of the job by a factory representative and it is hoped that we can find the way to correct any deficiencies.

Marsh Rehabilitation

No activity possible this period.

Soil and Moisture

During the winter period the Master Economic Plan was revised for the station in order to make necessary adjustments for proper land use and wildlife production. This plan is now in effect and will act as a guide for future work programs under Soil and Moisture allotments.

Light, sandy soils are again being returned to permanent grass this year. Woodlots in pasture units are being excluded by fencing out suitable portions in order to prevent further damage to existing trees and shrub plantings. Strip crop farm operations along with suitable rotations with a grass legume planting are now established.

Farm plans were assembled for use in establishing new field practices and make it possible to compile more accurate data on yields, and permittee performance. Near the close of the period this information proved most helpful in working out spring planning operations with the individual permittees who operate the Refuge's 43 farming units which total 3,587 acres. During these meetings each permittee was brought up to date on current recommendations and future field practices. All permittees have responded well to our more modern farming operations. It has been encouraging to see the interest and enthusiasm that many have shown relative to legumes, fertilizer plots and better land planning. We are hopeful that these practices will soon be carried over to their own private lands.

A joint meeting was held on January 4 with representatives of the Soil Conservation Service and Refuge staff in order to discuss refuge soils maps and land capability recommendations. The SCS personnel in this area have aided greatly in giving

both time and technical knowledge to the land use program of this station.

See Section V, Field Investigations, for other data relative to S & M program.

Miscellaneous Activities

1. Shop re-arrangement - bolt bins, tool boards, additional shop lights, cabinet for shop supplies, etc.
2. Ford, I-16976 - Motor job, transmission & brakes.
3. Briggs & Stratton Motor (Panama Pump) - motor job.
4. Ford Tractor - motor job, cleaned up brakes & installation of rear axle seal, straighten and reinforce guard, replaced wiring.
5. Dodge, I-19048 - Recondition crankshaft & installation of new bearings.
6. Autocar - paint job, heater installation.
7. Kentucky Trailer - relocated dollies, turn lights and clearande lights.
8. GMC COE - new manifold installation, improved turn signals.
9. Int., I-16972 - King pin & shackle job.
10. Ford, I-19282 - Radio installation anc check up.
11. Cletrac - Motor job.
12. Hanson Crane - Welded frame of undercarriage, repair hydraulic lines.
13. Unit Crane - Moved in from Long Lake, dismantled and steam cleaned, made up repair cost estimate.
14. 5,000 mile & safety inspection as necessary on all vehicles.
15. Trips to Riverdale for surplus property & lumber.
16. Washed walls in office and caulk around quarter round at junction of wall and ceiling.
17. Miscellaneous building maintenance.

18. Measuring wood cut under permit as required.

19. Miscellaneous improvements at Quarters #4 including relocating bathroom, plumbing, sewer and water connections, coal bin, etc.

20. Sewer maintenance and cleaning.

21. Gauge readings and gate adjustments - daily after spring breakup.

22. Constructed and set out four photographic blinds.

23. Sandbagged extensive washout in 332 dike, and caught a washout in 341 dike before it was more than a hole caused by a rat or beaver. In latter case hole was filled in by digging down to it and filling it in all the way across the dike.

24. Made up frames for 4 picnic tables (Arrowwood design), moved and erected one latrine, and installed four fireplaces in Freeman Bridge picnic grounds.

25. Mr. Wilson made trip to St. Paul to take delivery of new Ford pickup.

26. Messrs. Wilson, Hammond, Frye and Carlson to Lake Alice Easement Refuge (Sullys Hill) on January 6, 7 & 8 to finish ditching job between Lake Alice & Lake Irvin.

27. Mr. Frye to Silver Lake Easement Refuge (Sullys Hill) for blasting job in removing plug in dike.

B. Plantings

By mid-April field plowing and seeding was well underway. Field operations have been hampered by high winds and flooded potholes. Continued high winds during the last of the period have added more hazards to the never-ending erosion problem found in North Dakota.

The rust problem makes it important to seed wheat early as many permittees feel that their earlier sown grain will mature to the extent that rust conditions will be less severe. During the permittee meetings arrangements were made for the seeding of various crops which included wheat, oats, barley (feed and malting), winter rye, millets, corn and grass legumes.

During spring operations 430 acres of land previously cropped will return to grass as derived through our soil survey and land use changes. Approximately 800 acres of light soils, soils of gravel underlay, gravelly surfaces, or steep slopes will have returned to grass since 1953.

IV. ECONOMIC USES

A. Grazing

No grazing took place during the period. In connection with revised land use maximum stocking rates were established for the 59 grazing units totaling 22,981 acres. Animal use months are established in accordance with the soil types found on the units. Each unit was measured from the soils survey aerial photographs by use of a planimeter and the stocking rate established in accordance with information furnished by Mr. Hugh Cosby, Range Specialist, Soil Conservation Service.

Meetings were held with nine permittees concerning the condition of their pasture during the fall pasture survey. Appropriate reductions in animal use months were made along with cross fencing, better water facilities, etc., in order to improve units in the future.

B. Haying

No haying during the period. It is planned that all hay units will be mapped and marked in order to lessen the confusion of our 77 hay permits. This work was planned one year ago but high water levels prevented operations. In the future each unit will be marked with a metal stake bearing the unit number. An appropriate map will be made of each hay unit and such work will include designated areas that will be unmolested. It is hoped that haying operations can be adjusted to fit our wildlife needs rather than impare them.

C. Fur Harvest

The following is a summary of trapping results for the 1954-55 trapping season.

Species	Total Removed	Trapper's Share	Gov't. Share	Change in total from 1954
Beaver	112	59	53	∠ 59
Muskrat	1306	671	635	∠ 96
Raccoon	66	66	-	- 1
Skunk	33	33	-	- 61
Badger	-	-	-	- 8
Mink	50	22	28	- 30
Weasel	4	1	3	- 12
Fox	2	2	-	- 55

Government furs have not been sold as yet so comparable prices are not available.

One permit was issued for hunting foxes and coyotes from an aircraft. This hunting was done during January and February and resulted in a kill of five foxes, 3 males and two females.

D. Timber Removal

Ten wood cutting permits were in effect during the period totaling a return of $258.00.

V. FIELD INVESTIGATION AND RESEARCH

Wildlife Shrub Plantings

The Refuge received 24 Prensepia sinensis from SCS Plant Materials Technician John McDermand for use in our woodlot rehabilitation work. These plants are found in Canada, growing about 6 ft. in heighth and bear a red berry similar to a cherry which remains on the plant for a long period. Mr. McDermand stated that Canadian Wildlife workers look upon this shrub as a very worthwhile winter food plant. Eighteen of these plants were placed in our cultivated shelter belt near 357 and six plants are growing in the old nursery near headquarters.

Fertilizer Plots

Demonstration plots were planned again for this year. The 15 plots of this springs planting will complete this project. All permittees on the Refuge (with the exception of two wet land units) will have had a plot on their Refuge crop land. Soil samples were collected for analysis. See enclosed soils data sheet in Appendix from fertilizer plots of 1954. All data, yields and soils information has been made available to all farming permittees.

Pothole Seeding

This project was initiated in 1954 on unit A-38 operated by permittee Ted Christianson. A three acre pothole was seeded at that time to Minnesota Crown Reed Canary grass and a mixture of Canary grass and alfalfa upon the dryer sites of the blocked out pothole area. During a discussion with Mr. McDermand, Plant Materials Technician and Mr. Wilson in the fall of 1954, arrangements were made for a pothole seeding experiment which would include other plant species than those already planted. The following sketch map indicates the seeding for this spring. Seed and planting recommendations were received from Mr. McDermand. Mr. Ellison Madden was requested to give any technical assistance or advice on this project. As pothole drainage is taking place at an alarming rate it is desirable to seek some remedy for the problem. Heavy sod-forming grasses will make it possible for operators to cross through a pothole with equipment (if not too wet), plant competition would keep out weeds, farmers could make use of the hay by cutting or grazing.

It is not our desire to seed all refuge potholes as this would impair waterfowl use but we do wish to set up a demonstration which might show farmers that drainage is not the only answer.

Wildlife Food Patches & Suitable Crops

Two of our largest shelter belt and homestead tree groves will have small plots summer fallowed in areas of maximum protection from drifting snow for wildlife food patches which will be seeded next year.

Small trial plantings are being planted by three permittees in order to determine wildlife foods that are suitable and enable us to produce our own seed. These trial plantings are as follows:

Dakota Squaw Corn
Assiniboine Flint Corn (60 day)
Dakota White Flint Corn (70 day)
Mennonite Sun flower
Early Canada field peas.

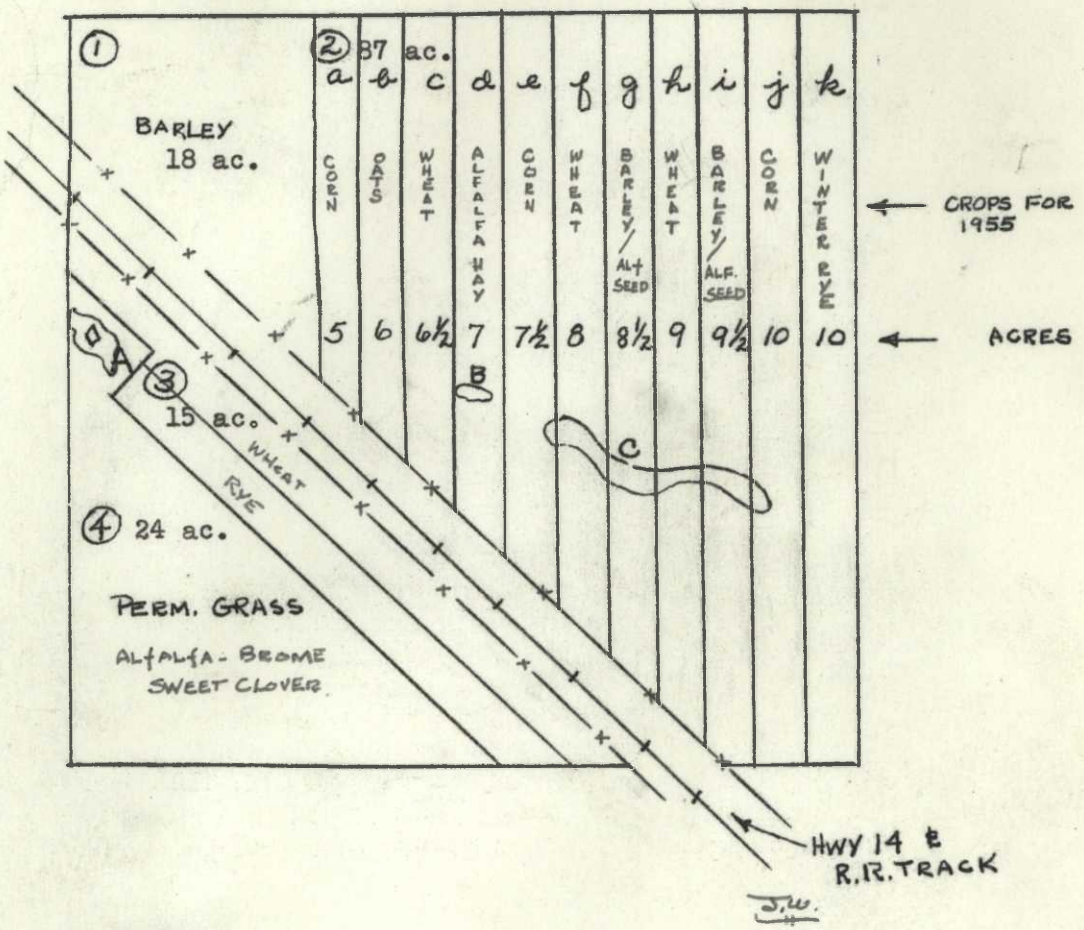
When established these food patches will provide both cover and winter supplements when used with small grains, sweet clover and row crops of corn or corn and field pea mixed.

Winter Upland Game Count

During the winter Mr. Hammond and Mr. Wilson conducted an upland game bird count in the vicinity of winter cover upon the Refuge. It is planned to continue this project in order to evaluate future habitat improvements that are to be made in wood-

STRIP CROP FARMING AND POTHOLE SEEDING

DEMONSTRATION AREA



The above area was selected as a demonstration area by which to show strip crop operations and the planting of sod forming grasses in potholes which in wet years hinder stripping operations.

Pothole A of 3 acres was seeded in 1954 to alfalfa and Reed Canary grass. Good to fair results were obtained and canary grass is now doing well in this wet site.

Pothole B of one seventh of an acre was seeded by hand in 1955 with a mixture of bluegrass, alfalfa and Minn. Crown Reed Canary grass.

Pothole C of 2.3 acres to be seeded in in five block areas consisting of the following: 1. Creeping meadow foxtail with test pattern of alsike clover, ladino clover, trefoil and Astragalus Rubyi (Stipa) 2. Tall wheat with canary grass. 3. Minn. Reed canary grass. 4. Ioneed canary grass, 1953. 5. Doneed canary grass , 1954. The legume seedings will be replicated on two other blocks.

lots. Pheasant and European Partridge flocks have shown considerable improvement over those numbers of recent years.

VI. PUBLIC RELATIONS

A. Recreational Uses

Again as in past years the main attraction this spring was the flight of Blue and Snow geese. As mentioned previously the birds did not use the Refuge to any great extent - preferring the flooded stubble fields. News and radio releases were made so that the general public would know they were here and many people took the occasion to make an effort to see them.

The winter fishing - which season closed March 15 - was very unproductive during the period.

B. Refuge Visitors

Date	Name	Affiliation	Purpose
Jan. 4	A. Fisk	SCS	Soils Maps & Land
"	D. Bannister	SCS	Capability survey
"	R. Moum	SCS	maps.
"	D. Campbell	SCS	"
"	W. Kunkle	SCS	"
"	J. Porter	SCS	"
Jan 13	A. Fisk	SCS	Range Management
14	H. Crosby	SCS	Range Management
	D. Campbell	SCS	Range Management
Jan 17	Robt. Nelson	ND Game & Fish	Deer Census
Jan 31	D. Campbell	SCS	AUM allotment for units
Feb 7	A. Fisk	SCS	Econ. Use Maps
"	D. Bannister	SCS	" " "
"	D. Campbell	SCS	" " "
Feb 10	Pearson	SCS	AUM/ac factors
Feb 16	John Resler	McHenry Co. Comm.	Bdry fence relocation
"	Ray Natwick	Twp Bd Member	" " "
Mar 18	Howard Huenecke	Des Lacs Refuge	Lumber trsf & general
"	Kermit Dybsetter	Lostwood "	" " "
Mar 19	John Resler	McHenry Co Comm	Road Construction
Mar 22	Ellison Madden	River Basins	Pothole discussion
Mar 28	Irvin Nelson	Sullys Hill	Lumber transfer
Apr 7	Nate Farbman	Life Photog.	Pintail story
14			
Apr 13-14	F. A Carpenter	Asst. Ref Supvr	Inspection
Apr 13	E. Madden	River Basins	Pothole seeding
Apr 20	B. Fashingbauer	ND G&Fish	Courtesy call
Apr 23	H. Jensen	USGMA Jamestown	" "
"	N. Nelson	Arrowwood	" "
Apr 27	Homer Bradley	Long Lake Refuge	Equipment transfer
Apr 14	J. W. McDermand	Plant Tech., SCS	Pothole Seeding

C. Refuge Participation

Refuge personnel took part in presenting wildlife information to the various schools within the vicinity of the Refuge during Wildlife Week (March 20 to 26). Drifted roads and heavy snows delayed scheduled appointments during the actual period set aside for Wildlife Week but the following schools were contacted when roads opened up. Particular emphasis was placed on "Save America's Wetlands".

School	Refuge Member	Attendance
Velva	Wilson	282
Upham	Frye	180
Towner	Frye	296
Granville	Frye	154
Maxbass	Wilson	93
Westhope	Wilson	362
Kramer	Johnson	100
Willow City Public	Johnson	180
Willow City Notre Dame	Johnson	110
Bottineau School of Forestry	Gray	110
Newburg	Johnson	130
Deering	Johnson	92
Gardena	Frye	50
Souris	Frye	105
		2,244

Mr. Hammond appeared before the Minot Junior High School on April 15 and showed slides on wildlife. Shown to six groups with 300 attendance.

D. Hunting

No hunting during period.

E. Violations

No violations were noted during the period. Game Management Agents Brevig (N.D.) Hopkins (Minn.) and Cadieux (Iowa) set up temporary headquarters at the Refuge during part of April and patrolled the area frequented by the large concentrations of geese.

VII. OTHER ITEMS

A. Items of Interest

Personnel

Mr. Kenneth B. Baker, Maintenance Man (Equipment) resigned February 11, 1955 to go into private business.

Mr. Raymond F. Badke was reclassified to fill the position vacated by Mr. Baker, having been Maintenance Man (General) CPC-4.

Mr. Charles I. Varty was selected from the register to fill the vacant Maintenance Man (General) position and reported for duty on April 19, 1955. Mr. Varty is no newcomer to Lower Souris, having served in the CCC Camp here when it was in operation.

Oil Activity

At last count there were seven producing oil wells in the North Westhope Field, all of them just west of the north end of the Refuge and within two miles of the boundary. The nearest one is but a half mile from the Refuge. It is fortunate that no, or very little, salt water is encountered in the operations. No problems have been encountered to date in the oil activity around the Refuge, that is, as it affects refuge management.

B. Photographs

Photos taken by Wilson of dynamite work at Lake Alice. See Appendix.

Following were responsible for preparation of this report.

Frye - Sections I, II, parts of III, IV and VI, and NR forms.
Wilson - Section V, and parts of II and VI, and pictures.
Gray - Section VII, part of III and IV.

Respectfully submitted,

Donald V. Gray

Donald V. Gray
Refuge Manager

May 13, 1955

APPROVED: May 20, 1955

Andrew J. Meyer
Acting Regional Director

EASEMENTS

It was impracticable (impossible) to check the easements during the period due to the condition of the roads. A report on the easements will be given in the next narrative.

DITCHING OPERATIONS AT
LAKE ALICE

Loading holes and tamping charge in place to increase flow out of Lake Alice at mouth of ditch.
Hammond, Carlson & Frye

300 sticks of 50% ditching dynamite taking off.

Ditch as it appears flowing out of Lake Alice. All ditching was done by dynamite charges.

Photos by Wilson

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE Lower Souris MONTHS OF January TO March 12, 19 55

(1) Species	(2) Weeks of reporting period									
WEEK ENDING	1/8	1/15	1/22	1/29	2/5	2/12	2/19	2/26	3/5	3/12
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada										
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	50	50	50	50	50	50	50	50	50	50
Black										
Gadwall										
Baldpate										
Pintail										
Green-winged teal										
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
Coot:										

Int. Dup. Sec.,
Wash. D. C.

3-7150a
Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Lower Souris MONTHS OF March 19 TO April 30, 1955

(1) Species	(2) Weeks of reporting period: WEEK ENDING 3/19 (11)	3/26 (12)	4/2 (13)	4/9 (14)	4/16 (15)	4/23 (16)	4/30 (17)	(18)	(3) Estimated waterfowl days use	(4) Production: Broods seen	(4) Production: Estimated total
Swans:											
Whistling			50	450	300	300	60		8120		
Trumpeter											
Geese:											
Canada		100	500	850	650	175	175		17,150		
Cackling											
Brant											
White-fronted				1500	800	100	50		17,150		
Snow				1000*	* 50,000	* 50,000	* 50,000		* 1,120,000		
Blue				2000*	*100,000	*100,000	*100,000		* 2,240,000		
Other											
Ducks:											
Mallard	50	50	100	2500	3,000	300	300		47,600		
Black											
Gadwall				300	900	1,000	1,500		25,900		
Baldpate				300	1,000	200	300		12,600		
Pintail			900	3000	3,000	400	400		53,900		
Green-winged teal				150	150	50	50		2,800		
Blue-winged teal					300	300	900		10,500		
Cinnamon teal											
Shoveler				600	1,100	300	150		15,050		
Wood											
Redhead				250	300	1,000	1,500		21,350		
Ring-necked				300	300	50	50		4,900		
Canvasback				150	200	500	700		10,850		
Scaup				700	2,500	5,000	5,000		92,400		
Goldeneye											
Bufflehead					15				105		
Ruddy					150	150	150		3,150		
Other											
Coot:					700	5,000	5,000		74,900		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	8,120	450	
Geese	* 3,394,300	* 151,450	
Ducks	301,105	12,915	
Coots	74,900	5,000	

SUMMARY

Principal feeding areas

Principal nesting areas

Reported by Frye

* Estimates of Blue-Snow Geese populations are for the general vicinity of the Refuge. Most concentrations were on private lands in the area where very limited use was made of refuge lands.

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

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C. 37944
1953

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(Other than waterfowl)

Refuge Lower Souris Months of January to April 1945

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Red-necked Grebe	1	4/26								
Horned Grebe	3	4/27								
Western Grebe	1	5/4								
Pied-billed Grebe	2	4/12								
White Pelican	4	4/8								
Great Blue Heron	1	4/7								
Bl. Crowned Nite Heron	Common	4/15								
American Bittern	1	4/25								
II. Shorebirds, Gulls and Terns:										
Wilson's Snipe	1	4/18								
Marbled Godwit	9	4/26								
Avocet	1	4/18								
W. Willet	2	4/28								
Ring-billed Gull	3	4/7								
Franklin's Gull	1	4/9								
Common Tern	3	5/2								

(over)

(1)	(2)		(3)		(4)		(5)	(6)
	First Seen		Peak Numbers		Last Seen		Production	Total
III. Doves and Pigeons:								
Mourning dove	1	4/7						
White-winged dove								
IV. Predaceous Birds:								
Golden eagle								
Duck hawk								
Horned owl								
Magpie								
Raven								
Crow	1	3/11						
Am. Rough leg hawk	1	3/11						
Swainson's Hawk	1	3/31						
Marsh Hawk	1	3/11						
Red-tailed Hawk	1	3/28						
Sparrow Hawk	1	4/13						
Snowy Owl			1	4/18				

Reported by.....

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

Interior—Duplicating Section, Washington, D. C.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Lower Souris Months of January to April, 1955

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant									800	
European Partridge									300	
Sharp-tailed Grouse									1,200	
Pinnated Grouse									6	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

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

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Lower Souris Year ending April 30, 1955

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5)
								Share Trapping						
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	Total Popula-tion
Beaver				112					59	53	53			400
Muskrat				1306					671	635	635			5,000
Raccoon				66	2				66					500
Badger														100
Skunk				33	9				33					500
Mink				50					22	28	28			200
Weasel				4					1	3	3			300
Fox				2					2					200
Coyote														10

* List removals by Predator Animal Hunter

REMARKS:

Reported by _____

INSTRUCTIONS

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

(1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)

(2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headingslisted.

(4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.

(5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.

REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

3-1570
NR-8a

REFUGE GRAIN REPORT

Refuge Lower Souris Months of January through April, 1955

(1) Variety*	(2) On Hand Beginning of Period	(3) Received During Period	(4) Total	(5) Grain Disposed of				(6) On Hand End of Period	(7) Proposed or Suitable Use*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Mixed Grain	20,260	-	20,260	-	-	-	-	20,260		20,260	
Wheat											
Barley											
Oats											
Durum											

(8) Indicate shipping or collection points

(9) Grain is stored at Refuge Bins

(10) Remarks

*See instructions on back.

16—61482-1

NR-8a

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

(1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR–9.

(3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.

(4) A total of columns 2 and 3.

(6) Column 4 less column 5.

(7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.

(8) Nearest railroad station for shipping and receiving.

(9) Where stored on refuge: "Headquarters granary," etc.

(10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

16—61482-1 U. S. GOVERNMENT PRINTING OFFICE

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Lower Souris National Wildlife Refuge

NEWS RELEASE! Upham, N. D. April 18, 1955

Where are the ducks? There has been an abundance of water areas in north-central N. D. this spring with a rapid and fairly heavy run-off. In past years, with similar water conditions, such as 1949 and 1950, there have been hundreds of thousands of pintails and mallards using this area during spring migration and thousands remaining to nest. This year they have appeared as hundreds, with many sloughs and potholes lacking birds entirely. M. C. Hammond, biologist for refuges in the Dakotas and Nebraska, reports that the scarcity extends into parts of South Dakota he visited two weeks ago.

In 1954, with a dry spring and few water areas we expected, and had, a reduced duck migration. This year it is evident that Pintails and Mallards either passed further west into Sask. and Alberta, or that the Flyway population is greatly reduced. We will not know until the States, Provinces, Canadian & U. S. Fish & Wildlife Service and Ducks Unlimited complete the annual spring waterfowl inventory in May.

It is now time for pintails and mallards to begin nesting. Blue-wing teal, Gadwalls and most of the late-migrating ducks are arriving in good numbers. The Snow-Blue goose population seems about normal, probably 100,000 to 150,000 birds in the Lower Souris area.

The main Snow-Blue flight has, so far, settled in the Upham-Willow City-Westhope triangle, as they usually do in years with an abundance of field water. In 1954 a large number of the birds used one partly dry refuge marsh area. There was severe damage to several neighboring corn fields, left unpicked for spring cattle feed. It does not appear that difficulties of this sort will arise this spring, but any unharvested fields should be closely watched. Refuge personnel will assist with control measures if advised of potential trouble spots.

Normally these geese do very little damage, as they feed in stubble and fallow fields. Occasionally pasture land bordering a slough or stream will have the grasses removed by browsing and tramping. Feeding on winter wheat or rye at times may improve the stand, but sometimes fields are puddled or packed down sufficiently to permit wind erosion later on.

The quantity of high nitrogen fertilizer left on a field by several thousands of geese has been shown to increase crop yields in some southern states. It would be of interest to know just what this source of cheap fertilization does in this area.

The first eggs of nesting Canada geese were found on April 12, about a week ahead of the average date. This year promises to produce a good crop of young - 40 nesting pairs were located on an early survey. The Lower Souris marshes are at a high flood stage, which is good for nesting geese since the nesting islands are protected from invading foxes and raccoons by wide expanses of open water. Hunters should wait a few weeks before getting their shot guns ready, however, as the weather can still play havoc with the first nestings.

IN REPLY REFER TO

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

Lower Souris National Wildlife Refuge
Upham, N. D.

NEWS RELEASE! April 25, 1955

School students in the vicinity of the Lower Souris Nat'l. Wildlife Refuge, Upham, N. D., were given an opportunity to see and hear about National Wildlife Week sponsored in March of every year by the National Wildlife Federation, Washington, D. C., it was announced by Mr. Donald Gray, Refuge Manager.

The theme of National Wildlife Week was "Save America's Wetlands". Each year since 1938, when President Roosevelt inaugurated National Wildlife Week, the National Wildlife Federation has sponsored the week and focuses public attention upon some particular phase of conservation. This theme was presented to the students and faculty of 14 schools through a short talk, by 5 personnel of the Refuge. The Refuge staff was aided in this program by material provided by the Federation. Slides or movies were shown on various aspects of Refuge activities, giving the students an array of pictures of many species of wildlife. Children from the first grade through high school age were included in the audience.

Upon completion of the talk and pictures a question period was held allowing students to ask questions. Strangely enough the younger students seemed to have more questions. Perhaps they weren't as bashful.

A total of 2,244 students and faculty members attended the 14 showings.

The focusing of attention on America's natural resources is a vital one and to reach the younger generation is of paramount importance.

Best possible image.

SOIL TEST REPORT
FROM FERTILIZER PLOTS ON LOWER SOURIS NATIONAL WILDLIFE REFUGE 1954

Name	Texture	Carbonates	Soluble Salts	pH	Phos. Rating	Name	Texture	Carbonates	Soluble Salts	pH	Phos. Rating	
L. Lattendresse	Loam	Non-limy	Salt free	6.6	Low	B. Faa	Silt loam	Non-limy	Salt free	6.1	Very low	
	Loam	Non-limy	Salt free	6.4	Low		Loam	Non-limy	Salt free	7.0	Moderate	
Orris Moen	Loam	Non-limy	Salt free	6.5	Low	Rolf Hanson	Silt loam	Non-limy	Salt free	6.1	Low	
	Loam	Non-limy	Salt free	5.9	Very low		Silt loam	Slt. limy	Salt free	7.3	Moderate	
Dayton Brandt	Loam	S. limy	Salt free	7.1	High(Border)	Frank DesChamp	Silt loam	Non-limy	Salt free	7.5	High(borderline)	
	Loam	S. limy	Salt free	7.3	High "		Silt loam	Non-limy	Salt free	7.4	Medium	
Nat Brandt	Loam	S. limy	Salt free	7.1	Low	Alden Anderson	Fine sandy	Non-limy	Salt free	6.8	Low	
Selmer Lee	Loam	Non-limy	Salt free	6.5	Very low	Alfred Sivertson	Loam	S. limy	Salt free	7.2	Low	
	F.S. Loam	Non-limy	Salt free	6.8	Medium		Loam	S. limy	Salt free	7.2	Medium	
Gilbert Sivertson	Loam	Non-limy	Salt free	6.7	High	Pete Hillman	VFS Loam	Non-limy	Salt free	7.6	Very low	
	F.S. Loam	Non-limy	Salt free	6.6	Medium		FS Loam	Non-limy	Salt free	7.4	Medium	
Lester Lee	Loam	Non-limy	Salt free	7.1	High	Ray Dagner	Loam	Non-limy	Salt free	7.0	Very low	
Gideon Brandt	Silt loam	Non-limy	Salt free	6.6	Low	Chris Hillman	VFS Loam	Non-limy	Salt free	6.6	Medium)	NW¼S23
	Loam	S. limy	Salt free	7.6	High		Loam	Non-limy	Salt free	6.5	V. low)	
	FS Loam	Non-limy	Salt free	7.7	Low		Loam	Non-limy	Salt free	6.5	V. low)	S½ SE¼
	Loam	S. limy	S. effected	7.1	Very low		Loam	Non-limy	Salt free	6.8	Medium)	Sec. 23
Leo Lattendresse	VFS Loam	Non-limy	Salt free	7.2	High	Leifur Benedictson	VFS Loam	Non-limy	Salt free	6.9	Medium	
	VFS Loam	Non-limy	Salt free	7.1	High		Loam	Non-limy	Salt free	6.6	Low	
Fred Rice	Silt loam	Slt. limy	Salt free	7.2	Low	Ted Christianson	FS Loam	Non-limy	Salt free	7.4	Low	
	Silt loam	Slt. limy	Salt free	7.1	Medium							

Phosphorus Ratings:

High: Poor prospect of response from use of phosphorus fertilizer on crops grown on soils rating "high". Response will occur on border line tests, however. It is suggested that you fertilize occasional strips & make on the spot tests for this group.

Medium: Crops grown on soils rated Medium usually respond to application of phosphate fertilizer. Even though no response is obtained the first time phosphate fertilizer is tried on these soils, very profitable response may be obtained on the average. Leave a check strip with no fertilizer in order that you may observe any difference in crop performance. Wherever possible, make actual yield determinations.

Low: These soils respond to phosphate fertilizer in a very high proportion of cases.

Very Low: These soils almost always respond to phosphate fertilizer.

Abbrev.: Slt. - slightly. S. - slightly. VFS - very fine sandy. F.S. - Fine sandy.