X

Narrative Report Routing Slip

Mr. Salyer _____ Mr. Ackerknecht _____

Mr. Crawford _____

Administrative Services

Miss Bass _____

Operations

Mr. Farnsworth _____ Mr. Regan _____

Public Use

Mr. Pelton _____ Mr. Kubichek _____

Mr. Stollberg _____

Resource Management

Dr. Morley _____ Mr. Hickok _____

Wildlife Management

Mr. Banko _____ Mr. Stiles _____

Mr. Goldman _____

Refuge LOWER SOURIS _____ Period September - December 1963 _____

NARRATIVE REPORT

LOWER SOURIS NATIONAL WILDLIFE REFUGE

For

SEPTEMBER - OCTOBER - NOVEMBER - DECEMBER

1961

UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF SPORT FISHERIES AND WILDLIFE

FISH AND WILDLIFE SERVICE

UPHAM, NORTH DAKOTA

REFUGE PERSONNEL

Edward J. Smith, Jr. .....Refuge Manager

E. Marvin Mansfield.....Refuge Manager

Lawrence W. DeBates.....Refuge Manager

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

Alvin Brandt.....Maintenanceman

Raymond F. Badke.....Maintenanceman

Charles I. Varty.....Maintenanceman

Wilfred J. Hill.....Refuge Clerk

****

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

****

Donald R. Goodman.....Laborer

Morris H. Hovland.....Truck Driver

Leonard A. Thompson..... Tractor Operator

TEMPORARY EMPLOYEES

C O N T E N T S

NARRATIVE REPORT

LOWER SOURIS NATIONAL WILDLIFE REFUGE

For

SEPTEMBER - OCTOBER - NOVEMBER - DECEMBER

1961

I. GENERAL

A. Weather Conditions.

	Snowfall	Precipitation This Month	Precipitation Normal		Max. Temp.	Min. Temp.
September	0.0	3.43	1.37		89	28
October	0.0	0.00	.90		84	15
November	Trace	Trace	.59		74	0
December	5.5"	.24	.46		50	-28
Total	5.5"	3.67"	3.32"	Extremes	89	-28
Annual Total	25.7"	10.26"	16.66"			

The above weather data was obtained from records of the official weather station maintained by Mr. Hill at refuge headquarters.

Precipitation was above average for the month of September but a warm dry spell followed in October and November. Freezeup came November 2 when the temperature tumbled to 15 degrees.

Snow depth on the ground averages about 4 inches at this writing where enough cover exists to keep it from blowing and drifting away.

December was a cold month with 23 days having a temperature below the zero mark. No real blizzards occurred during the period in this immediate area.

B. Habitat Conditions

1. Water

The September rainfall, a reduced commitment to Canada from 20 cfs to 10 cfs and a release from Lake Darling gave us additional water during the fall migration period. This water delayed complete drainage of our northern-most impoundments for a short time only. The hot dry October and November resulted in almost complete pool bottom exposure of 357 and 341 units.

At time of freezeup on November 2 we recorded the following pool elevations and acre-foot capacities:

	Gauge Reading	Acre-feet Capacity
Rubble-masonry unit	Dry	-
320 pool	Dry	-
326 pool	1417.7	500
332 pool	1416.5	3,900
341 pool	1410.0	150
357 pool	1409.7	1,700
	Storage on hand.....	6,250

Total capacity of refuge impoundments = 45,095 acre-feet.

With below normal precipitation recorded the past year and very little snow cover, we have doubts about obtaining desired objectives in water management for 1962.

2. Food and Cover

Harvest of small grains was completed last period and feeding stations did not have to be supplied with grain during September. Some supplemental feeding was done to bait mallards into banding sites.

Off refuge field feeding by mallards and white-fronts was quite extensive this fall. There was much waste grain because stalk growth was too short to harvest by conventional harvesting equipment.

Supplies of aquatics were short because of constricted open water areas. Growths of alisma (plantain), fireweed and goosefoot provided some attraction for waterfowl to mud flats.

The marsh is providing overwinter cover for pheasants in 326 and 332 units. Deer are using the shelter of phragmites.

A survey of the riverbottoms in late December showed much deer sign and plenty of available browse.

Soil moisture was renewed in September by over three inches of rain and grasses greened up again and some pasture regrowth was observed. However, a check of subsoil moisture in late October indicated a very dry condition.

II. WILDLIFE

A. Migratory Birds

Ducks

Due to rapid receding water levels in September (357, 341 and 320 units went dry) duck numbers dropped to 50,000 from an August peak of 127,000. Water releases from Lake Darling in September temporarily alleviated the condition but it was not enough to stem the loss of aquatic habitat. The peak duck population for the period was only 70,000 birds during the week of October 7 - 14.

Early field feeding flights were common as aquatic food supplys were exhausted and only two feeding stations were in operation. Depredation was slight because of the poor crop and early harvest.

Duck use was greatest in 332 unit. After the release from Lake Darling high use was noted on 357 and 341 units.

The majority of the pintail, gadwall, green-winged teal, blue-winged teal, baldpate, shoveler, ruddy and coot had vacated by October 25. Mallard, scaup, redhead and canvasback departed by November 2. The migration was gradual and the only significant movement sighted was on November 2 when the temperature dropped to 15 degrees.

All duck numbers were down but the largest reductions were noted in pintail, baldpate, gadwall, ruddy, canvasback and redhead.

Coot

These birds peaked at 14,000 compared to a 250,000 peak the previous year. No mass movement was seen but most of the birds had disappeared by October 25.

Canada Geese

Only two flocks of small Canadas were identified, 50 on October 3, in 357 unit and 30 on October 5, in 341 unit.

About 500 common Canadas were present during the week September 18-26 and probably not more than 300 until October 16. Numbers enlarged to 710 on October 25 and apparently they migrated that same evening.

White-fronted Geese

Arrivals appeared during the period September 4 to 30 when a peak of about 13,000 birds was reached.

Departures occurred October 5 through October 25. The hunting season opened October 7 with about 11,000 present. Despite hunting pressure (½ day season) and a coinciding cold front, 8,700 white-fronts remained until October 10. Departures October 11-13 reduced the population to 3,700. Most of these left about October 18-19, but 500 remained until the evening of October 25.

Snow-Blue Geese

These birds appeared in small numbers with the white-fronts. On September 27-29 we counted 214 Snow-3 Blue color phase. On October 16, 107 Snow-9 Blue were counted in 357 unit. Last migrants heard were on the evening of October 25.

Whistling Swan

Swans first appeared (27) on September 24. Few numbers of gray colored cygnets were seen among the concentrations. Only eight percent of the counted birds were cygnets.

Food shortage, due to low water, undoubtedly prevented a large build-up from occurring. Many of the feeding flats of past years were dry.

Mourning Dove

Most had migrated by late September. One straggler was detected on December 11.

Sandhill Crane

A peak number of 150 were seen on October 24. Cranes were first heard on August 7.

Shore Birds

Low water conditions exposed mud flats and many shore birds were observed.

Other Birds

Christmas Bird Count - From Freeman Bridge on Upham-Willow City road northwest to 326 Dam and southeast to Willow Creek bridge; marsh 33%, meadow 33%, wooded riverbottom 34%. December 29; 8:30 a.m. to 5:00 p.m. Cloudy; temperature: -24 degrees to -2 degrees below zero; NW wind at 0-5 m.p.h.; snow on ground averaged 4" deep. Two observers in one part.

Total party hours: 17 (6 on foot, 11 by car). Total party miles: 42 (8 on foot, 34 by car). Sharp-tailed Grouse, 22; Ring-necked Pheasant, 32; Gray Partridge, 7; Snowy Owl, 1; Short-eared Owl, 3; Downy Woodpecker, 2; Blue Jay, 1; Black-billed Magpie, 5; Black-capped Chickadee, 13; White-breasted Nuthatch, 4; Bohemian Waxwing, 45; House Sparrow, 116; Red-winged Blackbird, 13; Evening Grosbeak, 4; Pine Grosbeak, 41; Common Redpoll, 6; Total 16 species; 315 individuals. Observers: Merrill C. Hammond and Edward J. Smith, Jr.

B. Upland Game Birds

Ring-necked Pheasant

Approximately 150 birds are wintering near feeding stations and adjacent marshes of 320, 326 and 332 units. Another 150 plus birds are scattered throughout the remainder of the refuge and the birds are wintering well at this writing. We have a slight increase in our wintering population over the past year.

Sharp-tailed Grouse

Movement into the sandhills area is apparent. Wintering flocks of 25 to 30 are common. Winter population seems to be higher than last year.

Gray Partridge

Many coveys are seen throughout the refuge and adjacent lands. The increase, in wintering population, is probably greater than any of the other upland game species.

C. Big Game Animals

White-tailed Deer

Deer are still scattered. No large movement has taken place into the sandhills area. Mild weather conditions and lack of snow has retarded the usual movement at this time of year. Some movement was noted on the winter bird count in the sandhills and river bottom area.

The annual deer track count in the sandhills area was done on December 7 and only 3 tracks were seen. Last year 38 tracks were seen on this same route on November 29. This count is made after the first fresh snow.

D. Fur Animals, Predators and Other Mammals

Muskrat

The annual survey of 'rat houses was made on 326 sample area

during December. Following is a tabulation of counts made in recent years:

Year	No. Houses (326 Unit)
1956	149
1957	No Count
1958	340
1959	334
1960	237
1961	108

This year's count was the lowest in the past six years and can probably be contributed to the fact that low water levels reduced the available habitat.

Muskrat were not included in this year's trapping season set by the State.

Mink

In the existing habitat mink were numerous. Trappers were fairly successful as shown in the fur harvest section.

Weasel

Weasel numbers are still at a high level. During the controlled burn in the 320 unit many were observed.

Beaver

Inhabitated beaver lodges were less than last year. A few lodges exist near the control structures or where adequate water is available.

Raccoon

Very abundant throughout the refuge, however, hardly any movement noted at this writing. A real cold spell in early December put these fellows away for the winter.

Skunk

Are abundant and some movement was apparent over the warm spell in late December.

Red Fox

Are numerous in all areas. Control measures were employed during this period.

Coyote

An occasional sighting is made in the sandhills area. Tracks were seen during the deer track count in December.

Rabbits and Other Mammals

We have a healthy population of cottontails and many using the nursery area. Snowshoes are readily seen in the river-bottom of the sandhills. A few jackrabbits are found on the upland.

We saw a porcupine with scorched quills after the controlled burn in 320 unit.

E. Hawks, Eagles, Owls, Crows and Magpies

Hawks

Swainson's, Red-tailed, Rough-legged, and Marsh hawks were common during this period. A couple of Sparrow hawks were seen also.

Eagles

Three sightings of Bald eagles were made during November and December.

Owls

Horned owls are present and have been trapped when harrassing the geese. Snowy owls were first observed on November 17 and six sightings have been made since this time. One uses our aerial at headquarters for his daily observations.

Crows and Magpies

The fall migration of crows took place prior to the legal time of carrying a shotgun afield. State law prohibits carrying a shotgun afield prior to opening of upland season so the crows went south with all their feathers and one avid crow hunter was despondent.

A few magpies are seen around the refuge area.

G. Fish

Suckers were present above the 326 structure after the fall release from Lake Darling. Minnows and an occasional perch were seen near the 326 and 332 structure.

I. Diseases

No diseases this period.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

Roads

1. Graveled and graded the headquarters entrance road, airport patrol road and approaches to 320 dike.

Buildings

1. Added a small room on the basement of Q-31.
2. Painted the exterior and most of the downstairs interior in Q-29.
3. Replaced downstairs windows, installed new kitchen cabinets, and put in a fan and range vent in Q-29.
4. Painted a bedroom in Q-32-2.
5. Installed formica covering on the laboratory table top.
6. A new chimney was erected for the shop furnace.

Miscellaneous

1. Dug 80 new potholes in 341 unit.
2. Installed a fire siren on the shop roof.
3. Cut out ice and inserted hay plugs at 326 and 332 structures.
4. Hauled grain from Snake Creek, Arrowwood and Sand Lake refuges.
5. Overhauled engine in Dodge dump, I-50502.

B. Plantings

1. Aquatic and Marsh Plants

None.

2. Trees and Shrubs

None.

3. Upland Herbaceous Plantings

None.

4. Cultivated Crops

The drought caused a considerable reduction in small grain yields. Wheat averaged about five, barley about four, and oats about ten bushels per acre. This does not allow for the fields which were not feasible to harvest. Wheat averaged better than barley because it was usually planted on summer fallow.

C. Collections and Receipts

1. Seed or Other Propagules

None.

2. Specimens

None.

D. Control of Vegetation

The dry weather seriously affected leafy spurge control efforts. The 400 acre plot did not receive the usual second aerial application.

Early spraying efforts with Radapon and Weedazol were more effective than summer applications of 2,4-D. (see Pest Plant Control Report).

F. Fires

On September 5 a call was received at headquarters that a fire had started in hay unit H-9. It started from sparks from a tractor working in the unit. Refuge personnel loaded the water tank and pump on the Jeep and took off. The Upham fire truck was already on the scene with three men, and three volunteers appeared later. The fire was suppressed by attack from both flanks. This could have been a costly fire because of the number (75) of hay stacks in the unit. The fire burned approximately two acres and went between two stacks without damaging either one. The drouth had made the fire hazard very high.

IV. RESOURCE MANAGEMENT

A. Grazing

The drouth was temporarily broken in September, but relief came too late to save the eight permittees who were required to remove their cattle during September. As a result of these rains a majority of grazing units were in good condition at the close of the season (October 15). All cattle observed during routine checks appeared to be in excellent condition.

In 1961, 48 permittees (same as 1960) utilized 4,500 AUM's. This compares with 4,124.39 AUM's in 1960. The increase is primarily a result of counting calves as 1/4 AUM.

B. Haying

The past haying season will long be remembered for the mad dash for emergency hay. People were desperate for hay, as characterized by one individual who came in to ask, "do you have some cattails with a little grass mixed in that I can cut." Except for a few areas withheld for study, the entire refuge was opened for emergency hay cutting. The permittees were asked to cut a maximum of 20 tons. As could be expected eight of the 74 emergency hay permittees cut in excess of 30 tons. We neglected to include a penalty on the permit so these hogs got off the hook. A slip on our part that won't happen again.

Everything considered, the emergency hay program went off very well. It created much good will in the area. As illustrated in the following table the 1961 haying season would have been a complete flop without it.

Year	No. Permittees	Tons Cut		Revenue
		Regular	Emergency	
1960	55	3,364	-	$5,050.86
1961	87	1,123	1,629	$5,811.78

Revenue increased because the price of regular hay was increased this year from $1.50 to $3.00 per ton. Emergency hay went for $1.50 per ton.

C. Fur Harvest

The 1961 mink and weasel trapping season ran from noon November 17, through December 3. It was only a fair season in spite of a good population, especially in the wooded parts of the refuge. Snow cover was lacking except for a trace toward the season end.

Regional Office approval was received authorizing a November 1 start on long-fur animals. Several permittees took advantage of this and the results were gratifying.

The table below compares 1961 with 1960.

Permittee 1961	Permittee 1960	Unit	Mink '61	Mink '60	Weasel '61	Weasel '60	'Coon '61	'Coon '60	Skunk '61	Skunk '60	Fox '61	Fox '60
L.Olson	T.Larson	1,2	2	6	-	-	7	2	'6	1	3	-
M.Teske	H.Teske	3,4	8	10	-	-	1	2	5	8	-	1
H.Teske	C.Torgerson	5,6	20	27	-	-	10	3	19	8	6	-
L.Benedicktson	D.Forschen	7	17	1	2	-	6	-	23	-	19	-
A.Lehmann	A.Dokken	8,9	18	8	15	-	7	19	4	12	-	2
H.Liebelt	H.Liebelt	10	3	2	-	-	11	-	8	8	1	-
Subtotal.			68	54	17	0	42	26	65	37	29	3
M-man Brandt			-	-	1	-	19	2	15	-	28	11
Grand Total			68	54	18	0	61	28	80	37	57	14

No beaver were trapped in 1961, compared to 12 in 1960. Eight badger were trapped in 1961 and one in 1960. The season was again closed on muskrats. The changes in trappers were voluntary except for Forschen, who was dropped for obvious reasons.

Prices received per animal by one trapper were as follows:

25 whole fox	$ 1.50
17 whole raccoon	2.00
7 badger	.50
6 male mink	27.00
2 female mink	10.00
10 skinned fox	2.00
1 weasel	.50

D. Timber Removal

Six timber removal permits were issued and resulted in 31 cords of fuel, 20.95 cords of posts and 0.5 cords of poles being cut. Refuge income was $170.55.

F. Other Uses

1. Gravel

Five special use permits were issued for the removal of 4,550 cubic yards of gravel at $.10 per yard.

2. Bee Colonies

Powers Apiaries, Inc. removed their 300 hives this period.

V. FIELD INVESTIGATION OR APPLIED RESEARCH

A. Progress Report

Job XIII - Canada Goose Management

Summarized below is the status of the captive goose flocks as of December 31, 1961:

Year Captured	Number	Number on Hand	Release Schedule	Number Released
1956	29	0	Spring,'59	3
1957	20	0	Spring,'60	9
1958	27	9	Spring,'61	9
1959	25	0	-	-
1960	35	21	Spring,'63	-
1961	3	0	-	-

1956 Flock

The three survivors of the 1956 flock were released in the spring of 1959 but failed to migrate and were recaptured and wintered during the 1960 period in the goose pen. They were released again in 1961 and they did not return to the pen and the fate of these birds is unknown. They were banded with an aluminum band on the right leg and a plastic orange band on each leg.

1957 Flock

The release of nine geese was completed in the spring of 1960. One of these birds used the goose pen this year. These birds carry an aluminum band and a plastic orange band on the left leg.

1958 Flock

The remaining 9 birds of this flock were permitted to escape in the spring of 1961. These birds frequented the goose pen until they migrated in mid-November. One brood was brought off in the goose pen this year and it is suspected that the parents were from this group. Originally the birds carried an orange band on both legs and an aluminum band on the right leg. Ten birds from this flock were recaptured in the wing clipping operation in the goose pen and some bands were replaced. In 5 cases orange bands were missing from both legs.

1959 Flock

The poor success with this group continued as we lost the remaining two birds. One died and apparently the other escaped.

1960 Flock

This flock, consisting of 35 juvenile birds, was captured by drive trapping in 320 pool during the last week of June and the first week of July. At the time of capture the sex ratio of the flock was 13 males and 22 females. Of this group, 2 died in 1960 and one was killed by a Horned owl in 1961. These birds were wing-clipped on July 3, 1961, but eleven developed enough flight feathers by November to escape.

1961 Flock

Only three birds were captured in 1961 due to poor reproduction. The three birds captured were hatched in the goose pen. On July 3, 1961, these birds had not developed enough to clip and prior to clipping they reached the flight stage and escaped. It is believed they still frequent the goose pen.

Job XII - Waterfowl Depredations Control - 1961

Only one case of "near" depredations was noted this harvest season. A flock of approximately 2,500 ducks was observed flying out SW from 332 Unit and landing in a harvested field adjacent to a swathed field containing three scare crows. Evidently the farmer put up the scare devices as a precautionary measure. We located the owner and he indicated no damage had occurred but asked us to help keep an eye out for him. We patrolled this area regularly by plane and car until the field had been combined. The ducks were either afraid of the scare crows or preferred the waste grain in the harvested field.

Harvest progressed rapidly from July 31 to August 21. On the latter date 94% of the crop was in the bin.

Feeding stations were manned beginning August 3rd to August 21. A total of 2,245 bushels of mixed grain were fed during this period. Six feeding stations were in operation. Peak numbers of ducks using feeding stations was 42,800 recorded on August 17.

The plane was used only five days from August 15 - August 19.

Loss or damage chargeable to ducks this year was considered negligible.

FALL WATERFOWL BANDING

Dew Line Banding

Mallard banding began on August 22 and was discontinued on October 6. 1516 mallards were banded. Of this total 134 were immature (8.8 per cent). The age and sex composition were as follows:

Adult Male:	886
Immature Male:	72
Adult Female:	496
Immature Female:	62

During early season banding, a male/female ratio of 3.8/1 was occurring as evidence of banding a molting population. This ratio reached 1/1 during the week of September 24-30 when the molting population had been dispersed and the females with broods began to frequent our trap sites.

Some late molting was noted in the female mallards. The data collected were as follows:

Date	Sample Size	No. That Had Not Molted Primaries	Per Cent Of Sample
9/14/61	65	4	6.2
9/26/61	16	2	12.5
9/27/61	64	1	1.6
9/28/61	69	1	1.4

Thirty-one banded birds were re-trapped. Of this total, 18 were foreign returns, 6 were banded at this station prior to this year and the remaining 7 were retakes.

The foreign returns were banded originally as follows: Manitoba 3; Saskatchewan 6; Missouri 2; Tennessee 2, Maryland, Wisconsin, Kansas, Wyoming and South Dakota each 1.

White-fronted Goose Banding

Banding attempts of the wary white-fronts began in mid-September and were discontinued on October 7. After all was said and done, 127 more white-fronts of the central flyway wore bands. Of this total, 73 were immature birds. This is not an indication of production as shown in the "White-fronted Goose Productivity Study" section.

WHITE-FRONTED GOOSE PRODUCTIVITY STUDIES

Origin and migration route of these White-fronts before arrival at Lower Souris remains unknown.

If our population estimates are correct and the same birds used the refuge in both 1960 and 1961 the annual loss was 3,630 birds (about 25 per cent) between Septembers of each year.

Age data for 1960 and 1961 showed:

	1960	1961
Per cent immature.	58.3	18.75
Young per family	4.37	2.57
Per cent of adults with families (productivity).	65.0	17.2
Per cent of total immatures without parents. . .	9.2	0.27
Per cent on adult families	17.3	8.3
Immature per adult	1.39	0.23

With a large number of young raised in both 1959 and 1960 (about 50 per cent immature, Lynch's 1960 report), the high spring 1961 yearling component left a small fraction of adult breeders in the population. This factor alone would have caused a low productivity rate. A reduction in young per family was chiefly responsible for the relatively low immature ratio, as compared with the potential (this may suggest weather factors).

Group size was significantly lower in 1961 than in 1960 throughout the season. This was due to (1) smaller numbers of young in family groups, and (2) a higher preponderance of adult flocks in the lower flock size bracket.

A seasonal decline in group size appears to be correlated with arrivals of population segments having increased proportions of adults and yearlings.

Average group sizes for 1960 and 1961 for various large flocks was:

1960		1961
5.22	326 unit flock	4.23
	341 unit flock	4.59
	357 unit flock	4.03

One 1961 "population" (357 unit - north) sampled before and after the hunting season did not change in average size. An apparent reduction occurred during this period in 1960 in the 32-/326 flock (5.71 to 5.62), possibly due to hunting mortality. The 1961 357 unit flock was observed feeding on Alisma flats and newly flooded areas on several feeding periods after hunting season opened. This flock was also the last to leave.

Merrill C. Hammond

SUMMARY OF BAND RETURNS AT LOWER SOURIS REFUGE FROM 1936 THROUGH 1960

During the period 1936 through 1954, 2,746 band returns had been received from waterfowl of all species banded at Lower Souris Refuge. From 1955 through 1960, an additional 676 returns were received for a combined total of 3,422 returns.

No great change has occurred in the return data for period 1955 through 1960. North Dakota again tops the list with 14.3 percent of all band returns. Texas is second with a 9.8 per cent. Arkansas is thrid with a 8.4 per cent.

The percentile breakdowns for these two periods and a combined percentile breakdown are shown in the table below:

State	Period '36-'54	Returns Percent	Period '55-'60	Returns Percent	Returns Total	Total Returns Per Cent
Alabama	13	.5	4	.5	17	.5
Arkansas	302	10.9	56	8.4	358	10.4
California	27	1.0	26	3.9	53	1.7
Colorado	20	.7	5	.6	25	.7
Florida	8	.3	7	1.0	15	.4
Georgia	3	.1	1	.2	4	.1
Idaho	1	.1	5	.6	6	.2
Indiana	10	.4	6	.9	16	.5
Illinois	189	6.8	36	5.3	225	6.6
Iowa	160	5.8	21	3.1	181	5.2
Kansas	89	3.2	19	2.8	108	3.1
Kentucky	5	.2	4	.5	9	.3
Louisiana	191	6.9	43	6.4	234	6.8
Maryland	4	.2	15	2.3	19	.6
Michigan	14	.5	3	.4	17	.5
Minnesota	179	6.5	49	7.3	228	6.7
Mississippi	39	1.4	7	1.0	46	1.2
Missouri	132	4.8	28	4.2	160	4.7
Montana	15	.5	1	.2	15	.4
Nebraska	81	2.9	20	3.0	101	3.0
Nevada	1	.1	1	.2	2	.1
New Jersey	1	.1	1	.2	2	.1
New Mexico	2	.1	2	.3	4	.1
New York	1	.1	2	.3	3	.1
North Dakota	403	14.6	97	14.3	500	14.6
Ohio	8	.3	0	-	8	.2
Oklahoma	75	2.7	2	.3	77	2.3
South Carolina	13	.5	5	.7	18	.5
South Dakota	157	5.7	26	3.9	183	5.5
Tennessee	33	1.1	12	1.8	45	1.3
Texas	248	9.1	66	9.8	314	9.2
Utah	6	.2	2	.3	8	.2
Virginia	4	.2	5	.7	9	.3
Washington	1	.1	2	.3	3	.1
Wisconsin	26	.9	6	.9	32	.9
Wyoming	2	.1	0	-	2	.1

Canada	Period '36-'54	Returns Percent	Period '55-'60	Returns Percent	Returns Total	Total Returns Per Cent
Alberta	17	.6	3	.4	20	.6
Saskatchewan	89	3.2	24	3.5	113	3.3
Ontario	15	.6	3	.3	18	.5
Manitoba	126	4.6	42	6.2	168	4.9
Northwest Territory	1	.1	2	.3	3	.1
Other						
Outside U.S.	35	1.3	18	2.7	53	1.6
TOTAL.....	2,746	100%	676	100%	3,422	100%

VI. PUBLIC RELATIONS

A. Recreational Uses

Visitor days of public use increased in 1961. Hunting use, particularly on big game, increased because of the longer season this year. The miscellaneous heading of Economic Use made a large increase because of the heavy permittee traffic induced by the emergency haying program. The "Other" category is made up of construction workers building highways and power lines across the refuge. There was some increase here because of Highway 14 reconstruction and the Otter Tail transmission line through the Sandhills. All other use categories remained about the same.

B. Refuge Visitors

Date			
9/5/61	E. Richwalski	FWS, Kenmare, N.D.	Return equipment
9/8	A. Brazda	FWS, Minneapolis	Aerial w.fowl census
9/13	D. Campbell	SCS, Towner, N.D.	Range survey
9/15-16	R. Smith	FWS, Patuxent	Waterfowl banding
9/18	J. Dahl	FWS, Foxholm,N.D.	Pickup banding nets
9/19	L. Harrison	FWS, Minneapolis	Quarters survey
9/19-20	H. Duebbert	FWS, Devils Lake,N.D.	Waterfowl census
9/21	H. Jensen	FWS, Jamestown,N.D.	Courtesy call
	J. Waters	FWS, Minot, N.D.	" "
9/29	H. Jensen	FWS, Jamestown,N.D.	Patrol activities
9/30-	H. Miller	FWS, Lake Andes, S.D.	White-front banding
10/6	A. Adams	NDG&F, Rugby,N.D.	" " "
10/3	C. Schroeder	NDG&F, Bismarck,N.D.	" " "
11/6	A. Studholme	FWS, Minneapolis	Visit
	H. Jensen	FWS, Jamestown,N.D.	"
12/6	C. Estheimer	FWS, Minot, N.D.	Wetlands acquisition

C. Refuge Participation

9/3 - Smith met with McHenry County Commissioners at their request to discuss mutual problems and become better acquainted.

9/18 - Smith presented talk to Bottineau Lions Club on refuge hunting opportunities and regulations.

9/20-22 - Hammond attended Prairie Chicken Conference in Pierre, South Dakota.

10/24-10/26 - Hammond met with Bureau personnel and Nebraska Game officials at Ogallala, Nebraska to discuss development and expansion of the Kieth-Garden Goose Management Area.

11/7-9 - DeBates, Hammond, Mansfield and Smith attended wetland management conference at Jamestown, N.D.

12/5 - Smith met with Bureau personnel and Bottineau County Commissioners re wetland acquisition proposals.

12/6 - Smith met with Bureau personnel and McHenry County Commissioners re wetland acquisition proposals.

12/12 - DeBates and Hammond attended meeting with Waterfowl Production Area personnel, Canadian Wildlife Service and Ducks Unlimited representatives in Minot re mutual problems.

12/29 - Hammond and Smith made the annual Audubon Christmas Bird Count.

D. Hunting

Waterfowl

Weather was warm and mild for the opening weeks of waterfowl season. White-fronted geese remained a little longer than usual, the last remaining birds departed October 25. The estimated total kill was slightly less than last year. We do not know what effect the 1/2 day season may have had on kill or hunter success. The white-fronts tarried here a few days longer and in fair sized numbers but believe they are too wary for the type of hunter we have (fence line shooters) around here. Some fair success was obtained by those hunters who took the trouble to set up decoys in field feeding areas off the refuge. Waterfowl hunter use days on the refuge was estimated at 1800.

Deer

The entire refuge, except for a small closed area around headquarters, was open for deer hunting during a 4-1/2 day gun season beginning at noon November 10. Forked antlered deer only was legal the first day and a half. Any deer was legal the last three days.

Opening day was a hot, dry 70 degree day with low success. Most of the kill took place on Sunday when any deer was legal. Hunter success was estimated at 45% on the refuge and computed on the basis of 500 hunters taking 225 deer. Hunter use days was estimated at 2,000 for the taking of big game.

E. Violations

A couple of "juvenile" cases of early shooting at geese were turned over to USGM agent Waters for disposition. No prosecution has been reported at this writing.

A break-in and theft of pyrotechnics used in duck depredation work was discovered after Halloween night. About $300. value was placed on material taken which included grenades, firecracker salutes, shell crackers and cannon net charges. These were taken from the old Benson granary where the items were stored the first part of October. The McHenry County Sheriff and FBI agent were put upon the case and apprehended four local youths who admitted their guilt. About half of the material was recovered. The case was processed in juvenile court and the four boys have been placed on probation and are required to pay back cash in the amount of $150.00 for the loss. These boys were also found guilty of damaging the Deep River gauging station recorder belonging to the U. S. Geological Survey people in Bismarck.

VII. OTHER ITEMS

A. Items of Interest

Safety meetings were held regularly every month:

September - Fire Suppression Methods
October - Fire Prevention Week
November - Safety Hints for the Home
December - Winter Driving Hazards.

We have had no lost time accidents for 565 days as of December 31.

Mr. and Mrs. Marv. Mansfield became proud parents of a boy, David Alan in November. Marv says this was no accident. They now have three boys in the family. Hmm!

B. Photographs

Photographs appended are results of the manager's first solo attempts in the refuge darkroom.

C. Credits

DE BATES	:	II, V, NR-1, 1A, 2, 3
HAMMOND	:	Notes on white-fronted geese
HILL	:	Complete typing and assembly of report
MANSFIELD	:	III, IV, NR-7, 8a, 8, 9, 11, Pest Plant Control
SMITH	:	I, VI, VII, NR-5, 6, Easements, Photos

SIGNATURE PAGE

Submitted by:

Edward J. Smith Jr.
(Signature)
Edward J. Smith, Jr.

Refuge Manager
Title

Date: January 22, 1962

Approved, Regional Office:

Date: 2-6-62

(Signature)

Regional Refuge Supervisor

EASEMENT DISTRICT III

WILLOW LAKE

Visits to check waterfowl use and patrol area were made on the following dates: 9/21 - replaced signs; 9/28 - posted diving duck pass between Willow and Berry Lake - checked cabin; 10/14 - patrol; 11/2 - patrol and countwwaterfowl - freezeup date.

LORDS LAKE

Visits to check waterfowl use and patrol area were made on the following dates: 9/21 - replace signs and count waterfowl; 10/14 - patrol; 11/2 - patrol and check waterfowl use - freezeup.

SCHOOL SECTION LAKE

Visits were made only twice during the period to check on waterfowl use and patrol for hunting violations. These dates were 10/14 and 11/2.

RABB LAKE

One visit made on 9/28 to check posting and waterfowl use.

All waterfowl use data recorded in refuge file.

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

WATERFOWL

REFUGE Lower Souris MONTHS OF September TO December, 19 61

(1) Species	(2) Weeks of reporting period: 9/9 (1)	9/16 (2)	9/23 (3)	9/30 (4)	10/7 (5)	10/14 (6)	10/21 (7)	10/28 (8)	11/4 (9)	11/11 (10)
Swans:										
Whistling				30	90	580	400	170	25	
Trumpeter										
Geese:										
Canada	325	325	325	275	305	340	545	710	70	35
Cackling										
Brant										
White-fronted	1,100	2,300	8,200	13,100	11,500	3,700	500			
Snow				115	355	135	100	100		
Blue										
Other										
Ducks:										
Mallard	25,650	25,650	25,650	29,510	37,250	39,950	50,000	34,900	3,750	500
Black	35	35	35	35	35	35	35	35		
Gadwall	4,000	4,000	4,000	1,075	4,275	3,840				
Baldpate	800	800	800	1,390	2,450	2,000	3,180			
Pintail	25,000	25,000	25,000	6,085	3,000	3,435	2,900			
Green-winged teal	200	200	200	5,860	2,440	5,240	8,860			
Blue-winged teal	7,500	7,500	7,500	500	50					
Cinnamon teal										
Shoveler	1,000	1,000	1,000	500	8,150	8,000				
Wood	20	20	20	20	20	20	20	20	20	
Redhead	400	400	400	710	200	1,300	2,700	725	690	
Ring-necked										
Canvasback	250	250	250	570	500			255		
Scaup	100	100	100	100	3,745	6,275	1,650	9,850	4,300	
Goldeneye										
Bufflehead						400	500	350		
Ruddy	150	150	150	360	650	50		350		
Other										
Coot:	300	300	300	4,700	13,950	5,350				

Int. Dup. Sec.,
Wash., D. C. 37944

3 -1750a
Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Lower Souris MONTHS OF September 1 TO December 31, 1961

(1) Species	(2) Weeks of reporting period: 11/18 11	11/25 12	13	14	15	16	17	18	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:											
Whistling									9,065		
Trumpeter											
Geese:											
Canada	35	35							23,275		
Cackling											
Brant											
White-fronted									282,800		
Snow)									5,635		
Blue)											
Other											
Ducks:											
Mallard	500	500							1,916,670		
Black									1,960		
Gadwall									148,330		
Baldpate									79,940		
Pintail									632,940		
Green-winged teal									161,000		
Blue-winged teal									161,350		
Cinnamon teal											
Shoveler									137,550		
Wood									1,260		
Redhead									52,675		
Ring-necked											
Canvasback									14,525		
Scaup									183,540		
Goldeneye											
Bufflehead									8,750		
Ruddy									13,020		
Other											
Coot:									174,300		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	9,065	580	
Geese	311,710	13,490	
Ducks	3,513,510	70,545	
Coots	174,300	13,950	

SUMMARY

Principal feeding areas _____

Principal nesting areas _____

Reported by _____
Edward J. Smith, Jr., Refuge Manager

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 1941

(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:										
Black-crowned Night Heron					1	10/28				
Pied-billed Grebe					4	10/18				
American Bittern					1	10/25				
Sandhill Crane	20	9/26	150	10/14	2	11/2				6 heard on 8/7
II. Shorebirds, Gulls and Terns:										
Ring-billed Gull					2	10/11				
Greater Yellowlegs					3	10/18				
Wilson's Snipe	1	9/1			50	9/25				
Franklin's Gull					1	10/25				
Least Sandpiper			Common		1	10/25				
Dowitcher			Common		1	10/18				
Avocets					2	9/29				

(over)

(1)	(2)		(3)	(4)		(5)	(6)
III. Doves and Pigeons:							
Mourning dove				1	12/11		
White-winged dove							
IV. Predaceous Birds:							
Golden eagle							
Duck hawk							
Horned owl				Resident			
Magpie				Resident			
Raven							
Crow							
Bald Eagle	1	10/26		1	11/20		
Rough-legged Hawk				1	11/22		
Short-eared Owl			Common				
Snowy Owl				Resident			
Marsh Hawk	1	11/17		1	12/16		
Sharpshinned Hawk				Resident			
Swainson's Hawk			Occasional				
			Occasional				

Reported by Refuge Personnel

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.

3-1750c
Form NR-1C
(Sept. 1960)

WATERFOWL HUNTER KILL SURVEY

Refuge **Lower Souris** Year 196**1**

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
3	373	818	**White-front** 42 **Canadas** 7 **Snow** 5 **Mallard** 7	61	5	66	1,800	330

Recorded
8

(over)

INSTRUCTIONS

(1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.

(2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.

(3) Record the total number of hours the hunters spent hunting on the refuge.

(4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).

(5) Record total numbers of waterfowl bagged.

(6) Record total numbers of waterfowl reported knocked down but not recovered.

(7) Total of Columns 5 and 6.

(8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).

(9) Kill sample projected to 100 percent. Column 9 = $\frac{\text{Column 8}}{\text{Column 2}}$ x Column 7.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Lower Souris Months of September to December, 1961

(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									300	
Gray Partridge									750	
Sharp-tailed Grouse									620	Based on dancing ground counts

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.

Form NR-3
(June 1945)

BIG GAME

Refuge Lower Souris Calendar Year 1961

(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 - 2,960 acres	200	225									500	275	2:1
	F_2b - 6,945 "													
	M-G -39,820 "													
	H_12 - 5,210 "													
	A - 5,990 "													

Remarks: Estimated populations - annual aerial census not completed.

Reported by Refuge Personnel

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 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
60701

DISEASE

Refuge Lower Souris Year 1961

Botulism

Period of outbreak June 12 - July 7, 1961

Period of heaviest losses mid-June

Losses:

	Actual Count	Estimated
(a) Waterfowl	17	50
(b) Shorebirds		
(c) Other		

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl	0	
(b) Shorebirds	0	
(c) Other	0	

Areas affected (location and approximate acreage) 3,719
320 and 326 impoundments

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.
Receding water levels due to drouth and drawdown seem to halt spread of disease.

Condition of vegetation and invertebrate life
A filamentous algal mat covering 40-50% of water surface area in June. High temperatures recorded in June.
Remarks

Lead Poisoning or other Disease

Kind of disease

Species affected

Number Affected Species	Actual Count	Estimated

Number Recovered

Number lost

Source of infection

Water conditions

Food conditions

Remarks

PUBLIC USE

Refuge **Lower Souris** Calendar Year **1961**

Total Use Visitor-Days	Hunting Use	Fishing Use	Miscellaneous Use
10,950	**3,800**	**50**	**7,100**

Where practical, by means of occasional spot checks, or other methods, show by percent and visitor-days the breakdown of the above figures and other related information:

Hunting (on refuge lands):	Percent	Visitor-Days	Acres	Miscellaneous	Percent	Visitor-Days
Waterfowl	47	1,800	2,884	Recreation*	2	150
Upland Game	0			Official	1	50
Big Game	53	2,000	58,000	Economic Use	95	6,750
Supervised by Refuge x By State - No. of Blinds - Other					2	150

Hunting (off refuge Lands: Estimated man-days of hunting on lands Adjacent to the refuge **2,000** (These figures should not be included in hunting-use totals above).

Comments: **Economic use days increased because of emergency hay program in July, August and September**

Fishing:

Acres of ponds or lakes **0** and miles of streams **5** open to fishing.

* including picnicking, swimming, boating, camping, viewing wildlife, and photographing.

3-1757
Form NR-7
(April 1946)

PLANTINGS
(Marsh - Aquatic - Upland)

Refuge Lower Souris Year 19~~4~~61

Species	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount & Nature of Propagules	Date of Plant-ing	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
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Lower Souris County Bottineau State North Dakota

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Waterfowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
Durum	29	185 bu.	-	-	-	-	29		29
Hd. Wheat	207	1217 bu.	9	58 bu.	4	25 bu.	272		272
Hd. Wheat	-	-	-	-	52*	200 bu.			
Barley	88	326 bu.	225	951 bu.	60	250 bu.	555		555
Barley	-	-	-	-	182*	600 bu.			
Oats	1	6 bu.	-	-	2	10 bu.	9		9
Oats	-	-	-	-	6*	20 bu.			
Rye	71	568 bu.	-	-	-	-	71		71
Corn Silage	3	4 ton	-	-	-	-	3		3
Alfalfa Hay	147	68 ton	-	-	225*	-	372		372
Alfalfa Seed	15	3.3Bu.	-	-	-	-	15		15
								Green manure(Alf.)	82
								Fallow Ag. Land	369

No. of Permittees: Agricultural Operations 19 Haying Operations 27 Grazing Operations 24

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue
Hay - Wild	718.24	1025	1278.48

GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
1. Cattle	544	1357.45	1404.95**	4774
2. Other				
1. Total Refuge Acreage Under Cultivation				1777
2. Acreage Cultivated as Service Operation				0

*Permittees share-poor crop, not feasible to harvest. **Increase in AUM's due to down payment forfeit.

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres 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. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

INT.-DUP. SEC., WASH., D.C. 91767

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Lower Souris County McHenry State North Dakota

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Waterfowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
Hd. Wheat	142	557 bu.	2	3 bu.	-	-	144		144
Barley	48	226 bu.	126	423 bu.	93	190 bu.	321		321
Barley	-	-	-	-	54*	120 bu.			
Oats	24	140 bu.	10	170 bu.	-	-	64		64
Oats	-	-	-	-	30*	150 bu.			
Rye	28	420 bu.	-	-	-	-	28		28
Corn Silage	27	61 ton	-	-	28*	30 bu.	62		62
Corn	-	-	-	-	7	15 bu.			
Alfalfa Hay	190	117 ton	-	-	-	-	269		269
Alfalfa Hay	79*	-	-	-	-	-			
								Green manure(Alf.) 106	106
								Fallow Ag. Land	223

No. of Permittees: Agricultural Operations 9 Haying Operations 60 Grazing Operations 24

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue
Hay - Wild	2034.41	4858	4533.30

GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
1. Cattle	1384	3142.51	3142.51	14,476
2. Other Horses	2	6.35	6.35	30

1. Total Refuge Acreage Under Cultivation	1217
2. Acreage Cultivated as Service Operation	8.8

*Permittees share-poor crop, not feasible to harvest.

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres 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. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

INT.-DUP. SEC., WASH., D.C. 91767

3-1570
NR-8a

REFUGE GRAIN REPORT

Refuge Lower Souris Months of January through December, 1961

(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	18,576	2,566	21,142	113(5)	-	2245(1)	4502	16,240*	-	16,240	-
Wheat						1932(2)					
Barley						182(3)					
Oats						30(4)					
Ear Corn	100	-	100	-	-	100	100	0	-	-	-
Shelled Corn	0	375	375	-	-	25	25	350	-	350	-
Oats	0	60	60	-	-	60	60	0	-	-	-
Millet	226	-	226	-	-	5	5	221	76	145	-
Rye	157	-	157	-	2	0	2	155	155	-	-

(8) Indicate shipping or collection points Lower Souris National Wildlife Refuge

(9) Grain is stored at Refuge Granaries

(10) Remarks (1) depredation control, (2) banding, (3) captive goose flock, (4) pheasant feeding stations, (5) dirt from cleaning several bins.
*Discrepency of 400 bu. due to inventory carry-over in 1960.

*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

3-1759
Form NR-9

COLLECTIONS AND RECEIPTS OF PLANTING STOCK
(Seeds, rootstocks, trees, shrubs)

Refuge Lower Souris Year 1941

Species	Collections				Receipts		Total Amounts on Hand	Amount Surplus
	Amount	Date or Period or Collection	Method	Unit Cost	Amount	Source		
Slender wheat-grass	-	-	-	-	-	-	200 lbs.	-
Canada wildrye	-	-	-	-	-	-	100 lbs.	-
Alfalfa	-	-	-	-	-	-	226 lbs.	-

3-1761
Form NR-11

TIMBER REMOVAL

Refuge Lower Souris Year 1961

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
Lawrence Degner	35676	W-5		23.9 cds.	2.50	59.75	fuel	Ash
" "	"	"		4.0 "	5.00	20.00	posts	Ash
Svein Goodman (Mrs.)	35679	W-3		5.71 "	5.00	28.55	posts	Ash
Earl Johnson	35678	W-5		0.5 cds.	5.00	2.50	poles	Ash
Otto Peterson	35677	W-3		3.37 "	5.00	16.85	posts	Ash
Lorenz Rosenau	35673	W-5		7.1 "	.50	3.55	fuel	Aspen
Robert Shafer	35675	W-2		7.87 "	5.00	39.35	posts	Ash

Total acreage cut over.....

Total income $170.55

No. of units removed B. F.....

Cords 52.45

Ties.....

Method of slash disposal scattering

Interior—Duplicating Section, Washington, D. C.

24316

PEST PLANT CONTROL REPORT

Lower Souris Refuge, Calendar year 1961
(To be inserted in the September-December Narrative Report)

Species	Date	Growth Stage	Chem.	Dilut.	Rate	Method	Water Depth	COST Mat'l.	Labor	Equip.	Total	P/Acre	% Kill Fall	% Kill Spring	Remarks
Leafy spurge (Euphorbia esula)	5/23-5/26	bud	Radapon	H_2O	50lb./A	back-pump		345.00	59.00	3.00	407.00	67.83	95(1)		6 acres
"	"	"	"	"	30lb./A	"		7.00	10.00	-	17.00	85.00	90(1)		0.2 acres
"	5/24	"	Weedazol	"	8lb./A	"		9.00	5.60	1.00	15.60	26.00	95(1)		0.6 acres
"	5/26-7/27	all stages	2,4-D	"	1lb./A	ground rig		619.00	284.00	250.00	1153.00	1.34	90(2)		865.0 acres
"	6/6-6/20	"	"	"	"	aerial		72.00	300.00	-	372.00	.93	80(2)		400.0 acres
Typha spp. Phragmites	8/21-8/22	mature	Radapon	"	48 lb./A	ground rig in air boat		287.50	69.28	8.00	364.78	84.81			4.3A. Exp. Far Slough in 332 Unit. Check in spring.
Salix spp. Typha spp. Phragmites	8/24	"	Weedazol	"	28 lb/A	"		152.00	17.32	2.00	171.32	122.37			1.4A. Exp. " "
Populus spp. Salix spp. Typha spp. Phragmites	8/24	"	M-569	"	13 lb/A	ground rig in Jeep		167.00	17.32	2.20	186.52	62.84			3A. Exp. 320 Dike Check in spring.
"	8/25	"	Weedazol	"	14 lb/A	"		319.20	34.64	3.60	357.44	59.57			6A. " "

1964.60

(1) Top kill with little regrowth.
(2) Top kill with considerable regrowth.

INSTRUCTIONS ON REVERSE SIDE

Recorded 5/7 Loader
N. B. S.

Attach this side in Narrative Report - Cut out and fold in the End →

INSTRUCTIONS

List all treatments made on one species, i.e., Canada thistle, before listing treatments on other species; then give a sub-total cost of treating each species and average cost per acre. Following the final entry on this form give grand total figures showing total cost for all treatments on all species and average cost per acre for treating all species during the calendar year covered by this report.

Make a separate entry for each set of completed "Application Data" and "Observations of Results" forms. The data can be transferred directly to this form; hence the importance of recording the information immediately on "Application" and "Results" forms when spraying is done or observations on results are made.

1. Species: Use common and scientific name.

2. Date: List dates applications were made, using separate line for each area treated. If two separate treatments were made on an area during the summer you should record two entries on this form.

3. Growth Stage: i.e., half leaf, full leaf, early bud, full flower, etc.

4. Chem.: Show type of herbicide used, i.e., 2, 4-D ester, etc.

5. Dilut.: Show diluent or carrier used plus stickers and spreaders added, if any.

6. Rate: Give lbs. acid equivalent per acre - not pounds of herbicide or lbs. of total mix. Check % acid equivalent on label.

7. Method: i.e., boom spray, cluster spray, hand spray, aerial spray, etc.

8. Water Depth: Would apply only when phragmites, etc., were sprayed.

9. Cost, material: Cost of herbicide, diluent (carrier), stickers, spreaders and other materials - take from "Application Data" form.

10. Cost, labor: Take from "Application Data" form.

11. Cost, equipment: Equipment operation costs taken from "Application Data" form.

12. Cost, total: Show total cost for each separate application as taken from "Application Data" form.

13. Cost, per acre: Show cost per acre separately for each application on a given area - take from "Application Data" form.

14. % Kill, fall: Per cent of plants killed by application of herbicide during the preceding summer and spring.

15. % Kill, spring: Per cent of plants showing no regrowth in the spring following treatments made the preceding year or years. Do not record data on spraying done during previous years. Explain briefly in space for remarks the spraying done during previous years if you give % kill for spring.

16. Remarks: Include factors such as weather, etc., not shown elsewhere. Explain briefly the spraying done on this area in previous years if you make an entry in the column "% Kill, spring."

Additional forms will be supplied from Regional Office upon request.

THE PILOT - Manager lawn-testing newly acquired mower.
Photo by R. Johnson. 5/61.

Safety Roll Bar attachment for wheeled tractors. This suggestion won $50 for Mgr. Ed Smith. Photo by EJS.

"Homemade" Awning suggested by Mr. Varty
(made of cedar siding and strap metal)
Used on south and west window exposures
of refuge residences. Photo by EJS.

Narrative Report Routing Slip

Mr. Salyer _____ Mr. ~~Ackerknecht~~ _____

Mr. Crawford _____

Administrative Services

Miss Baum _____

Operations

Mr. Fermanich _____ Mr. Regan _____

Public Use

Mr ~~Dufrain~~ _____ Mr. Kubichek _____

~~Mr. Stollberg~~ _____

Resource Management

Dr. Morley _____ Mr. Hickok _____

Wildlife Management

Mr. Banko _____ Mr. Stiles _____

Mr. Goldman _____

Refuge LOWER SOURIS Period May - August 1961

NARRATIVE REPORT

LOWER SOURIS NATIONAL WILDLIFE REFUGE

For

MAY, JUNE, JULY, AUGUST, 1961

UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF SPORT FISHERIES AND WILDLIFE

FISH AND WILDLIFE SERVICE

UPHAM, NORTH DAKOTA

REFUGE PERSONNEL

Edward J. Smith, Jr.....Refuge Manager

E. Marvin Mansfield.....Refuge Manager

Lawrence W. DeBates.....Refuge Manager

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

Alvin Brandt.....Maintenanceman

Raymond F. Badke.....Maintenanceman

Charles I. Varty.....Maintenanceman

Wilfred J. Hill.....Refuge Clerk

****

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

Gerald F. Martz.....Wildlife Aid

****

TEMPORARY EMPLOYEES

Donald R. Goodman.....Laborer

Morris H. Hovland.....Truck Driver

Leonard A. Thompson.....Tractor Operator

C O N T E N T S

BUREAU OF SPORT FISHERIES AND WILDLIFE
LOWER SOURIS NATIONAL WILDLIFE REFUGE
UPHAM, NORTH DAKOTA

I. GENERAL

A. Weather Conditions.

	Precipitation This Month	Precipitation Normal		Max. Temp.	Min. Temp.
May	2.09	2.19		89	15
June	.38	3.55		104	32
July	1.14	2.51		99	44
August	.23	2.08		105	41
Total	3.84"	10.33"	Extremes	105	15

This four month period was the driest May through August ever recorded in this area. Both June and August broke all previous records for lack of precipitation. The largest amount of precipitation received in any one twenty-four hour was .63" on May 6. Hail, wind and cloudbirst rains were practically nonexistent and no damage from these elements occurred here.

Last frost occurred on June 20. Temperatures were above normal in June with 15 days of that month registering 90 degrees or above. July had only 10 days and August 23 days of 90 degree temperatures or above.

B. Habitat Conditions

1. Water

Rubble-Masonry Unit

This unit was practically dry at the beginning of the period. Not until back-up water from 320 was received about May 20 was this unit functioning as a wetland area. This lasted until about the 3rd week of June when 320 had to be drawn down for botulism control. A complete drying had been effected by mid-July and remained in that state the rest of the period.

320 Unit

Very little, if any, runoff was received this spring from the Souris River. 320 pool was dry through last winter and depended on spring flood waters for refilling. Not until the Eaton project upstream near Towner, N. D. opened their dams was water received. Water began rising on the gauge about May 17 (too late to form islands for nesting geese). An approved level of 1423.75' was never reached. 1423.60' was the highest recorded reading and was attained on June 7. On June 12 we discovered a few botulism sick and dead birds and began an immediate drawdown. By June 20 the pool was back to a drained state with just a few isolated flats holding shallow water. These had completely disappeared by July 20 and we felt the danger of botulism in this unit had passed. At this writing the unit is in a drained state except for water present in the Souris River channel.

326 Unit

Our goal of 1419.75' for this pool was never reached in the spring. The best or highest level obtained was 1418.70' registered on May 1st. Lack of rainfall prevented maintenance of any set level and evaporation and transpiration gradually effected a descending trend throughout the period. We desired to hold a minimum of 1417.30' in this pool to attract a few white-fronts in the fall and carry out some banding work on previously prepared net trapping sites. This level was believed about ideal for efficiency of the white front banding program. By August 1st the pool had already reached 1417.70' and we requested a release from Lake Darling at Upper Souris to help maintain desired minimum levels and provide water to meet an obligation to the Canadian people downstream. The release from Lake Darling was made on August 15 but had not reached the southern extremity of the refuge until August 28. Meanwhile, 326 unit had dropped to 1416.20' by the end of August.

332 Unit

The approved level of 1417.00' was held through May but dropped to 16.00' by June 18. Waters from the drawdown for botulism in 320 allowed recovery to 16.77' on June 23 but too short-lived. A gradual descent to 16.00' had been reached again by August 31.

341 Unit

We started out the period with an approved level of 1415.00' but this pool was gradually sacrificed for lack of incoming water and a drain to meet the release into Canada. By the end of August a low of 1411.40' was recorded.

357 Unit

We show a record of gradual descent from the beginning of the period to the end in this pool. A high of 1411.70' which is a foot short of desired approved level was recorded on May 1st. A 20 cfs release into Canada beginning June 1st took its toll and later the obligation was reduced to 10 cfs on August 1st. But a drained state was in the offering if the release from Lake Darling was not made. At the end of the period a reading of 1408.38' was taken and the pool is still dropping. We hope the Lake Darling waters reach this point on the Souris before the head on the pool drops completely.

2. Food and Cover

Grain yields were poor and averaged about 5 bushel/acre in this area. Waste grain is present, probably in larger amounts than with a normal or bumper crop, because straw was so short that harvest equipment could not work efficiently. Harvest operations on small grains had been almost complete by August 21 in this vicinity.

Artificial feeding was limited to a few stations in the Russell-Kramer area to hold birds concentrated in 326 and 332 units. Feeding began August 1st and has been modified to a bait banding program for net trapping mallards since the 21st of August.

Subsoil moisture dropped rapidly and was around the five foot mark in August. Most of our stock water ponds in pasture units had to be deepened to provide adequate water supplies for permittee cattle.

Grass growth has been practically non-existent and range appears to be dormant. Pastures are being vacated as the condition dictates.

Fruit of chokecherry and juneberry was produced in normal abundance this year in spite of the drouth. Grasshoppers and crickets are abundant in fields.

3. Aquatic and Emergent Vegetation

An algal mat of a filamentous variety covered water areas in June in most pools. The thick mats covered 40-50% of the open water bays in 326. Pondweeds were checked in 326 and good fruiting was noted except in the deep channel areas. No other pools were checked for pondweed production this year.

Emergents began sprouting on exposed flats of 320 soon after drawdown was effected in June. Alisma, Sagittaria, cattail, softstem bulrush and pigweed were all represented in abundance by the end of the period. Discing with a 20-foot one-way and D-7 cat was started in mid-August to control spread of cattail and undesirable emergents around islands and on the flats.

II. WILDLIFE

A. Migratory Birds

1. Waterfowl

Geese

Spring migration of geese was complete through this area by the third week of May and we were left with a resident flock of about 290 Canada geese.

Water was late in coming or didn't fill enough in pools 320 and 326 to form island nesting habitat. Predation was high on what few nests were established but it appeared that most of the pairs did not make a nest attempt. About June 1 it was apparent that this year's Canada goose production was a complete bust and we noted the pairs began gathering in flocks. Only a few broods of goslings were observed and an optimistic estimate of 35 total young is submitted for 1961. This is a dismal flop when compared with last year's high of 310.

Total use days for geese are higher this year than last because of the increased use made by snow and blue geese in the spring of 1961.

A small flock (about 2500) little Canadas and about 20 white-fronts stopped over for a few days the middle of May.

Ducks

As drouth and hot weather took its toll of our pool habitat so went our numbers of ducks. We lost all of 320, 357 and most of 341 and 326 as good concentration areas for moulters this year. When mud flats became exposed the extensive beds of pondweed disappeared and weedy emergents took their place. Without the bays of open water and pondweeds, the moulters were not enticed. With the exception of 332 and part of 326 the other pools were dry. The only water they contained was in the meandering river channel between dikes.

Production data was gathered but not yet finalized into figures. A cursory glance at the brood chronology run and nesting studies executed by Hammond and Martz indicate poor nesting success

(between 15%-45%). There seemed to be a direct correlation between predation rate and intensity of study on the study areas. The chronology run indicated either the first nesting attempt was a success or that second nesting was not attempted because of weather, climate conditions, loss of habitat, ad infinitum. Only one peak in the hatching curve was tabulated and the curve dropped off sharply after July 23. Normally, our largest producers, the gadwall and blue-winged teal would extend the curve beyond this date. This year's sharp decline in nesting attempt could be related with an extremely hot, dry weather period.

Another interesting facet of this year's brood and nesting study was the high incidence of orphaned blue-winged teal broods. Also, about four or five dead blue-winged teal hens were found on nests or near nest sites without any indication of predation.

This was a fairly good year for shovelers and blue-winged teal on the refuge. Pintails, all the divers and coots appear to be in bad shape around here. A comparison of the cumulative total of broods by species for the years 1956 through 1961 follows: (This chronology run consists of eleven weekly counts beginning the last week of June.)

Brood Totals From Chronology Run

	1956	1957	1958	1959	1960	1961
Mallard	30	52	48	32	24	38
Gadwall	59	72	47	107	106	70
Baldpate	4	2	6	3	2	3
Pintail	14	13	11	6	17	4
B.W. Teal	99	172	139	67	134	211
Shoveler	8	13	6	9	28	34
G.W. Teal	0	0	0	0	0	2
Dabblers.....	214	324	257	224	311	362
Redhead	15	16	18	23	21	3
Canvasback	9	13	2	2	2	1
Scaup	5	7	1	0	19	4
Ruddy	14	10	11	4	52	12
Divers.....	43	46	32	29	94	20
Total	257	370	289	253	405	382
Ave./Week	23.4	33.7	26.3	23.0	26.8	34.7
Coot	370	154	314	658	984	70
Ave./Week	33.6	14.0	28.5	58.8	89.3	6.4

The decrease in diver broods is probably more significant than the increase in dabblers compared with 1960 or any previous year. The shrinkage of waterfowl habitat, receding water levels and/or actual drouth conditions seem to be best reflected by the diving duck figure. We are inclined to agree with Manitoba Provincial Biologist, C.H. Lacy who believes that the brood census of dabbling ducks this year is more a measure of changes in visibility than actual changes in duck numbers. Receding water levels and resultant exposed mud flats have probably increased the proportion of dabbler broods visible to the observer.

This summer we were probably counting 100% of all the broods in a given unit where all water and census was confined to a meandering Souris river channel. Thus, the comparatively high figure for broods in 1961 will have to be tempered a bit by the above considerations.

Duck numbers beginning in August and early September when we usually experience our annual peak were way down this year. Aerial census during the third week of August indicated a half of what we had a year ago or during a normal late summer peak. Another census at the end of the period showed a further decline to about 1/4 of expected numbers. The following census figures illustrate our point:

Aerial Waterfowl Census

	1960		1961	
	Aug. 19	Sept. 1	Aug. 19	Sept. 1
Total Ducks	211,000	260,000	127,000	57,650
" Coots	41,000	90,400	9,000	300

Both counts in 1961 were made during the period of lowest water in all units. It shows how drastic a drouth can be and without the water you've got nothing!

2. Other Water and Marsh Birds

Rails

Sora rails were the most commonly observed of this group. One Virginia Rail was seen in 320.

Herons and Bitterns

Black-crowned night herons were abundant in 326 unit. Great blue herons and bitterns were observed occasionally in all units.

Cormorants and Pelicans

The cormorant was seen most frequently in downstream areas of all dams. Only one nesting tree remains standing in 320 unit.

White pelicans became numerous by the end of the period. A total of 3,000 was estimated on the last aerial census.

Grebes

All but the pied-billed were fairly scarce this year. One dead Western was put up as a study skin. A Hoebell's was observed on nest in the borrow ditch along the Willow City road. Eared were observed occasionally.

Gulls

Franklin's gulls were again very abundant and large colonies were discovered in Unit 326. Total numbers were estimated at over 100,000. Field feeding on grasshoppers throughout the summer was a common sight. Grasshoppers were considered to be of plague proportions in the area this year.

Cranes

Sandhill cranes made an early southward migration appearance in August. No large concentrations observed.

Doves

Mourning doves were very common summer nesting residents. Some have been seen on the nest at this September writing.

B. Upland Game Birds

Sharp-tailed Grouse

We lost a few more dancing grounds this spring, i.e., no use by grouse, but some grounds showed an increase in numbers of males over last year's low. Large broods and frequency of broods observed indicate this species may be on the rise again.

Gray Partridge

About as numerous as last year. 1960 was considered a bumper year for the "hun" by N. Dak. State Game and Fish biologists.

Pheasant

Population is apparently increasing from last year's low. Crowing count was up and more broods observed to substantiate this belief.

C. Big Game Animals

White-tailed Deer

We have had very few observations of deer the past summer and know little of their breeding success. We are being included in the area open to deer hunting this fall for a 4½ day gun season beginning November 10.

D. Fur Animals, Predators, Rodents and Other Mammals

Beaver

Common throughout and frequently observed in the river channel area of all units.

Mink

Also common in abundance.

Weasel

Observed occasionally this summer and more frequently than in the past few years.

Muskrat

Common in middle units (326-332). Drained pools will crowd them this fall - no housebuilding observed yet.

Skunk

Seen frequently and believed common in abundance.

Raccoon

Still numerous and one of our worst nest predators.

Badger

Very common judging from numerous diggings.

Red Fox

Abundant in spotty areas.

Coyote

Present in fair number but not considered a problem.

Rabbits

Cottontails are observed frequently around headquarters. Jacks are fairly abundant in open areas.

Other

Richardson's and 13 lined ground squirrels were very abundant this summer.

E. Hawks, Eagles, Owls, Crows and Other

Marsh hawks, Swainsons and red-tailed hawks were common summer residents. An occasional sparrow hawk, sharp-tail and duck hawks were observed also.

No eagles sighted this period.

Short-eared owls were common sights over the marsh. A family of long-eared owls was raised near headquarters and banded. Horned owls have been seen near station headquarters.

F. Other Birds

Blackbirds were very abundant and damage to corn in this area was a common complaint.

Another heavy migration of swallows occurred in late summer.

Purple martins nested in a house erected for that purpose at headquarters. Three pair occupied it in early June.

G. Fish

Nothing to report this period.

H. Reptiles

Nothing to report this period.

I. Disease

Some botulism occurred in 320 and 326 this period and was first noted June 12. An early drawdown of 320 was effected and no further trouble was experienced there. A few dead birds were observed in northern units later in the summer but attained no outbreak proportions. Estimated loss does not exceed 50 birds.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

1. Dikes and Roads

Filled muskrat runs on 320 dike. Spot gravelled 326. Constructed new entrance trail into 357 dam from east side to facilitate winter time checks.

All feeding stations were mowed and gravelled as needed.

Sand and gravel fill applied to patrol road on west side of 326.

Two new cattle guards were installed and one old one moved to a different location.

All dikes and some of the heavily used trails were mowed in August.

Turf on refuge air-strip was rolled with a weighted roller constructed by maintenanceman Varty.

2. Fencing

The boundary fence required extensive repairs. Particular attention was given to areas bounding refuge pasture units. Cross fencing of pasture and fencing of stock water pond developments were also given primary attention.

Grazing exclosures were established in G-49.

3. Buildings

All doors of shop, service building, six stall, three stall and barn storage sheds were painted chrome green.

The roof of Quarters 29 was stained red.

Renovation of Quarters 29 which included window replacement, re-wiring, and inside wall partition replacement was started this period. Kitchen work is all that remains to be done at this writing.

4. Soil and Moisture

Several new stock water ponds and several old ones enlarged or deepened were under-development this period. Water need in pastures was quite critical because of the existing drouth.

5. Miscellaneous

Aerial and ground treatment of leafy spurge plots was made this year. Ground coverage was made twice over the same areas. This was a chemical treatment using 2,4-D.

Emergent vegetation in 320 marsh was given mechanical control using a D-7 cat and 20' surflex one-way disc.

Weedazol spray was used on emergents in 332 from the air boat spray-rig.

Safety wire was erected on stairways and landings of the headquarters observation tower.

All large wooden recognition signs (eleven) were painted with the approved blue and white colors.

A large martin bird house was constructed and erected by Mr. Varty. Occupancy was made by three pair of martins.

Pump flooding of 341 management unit (west side) was accomplished this May. Drouth conditions prevented maintenance of water levels in this unit.

Trees were cultivated at Westford Grove tree planting site.

B. Plantings

1. Aquatic and Marsh Plants

None this period.

2. Trees and Shrubs

Twenty-one Black Hills spruce were planted as ornamentals in headquarters area. All survived at this writing. They required two waterings per week throughout the period.

3. Upland Herbaceous Plants

None this period.

4. Cultivated Crops

Yields of barley and wheat were lowest in many years. 5 to 6 bushel/acre was considered a good crop this year.

Alfalfa stands received onslaught by grasshoppers. The single cutting allowed produced low tonnage.

Corn did surprisingly well in spite of hot, dry weather. Blackbird damage was the worst seen in any year.

C. Collections and Receipts

1. Seeds and Propagules

None this period.

2. Specimens

Harold Duebbert made study skins of the following dead birds found during field surveys:

1. Western Grebe
2. Upland Sandpiper (Plover)
3. Ruddy Duck

F. Fires

On July 10 a lightning strike in 320 marsh set fire to a dead snag along the river channel and burned off about 8 acres of cattail and phragmites before burning itself out. Damage was estimated at none.

IV. RESOURCE MANAGEMENT

A. Grazing

The extremely hot and dry conditions this period (see Ia), coupled with the grasshopper plague, resulted in the poorest forage production since the '30s. The 'hoppers were in there battling all the way and probably consumed as much as or more than the cattle.

There are 54 grazing units on the refuge, and even during a normal year, the job of dealing satisfactorily with these permittees is no easy task. The conditions this summer made the job far more complicated. In an effort to help the farmers wherever possible, four Drought Emergency Grazing Permits were issued, five new stock water ponds were dug, and three were cleaned and deepened. Because of the low water level, barbed wire and steel fence posts were issued to several permittees for extending fences to contain the cattle in the pastures--a job normally done by natural water areas. In three units the water became so low that it was necessary to remove the cattle--it was too much of a struggle for the younger head to reach water through the belly deep mud.

Forage conditions were checked continually, and as a result of these surveys, seven permittees have been notified to remove their cattle during September (normal removal date is October 15). It is expected more notices of this type will follow.

B. Haying

It will be a long time before the local farmers and ranchers forget 1961. Hay production on most established units reached an all time low. It was not unusual to see one stack where five would normally have been, and the quality was poor because many of the leaves had been eaten by 'hoppers. In addition, several units had practically no growth, and therefore were not cut.

Pressure from our neighbors for hay was terrific-throughout July and most of August, Monday mornings were taken up by applicants for emergency hay. Forty of the regular hay permittees requested emergency hay and were allowed to cut 20 tons each. In addition, 35 non-permittees cut 20 tons of emergency hay each. Although all of this has not been measured, it is estimated that 1,500 tons plus of emergency hay were cut. It is doubtful if that much will be cut on the regular hay units, which would normally yield approximately twice that amount.

With a program of this type, we hope we aren't sacrificing too many of our wildlife principles, but let's face it--a drought is serious business! We are all brothers under God, and what little we can do to help our fellow man, should be done. A considerable amount of good will has been generated and should benefit the Bureau's program in North Dakota.

C. Fur Harvest

No fur harvest this period.

Furs consigned to the New York Auction Company last period were sold in May. Prices received, less commission were:

27 Mink	$235.36
8 Beaver	26.00

D. Timber Removal

None this period.

E. Commercial Fishing

None this period.

F. Other Uses

One special use permit was issued to Powers Apiaries, Inc. for 300 hives.

V. FIELD INVESTIGATION OR APPLIED RESEARCH

A. Progress Report

Job I. Nesting Island Predator Control

Strychnined poisoned eggs were placed on nesting islands of 326 pool last period. Only one round or application was made leaving about two "dummy" nests of two eggs each per island. A goose nest check of these islands in early May indicated all eggs were taken. One dead skunk was found on one of the islands. Nest predation on the few goose nests under observation was high.

Job II. Grouse Studies

Dancing grounds of sharp-tailed grouse were checked for numbers of males again this spring. A comparison of data will be shown in the January-April Narrative Report.

Job III. Effects of Cover Removal in Relation to Waterfowl Breeding Population

This study has been undertaken by Wildlife Aid Gerald Martz, a student from the University of Wisconsin. The study has been extended to include one more nesting season and final conclusion should be reached in 1962. This summer's work will be compiled in report form and submitted at a later date.

Job. IV. Waterfowl Banding

The "dew line" mallard banding program was started in mid-August. Over 1,000 mallards have been banded at this writing. The percent of immatures in the banded population is running about 3½%.

A white-front goose banding attempt will be made again this fall. Bait and trap sites are being located at this writing.

Job V. Vegetation Control

Leafy spurge on uplands was given treatment with 2,4-D at the rate of 1 lb./acre. Both aerial and ground equipment were used. Results, costs and acreage treated will be submitted in the next period's report.

Emergent growth sprouting on the exposed flats of 320 pool after the mid-June drawdown was subjected to mechanical control. A D-7 cat and 20' surflex disc was used. Approximately 205 acres of mud flat were treated in this manner.

Job VI. Waterfowl Depredations Control

An early and uninterrupted harvest beginning in late July and complete by August 21 gave little opportunity for ducks to cause crop damage this year. The plane was used only four days for routine patrol. Feeding stations were baited in early August and feeding continued until harvest was complete. A total of 1755 bushels was fed from August 3 - August 21 for this purpose.

VI. PUBLIC RELATIONS

A. Recreational Uses

Visitor days because of the emergency hay program increased this period. Numbers of bird watchers, sight-seers and fishermen averaged the same as in normal years. The only fishing activity noted was an occasional bridge fisherman on the Willow City road, Russell-Kramer road and Highway 14.

B. Refuge Visitors

Date	Name	Affiliation	Purpose
5/61	S. Wilson	USDA, Fargo, N.D.	Grasshopper Control
5/10/61	H. Jensen	FWS, Jamestown, N.D.	GMA vehicle repair
	J. Waters	FWS, Minot, N.D.	" " "
5/11	H. Cosby	USDA, Minot, N.D.	Range survey
5/25	A. Geis	FWS, Washington, D.C.	Waterfowl study projects
	H. Nelson	FWS, Minneapolis, Minn.	" " "
	A. Brazda	FWS, Minneapolis, Minn.	" " "
	J. Sayler	FWS, Kenmare, N.D.	" " "
6/13	H. Bradley	FWS, Kenmare, N.D.	Pickup surplus vehicle
	L. Hoffman	FWS, Kenmare, N.D.	" " "
6/12-13	W. Brandvick	USDA, Fargo, N.D.	Grasshopper survey
6/16-17	J. Hickey	Univ. of Wisconsin	Review student studies
	J. Bartinck	Univ. of Wisc. student	" " "
6/21	Mr. Earl & Son	Cambridge, Mass.	Birding
6/24-25	R.&A. Gammell	Kenmare, N.D.	Bird banding
6/30	V. Conover	USWB, Bismarck, N.D.	Checked WB station
7/2	Mr&Mrs Adamson	Lafayette, Calif.	Birding
7/3	R.&A. Gammell	Kenmare, N.D.	Bird Banding
7/17-18	A. Studholme	FWS, Minneapolis, Minn.	Inspection
7/17-19	H. Nelson	FWS, Minneapolis, Minn.	"
7/17-18	H. Huencke	FWS, Minneapolis, Minn.	"
7/17-18	A. Brazda	FWS, Minneapolis, Minn.	"
8/1	M. Tremaine	Omaha, Nebraska	Birding
8/3	E. Doeling	FWS, Minneapolis, Minn.	Souris River water mgt.
	A. Brazda	FWS, Minneapolis, Minn.	" " " "
8/15-17	A. Brazda	FWS, Minneapolis, Minn.	Depredations patrol
8/16	E. Bossenmier	Manitoba F&G, Winnipeg	Depredations problems &
	R. McWharton	" " "	feeding station techniques
8/16	J. Carlson	FWS, Minot, N.D.	Courtesy call
8/17-29	R.&A. Gammell	Kenmare, N.D.	Band small birds (warblers)
8/22	W. French	FWS, Seney, Mich.	Visit - enroute
8/23	R. Davis	SCS, Minot, N.D.	Pasture survey
	D. Campbell	SCS, Towner, N.D.	Pasture survey

C. Refuge Participation

5/20 Martz conducted tour of 20 students from Minot State Teachers College to observe birds.

6/13 Smith attended meeting in Rugby, N.D. w/representatives of the Bureau, Governor of N.D. and Commissioners from 10 county area re wetland and refuge acquisition program.

6/17 Duebbert and Hammond attended N.D. Wildlife Federation meeting in Cooperstown, N.D.

7/7 Smith presented refuge program of emergency drouth relief to citizens of Upham by invitation of Mayor E. Anderson.

8/23-26 Hammond attended meeting re waterfowl behavior studies at Delta Waterfowl Research Station in Manitoba, Canada.

D. Hunting

None this period.

E. Violations

Alvin Brandt, maintenanceman, while on a weekend trip to Rolla, N.D. on May 14 apprehended two spring waterfowl shooters. These cases were turned over to GM agent John Waters for disposition.

F. Safety

Safety meeting were held during the period as follows:
May - Use of personal protective equipment
July - Safe boating
Aug. - Safe work habits
No meeting was held in June as too many personnel were on annual leave.

There were no accidents during this reporting period. Accident free days total 443.

VII. OTHER ITEMS

A. Items of Interest

Gerald Martz, wildlife aid, had to cut his summer short to attend Army Reserve training the latter part of August.

Mr. Robert Johnson, Refuge Manager, GS-9 left here on June 17 to accept an appointment as manager of the Waubay Refuge in South Dakota. He was replaced by E. M. Mansfield on July 7 who transferred from Herb Dill's Agassiz Refuge in Minnesota.

Mr. Harold Duebbert, Refuge Manager GS-7 left on July 10 to accept an appointment as Wildlife Management Biologist with the Wetland Acquisition office in Devils Lake, N.D. He was replaced on August 2 by Lawrence DeBates who arrived from Webster, South Dakota where he had put in several years service with the South Dakota Game and Fish Department as a pheasant biologist.

Needless to say, the constant turnover of personnel leaves something to be desired for an efficient management operation. The new men are doing fine in spite of the handicap of having to become oriented to a new job and a different area.

B. Photographs

Bob Johnson, our "station photographer" has left us and it will be some time before one of us can turn out anything worthwhile in the way of photographs.

C. Credits

Sections I, II, III, V, VI, VII, NR's, Easements - Ed J. Smith
Section IV - E. M. Mansfield
Typed and assembled by W.J. Hill

SIGNATURE PAGE

Submitted by:

Edward J. Smith Jr
(Signature)

Refuge Manager
Title

Date: October 2, 1961

Approved, Regional Office:

Date: 10-4-61

Signature

Regional Refuge Supervisor

EASEMENT DISTRICT III
(Lower Souris)

Only two ground inspections were made during the period.

LORDS LAKE

On May 18 the water level was 53" below top of culvert and a pair count of waterfowl showed:

Mallard	- 5 pair	Scaup	- 5 pair
Pintail	- 9 "	Redhead	- 1 "
Shoveler	- 2 "		
B.W. Teal	- 5 "		

Ruddy Duck - large flocks - no distinct pairs

Only about 50% coverage on above count.

On August 8 the water had dropped considerably and it was dry below mouth of culvert and out 30 yards to shoreline.

Eleven broods were counted:

Mallard - 9, 3, 8
Gadwall - 4, 3, 6, 2, 2, 4
Shoveler - 8
Pintail - 2

Many ruddy ducks, a few canvasback and redheads out in open water.

SCHOOL SECTION LAKE

On May 18 the water level was fairly high but only a few mallard drakes (5) observed.

On August 8 the water level had dropped about 8" from the previous observation and no broods or ducks were seen.

WILLOW LAKE

On May 24 this area was visited to establish a census route on water for breeding pair and brood counts. Water level was 33" below spillway. 165 pairs of ducks and 74 pairs of coot were observed. It appeared that cormorant and ring-billed gulls have been establishing nesting colonies on some of the islands in the S.W. corner of the lake.

On August 8, water was too low for good boat travel. Attempted a count of broods from shoreline vantage points. Decided to wait for aerial coverage. Checked cabin site and buildings. Cleanup of yard area scheduled.

RABB LAKE

Not visited this period.

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

WATERFOWL

REFUGE **Lower Souris** MONTHS OF **May 1** TO **August 31**, 19**61**

(1) Species	(2) Weeks of reporting period 5/6 : 1	5/13 : 2	5/20 : 3	5/27 : 4	6/3 : 5	6/10 : 6	6/17 : 7	6/24 : 8	7/1 : 9	7/8 : 10
Swans:										
Whistling	80	30	2	0						
Trumpeter										
Geese:										
Canada	600	2,500	285	290	290	290	290	290	290	290
Cackling										
Brant										
White-fronted			20	0						
Snow)	5,000	7,500	0	0						
Blue)										
Other										
Ducks:										
Mallard	1,300	900	1,300	1,400	1,400	1,400	1,400	1,400	1,400	1,400
Black										
Gadwall	9,000	6,400	3,000	3,300	3,000	3,000	3,000	3,000	3,000	3,000
Baldpate	900	800	200	200	200	200	200	200	200	200
Pintail	800	500	1,200	800	800	800	800	800	800	800
Green-winged teal	3,300	2,300	100	70	70	70	70	70	70	70
Blue-winged teal	8,500	11,600	5,100	5,500	5,000	5,000	5,000	5,000	5,000	5,000
Cinnamon teal	2									
Shoveler	2,500	2,900	1,550	3,100	1,500	1,500	1,500	1,500	1,500	1,500
Wood										
Redhead	800	1,200	1,000	700	700	700	700	700	700	700
Ring-necked	50	80	20	0						
Canvasback	350	700	270	280	280	280	280	280	280	280
Scaup	10,500	20,600	1,150	280	300	300	300	300	300	300
Goldeneye										
Bufflehead	50	40	20	30						
Ruddy	1,400	2,100	800	900	450	450	450	450	450	450
Other										
Coot:	40,500	48,200	8,750	3,450	1,200	1,200	1,200	1,200	1,200	1,200

Int. Dup. Sec.,
Wash., D. C. 37944

3 -1750a
Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Lower Souris MONTHS OF May 1 TO August 31, 1961

(1) Species	(2) Weeks of reporting period 7/15 (11)	7/22 (12)	7/29 (13)	8/5 (14)	8/12 (15)	8/19 (16)	8/26 (17)	9/2 (18)	(3) Estimated waterfowl days use	(4) Production Broods seen	(4) Production Estimated total
Swans:											
Whistling									784		
Trumpeter											
Geese:											
Canada	290	290	290	290	290	290	325	325	54,635		
Cackling											
Brant											
White-fronted									140		
Snow)									87,500		
Blue)											
Other											
Ducks:											
Mallard	57,850	57,850	57,850	57,850	57,850	57,850	25,650	25,650	2,881,900		
Black	35	35	35	35	35	35	35	35	1,960		
Gadwall	8,000	8,000	8,000	8,000	8,000	8,000	4,000	4,000	669,900		
Baldpate	1,800	1,800	1,800	1,800	1,800	1,800	800	800	109,900		
Pintail	35,900	35,900	35,900	35,900	35,900	35,900	25,000	25,000	1,923,600		
Green-winged teal	150	150	150	150	150	150	200	200	52,430		
Blue-winged teal	17,500	17,500	17,500	17,500	17,500	17,500	7,500	7,500	1,264,900		
Cinnamon teal									14		
Shoveler	2,000	2,000	2,000	2,000	2,000	2,000	1,000	1,000	177,350		
Wood	20	20	20	20	20	20	20	20	1,120		
Redhead	1,000	1,000	1,000	1,000	1,000	1,000	400	400	109,900		
Ring-necked									1,050		
Canvasback	400	400	400	400	400	400	250	250	43,260		
Scaup	900	900	900	900	900	900	100	100	279,510		
Goldeneye											
Bufflehead									980		
Ruddy	1,250	1,250	1,250	1,250	1,250	1,250	150	150	122,500		
Other											
Coot:	9,350	9,350	9,350	9,350	9,350	9,350	300	300	1,162,000		

*Population figures between 6/3 and 8/19 estimated on basis of aerial census taken on 8/18 and 9/8

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	784	80	
Geese	142,275	10,000	
Ducks	7,640,274	126,805	
Coots	1,162,000	48,200	

SUMMARY

Principal feeding areas

Principal nesting areas

Reported by Edward J. Smith, Jr.

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 May to August 1961

(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:										
Eared Grebe			Present	Summer						
Western Grebe			Present	"						
Pied-billed Grebe			Common	"						
Holboell's Grebe			Present	"						
Horned Grebe	100	5/4/61								
White Pelican			3,000	August						
II. Shorebirds, Gulls and Terns:										
Franklin Gull			Abundant	Summer						
Black-bellied Plover	2	5/9								
Ruddy Turnstone	10	5/23								
Wilson's Snipe	2	5/1								
Upland Sandpiper	4	5/10	Common	Summer						
Avocet	3	5/2								
Forester's Tern	5	5/3								
Common Tern	1	5/4								
Black Tern	10	5/11								

(over)

(1)	(2)		(3)		(4)	(5)	(6)
III. Doves and Pigeons:							
Mourning dove			Common	Summer			
White-winged dove							
IV. Predaceous Birds:							
Golden eagle							
Duck hawk							
Horned owl			Present	Summer			
Magpie			Present	"			
Raven							
Crow			Common	"			
Red-tailed Hawk			Common	"			
Marsh hawk			Common	"			
Swainson's Hawk			Common	"			
Duck Hawk	2	August					
Long-eared Owl	4	July					
Short-eared Owl			Common	Summer			

Reported by Edward J. Smith, Jr.

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

3-1750
Form NR-1B
(December 1956)

UNITED STATES
DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Lower Souris — For 12-month period ending August 31, 1961

Reported by Edward J. Smith, Jr. — Title Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type	(2) Habitat Acreage		(3) Use-days	(4) Breeding Population	(5) Production
Unit 1 (357)	Crops	1,088	Ducks	9,290,435		
	Upland	3,636	Geese	731,312		
	Marsh	1,771	Swans	50,660		
	Water	3,785	Coots	2,574,675		
	Total	10,280	Total	12,647,082		
Unit 2 (341)	Crops	277	Ducks	4,434,071		
	Upland	2,000	Geese	621,615		
	Marsh	1,769	Swans	11,820		
	Water	1,378	Coots	1,716,450		
	Total	5,433	Total	6,783,956		
Unit 3 (332)	Crops	581	Ducks	2,956,048		
	Upland	1,725	Geese	73,131		
	Marsh	1,838	Swans	4,222		
	Water	1,387	Coots	551,716		
	Total	5,433	Total	3,585,117		
Unit 4 (326)	Crops	428	Ducks	2.111.462		
	Upland	2,720	Geese	146,262		
	Marsh	2,629	Swans	15,198		
	Water	1,660	Coots	1,103,432		
	Total	5,483	Total	3,376,354		
Unit 5 (Benson)	Crops	180	Ducks	Included with 326		
	Upland	155	Geese			
	Marsh	537	Swans			
	Water	128	Coots			
	Total	1,000	Total			
Unit 6 (R.M.)	Crops	420	Ducks	Not Counted		
	Upland	420	Geese			
	Marsh	484	Swans			
	Water	136	Coots			
	Total	1,460	Total			
Unit 7 (320)	Crops	344	Ducks	2,322,609		
	Upland	1,390	Geese	237,677		
	Marsh	890	Swans	2,533		
	Water	2,680	Coots	183,905		
	Total	5,304	Total	2,746,724		

(over)

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August narrative report.

INSTRUCTIONS

(1) Area or Unit: A geographical unit that, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. Estimated acreage of each unit should be indicated.

(2) Habitat: Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland consists of all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type including wet meadow and deep marsh; and the water category includes all other water areas inundated most or all of the growing season and extends from the deeper edge of the marsh zone to strictly open-water areas, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for each type should be kept as accurate as possible through reference to available maps supplemented by periodic field observations and should agree with unit acreage.

(3) Use-days: Use-days is computed by multiplying weekly waterfowl population figures by seven.

(4) Breeding Population: An estimate of the total breeding population of each category of birds for each area or unit.

(5) Production: Estimated total number of young raised to flight age.

Interior Duplicating Section, Washington, D. C.
1956

8694

3-1750
Form NR-1B
(December 1956)

UNITED STATES
DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Lower Souris — For 12-month period ending August 31, 1961

Reported by Edward J. Smith, Jr. — Title Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type	(2) Habitat Acreage	(3)	(3) Use-days	(4) Breeding Population	(5) Production
Unit 8 (Sandhills)	Crops		Ducks	Dry,		
	Upland	20,722	Geese			
	Marsh		Swans	Not		
	Water	209	Coots			
	Total	20,931	Total	Counted		
Unit 8A (Willow Potholes)	Crops		Ducks	Dry,		
	Upland	747	Geese			
	Marsh	10	Swans	Not		
	Water	3	Coots			
	Total	760	Total	Counted		
Unit 8B (Thompson)	Crops		Ducks	Dry,		
	Upland	550	Geese			
	Marsh	90	Swans	Not		
	Water	20	Coots			
	Total	660	Total	Counted		
GRAND TOTAL	Crops	3,318	Ducks	21,114,626		
	Upland	34,065	Geese	1,828,281		
	Marsh	10,018	Swans	84,434		
	Water	11,347	Coots	6,130,180		
	Total	58,784	Total	29,157,521		
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

(over)

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August narrative report.

INSTRUCTIONS

(1) Area or Unit: A geographical unit that, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. Estimated acreage of each unit should be indicated.

(2) Habitat: Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland consists of all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type including wet meadow and deep marsh; and the water category includes all other water areas inundated most or all of the growing season and extends from the deeper edge of the marsh zone to strictly open-water areas, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for each type should be kept as accurate as possible through reference to available maps supplemented by periodic field observations and should agree with unit acreage.

(3) Use-days: Use-days is computed by multiplying weekly waterfowl population figures by seven.

(4) Breeding Population: An estimate of the total breeding population of each category of birds for each area or unit.

(5) Production: Estimated total number of young raised to flight age.

Interior Duplicating Section, Washington, D. C.
1956

AMENDMENT No. 1

3-1750b
Form NR-1B
(Rev. Nov. 1957)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

(Lower Souris Narrative Report - MAY, JUNE, JULY, AUGUST, 1961)

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge **Lower Souris** For 12-month period ending August 31, 1961

Reported by **Edward J. Smith, Jr.** Title **Refuge Manager**

(1) Area or Unit Designation	(2) Habitat Type	(2) Habitat Acreage		(3) Use-days	(4) Breeding Population	(5) Production
Unit 1 (357)	Crops		Ducks		1,125 prs.	2,200
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
Unit 2 (341)	Crops		Ducks		1,135	2,200
	Upland		Geese		30	10
	Marsh		Swans			
	Water		Coots			
	Total		Total			
Unit 3 (332)	Crops		Ducks		2,270	4,400
	Upland		Geese		50	10
	Marsh		Swans			
	Water		Coots			
	Total		Total			
Unit 4 (326)	Crops		Ducks		3,700	7,200
	Upland		Geese		50	15
	Marsh		Swans			
	Water		Coots			
	Total		Total			
Unit 5 (Benson)	Crops		Ducks			
	Upland		Geese		Included	
	Marsh		Swans		with	
	Water		Coots		326	
	Total		Total			
Unit 6 (R.M.)	Crops		Ducks		150	300
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
Unit 7 (320)	Crops		Ducks		1,630	3,300
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

(over)

3-1750
Form NR-1B
(December 1956)

UNITED STATES
DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service

AMENDMENT No. 1
Sheet 2
(Lower Souris Narrative Report - MAY, JUNE, JULY, AUGUST, 1961)

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Lower Souris — For 12-month period ending August 31, 1961

Reported by Edward J. Smith, Jr. — Title Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type	(2) Habitat Acreage		(3) Use-days	(4) Breeding Population	(5) Production
Unit 8 (Sandhills)	Crops		Ducks		Included with 320	
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
Unit 8A (Willow Potholes)	Crops		Ducks		Included with 320	
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
Unit 8B (Thompson)	Crops		Ducks		Included with 320	
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
GRAND TOTAL	Crops		Ducks		10,010 prs.	19,600
	Upland		Geese		130 prs.	35
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

(over)

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge **Lower Souris** Months of **May 1** to **August 31**, 19 **61**

(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									500	
European Partridge									1,000	
Sharp-tailed Grouse									700	

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.

Narrative Report Routing Slip

Mr. Salyer _____ ~~Mr. Aelquist~~ WDA

Mr. Crawford _____

Administrative Services

Miss Baum _____

Operations

Mr. Fermenich _____ ~~Mr. Regan~~ JMR

Public Use

Mr. DuMont _____ Mr. Kubichek _____

Mr. Stollberg _____

Resource Management

Dr. Morley _____ Mr. Hickok _____

Wildlife Management

Mr. Banko _____ Mr. Stiles _____

Mr. Goldman _____

Refuge LOWER SOURIS _____ Period Jan. - Apr. 1961 _____

NARRATIVE REPORT

LOWER SOURIS NATIONAL WILDLIFE REFUGE

For

JANUARY - FEBRUARY - MARCH - APRIL

1961

UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF SPORT FISHERIES AND WILDLIFE

FISH AND WILDLIFE SERVICE

UPHAM, NORTH DAKOTA

REFUGE PERSONNEL

Edward J. Smith, Jr. . . . . Refuge Manager

Robert R. Johnson . . . . . Refuge Manager

Harold F. Duebbert . . . . . Refuge Manager

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

Alvin Brandt . . . . . Maintenanceman

Raymond F. Badke . . . . . Maintenanceman

Charles I. Varty . . . . . Maintenanceman

Wilfred J. Hill . . . . . Refuge Clerk

****

Merrill C. Hammond . . . . . Wildlife Biologist (Management)

Gerald F. Martz (e.o.d. 4/24/61) . . . . . .Wildlife Aid

C O N T E N T S

BUREAU OF SPORT FISHERIES AND WILDLIFE
LOWER SOURIS NATIONAL WILDLIFE REFUGE
UPHAM, NORTH DAKOTA

I. GENERAL

A. Weather Conditions.

	Precipitation				Max.	Min.
	Snowfall	This Month	Normal		Temp.	Temp.
January	1.0	.18	.48		45	-35
February	14.7	1.28	.45		42	-20
March	0.5	.04	.82		61	- 3
April	4.0	1.25	1.31		72	4
Total	20.2"	2.75"	3.06"	Extremes	72	-35

The above weather data is taken from official daily records maintained by Mr. Hill for the U.S. Weather Bureau. The station is located on refuge headquarters grounds.

Except for February snowfall was light and precipitation below normal. Total snow accumulation for the entire winter period was 32.2". All snow was gone by April 11 and the last ice disappeared on April 20. Runoff did not occur this spring. Water from melting snow was absorbed on the spot for the most part. Deep Creek, Stone Creek did not run at all this period. Boundary Creek and Willow Creek had a short time flow of less than 10 c.f.s. The Souris River has been dropping from the winter level because the Eaton Project upstream is holding everything back.

This has been a mild, open winter comparing it with known previous years. Only one snowstorm occurred of any consequence. No real blizzards struck this winter and temperatures were average.

Spring seems to be a cool one thus far and fairly dry. Subsoil moisture is at an all time low over this general area. Farmers began working and seeding fields in late April.

B. Habitat Conditions

1. Water

Flood was not a spring problem this year. As mentioned above runoff from melting snow contributed practically nothing toward raising pool water levels. We entered the spring season with 320 Unit practically dry and 326 very low. The middle pools, 332 and 341 were held fairly full through the winter months and are full at this writing. The large tail unit 357 was low going into freezeup last fall and is just holding its own at that low level. Below is a table summary of impoundment status.

Pool	Winter Condition	Present Level	Remarks
R.M.	Dry	Low level	Dependent upon 320
320	Dry	22.10	1½ ft. below desired level
326	1418.00	18.50	1 ft. " " "
332	17.00	17.10	Desired level 17.00
341	14.00	15.20	Desired level 15.00
357	11.20	11.60	1¼ ft. below desired level

As a part of our annual water management plan we allow the uppermost pool 320 to drain during the fall to act as a buffer for the expected normal spring flood. Also we allow 357, the lower pool, to drop about 18" below summer maintenance level to provide some buffer against flooding Canadian soil further downstream (north flow) on the Souris. Ordinarily we can expect enough spring runoff to refill these end units but as drought insurance always maintain the middle pools at a fairly high level through freeze up. It was a good thing we held these middle units up this year as it looks like water will be in short supply.

The Eaton Project began holding water when the river upstream first began to flow and is still holding the Souris at this writing. He uses the water to flood lowland hay meadows to promote growth of white top grass and sedges. He will probably let it go in late May and we expect some flooding at that time.

2. Food and Cover

The lack of water around prime nesting island habitat of 320 and 326 may reflect poor nesting success by our resident Canada Goose Flock. An early check of 326 islands indicated predation is high on the islands. Besides low water levels a few nights of below freezing temperatures during late April had produced ice an inch thick and allowed easy access to the islands from the mainland by raccoon, fox, etc.

A fairly mild winter with no major storms allowed present cover to adequately serve the needs of pheasant, partridge, grouse, rabbits and deer. Supplemental food which included ear corn and small grains was made available in feeders near marshes and tree groves where upland game has been known to frequent. These stations were maintained regularly to keep them well supplied and free of snow. Use of these stations by pheasants, rabbits, deer and raccoon was quite extensive.

II. WILDLIFE

A. Migratory Birds

Ducks

Mallards and pintails arrived during the week of March 19-23. These early migrants utilized available snow melt water in farmland stubble fields and open areas of the marsh. Daily feeding flights from the refuge to surrounding fields continued through the end of the period. This field feeding habit was probably accentuated by the fact that the aquatic food supply was nearly exhausted by resident and migrant waterfowl during 1960.

Even though "sheet water" was extremely scarce because of scant runoff, dabbling ducks made heavy use of this habitat type. Small temporary potholes (less than one acre) in the vicinity of Kramer and Landa commonly contained up to 100 ducks. As the spring season advanced pairs of mallards and pintails were seen here also. This suggests a strong innate preference by certain waterfowl for this type of habitat during spring migration and early phases of the reproductive cycle. Immediate utilization of temporary rainwater puddles is also a common behavior trait of dabbling duck pairs.

A heavy migration of lesser scaup and green-winged teal passed through during the last half of April. First observations of all species traditionally found here had been recorded by April 27. As usual, blue-winged teal and ruddy ducks were the last to arrive.

Spring mallard and pintail sex ratios showed a disparity in favor of males. Based on a tally of about 900 mallards the ratio was 147 male per 100 females. The observed sex ratio for pintails was 127 males per 100 females based on a sample of about 850 birds.

Coot

First observation of this species was on April 18, and an estimated 12,000 were present by the close of the period.

Whistling Swan

The first swans were seen on April 8. Highest spring population estimate was 500 birds, compared with 2,500 during October 1960. This population difference might be related to availability of food. Traditionally favored portions of the marsh were again used almost exclusively. The interior of Units 326 and 320 and the shallow flats of Unit 357 were heavily utilized. Swans were noticeably sedentary during their stay here - often feeding, loafing and sleeping within a small area of the marsh. Occasional "change of location" flights were noted, involving family size groups. Courtship displays were frequently observed, including bird to bird agression on the water and short aerial chases. Three birds were the number most frequently observed in these courtship displays.

Canada Geese

Penned flock: The captive flock wintered quite well. Only one bird was lost (an adult female), apparently from an injury inflicted by a great horned owl. In addition to the flock of wing-clipped geese, sixteen free-flying birds stayed here all winter voluntarily. This flock made short daily exercising flights which gave the refuge staff temporary relief from "office-itis", a malady associated with northern winters.

With the advent of spring break-up, pairs of free-flying geese flew from the pen to Unit 326. This activity was most prevalent during dawn and dusk periods.

At the close of the period, two pairs of geese were nesting in the pen. An aerial photo of the goose pen showing nest locations is included in the picture section. The female of Pair "A" began incubating a set of 9 eggs on April 18. In the second nest, female "B" began incubating a set of 10 eggs on April 22. Individual pair formation history is not completely known at present. Gander "A" has orange plastic bands on both legs - probably a member of the free-flying flock which remained over winter and banded as an immature in 1956 or 1957. Gander "B" is unbanded and is apparently a wild bird. No information is available on the history of either female. They were not disturbed to determine the presence of bands.

Wild Flock: The resident Canada goose flock returned on March 15. The water level in Unit 320, the primary goose nesting area, has been precariously low following break-up as a result of poor spring runoff in the Souris watershed. Prior residents of Lower Souris will recall that water right priorities established by the State Water Commission require an annual spring release from Upper Souris Refuge to provide for irrigation of native hayland owned by a prominent Towner citizen. So it looks like this spring the available water will produce hay instead of Canada geese.

In other words, habitat conditions for goose nesting in Unit 320 are very poor. The influence this deteriorated habitat complex will have on goose production is only problematic at present. One would suspect that this shallow water would not be sufficient to exclude mammalian predators. Pairs of geese have been observed loafing on 320 and 326 dikes and also around the periphery of these units. These observations have been made at various times throughout the day - during the period when incubation should be in progress - suggesting that non-breeding may depress the annual production potential this year. An early season check of nesting islands in Unit 326 on April 18 revealed eight nests, seven of which had been destroyed by predators.

A good migration of small Canada geese was observed during the last week of April. An estimated 15,000 were present at the close of the period. These birds remained noticeably segregated from other species, although they were associated with snow goose concentrations.

White-fronted Goose

Small numbers of white-fronts, usually in flocks of less than 50, were observed in association with snow geese and small Canadas. The first observation of this species was made on March 21. The spring population did not exceed 1,000 birds, in contrast to October 1960 when an estimated 14,000 were present.

Snow and Blue Goose

The first snows and blues were observed on April 7. Migratory movements continued through the remainder of the month. A peak population of about 100,000 birds was present by the end of April. Water conditions outside the refuge were poor for holding large numbers of geese. Nearly all geese passing through this area were based on the refuge and made feeding flights twice daily to surrounding stubble fields. Farming units on the refuge were also used considerably. The most spectacular feeding concentrations were noted between Landa and Bottineau along Highway 5. Only one water area outside

the refuge held a large number of birds - approximately 25,000 observed on a shallow 100 acre marsh south of Landa on April 28.

Low water levels in Units 357 and Unit 320 created extensive mudflats which provided preferred roosting areas for geese.

Water and Marsh Birds

Dates of first observations for representatives of this group are recorded in the table of migration chronology. Pied-billed, eared, red-necked and western grebes were here by the close of the period. Horned grebes, usually common summer residents had not been recorded. Seven sandhill cranes were observed on April 28, and a few farmer reports of sandhill crane migration were also received. No whooping crane sightings were recorded this period.

Shorebirds, Gulls and Terns

Small numbers of the commoner shorebirds were present at the end of April. Baird's sandpipers and killdeers were especially common. Mudflats in Units 320 and 357 provided attractive shorebird habitat.

Ring-billed and Franklin's gulls were present. "Several thousand" Franklin's gulls arrived in Unit 326 on April 29-30.

Chronology of Spring Migration, to May 1, 1961

March	1	Crow
	15	Canada goose (resident flock); western meadowlark; Tree sparrow; Cedar waxwing
	17	Marsh hawk; Bald eagle
	18	Rough-legged hawk
	21	White-fronted goose; mallard; pintail; Robin
	24	Green-winged teal; Ring-billed gull
	25	Northern shrike; Slate-colored junco
	27	American widgeon
	29	Red-winged blackbird
	31	Killdeer; American merganser; American goldeneye; Lesser scaup; Ring-necked duck; redhead
April	1	Downy woodpecker
	5	Lapland longspur; Sparrow hawk
	7	Chestnut-collared longspur; Shoveler; Snow goose (and blue); canvasback; Bufflehead
	8	Whistling swan; Mourning dove
	10	Mountain bluebird; pigeon hawk
	12	Gadwall; Great-blue heron
	13	Hooded merganser
	18	American coot; Franklin's gull
	19	Blue-winged teal; Yellow-shafted flicker; Yellow-headed blackbird; Vesper sparrow

April	20	White pelican; Hermit thrush
	21	Greater yellowlegs; Lesser yellowlegs; Double-crested cormorant; Marbled godwit
	22	Pied-billed grebe
	25	Eared grebe; Hudsonian godwit
	26	Red-necked grebe; Willet
	27	Ruddy duck; Baird's sandpiper; Wilson's phalarope; Belted kingfisher; White-throated nuthatch
	28	Red-tailed hawk; Sandhill crane; Western grebe; Black-crowned night heron; Spotted sandpiper; Bronzed grackle; Savannah sparrow; McCown's longspur
	30	Long-eared owl

B. Upland Game Birds

Ring-necked Pheasant

The pheasants inhabiting Lower Souris Refuge constitute an "island" population within generally marginal range for this species. Environmental influences contributing to high density pheasant populations, primarily a compatible agricultural land-use and permanent cover pattern and suitable climatic factors do not exist over large portions of northern North Dakota. It is probable that without supplemental winter feeding, the refuge population would be much lower or fail to thrive at all. (Not implying that winter food supply is the only factor limiting the pheasant population density of northern North Dakota).

On the basis of excellent reproductive success for pheasants in this state during 1960 and a winter without serious blizzard mortality, we expect a substantial increase in the spring breeding population. This prediction follows the statewide annual population trend for pheasants. No age ratio data is available for this section of the state, but in the prime pheasant range, opening weekend hunter bag checks in October 1960 indicated an average juvenile per adult hen ratio of 8:1. This indicates excellent reproductive success.

In this semi-arid climate, precipitation and temperature patterns during the nesting and brood-rearing period are believed to have a strong influence on the annual production success of pheasants. This climatic influence probably operates both indirectly through habitat quality and directly through egg viability and juvenile survival.

European Partridge

Population size and distribution of this species in North Dakota fluctuates widely in response to environmental factors which are not clearly understood. Probably changes in broad land-use and cover patterns regulate long-term regional population densities while climatic factors govern annual reproductive success.

Partridge coveys generally ranging in size from 5 to 15 birds were observed throughout the winter. These hardy game birds have shown a capability for surviving winter climatic extremes at this latitude with only a minimum of protective cover. As usual, coveys favored roads and trails as feeding sites.

Covey break-up was noted at this latitude during the first week of March. Earliest pairing began by February 28 and pair formation was near completion by March 15.

Lack of adequate census dataprevents making an accurate statement of population size or trend.

Sharp-tailed Grouse

Reproductive success of prairie grouse usually approximately parallels that of pheasants in North Dakota. In view of this fact, we expect a moderate increase in our spring grouse population. Dancing ground counts are incomplete at this time, but preliminary results indicate a stable or only slightly increased grouse population on the refuge.

A table summarizing dancing ground data for the past few years is included in Section V.

Land-use adjustments have been made in an attempt to improve refuge grassland habitat. In many of these units of retired farmland, species composition is predominated by tame grasses and annual weeds. Recovery of this land type to prime grouse habitat through natural succession probably will be a slow process. This indicates that immediate results should not be expected always from a land management practice designed to benefit wildlife.

C. Big Game Animals

White-tailed Deer

The refuge deer population is in a healthy state and within carrying capacity of available habitat. During an aerial census of the Souris valley on February 27, 189 deer were counted within refuge boundaries by Arthur Adams, Game Biologist, N. Dak. Game and Fish Department. As usual, the majority were tallied in the sandhills area. He estimated 80 percent coverage, indicating a total population of about 230 animals.

James McKenzie, State Big Game Biologist, has reported deterioration of deer habitat by cattle in the Souris valley between Upper and Lower Souris Refuges. This cattle-deer competition has become increasingly severe during the past five years. In many places heavy utilization of the wooded river valley by cattle has destroyed nearly all understony, woody and herbaceous browse species.

D. Fur Animals, Predators, Rodents and other Mammals

This group of animals generally remain dormant during the winter. Raccons, badgers and skunks made erratic, wandering movements on warm days during January and February. Above ground activity increased throughout March and April.

Mink, muskrat and beaver populations are maintaining a pattern of stability. The extent to which water area deficiencies on land surrounding the refuge for the past 5 years or more has resulted in movement into the refuge is unknown. Such a shift is not believed to have been significant for muskrats or beaver, but the greater mobility of mink may have facilitated more migratory movement.

Red fox and coyotes are present; the former are abundant, the latter scarce. A male bobcat (Lynx rufus) was captured by Mr. Brandt on January 3. The pelt and skull are being preserved for a museum-type specimen. This capture represented an unusual record of bobcat occurrence for this locality. No other specimen has been recorded since establishment of the refuge. Porcupines are present on the refuge, and are concentrated primarily in the sandhills, although scattered individuals may be observed anywhere. Aspen is probably the principal food source. Cottontail and white-tailed jackrabbits are moderately abundant throughout the refuge. A noticeable increase in jackrabbit movement and a change in behavior, probably associated with breeding, occurred in late April.

E. Hawks, Eagles, Owls, Crows, Ravens and Magpies

Observations of hawks by species are recorded in the table of migration chronology. One golden eagle was observed on February 27 and bald eagles were observed on March 17 (3) and April 5 (2). Crows migrated throughout March and April following first observation on March 1. Magpies are common year around residents in the vicinity of aspen woods.

A "wave" of migrating hawks was observed on April 28.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

Following is a list of work projects accomplished this period:

Roads and Impoundments

1. Gravelled goose banding sites in 320 and 326.
2. Put out goose nesting tubs in 320.
3. Knocked down cattail emergent encroachment in 320 with D-7 Bulldozer and rotary mower.
4. Rebuilt brood chronology-run trail on 326 shoreline.

Buildings, Grounds and Equipment

1. Installed concrete floor in garage at Qtrs. 9-2.
2. Completed renovation of Transient Qtrs. (Kitchen and plumbing).
3. Dismantled old wooden hangar for salvage and survey.
4. Installed new kitchen cupboards, sink and exhaust fan in Qtrs. No. 1.
5. Completed interior painting of kitchen and woodwork in Qtrs. No. 1.
6. Repaired and painted clinker boat.
7. Constructed new two-wheel boat trailer.
8. Constructed and installed safety roll bar on wheel tractor.
9. Constructed three vehicle tool storage boxes.
10. Constructed and erected Martin Bird House at Hdqtrs.
11. Raked lawn at headquarters.

Miscellaneous

1. Constructed forms for making concrete gate and corner posts.
2. Harvested 1,000 ash fence posts from river bottom near Johnson bridge.
3. Reseeded rangeland in D-22 with Russian Wild Rye and legume mixture.
4. Constructed 3 permanent grazing exclosures in G-34.
5. Constructed 48 portable grazing exclosures.
6. Painted large recognition (wooden) signs blue and white to conform with New Sign Standards.
7. Salvaged power poles from abandoned line crossing refuge.
8. Cleaned 3,310 pounds of millet and 2,120 pounds of slender wheat grass seed.
9. Cleaned timber from Willow Creek Channel (8 man days - chain saw and bulldozer).
10. Constructed new flourescent light tracing table.
11. Signed up all grazing and farming permittees under new permits and agreements.
12. Mr. Johnson revised 10 year Soil & Moisture Plan.
13. Regularly scheduled safety meetings and check of radiation monitoring instruments were conducted.
14. Sharp-tailed dancing ground census was started in April.
15. Mr. Duebbert was on assignment with River Basins delineating wetlands in Dickey, Cavalier, McIntosh and Logan Counties.
16. Mr. Brandt maintained daily care of captive goose flock.

B. Plantings

1. Aquatic and Marsh Plants

None.

2. Trees and Shrubs

None.

3. Upland Herbaceous Plants

Al Brandt seeded 20 acres of retired rangeland in D-22 and 5 acres of range in G-53. Date of seeding was April 12-13. Seed mixture consisted of: 200 lbs. of slender wheat grass
100 lbs. of Russian Wild Rye
120 lbs. of Alfalfa
1,000 lbs. of 12-48-0 Fertilizer

4. Cultivated Crops

Refuge farm permittees signed new agreements and plans for the 1961 crop year during this period. Plowing and first seeding was noted on April 20.

IV. RESOURCE MANAGEMENT

A. Grazing

None this period. Nevertheless a number of administrative details associated with the grazing program were completed. They include: (1) weeding "dead wood" out of the permittee waiting list; (2) setting 1961 stocking rates; (3) renewing 3 year grazing permits; and (4) constructing 48 portable grazing exclosures and 3 permanent grazing exclosures. The permanent exclosures were established in Grazing Unit G-34.

B. Haying

None this period. However, a survey of the local hay prices was completed. Results indicate that the refuge price for bottom land hay ($1.50 per ton standing in the field) is too low. It has been recommended that the price be increased to $3.00 per ton in 1961.

C. Fur Harvest

Beaver was the only fur bearer trapped on the refuge this period. A total of 19 animals were removed by 6 permittee trappers during the season which ended on April 30. The refuge share of the harvest was 8 pelts.

Maintenanceman, Al Brandt, also trapped predators in the vicinity of 320 and 326 pools. His catch for the season included 14 red fox, 1 coyote, 1 bobcat, 2 raccoon, 10 skunk, 1 feral domestic cat, 2 crows and 10 magpies. The coyote, raccoon and 13 red fox, sold in the round to local buyers, brought $15.75.

Poison eggs (6 dozen) were set out on nesting islands to control predators in Units 320 and 326 during early April.

D. Timber Removal

Refuge personnel cut 1,000 ash posts in Woodland Unit 3, for use in maintaining grazing unit fences.

F. Other Uses

One special use permit for pasturing 300 bee colonies was issued. Refuge income from this permit totalled $30.00.

Also, one special use permit was issued to Willow Creek Township for removing approximately 2,500 cubic yards of gravel from the Willow Creek pit.

V. FIELD INVESTIGATION OR APPLIED RESEARCH

A. Progress Report

Job I - Grouse Studies

Sharp-tailed grouse dancing ground surveys which began in early April were not completed by the end of the period. An abundance of cold, windy mornings during April prevented the completion of the survey.

Mr. Hammond's summarization of sharp-tailed grouse dancing counts for the period 1953 to 1960 inclusive, is tabulated below:

	Number of Male Birds							
Ground Number	1953	1954	1955	1956	1957	1958	1959	1960
1	27	13	NC	0	0	0	11	0
2	NC	8	NC	0	0	0	0	0
3	3	5	NC	0	0	0	0	4
4	33	31	NC	16	16	14	13	9
5-5A	NC	14	NC	0	3	6	0	4
6	NC	17	NC	5	0	0	0	0
7	9	1	NC	0	0	0	0	0
9	NC	9	NC	8	5	6	5	5
10	NC	2	NC	0	0	0	0	0
11	NC	8	NC	NC	NC	11	5	0

Ground Number	1953	1954	1955	1956	1957	1958	1959	1960
12-12A	5	3	0	0	0	0	0	7
12B	0	0	0	0	21	24	16	14
13-13A	NC	0	0	11	0	0	0	0
14-14A	17	1	0	NC	12	12	9	3
14B	0	0	0	0	1	8	16	11
14C	0	0	0	0	0	10	0	0
14E	NC	NC	NC	NC	NC	21	19	0
15	24	17	18	NC	26	29	12	0
15A	0	0	0	0	15	17	7	0
16	8	10	NC	NC	4	5	0	0
17	NC	12	NC	10	10	31	8	7
18	NC	14	NC	27	21	26	16	8
18A	NC	16	NC	16	16	15	10	0
19	NC	15	17	24	25	24	2	0
20	NC	2	NC	0	0	8	3	0
21	NC	17	NC	0	16	15	14	13
22	10	12	10	18	16	13	7	5
23	4	0	13	10	12	9	0	4
25	NC	3	0	0	0	0	0	3
26	6	4	5	11	19	5	0	4
27	NC	38	31	NC	24	26	12	9
28	NC	24	NC	NC	15	20	19	12
29	33	17	NC	NC	19	21	16	13
35	0	0	NC	NC	11	34	10	0
36	0	5	0	0	0	0	NC	0
37	NC	4	0	0	0	0	0	0
37A	0	0	0	4	8	NC	0	0
38A	NC	9	6	11	13	13	7	4
38B	0	0	0	0	4	0	0	0
39A-B	0	4	0	0	0	8	1	0
40	NC	13	0	0	0	0	0	0
counted Grounds / with birds	12	32	8	13	24	28	28	19
Males	179	358	101	171	322	451	234	139
Average per ground	14.9	11.2	12.6	13.1	13.4	16.1	10.2	7.3
Grounds present	30*	33	-	22	26	29	23	19
Total Males	450	370	355*	295*	349	467	234	139

NC - not counted
* - estimated

Job II - John Johanson's study entitled "Some Effects of Cover Removal in Relation to Waterfowl Breeding Populations"

Mr. John Johanson, refuge wildlife aid in 1960, was unable to return to the refuge this year to fill the wildlife aid position. The continuation of the above study initiated by Mr. Johanson has been assigned to Mr. Gerald Martz, a University of Wisconsin graduate student, who reported for duty as a wildlife aid, GS-5, on April 23.

Job III - Long range study to determine an annual index to predator population density and distribution

In the past, lack of reliable census data has been a serious limitation to obtaining exact knowledge of population density and distribution of predator species. Population estimates have been based primarily upon impressions of abundance and fur harvest figures. The effect of predation on potential waterfowl production has traditionally been one of the least understood population decimating influences.

The present study was designed to shed some light on the relationship of predation to waterfowl reproductive success. Study techniques were formulated by Mr. Hammond, and field work is being conducted by Mr. Brandt, with occasional assistance from Mr. Laughlin of the Predator and Rodent Control Branch. Standard trap sets have been located at 50 sites and will be operated for 20 days or a total of 1,000 trap nights. A set consists of a constructed nest containing chicken eggs and two No. 1½ or 2 steel traps.

Combined with this technique, a sampling of predator activity, or predator pressure, will be carried on during the duck nesting season. Dummy nests using chicken eggs will be used for this annual index to predator populations.

Since these studies will be conducted annually and in a standardized manner, we hope to obtain valuable knowledge of the complex interrelationships between refuge predator populations, weather, and waterfowl production.

VI. PUBLIC RELATIONS

A. Recreational Uses

Refuge recreation facilities received very little use during the winter months. A few ice fishermen tried their luck at the Nermoe bridge fishing area during early January and an occasional bird watcher made use of the Willow City road during late April.

B. Refuge Visitors

Date	Name	Affiliation	Purpose
1/10/61	H. Jensen	FWS, Jamestown, N.D.	Mutual problems
	J. Waters	FWS, Minot, N.D.	" "
2/16	J. Waters	FWS, Minot, N.D.	Radio program
2/27	R. Nelson	NDG&F, Bismarck, N.D.	Aerial deer census
	A. Adams	NDG&F, Rugby, N.D.	" " "
3/15	H. Dill	FWS, Holt, Minn.	Depredations program
	M. Mansfield	FWS, Holt, Minn.	" "
3/29	H. Bradley	FWS, Kenmare, N.D.	Seed pickup; mut. problems
	L. Hoffman	FWS, Kenmare, N.D.	" " " "
4/11-12	E. Kaastad	FWS, Blair, Nebr.	Corn dely.; seed pickup
4/17	J. Dahl	FWS, Foxholm, N.D.	Grass seed pickup
4/25;27-28	Dr. W. Gunn	Biol.,Toronto, Canada	W. Swan recordings
Occasional	J. Laughlin	FWS, Bottineau, N.D.	Predator control
	O. Crosby	USGS, Bismarck, N.D.	Water measurement
	C. Decker	NDG&F, Upham, N.D.	Enforcement
	A. Adams	NDG&F, Rugby, N.D.	Fur & waterfowl mgt.
	J. Waters	FWS, Minot, N.D.	Vehicle repair; enforcemen

C. Refuge Participation

1/3/61 - Smith met with Directors of the Mouse River Grazing Assocation re refuge haying and grazing policies.

1/26-27 - Smith and Hammond attended meeting of North Dakota, Minnesota, South Dakota and FWS biologists re mutual waterfowl management and research problems at Wahpeton, North Dakota.

2/13 - Hammond presented talk, "Limiting Factors on Game Populations" to Upham High School Biology Class (25 students).

3/6-9 - Hammond attended and presented paper entitled, "Waterfowl Feeding Stations for Controlling Crop Losses." at North American Wildlife Conference in Washington, D.C.

3/10 - Johnson conferred w/Bottineau and McHenry County ASC officials re feed grain production allotments on refuge croplands.

3/13 - Hammond presented talk, "Some Needs for Waterfowl Research" at a Wildlife Seminar, Univ. of Mo., Columbia, Mo.

3/21-24 - Duebbert, Hammond, Johnson and Smith attended Dakota Wetlands Conference in Jamestown, N. Dak.

3/30 - Hammond, Johnson and Smith attended Grasshopper Control Conference in Rugby, N. Dak.

4/17 - Smith met with Park Board Officials at Westhope, N. Dak. re improvements to Meddaugh Park recreational area

VII. OTHER ITEMS

The Roy Carlson's became proud grandparents with the birth of a son to Mr. and Mrs. Larry Brandt in early January. Mrs. Brandt is the former Theresa Carlson. It looks as if "Grandpa Carlson" will be having another mechanic in the family!

Mr. Gerald Martz, graduate student from University of Wisconsin arrived April 23 to take over study vacated by John Johanson. Mr. Martz is accompanied by his wife, Barbara.

The paper, "Waterfowl Feeding Stations as a means for Controlling Crop Losses" presented by Mr. Hammond at the 1961 North American Wildlife Conference in Washington, D. C. is appended. omitted - Merrill had given away all copies before this report was being assembled. EJS

Photographs

By R. Johnson are appended.

Credits

H. DUEBBERT	:	Secs. II, NR's 1, 2
M. HAMMOND	:	Conference paper
R. JOHNSON	:	Secs. IV, V, VI, VII, NR1a, 4, Photos.
E. SMITH	:	Secs. I, III, Easements
W. HILL	:	Complete typing and assembly of report

SIGNATURE PAGE

Submitted by:

Edward J. Smith Jr
(Signature)
Edward J. Smith, Jr.

Refuge Manager
Title

Date: May 15, 1961

Approved, Regional Office:

Date: 5-18-61

(Signature)

Regional Refuge Supervisor

EASEMENT DISTRICT III

WILLOW LAKE

Visited on April 21. Iced over except for a margin of open water around west shoreline. Just a few mallard and pintail present. Lake is low and no water flowing out through the S.W. spillway.

SCHOOL SECTION LAKE

Visited on April 21. Still completely frozen.

LORDS LAKE

Visited on April 21. Water level measured 52" below top of culvert. Lake 2/3 ice-covered.

Waterfowl Population observed:

Whistling Swan	-	10
Snow and Blue Geese	-	5,000
Mallard	-	300
Pintail	-	200
Baldpate	-	1,000
Shoveler	-	100
Green-winged Teal	-	50
Gadwall	-	50
Ringneck	-	2 (1 pr.)
Goldeneye	-	50
Bufflehead	-	10
Redhead	-	10
Canvasback	-	30

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

WATERFOWL

REFUGE **Lower Souris** MONTHS OF **JANUARY** TO **APRIL**, 19**61**

(1) Species	(2) Weeks of reporting period									
	1	1/1-7 2	1/8-14 3	1/15-21 4	1/22-28 5	1/29-2/4 6	2/5-11 7	2/12-18 8	2/19-25 9	2/26-3/4 10
Swans:										
Whistling			NONE	DURING		THIS	PERIOD			
Trumpeter										
Geese:										
Canada										
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard										
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. 37944

3 -1750a
Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Lower Souris MONTHS OF JANUARY TO APRIL, 1961

(1) Species	(2) Weeks of reporting period: 3/5-11 (11)	3/12-18 (12)	3/19-25 (13)	3/26-4/1 (14)	4/2-8 (15)	4/9-15 (16)	4/16-22 (17)	4/23-30 (18)	(3) Estimated waterfowl days use	(4) Production: Broods seen	(4) Production: Estimated total
Swans:											
Whistling						600	300	200	7,700		
Trumpeter											
Geese:											
Canada (large ssp.)		200	300	300	300	300	300	300	14,000		
~~Cackling~~ (small ssp.)						2,000	5,000	15000	154,000		
Brant											
White-fronted							800	800	11,200		
Snow } combined						15,000	50,000	120,000	1,295,000		
Blue }											
Other											
Ducks:											
Mallard			100	2,000	8,000	4,000	4,000	4,000	154,700		
Black											
Gadwall						300	2,000	5,000	51,100		
Baldpate				100	200	200	5,000	15,000	143,500		
Pintail			1,500	8,000	24,000	5,000	1,500	2,000	294,000		
Green-winged teal					50	500	15,000	30,000	318,850		
Blue-winged teal							500	2,000	17,500		
Cinnamon teal											
Shoveler						500	1,500	9,000	77,000		
Wood											
Redhead					200	200	2,000	2,000	30,800		
Ring-necked					100	100	100	200	3,500		
Canvasback						100	800	800	11,900		
Scaup				1,000	3,000	5,000	50,000	30,000	623,000		
Goldeneye				1,500	1,500	300	100	10	23,870		
Bufflehead					50	50	30	20	1,050		
Ruddy								100	700		
Other											
Common merganser				400	100	50	25	10	4,095		
Hooded merganser						10	10	10	210		
Coot:							5,000	12,000	119,000		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	7,700	600	
Geese	1,474,200	136,100	
Ducks	1,755,575	100,150	
Coots	119,000	12,000	

SUMMARY

Principal feeding areas All refuge impoundments; cropland units

Principal nesting areas

Reported by H. F. Duebbert

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 Refuge Months of JANUARY to APRIL 30 195 61

(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	2	4/26								
Eared Grebe	1	4/25								
Western Grebe	1	4/28								
Pied-billed Grebe	1	4/22								
White Pelican	30	4/20								
Double-crested Cormorant	1	4/21								
Great Blue Heron	2	4/12								
Black-crowned Night Heron	3	4/28								
Sandhill Crane	7	4/28								
II. Shorebirds, Gulls and Terns:										
~~Killdeer~~	3	3/31								
Spotted Sandpiper	1	4/28								
Willet	1	4/26								
Greater Yellowlegs	1	4/21								
Lesser Yellowlegs	1	4/21								
Baird's Sandpiper	1	4/27								
Marbled Godwit	1	4/21								
Hudsonian Godwit	85	4/25								
Wilson's Phalarope	1	4/27								
Ring-billed Gull	3	3/24								
Franklin's Gull	1	4/18								

(over)

(1)	(2)		(3)		(4)		(5)		(6)
III. Doves and Pigeons:									
Mourning dove									
White-winged dove	1	4/8							
IV. Predaceous Birds:									
Golden eagle									
Duck hawk									
Horned owl									
Magpie									
Raven									
Crow									
Snowy Owl	1	1/20			1	3/1			
Bald Eagle	3	3/17			2	4/5			
Marsh Hawk	1	1/5							
Red-tailed Hawk	1	4/28							
Swainson's Hawk	1	1/3							
Rough-legged Hawk	1	3/18							
Pigeon Hawk	1	4/10							
Sparrow Hawk	1	4/5							

Reported by Edward J. Smith, Jr.

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.

INT.-DUP. SEC., WASH., D.C.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge **Lower Souris** Months of **JANUARY** to **APRIL**, 19**61**

(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.
Sharp-tailed Grouse					**100:100***				400	
Ring-necked Pheasant					**50:100***				500	**Good hatch 1960; statewide estimated for increase in size of spring breeding population**
European Partridge					**100:100***				300	

*** Estimated**

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, 1961

(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
Mink				54	1**			T-9407	13	14	14			250
								9408	5	5	5			
								9409	4	4	4			
								9410	1**	1**				
								9411	1	1	1			
								9412	3	3	3			
Muskrat				4								4***		2,000
Raccoon				34	2				34	0				300
Skunk				31	10				31	0				500
Badger				1					1	0				100
Weasel														100
Coyote					1									10
Red Fox					14									100
Bobcat					1***									

* List removals by Predator Animal Hunter

REMARKS: * Sold on local market and proceeds divided
** Turned over to North Dakota Game & Fish Department
*** Pelt tanned and retained for refuge specimen.

Reported by Edward J. Smith, Jr.

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.

32715

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Lower Souris Year ending April 30, 1961

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5) Total Population
								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	
Beaver				1				T-9407	3/5*	2/5*				250
				0				9408						
				0				9409						
				10				9410	5	5				
				3				9411	2	1				
				6				9412	3	2			1	

* List removals by Predator Animal Hunter

REMARKS:

Reported by Edward J. Smith, Jr.

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.

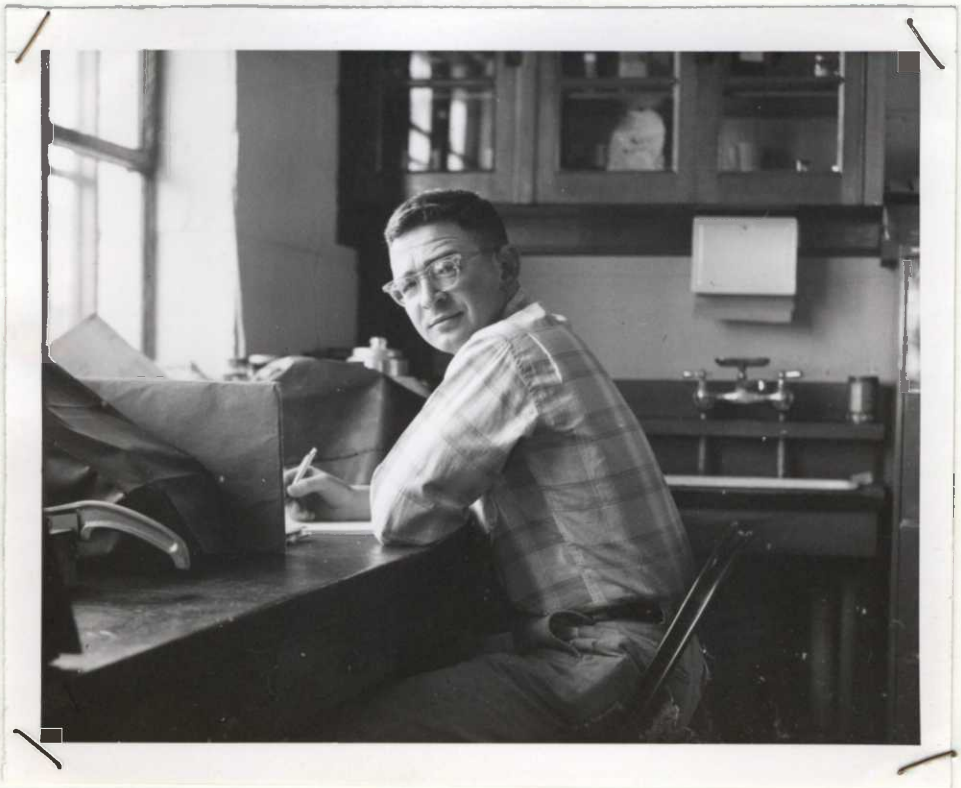
(4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated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

32715

Ground-water levels have dropped drastically during past few years. Maintenanceman Ray Badke is shown standing by a stock water pond whose water level has dropped nearly two feet since last year
Exp. 391, 4/61/RRJ



Mr. Gerald Martz, Wildlife Aid G-5
Exp. 392, 4/61/RRJ

Maintenanceman Al Brandt displaying Bobcat trapped in sandhills
Exp. 390, 1/61/RRJ

Winter scene, headquarters area
Exp. 391, 1/61/ RRJ

Close-up of Goldeneye, taken through B & L spotting scope, 15X objective
R-326, Exp. 43, 4/61, RRJ

Close-up of Goldeneyes, taken through B & L spotting scope, 15X objective
R-326, Exp. 43, 4/61, RRJ

Transient quarters before renovation
R-322, Exp. 1 - EJS, 3/22/60

Transient quarters after renovation
Exp. 394, 4/61, RRJ

Aerial photo of goose pen at refuge headquarters showing location of two 1961 nests. Nest "A" contains 9 eggs - incubation began 4/18; Nest "B" contains 10 eggs - incubation began 4/22. In October, 1960 (after photo was taken) a small pond was dug at "X". Water is pumped from nearby Unit 326.