

UPPER SOURIS NATIONAL WILDLIFE REFUGE

R.R. #1

Foxholm, North Dakota 58738

ANNUAL NARRATIVE REPORT

Calendar Year 1984

U.S. Department of the Interior
Fish and Wildlife Service
NATIONAL WILDLIFE REFUGE SYSTEM

REVIEW AND APPROVALS

UPPER SOURIS NATIONAL WILDLIFE REFUGE

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ANNUAL NARRATIVE REPORT

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Paul D. Johnson (Acting) 5/14/85
Refuge Manager Date

Dale B. Henry 5-20-85
Refuge Supervisor Review Date

[Signature] 5-20-85
Regional Office Approval Date

INTRODUCTION

UPPER SOURIS NATIONAL WILDLIFE REFUGE

The Upper Souris National Wildlife Refuge is situated in the drift prairie region of north central North Dakota. It occupies a 30-mile reach of the western loop of the Souris River. The Souris River enters the United States from Canada just north of the refuge and flows 69 river miles before leaving the refuge.

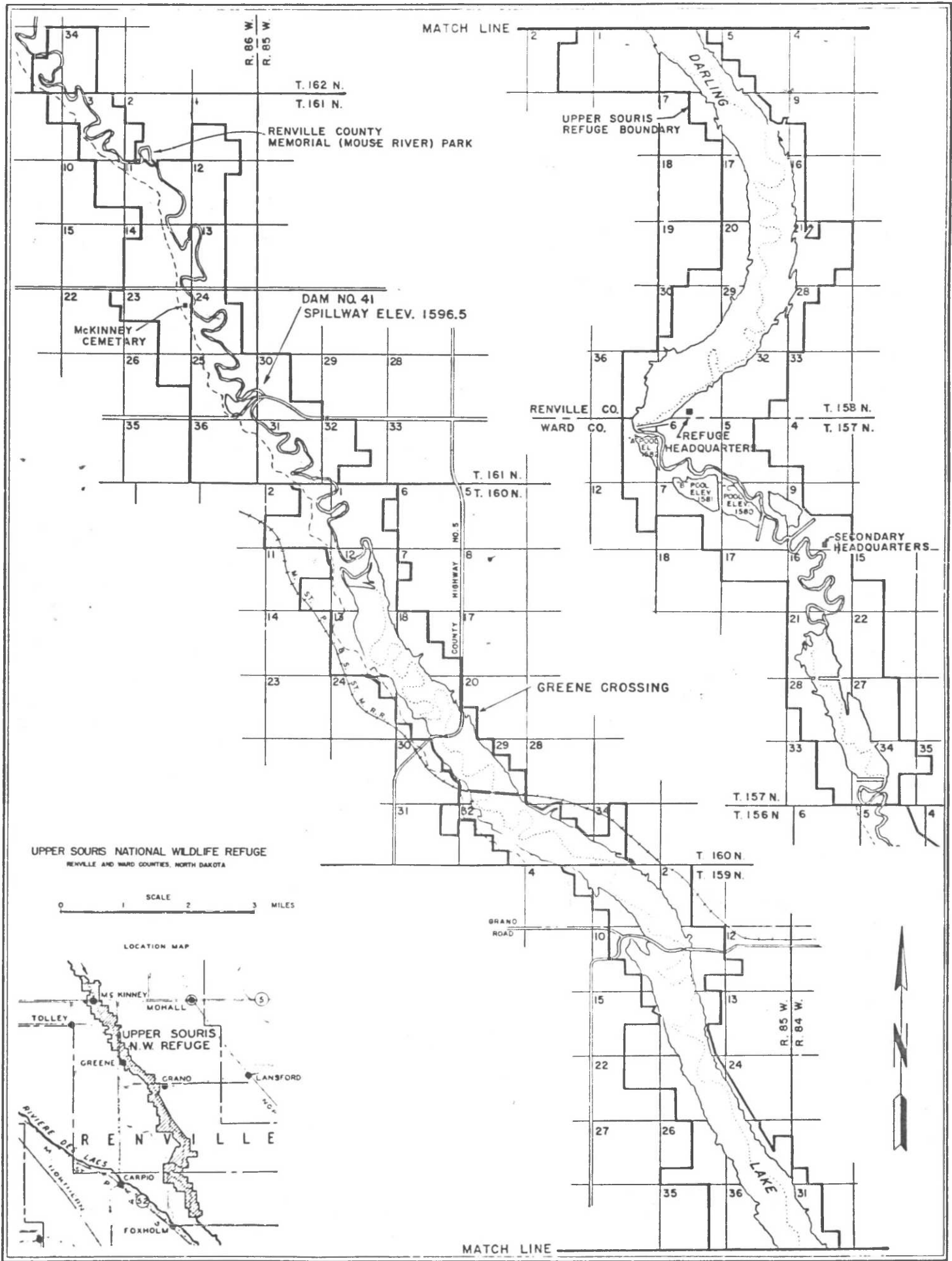
At a point approximately seven miles north of Foxholm, the refuge's Lake Darling Dam spans the Souris River valley. This earthen dam, creating a refuge impoundment covering 10,000 surface acres of water, supplies several smaller impoundments on the refuge and the marshes at J. Clark Salyer NWR downstream. Major flooding along the Souris River occurred in 1969, 1975, 1976 and 1979, resulting in economic losses downstream and in the city of Minot. A major Corps of Engineers (COE) flood control project, the Burlington Dam, would have inundated the lower portions of the refuge but was met with strong local opposition. A compromise project, agreed to by the Service in 1981, calls for a four-foot raise to the Lake Darling Dam. The Service has agreed to refuge structural modifications in lieu of the purchase of private lands for mitigation purposes on this project.

The Upper Souris NWR covers 32,092 acres of the Souris River valley in both Ward and Renville counties. Present habitat for wildlife on the refuge includes 17,562 acres of native grasslands, 400 acres of introduced grasses, 733 acres of dense nesting cover, 750 acres of woodlands and 12,647 wetland acres of open water, river and shallow marshes. The physiography of the area is characterized by a narrow band of river bottom woodlands, fertile flood plain, rolling hills and steep sided wood brush coulees.

Management programs are designed to increase waterfowl production and maintenance, but they also promote species diversity and maintain the complex prairie ecosystem. Water management in marshes located below Lake Darling Dam consists of seasonal drawdown capabilities in all pools. Pools A, B, C, 87 and 96 all have water supply from Lake Darling reservoir. Pools 96A and 96B have either spring runoff or water pumped from the river. Refuge marshes above Lake Darling are controlled by Dam 41. These marshes consist of natural river oxbows and natural marsh areas created by holding the river at a certain level. Management of native and tame grasslands for waterfowl nesting is accomplished by grazing, prescribed fire and the establishment of native and tame grass stands.

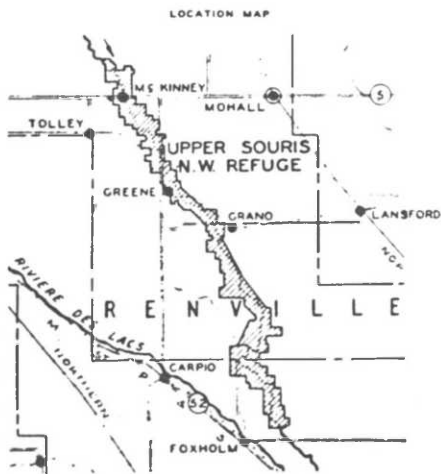
The refuge receives considerable public use due to the close proximity of the city of Minot and Minot Air Force Base. An auto tour route, hiking trails, canoe routes, observation points and grouse observation blinds provide many opportunities to the

visitor to view wildlife. Fishing visits account for 94% of all public use with an estimated 83,000 visits in 1984. Environmental Education workshops are held on the refuge for local teachers for college credit through Minot State College and North Dakota State University. Due to the closeness of population centers and the visibility of the refuge, Upper Souris NWR becomes the focal point of Fish and Wildlife Service (FWS) activities in the northwestern part of the state and receives a good deal of television and radio coverage.



UPPER SOURIS NATIONAL WILDLIFE REFUGE
RENVILLE AND WARD COUNTIES, NORTH DAKOTA

0 1 2 3 MILES
SCALE



MATCH LINE

INTRODUCTION

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A. HIGHLIGHTS

A sharp-tailed grouse hunting season was held on the refuge for the first time. (Section H.8)

A study of breeding birds associated with refuge grassland and woodland habitats was completed and will be used to monitor habitat management activities. (Section G.7)

The refuge hosted and assisted in conducting a teacher workshop in environmental education in cooperation with Minot State College. (Section H.3)

Pool 87 and C Pool were burned and water levels increased in an effort to control cattail. (Section F.2)

Waterfowl nest dragging studies were initiated and results indicate a high predation rate. (Section G.3)

An arctic loon on Lake Darling was the first state record. (Section G.4)

B. CLIMATIC CONDITIONS

Despite a January low of -28 degrees below zero, winter was characterized by relatively mild temperatures.

Thirteen inches of snow fell between January and the end of March and eight more inches were added on April 27.

May was dry and windy and the rest of the growing season saw little precipitation.

Three rain dates in July totaled a mere .69 inches of precipitation.

High temperatures and winds during the summer quickly evaporated what little moisture there was. Total precipitation for May, June, July, and August was 2.93 inches compared to a normal 9.44 inches (Table 1).

The vagaries of North Dakota weather were evident in October as we received a 4.34 inch downpour on the 6th, lost electrical power on the 16th due to snow and ice, were hit by a winter snow storm on the 27th and closed the month with two-to-four inches of ice on the lake and our first ice fisherman of the season.



Figure 1. A dry summer brought on an early fall. (9-84-MBW)

Table 1. Weather conditions, Upper Souris NWR, 1984.

Month	Precipitation		Max Temp	Min Temp
	Normal	Snowfall		
January	.62"	.37"	+ 45	-28
February	.15"	.43"	+ 52	-13
March	.25"	.61"	+ 58	-20
April	3.63"	1.22"	+ 72	+19
May	.15"	2.16"	+ 94	+22
June	1.63"	3.21"	+ 92	+40
July	.69"	2.15"	+102	+39
August	.46"	1.92"	+100	+43
September	1.78"	1.60"	+ 88	+23
October	6.60"	.91"	+ 75	+01
November	1.35"	.66"	+ 57	-03
December	.27"	.46"	+ 45	-24
Annual Totals	17.58"	15.70"	-----	---

D. PLANNING

2. Management Plan

Annual plans submitted to the Regional Office included: Prescribed Burn Plan, Trapping Proposal, Water Management Plan, Pesticide Use Proposal, and Annual Work Plan. Work continued on the draft of the Emergency Action Plan. The Fire Management Plan was revised and sent to the Regional Office for review.

The Refuge Trapping Plan was prepared. After 50 years of trapping on the refuge, it was the RO's position that an environmental assessment must accompany the plan because it was being revised.

4. Compliance With Environmental And Cultural Resource Mandates

Refuge staff met many times throughout the year with the Army Corps of Engineers (COE) and FWS Ecological Services (Bismarck) to provide planning information for the Lake Darling Project (LDP). The LDP is the second phase of the total flood control plan of the Souris Valley in North Dakota. The project consists of an approximate four-foot raise of the Lake Darling Dam on refuge land, levee improvements at Velva, Sawyer, and at six subdivision areas between Burlington and Minot; floodproofing of rural residences; modification of refuge dams in the Upper Souris NWR and the J. Clark Salyer NWR; mitigation measures incorporated into project operation features; road and railroad relocation near the reservoir; and compensation to Canada for altered return flows. (See last year's narrative for further background on the project.)

Discussions this year centered around the proposed "operational features" designed to offset adverse impacts of project operation. The COE has decided not to call these mitigation features. Measure #1 was suggested by refuge manager Wright in place of an extensive dike proposal and replacement of Dam #87. With the acceptance of the proposal by COE, both measure #1 & #2 were then incorporated into the project design as mitigation features. Proposed operational features of the LDP are as follows:

- #1. Rehabilitate Marsh #87. This feature consists of the removal of Dam 87; construction of a levee from the east abutment of the dam to the upper end of the pool; and provide a water supply via conduit to the upper end of the pool. This will provide a better source of water, eliminate refuge maintenance problems on the dam and most importantly, provide for water level management of the pool.
- #2. Provide Water Supply to Pools 96A and 96B. This feature consists of the construction of a low-flow conduit from the downstream end of pool C to pools 96A and 96B. This conduit will provide a water source to these pools which are currently filled only

by runoff.

Two aspects of the project design which are unresolved at this time is the purchase in fee title of break-out points off the refuge and inclusion of a high-flow/high velocity channel and a low-flow electric weir at Dam 357 to prevent carp invasion of J. Clark Salyer NWR. A mitigation report and draft EIS is due in May 1985 with the final EIS due in October 1985.

As if LDP wasn't going to keep us busy enough, Congress has authorized funds for a study by COE to determine the feasibility of providing improvements in the Souris River Basin in the United States and Canada for flood control and other water resource needs. The study began in October 1984 and will focus on determining the feasibility of developing dams at Canadian sites near Estevan, Saskatchewan (Rafferty Dam), and Moose Mountain Creek near Alamed, Saskatchewan. A hydrology model is being developed to analyze various Canadian and U.S. plans. The current study schedule includes a prereconnaissance level report due in June 1985 to address U.S. interest in the Rafferty site in Canada, and a draft report in December 1985 to evaluate flood control alternatives at Minot and upstream in the U.S. and Canada.

E. ADMINISTRATION

1. Personnel

Refuge staffing pattern remained the same during 1984. The five-year comparison of on-board strength given below (Table 2) does not show the loss of one permanent staff maintenance position in 1978. Current needs are to replace the lost wage grade position to help accomplish the increased equipment and facility maintenance.

Table 2. Upper Souris NWR staffing pattern, 1980-1984.

Year	Permanent		Temporary
	Full-Time	Part-time	
FY 1980	4	4	6
FY 1981	4	1	8
FY 1982	3	2	4
FY 1983	5	0	4
FY 1984	5	0	3



2

1

5

3

4

1. Maurice B. Wright--Refuge Manager, GS-11, EOD 7/31/77, PFT
2. David D. Linehan--Assistant Refuge Manager, GS-09, EOD 7/12/82, PFT
3. Duane C. Anderson--Biological Technician, GS-07, EOD 11/7/77, PFT
4. David F. Gray--Maintenance Worker, WG-07, EOD 4/15/72, PFT
5. Donna L. Dumas--Refuge Assistant, GS-05, EOD 7/12/82, PFT



Temporary Help Included (From Left To Right): Stewart W. Borman--Biological Aid (Wildlife), GS-4; Kent L. Solberg--Biological Aid (Wildlife), GS-4 And Sanford K. Rostad--Biological Aid (Wildlife), GS-4.



Student Conservation Association (SCA) Volunteer
Joseph D. Engler



Youth Conservation Corps (YCC) Enrollee
Jean M. Ahmann

2. Youth Programs

One Youth Conservation Corps (YCC) worker was chosen from Carpio High School students. Jean Ahmann assisted with many small projects on the refuge and in the office.

4. Volunteers

The refuge benefited again this year from the many hours of service donated by volunteers. During the year, 414.5 hours were donated by a total of 42 volunteers. The following projects were completed or assisted by volunteers:

The Town & Country Sportsman's Club helped put out goose nesting bales.

Retired Air Force Sergeant William "Shorty" Pettit volunteered many hours filling bird feeders, wrapping nesting bales, counting sharp-tailed grouse and many other helpful maintenance and wildlife oriented projects.

Student Conservation Association (SCA) volunteer Joseph Engler, of Penn State University, conducted a study of breeding birds (G.7) during the summer. After completing his bird transects in the early morning hours, Joe would spend the rest of the day helping refuge staff with nest dragging, waterfowl counts, maintenance jobs, or anything else that needed to be done. His 50, or more, hours per week donated time helped this refuge immensely.

Wood duck nest boxes were maintained by members of the Town and Country Sportsman's Club.

Volunteers Gordon Berkey and Ron Martin erected and maintained bluebird nest boxes and provided bird observations and report.



Figure 2. Members of the Town & Country Sportsman's Club helped with the refuge goose bale project. (2-84-DL)

5. Funding

The FY '84 budget was helped considerably by ARMM projects and the Regional funding of YCC and the U.S.G.S. gauging stations. The FY '85 budget again has provided a good ARMM supplemental. However, rising fixed costs and maintenance continues to eat away at the budget and we continue to lose the ability to hire adequate summer help for needed work projects. Table 3 depicts funding during the last five years.

Table 3. Funding levels at Upper Souris, NWR 1981-1985.

Fiscal Year	O&M Budget	BLHP Budget	ARMM
1981	\$181,000	\$354,000	\$ 0
1982	\$178,500	\$ 25,000	\$ 0
1983	\$191,000	\$ 0	\$ 0
1984	\$203,600	\$ 0	\$45,000
1985	\$205,000	\$ 0	*\$40,000

* 34k in small projects, 6k as large ARMM project

6. Safety

Safety meetings were held quarterly with all permanent staff members responsible for a meeting. Special safety meetings on prescribed burning and first aid were also held. All staff received first aid training and all permanent staff are CPR trained. An LPG gas detector was installed in quarters #59. Maintenance worker Dave Gray hurt his back while loading a drum of pesticide on a pickup, but was back to work the following day.

F. HABITAT MANAGEMENT

2. Wetlands

Lake Darling-Dam 83

At the beginning of 1984, Lake Darling was 1594.68 MSL with 81,116 acre feet of water in storage. Releases from the dam averaged 20 cfs all through January, February, and March with anticipated low runoff due to an open winter in the Souris River Basin. Lake stage was 1595.53 MSL on May 1. Peak flows of 310

cfs occurred on March 26, while the total inflow to Lake Darling for the calendar year was 9,658 acre feet, measured at Sherwood gauge. At year's end, Lake Darling was at 1593.32 MSL with releases in the neighborhood of two to five cfs to maintain downstream marshes on Upper Souris NWR. Plans are to operate the pool at 19.0 feet (operational level) if runoff volume permits.

Eaton Irrigation Project was able to fill nearly all their units from the local runoff but requested an additional 2,000 acre feet. The release was made in April, without data from the Verendrye and Karlsruhe gauges, at the same time that Minot began a sewage release. Minot made sewage releases five times during the year totaling 800.5 million gallons of effluent (2,457 acre feet). Coordinated releases were made from Lake Darling during these releases. In August, a 2,000 acre feet release was made to J. Clark Salyer NWR to meet treaty requirements with Canada.

A Pool

This pool was kept at operating level (1582.0 MSL) during most of the year to help fill lower pools.

B Pool

This pool was held at 1580.5 until mid-October when the level was raised to 1581.3 to facilitate filling C pool. An excellent growth of sago pondweed in this pool attracted many fall migrants.

C Pool

C pool was drained in 1983, but provided excellent dabbler habitat in the spring of 1984 as the result of snow melt. The pool remained in drawdown condition through the summer. On August 18, a prescribed burn in the pool resulted in a complete burn of cattails. The pool was then filled and went into freeze-up at 1580.3 MSL. It is hoped that the three to five feet of water held throughout next summer will reduce cattail growth.

Pool 87

For the past 15 years, pool 87 has been a dense stand of cattail and bulrush offering little to no habitat for waterfowl use (Figure 3). A restoration project was not considered feasible because of the inability to put substantial water into the pool. Chemical control in earlier years met with only slight temporary results. This year, a project was started to burn the cattail and put additional water over the cattails by using an extension to the existing dam height. Manager Wright designed a temporary one-foot extension to Dam 87, using stoplogs and heavy timber. First, the stoplog extension structures were floated down river (Figure 5) and installed on the four wingwalls and gate (Figure 6). The marsh was burned on September 11, under very dry conditions (Figure 7), but much of the cattail was simply too green to burn. The pool was filled only days later. The marsh

was used by greater white-fronted, Canada and snow geese, ducks, and other waterfowl right up until freeze-up. Center portions of the marsh have a water depth of four to five feet, while most of the marsh is at a depth of two and one-half to three and one-half feet. Whether the cattail in the center portions of the marsh can be reduced by maintaining this depth remains to be seen.



Figure 3. Vegetation choked pool 87 before restoration treatment. (8-84-DL)



Figure 4. Pool 87 after treatment using prescribed burning and dam



Figure 5. Four one-foot extension forms were floated downstream. (8-84-DL)



Figure 6. Extension forms were placed onto the four wingwalls and gate of Dam 87. (8-84-DL)



Figure 7. Drought conditions and heavy fuels required careful planning and adequate fireline construction before the Pool 87 burn. (8-84-MBW)

Pool 96

This pool was held at 1576.8 most of the year, but lowered in the fall.

Pools 96A and 96B

Low runoff and little precipitation resulted in very little water in these pools. By mid-summer both were dry and cattail gained further ground.

3. Forests

Vegetative and bird community characteristics of refuge woodlands were looked at as part of the study by SCA volunteer Joe Engler (Section G.7). Eleven areas on the refuge, comprising about 400 acres, were mapped and identified as having significant value as woodland habitat. These included four river bottom woodland areas and seven tracts of wooded coulees. Vegetation analysis was completed in five wooded census plots. Green ash and American elm had the highest importance values while chokecherry was the most common shrub. Ground cover was predominantly rough fescue, buckbrush, and Kentucky bluegrass. The plant communities of both the river bottom woodland and the wooded coulees were

classified as green ash-American elm association.

Although differences in bird communities between grazed and ungrazed coulees were slight, there were striking vegetational differences, especially in the ground and shrub layers (Figures 8 & 9). The study suggested that severe degradation (and eventual loss) of these woodlands will occur if young trees and shrubs are not allowed to re-establish. This study further confirms our belief that the refuge needs to manage these woodland habitats. Future management activities include the elimination of grazing on woodland tracts and the application of forestry practices on selected woodlands to increase growth and enhance tree reproduction through sprouting.



Figures 8 & 9. Deterioration of grazed refuge woodlands (left) is evidenced by the absence of young trees. (8-84-DL)

4. Croplands

The restoration or rejuvenation of 8-15 year old stands of DNC has been attempted during the past two years using two methods-haying/spiking and burning. Figure 10 was taken on DNC field #6 which had a robel pole reading of 2.8 decimeters prior to being hayed and spiked July, 1983. The results on other fields spiked in 1983 varied; however, the lack of moisture during the growing period suppressed any great comeback. Only one out of the two areas that were overseeded with alfalfa and sweet clover showed

any young plants resulting. All areas will be measured next spring to evaluate response to the treatment. Because of dry conditions, none of the areas hayed in 1984 were spiked or disced.



Figure 10. Despite poor moisture, this DNC field responded favorably to the hay/spike treatment in 1983. (8-84-DL)

Two DNC fields (#2 & #22) were burned in the spring of 1984, (April 20 & 23) and both showed a good initial response by alfalfa (Figures 11 & 12).

One advantage of burning as a rejuvenation treatment is that good cover is provided throughout the long North Dakota winter.

Also, because an early burn date is needed to stimulate alfalfa, few nests are initiated prior to burning.

On one of the burned DNC fields we had a cooperator hay two swaths around the field the previous fall. In return for the hay, he disced the two swaths which provided our fire break the following spring.



Figures 11 & 12. DNC field #2 was in a decadent condition prior to the burn (left). Alfalfa responded quickly following the burn (right). (4-84-DL and 5-84-DL)

5. Grasslands

Grazing, prescribed fire, and rest are the three forms of management treatments directed towards over 17,000 acres of refuge native grasslands.

All grasslands suffered in 1984 due to poor moisture conditions. Regrowth of warm season native grasses following the spring grazing treatment was especially poor (Figure 13 & 14).

Vegetation frequency transects were run in eight grassland census plots in conjunction with the bird studies. Kentucky bluegrass and smooth brome had the highest relative frequencies of all grasses and the combined mean frequencies for these invader species were: 69% on ungrazed areas, 74% on the one burned area, and 41% on the grazed areas. It is significant that grasslands

not receiving any treatment for many years also had the lowest density and diversity of breeding birds. These degenerate grasslands also did not have any unique bird species which points to the unnatural and unproductive condition of grasslands rested 10-50 years. The misuse and overuse of grazing has resulted in the deterioration of refuge grasslands. However, no-use, and continued light use, such as season long grazing at very low stocking rates, has also contributed to the expansion of brush and exotic grasses on native grasslands.



Figure 13 & 14. Native grasses showed little regrowth in the dry summer of 1984 (left). 7-84-DL. Natives such as big bluestem were stressed and didn't produce seed heads (right). 8-84-DL

7. Grazing

We met with seven refuge grazing permittees in January following their receiving our letter informing them of a grazing rate fee increase. We discussed results of the statewide grazing rate survey and compared North Dakota rates with other states. In general, the grazers feel refuge grazing is too costly, too short, and too restricted. They have yet to accept short duration grazing. The old 1930's advertisement on the following page speaks of better days for the cattlemen and how they remember and still view the area.

In 1984, 7,150 acres of grasslands were grazed by cooperators in the third year of a four year grazing plan. Each cooperator has two grazing units (two, have three) which are grazed every other year under the plan. Eight grazing units are grazed during the fall (September 1- October 31) followed by a spring graze (May 1- June 30). Seven other units are spring only grazing. Both treatments are designed to set back exotic grasses, reduce mulch, and

The Mouse River Loop---Farthest North Ranch Area Near Center of Continent

Bounded on the north by the Canadian line, its eastern boundary just 20 miles from the geographical center of North America, The Mouse River Loop has the climate that produces the finest, healthiest feeder cattle to be found anywhere. It is rolling prairie with ample water supply and abundant pasture. The River valley and big areas of meadow land provide the finest hay for wintering.

In the past few years the Biological Service has created a vast waterfowl nesting area which this year is producing thousands of migratory birds—Ducks, Geese, Brant. Upland birds are abundant—Grouse, Pheasants, Hungarian Partridge. Hunting will be good this season offering a fine chance to combine business with pleasure.



Exceptionally fine conditions prevailed thruout the lives of young cattle and they show results in better growth.

Where the Buffaloes Roam

At the right is an actual photograph of the Buffalo herd on the C P Ranch 25 miles up the Mouse river from Minot. It is one of the finest herds left in America and Clarence Parker, of the Leland-Parker Hotel in Minot, is always pleased to have visitors look them over. They are worth driving miles to see.

Near the ranch is Lake Darling, made by damming the river. It is a lake two miles wide and 21 miles long and provides water for the wildlife breeding grounds. The government has invested some ten millions in the project and it too is worth seeing.

FAMOUS HERD OF AMERICAN BISON ON
C P RANCH, NEAR MINOT.



MOUSE RIVER CATTLEMEN'S ASSOCIATION

Bulletin Number Three

MINOT, NORTH DAKOTA



stimulate native grass response. After three years it is evident that the current plan needs to be modified if we are to affect any positive changes.

This year, all pastures grazed (except one) were done so to follow the plan and meet our commitment to grazers who have a four year permit. Poor regrowth following the 1982 graze was evident in all the pastures prior to grazing in 1984. In other words, based on management needs, there should have been no grazing in 1984.

The major problems of the plan are: 1) not enough rest between grazes, 2) too late removal (June 30), 3) no flexibility to allow treatment prescriptions based on actual need and grassland conditions. Any future grazing plan should address the above so that grazing will be done solely for the purpose of improving and managing habitats.

The one exception to the above was grazing unit 10C, which is not normally part of the grazing plan. The area needed a treatment to remove heavy mulch accumulation. A cooperator grazed the unit from May 1- June 14.

Also, to encourage an earlier cattle removal, this year on a one time basis, all cooperators were allowed to go in a week to ten days early in April with no charge, if they agreed to come out early. Nine out of the fourteen choose that option and cattle were out of pastures on June 23.

Once again, because of poor moisture there was poor regrowth of natives and little visible benefit from the treatment.

Table 4 lists grazing unit acreages, AUM's, and grazing receipts for the 1984 grazing season. Many of our permittees have reduced their herds and are now failing to meet their stocking rate of one AUM per acre. In some of the units, this doesn't appear to be a big problem because of the uneven distribution of cattle in the unit due to coulees, brush, watering areas, and slope. In several of these units, the .70 to .85 AUM per acre rate is still hitting the grasslands pretty hard. And, as mentioned above, these units have not fully recovered from the previous graze. However, we believe we shouldn't abandon our objective of a crowd graze.

Therefore, the one AUM per acre rate for spring only and a one to one and a half AUM per acre rate for fall/spring graze will continue to be used. No action was taken on those permittees who were well below their stocking rate in 1984; however, they will be required to meet the requirement before going into grazing units in 1985 if moisture is adequate. The problem of understocking would also be much more manageable if the length of the grazing permit was reduced from four years to one or two.

The grazing fee in 1984 was \$6.95 per AUM. Receipts totaled \$28,201.52.

Table 4. The 1984 grazing season, Upper Souris NWR.

Grazing Unit	Acres Grazed	AUMS	AUM's Per Acre	Receipts
1A	285-S	65	.23	\$ 453.14
2A	195-S	64	1.10*	\$ 1,071.90
2B	185-F	90	----	\$-----
3A	320-S	141	.44 ¹	\$ 2,099.66
3B	330-F	161	----	\$-----
4B	295-S	82	.70*	\$ 1,321.13
4A	300-F	108	----	\$-----
5B	225-S	77	.82*	\$ 1,541.86
5A	230-F	92	----	\$-----
6A	600	Rested	----	\$-----
6B	620	Rested	----	\$-----
7C	390-S	156	.85*	\$ 2,490.32
7A	430-F	203	----	\$-----
8A	290-S	120	.41	\$ 829.28
9A	350-S	450	1.29	\$ 3,124.65
10C	200-S	204	1.02	\$ 1,415.72
11C	170-S	86	1.30*	\$ 1,541.86
11A	170-F	135	----	\$-----
12A	460-S	274	.60	\$ 1,899.44
13A	135-S	96	.71	\$ 664.28
14A	220-S	152	.69	\$ 1,055.98
15B	520-S	375	.72	\$ 3,933.98
15A	520-F	191	----	\$-----
16B	470-S	330	.70	\$ 4,758.32
16A	460-F	355	----	\$-----
Totals	7,150	---	----	\$28,201.52

*: Stocking rate calculated using fall 1983 and spring 1984 grazing.

1: Not grazed the previous fall.

F: Fall grazing.

S: Spring grazing.

8. Haying

Haying was done on 14 fields, (five DNC and nine tame grass fields), to rejuvenate stagnant stands and control brush.

Fifteen permittees hayed 627.4 tons for a total refuge receipt of \$3,345.20.

Depending on the relative quality of hay, permittees were charged \$4, \$5 or \$6 per ton, for mostly poor quality hay.

9. Fire Management

High winds in May blew a lot of dirt into the refuge and also made it a disappointing year for fire management as only 333 acres were treated with fire on five burns.

Ten grassland areas, totaling 1,900 acres, were scheduled in the annual burn plan. Choice prescribed burning days in April found crew members at various training sessions and meetings.

May was extremely windy while in June we were either short-handed or received just enough precipitation to cancel the days burn. The five prescribed burns accomplished in the year are summarized in Table 5.

10. Pest Control

About 80 acres of leafy spurge were sprayed by helicopter on the southern portion of the refuge. Knutson Flying, of Tioga, North Dakota, were contracted to spray a tank mixture of one quart Tordon 22 K and two quarts 2-4-D amine.

The total bill for the helicopter Service was \$2,673. We did have to follow-up and spray several isolated patches and patches missed by the helicopter. The total amounted to \$7,000 spent on weed control in 1984.

11. Water Rights

We released 2,000 acre feet of water from Lake Darling to meet water requirements downstream at the Eaton Irrigation District. The release was timed to coincide with sewage releases from the city of Minot.

G. WILDLIFE

2. Endangered And/Or Threatened Species

Eighteen bald eagles were seen on the refuge during the year; three during spring migration and 15 during fall. In October, three adults and five immatures used the refuge, while in November, five adults and two immatures were seen. The Grano area was searched for nesting piping plovers but none were found. It

Table 5. Upper Souris NWR prescribed burning program, 1984.

Location	Date Acreage, Costs	Weather	Burn Evaluation	Vegetation	Problems
84-1 Bakers Bridge (DNC)	April 20 45 acres \$190 \$4.22/ac	60-70F 55-35%RH E-SE @ 5-18mph	Complete Burn Litter Removed	Vigorous Regrowth Alfalfa	Smoldering Trees
84-2 Headquarters (DNC)	April 23 80 acres \$120 \$1.50/ac	50-60F 65-50%RH S wind @ 12-15mph	Complete Burn, Litter Removed	Alfalfa Regrowth Fair	Smoldering Hayed Firebreak Crossed
84-5 B,C Pool River Bottom (Tame grass)	May 25 8 acres \$50 \$6.25/ac	40-45F 65%RH NE wind 4-6mph	Partial Burn, Incomplete Litter Removal	Vigorous Regrowth of Grasses	Inadequate Wind For Backfire
84-10 C Pool (Marsh)	August 17 100 acres \$700 \$70/ac	70-80F 40%RH N wind 5-15mph	Good Burn On Cattail & Phragmite Stands	Cattail Regrowth Flooded	Dike On N Too Hot Due To Brush (Rose & Buckbrush)
84-11 Pool 87 (Marsh)	Sept 11 100 acres \$200 \$1/ac	58-62F 69%RH 5-10mph E wind	Partial Burn	Flooded After Burn	Portions Too Green

has been at least five years since this soon-to-be listed as threatened species nested on the refuge.

3. Waterfowl

Canada geese were the first arrivals with an early date of February 21 and were paired up on territories when the ducks began arriving the last week of March. "A" pool had pintail, mallard, gadwall, lesser scaup, and goldeneye by the first week of April. Tundra swans were first seen on April 3 and later peaked at 200 birds (Figure 15). Spring species included cinnamon teal and black duck.

The fall migration was just heading up steam when a winter storm hit on October 27 and caused the exodus of almost all waterfowl in the area. Snow geese and greater white-fronted geese first arrived on September 23. The white-fronts stayed on the refuge in small numbers at a peak of about 250 birds. Snow geese built up to about 30,000 during the first two weeks of October. Ducks numbered about 25,000 during the first weeks in October. Notable peak populations included 10,000 ruddy ducks, 6,500 gadwall, and 10,000 lesser scaup. Unusual species included 13 white-winged scoter, 10 surf scoter, 1 oldsquaw, and 1 blackduck.



Figure 15. Tundra swans are common spring and fall migrants. 9-85-Jan Tousant

Total production of Canada geese was an estimated 150 young, and included goose production on islands and dikes on both sides of Dam 83. Flax straw bales on refuge marshes below the dam received slightly less use than the previous year. Thirty-four bales were placed in marshes in 1984. We continue to get reports and have observed an increase in goose nesting occurring in new areas on private land surrounding the refuge.

Waterfowl breeding pair counts were completed in May and covered the entire refuge using boats as primary transportation. Total pairs were down 20 percent from the previous year, and still 14 percent below the ten-year average. As a group, divers were down 46 percent which was to be expected with drawdown condition in pool 87 and C pool. The refuge assisted J. Clark Salyer WMD and completed one four square mile census block for use with the Mallard Model. The block was centered mostly on private land west of Dam 41, but yielded 19 dabbling pairs per square mile despite a low number of wetland basins.

Brood counts were completed in July and August (two counts), again on the entire refuge. Production was calculated as follows: counted pairs x productivity rate x brood size. Brood size was the actual size counted if it was below the standard brood size. Standard brood size was used for any actual counts, even class III, that were higher. Productivity rate was simply pairs divided by broods. We believe that we have at least partially deflated the artificially high production figures that result when standard brood size and a production figure of .45 is used. Total production was estimated to be 2,320 young ducks produced (a sorry figure). Of that, only 560 were mallard. Production on this refuge is bound to increase dramatically as we finally get our marshes reflooded with cattail control; produce better nesting cover by burning, less grazing, and some rain; and reduce the number of raccoon and skunk predating on what nests we do have.

Nest dragging was done on 282 acres of DNC to determine nesting success in the marshes below Dam 83 (Figure 16). A total of 102 staff hours were required to complete the project at a cost of \$1,100. A total of 47 waterfowl nests were found, as well as several nests of sharp-tailed grouse and upland sandpiper. Out of 41 duck nests that we were able to revisit, 17 successfully hatched for an apparent success rate of 41.5%. However, because of the small numbers involved we used the "shortcut" method described by Klett and Johnson (NPWRC) which revealed a the nest success rate was only 10.3%. The discrepancy is a result of a group of gadwall nests found late in incubation that successfully hatched. This biased the apparent success rate upward. Of the 24 unsuccessful nests, 88% were attributed to predators. In our first year of nest dragging, we were uncomfortable with assigning which predator was responsible; however, skunk and raccoon were suspected for most predations. No hens were taken at the nest sites. Red fox were seen in a neighboring area (Figure 17).

4. Marsh And Water Birds

Summer residents and known breeders include great blue heron, double-crested cormorant, sora, American bittern, black-crowned night heron, and western, eared, horned and pied-billed grebes. Active nests at the Grano rookery were counted and included 187 double-crested cormorant nests and 8 great blue herons. A survey of the lake, for grebe young, was conducted with 230 western, 75

pied-billed, 1,030 eared, and 40 horned grebe young counted. This count is considered a conservative estimate of grebe production. Of interest was a young still-downy western grebe seen on the lake on October 28; the lake froze the next day.



Figure 16 & 17. SCA volunteer Joe Engler candles a duck egg while biological aid Kent Solberg records. Meanwhile, a red fox awaits his turn at nest searching. 7-84-DL & 7-84-JDE

The first State record (previously hypothetical) for the Arctic loon in North Dakota was made in October when birder Gordon Berkey found the bird along the face of the dam (Figure 18). Common loon were seen on several occasions during the spring and fall.



Figure 18. An Arctic loon was seen on Lake Darling. 10-84-DL

5. Shorebirds, Gulls, Terns, And Allied Species

Franklin's, Bonaparte's, ring-billed, California and herring gulls were recorded on the refuge during the year. Forster's tern was present during the summer, but no nesting was observed. Wilson's and red-necked phalaropes were seen during migration, Wilson's nested on the refuge.

A ruddy turnstone was seen August 7th. Thousands of other shorebirds fed in shallow waters and exposed mudflats in C pool and other areas. Species seen included: semi-palmated plover, killdeer, American avocet, yellowlegs species, marbled godwit, and least's, white-rumped, Baird's, pectoral, and stilt sandpipers. Virginia rail was seen and heard throughout the summer; the sora is a common nester. A cattle egret was seen in the late summer near Dam 41.

6. Raptors

Cooper's hawk were seen on several occasions and scattered locations on the refuge during the breeding season; however, only one nest site was confirmed (Figure 19). Conspicuous by it's absence from the refuge in recent years is the short-eared owl.

7. Other Migratory Birds

Thirteen Emlen line transects were established on the refuge to determine breeding birds associated with different refuge habitats and to measure the response of various management treatments (graze, burn, and rest). Five transects were located in refuge woodlands, one in DNC and seven in native grasslands. The transects were established by Dave Linehan who helped in the initial surveys, but essentially the survey work was done by the dedicated efforts of SCA volunteer Joe Engler. A report was completed for the first year's results.

The breeding bird census work confirmed the presence of several uncommon grassland bird species of interest. These species include: LeConte's, Baird's, and sharp-tailed sparrows; Sprague's pipit (Figure 20) and large numbers of sedge wren.

The annual Christmas Bird Count yielded 28 species to ten participants who braved the -40 F chill factor. Hoary redpolls and pine grosbeaks were common at winter feeders. Two unusual sightings during the fall were a raven and a Townsend's solitaire.

8. Game Mammals

The annual mid-winter aerial survey for refuge white-tailed deer was not flown due to lack of snow depth and cover. The deer herd appeared to be stable at an estimated winter herd of 300 animals. Moose were again seen on the refuge but none stayed for long. A five point bull elk was seen just east of the refuge north of the Eckert Ranch (Figure 21).



Figure 19 & 20. Two young Cooper's hawk fledged from a nest (left). 7-85-JDE. Sprague's pipits fledged from a nest located in a grazed area. 7-85-JDE



Figure 21. A white-tailed doe was more interested in us than the 5-point elk behind her. 8-84-DL

Trapping on the refuge continued under a bid system with credits given for skunk, beaver and spring raccoon. Permits were issued to four individuals with the highest bids on four trapping units as follows: Unit I: \$400, Unit II: \$411, Unit III: \$367 and Unit IV: \$1,079. The value of the bid system can be seen by looking at Unit IV. At year's end, the trapper had removed 2 fox, 22 raccoon, 3 skunk, 9 beaver and 14 mink. He now has quite an incentive to return in the spring to trap skunk, raccoon, and

beaver for the \$8 credit. Total take for the fall trapping was 56 fox, 5 badger, 85 raccoon, 54 skunk and 21 beaver. Spring trapping and shooting beaver resulted in 88 beaver, 8 raccoon, and 10 skunk.

10. Other Resident Wildlife

Relatively mild weather allowed pheasants, gray (Hungarian) partridge, and sharp-tailed grouse to enter the breeding season in good shape and numbers. During the summer, broods of all three species were recorded. The spring survey of sharp-tailed grouse dancing grounds indicated 28 grounds and an estimated spring grouse population of 950 birds, up from 870 in 1983.

11. Fisheries Resources

Fisheries management on the refuge is greatly enhanced through the fine work of Frank Pfeifer, fisheries management biologist at Valley City, North Dakota. His work and a general description of fisheries activity on the refuge was described in last year's narrative. During the summer, 12,500 smallmouth bass, 177,500 walleye, and 26,000 spot-tailed shiners were stocked in Lake Darling (Figure 22). Test netting, prior to stocking, yielded young of the year perch and walleye (Figure 23).

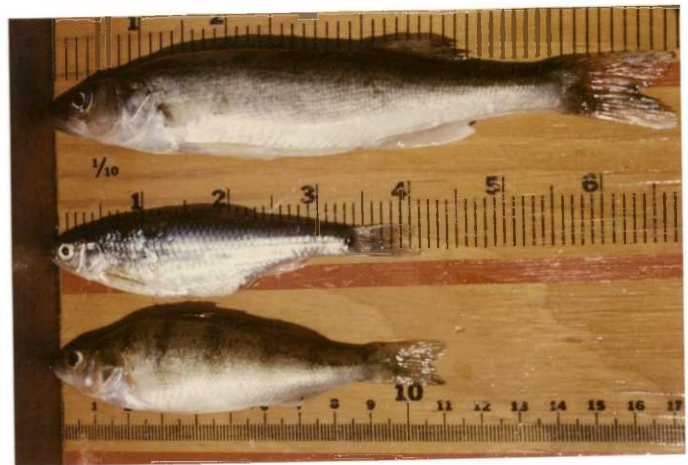


Figure 22 & 23. Walleye, bass and shiners were stocked in Lake Darling in 1984 (left) to help supplement what natural reproduction occurred (right). 7-84-DL & 6-84-DCA

12. Wildlife Propagation And Stocking

One hundred thirty-five ring-necked pheasants were released on the auto tour route and other areas by the Town and Country Sportsman's Club. There is no refuge hunting season on pheasants. The club also planned to release turkey, but the birds were killed by vandals.

16. Marking And Banding

The refuge again banded geese at night using the airboat and floodlights powered by a portable generator. A total of 41 geese were banded in three nights. Drive trapping was attempted once without any luck.

17. Disease Prevention And Control

In July and August, we checked areas on the north end of the refuge where last year's outbreak of botulism occurred. No sick or dead birds were found.

H. PUBLIC USE

1. General

Upper Souris NWR continues to receive a large amount of public use for a North Dakota refuge. Public use visits increased slightly in 1984 due to increased fishing activity.

The refuge maintains close contact and a good working relationship with radio, television, and newspaper. Topics of radio, newspaper and television coverage included: volunteer program, goose nesting project, spring run-off conditions, deer season, sharp-tailed grouse hunting, grouse dancing grounds, fishing season, duck and goose production, volksmarch, ice conditions, winter bird feeders, waterfowl migration, spring wildlife return, environmental education and others.

2. Outdoor Classrooms-Students

Upper Souris hosted outdoor classrooms on 20 different occasions for students from the following schools/groups: Minot State College, Fargo High School, church groups, Carpio Hunter Education, Boy Scouts, 4-H, Mohall Girl Scouts, Carpio Girl Scouts, Minot AFB and Tolley.

3. Outdoor Classrooms-Teachers

A teachers' workshop was held on the refuge the first week of June, with 33 teachers attending the week-long course. Dr. Dennis Disrud helped conduct the course which is offered through Minot State College for credit. Linehan, Wright and Anderson taught sessions during the week.

5. Interpretive Tour Routes

A five-mile auto tour route with 13 interpretive signs is maintained for refuge visitors. Two signs were stolen in 1984, prompting a change in design. Bolts were counter-sunk into poles and a metal edge was added to prevent soiling by birds. The canoe route launch area was also reworked and re-signed to provide for better access.



Figure 24. Minot State College Professor Dennis Disrud discusses soil profiles with teacher-students. 6-84-MBW

6. Interpretive Exhibits/Demonstrations

This refuge again coordinated Service participation in the North Dakota State Fair (a thankless job indeed).

The fair booth and display entitled "50th Anniversary of the Duck Stamp" was designed and provided to us by the Washington Office and was of excellent quality.

Those helping with the booth during the hot fair week included: Hank Webster, Jim Nelson, Karen Smith, Fred Giese, Ron Shupe, Rich Antonette, Rick Poetter, Steve Knode, Thad Fuller, Mark Dryer, Al Lund, Ray Varney, Roger Collins, Myron Borneman, Bill Berg, Duane Anderson, Dave Linehan, and Maurice Wright.

Duck Stamps were sold at the booth located in the commercial building, which is a poor location for a resource agency. As one disgruntled worker put it, it's time we located our exhibits outdoors and remove our exhibit from the group of "snake oil" salesmen.



Figure 25. "Snake oil" salesman Rick Poetter, of Lake Ilo NWR, attempts to sell duck stamps to two unsuspecting visitors at the State Fair booth in Minot. 7-85-DL

8. Hunting

An estimated 110 hunters participated in the first sharp-tailed grouse hunting season on the refuge and harvested an estimated 150 birds.

Most of the hunting and the harvest occurred during the first two weekends of the season, with very few hunters taking advantage of the late season. There were no problems associated with the hunt.

The deer hunting season, both gun and deer, went satisfactorily this year, even with the change to refuge permits needed for the first one-and-a-half days of deer gun season.

A total of 250 permits were issued by the North Dakota Game and Fish Department, 108 of which were for any antlerless deer. Requiring the permits has greatly reduced the safety hazard resulting from too many hunters on certain areas of the refuge for the opener.

Violations during deer season included: One - no refuge permit; Two - wrong sex; Two - untagged deer; One - loaded weapon in vehicle and two - improper clothing (no blaze orange caps).

We estimate the harvest to be 100 deer which is enough to prevent overpopulation problems. Hunter success for the gun season was approximately 20%.

9. Fishing

Fishermen had excellent success with walleye and northern pike during the summer and winter months.

The Carpio Jaycees held a fishing derby on opening weekend. While only two fish were caught in last year's derby, 133 northern pike were caught this year.

Thirty-eight two-man teams entered the Lansford Jaycees fishing derby in July and landed 209 walleye (weighing 264 pounds) and 45 northern pike which had a total weight of 107 pounds.

A number of walleye were caught (weighing over nine pounds) during the summer and one angler took a northern weighing nearly 30 pounds (Figure 26).

The good fishing resulted in an increase of boats and visitors to the refuge. On July 4th, 800 visitors and 120 boats were counted on the refuge. Fishing use was high throughout June, July and August (Figure 27).

Results of a summer creel survey were reported in last year's narrative.



Figure 26 & 27. A 30-pound northern pike was caught at the Grano fishing area. Parking sites at refuge boat ramps were cramped during the summer of 1984. 7-85-DCA & 7-85-DL

11. Wildlife Photography

One of the most popular activities on the refuge is the opportunity to view dancing sharp-tailed grouse from three refuge blinds. The blinds are changed every other year or so to minimize visitor impact and there appears to be little impact on the grouse grounds. In 1984, 40 people reserved grouse blinds.

Individual photographers are given special permits to enter closed areas for picture taking. A number of photographers were allowed to establish photo blinds. While many others enjoyed taking pictures of the fall scenery (Figure 28).



Figure 28. A refuge visitor. 9-85-Irv Rostad

17. Law Enforcement

There was a significant increase in violations, from 31 last year to 71 this year (all resulting in fines). The increase was likely the result of increased fishing pressure and more law enforcement patrols. During June and July, work schedules were altered with Linehan and Wright working weekend duties.

Table 5 summarizes 1984 violation cases. F.O.C.'s were issued by refuge officers, with only one resulting in a court appearance. In one other case (a disorderly conduct) two Bottineau men threatened refuge officer Duane Anderson and refused to leave a recreation area after closing hours. A Renville County sheriff was called on the State radio and assisted Duane. It was really disappointing (and hardly a deterrent) when both men were found guilty and received only fines of \$20 each. On the positive side were the number of littering cases we were able to make this year. In one case, the garbage left behind by one Air Force

man included a bag with seven love letters (three different women) and a checkbook. Other cases included the usual beer bottles thrown in the lake or into the bushes and garbage left behind at picnic sites (Figure 29.) We would like to see the bond schedule changed and the fine for littering increased to \$100.-



Figure 29. The "Pack Your Trash " sign ignored.
7-85-DL

Table 4. Violation cases, Upper Souris NWR, 1985.

Violations	# Of Cases	Fine	Total Fines
Entry and Use	27	\$ 25	\$ 675
Littering	8	\$ 50	\$ 400
Off Road Vehicle	2	\$ 25	\$ 50
Fishing In Closed Area	4	\$ 35	\$ 140
Use of Minnows	5	\$ 25	\$ 125
Overlimit	2	\$ 25	\$ 50
No Fishing License	1	\$ 25	\$ 25
No Life Jackets	5	\$ 25	\$ 125
Reckless Driving	2	\$ 50	\$ 100
Hunting Special Regs	3	\$ 50	\$ 150
Injuring Plant & Animal	1	\$100	\$ 100
Disorderly Conduct	2	\$ 20	\$ 40
No Duck Stamp	1	\$ 50	\$ 50
No Blaze Orange	2	\$ 25	\$ 50
Loaded Weapon In Vehicle	1	\$ 50	\$ 50
Wrong Sex Deer	2	\$200/\$ 50	\$ 250
Untagged Deer	2	\$ 50	\$ 100
Total	71		\$2,480

J. Clark Salyer assistant refuge manager, Fred Giese, helped our Law Enforcement activities during the 4th of July weekend. Anderson helped with a border patrol check for incoming fish limits at Dunseith. The refuge hosted two Service pistol qualification sessions attended by North Dakota refuge officers. Manager Wright served as firearms instructor for each.

18. Cooperating Associations

Maurice met with the National Park Service and the Cooperating Association at Theodore Roosevelt National Park about establishing a book outlet at the refuge under the auspices, of the existing park association at Medora. A draft of the agreement was prepared but not all approvals were obtained by year's end.

I. Equipment And Facilities

1. New Construction

A storage shed was constructed (by force account) at the shooting range (Figure 30). Another shed was constructed to house our radio communication center. Storage cupboards were built in the conference room by Duane Anderson and the staff bathroom was converted into a computer room.



Figure 30. A storage shed was constructed by force account at the pistol range. 8-85-DL

2. Rehabilitation

Three culverts were replaced; two on the west trail below Dam 41 and one on the east trail below headquarters. Fence and corner posts were repaired in several areas on the north part of the refuge. A wood burning stove was installed in Quarters 59, thus replacing an inefficient fireplace. The waterline to the shop was repaired in spring after five months of winter without water.

3. Major Maintenance

Besides routine grading and road maintenance, a major accomplishment was the grading of the auto tour route and renovation of the western refuge trail from headquarters to Baker's Bridge. Spot graveling was done on refuge roads. Under an ARMM's project, B and C dike roads were disced and packed and a new culvert installed between pools. Portions of the C pool dike were repaired with the John Deere (JD) 550 (after beaver had burrowed into the dike).

Firebreaks were constructed around Pool 87 using the J.D. 550 and motorgrader. Two boat launching sites were installed; one above and one below Dam 87. ARMM's money was used to make repairs to the washed out road at Dam 41. Rock and gravel were hauled from the Grano gravel pit for that project.

Another ARMM's project was the major repairs on our J.D. 550 which totaled \$8,072. A ROPS was also installed for another \$4,853.

4. Equipment Utilization And Replacement

Two Dodge pickups were transferred to us from Des Lacs Complex. The airboat was tuned and minor repairs done at Pietsch Aviation in Minot. We also picked up a TD 25 IHC dozer in good condition from Minot Air Force Base surplus, but a ROPS will have to be added before use.

Des Lacs Complex loaned us the use of their trailer to pick up a J.D. power-till interseeder we borrowed from the Agricultural Experimental Station at Dickinson.

6. Computer Systems

The refuge purchased a DEC Rainbow 100⁺ (\$6,855) with the following features and software:

Rainbow 100 (256k)	dBase-II (Ashton-Tate)
Hard Disk (+5MB)	Wordstar (Micro-Pro)
LQPO2 Printer	Multi-plan (Micro-Pro)
Rixon R212A Modem	Poly-Com-1.2 (DEC)

This report was first drafted on Wordstar by Dave Linehan and later edited by Donna Dumas. The computer is used heavily for

word processing. However, its dBase, spreadsheet and communications functions are as yet underutilized.

Contacts were made to begin using our modem with the River Forecasting computer operated by U.S. Weather Service in Minneapolis. This will allow us direct access to hydrological data on the Souris River. When we are hooked-up, this information will be extremely useful in estimating spring run-off and determining our releases from Lake Darling.

J. OTHER ITEMS

2. Other Economic Uses

Four oil wells on refuge lands are leased to oil companies and are currently producing. During the year we received many inquiries into leasing and explained the current moratorium on new leases. Two permits were issued to companies for seismic work across refuge lands. We allowed the first to operate their thumper and vibroseis equipment within the roadside ditch along the Swenson Bridge road. The second permit allowed only hand laid geophone cable to cross the refuge boundary in the existing oil well area. No fee was charged for the permits.

3. Items Of Interest

Meetings, public talks, visits with refuge neighbors and permittees, media contacts and more meetings take up an ever increasing portion of a refuge manager and staff's time. These meetings and training sessions are listed on the monthly activities report and will not be recapped here.

4. Credits

This report was written by Dave Linehan and edited by Donna Dumas.

K. FEEDBACK

We want to take this space this year to say thanks to all the North Dakota wetland and refuge managers who have been willing to share equipment, native grass seed, ideas, and even personnel to help out neighboring refuges and districts.

We have mentioned some in the report, but over the years we have received help from all of them. Most people in the Service know, and are beginning to acknowledge, how Dakota WMD's and refuges are understaffed and poorly funded when compared to other regions, especially on a land base comparison.

People are also aware of the importance of the waterfowl breeding habitat that wetland managers fight to protect. From oil and gas development, easement violations, wetland drainage projects, predator control projects to wetland construction and enhancement

and establishment of upland cover, the work is difficult and complex. And you won't see any large list of heavy equipment operators, mechanics, or maintenance men on any of these refuges or WMD's. Yet the work gets done, and more could be done.

What many Service people aren't aware of is the sharing, cooperation, and camaraderie among refuges and wetland districts in North Dakota that makes it a great place to work.

At the risk of fostering regionalism, we salute and thank our neighboring North Dakota wetland and refuge managers.

upper souris

National
Wildlife
Refuge



HUNTING MAP
AND
REGULATIONS

WELCOME TO UPPER SOURIS NATIONAL WILDLIFE REFUGE! The diversity of wetlands, native grasslands, and woodlands found on the Upper Souris National Wildlife Refuge provides excellent wildlife habitat which supports a variety of game animals. The refuge offers a quality hunting experience for deer, sharp-tailed grouse and gray (Hungarian) partridge.

Regulations established by the refuge and the North Dakota Game and Fish Department must be observed in all public hunting areas. Become familiar with all special regulations and the boundaries of hunting units before going afield.

Remember, the refuge is open only to the hunting of deer, grouse and partridge and is closed to the hunting of all other species of wildlife.

SPECIAL REGULATIONS

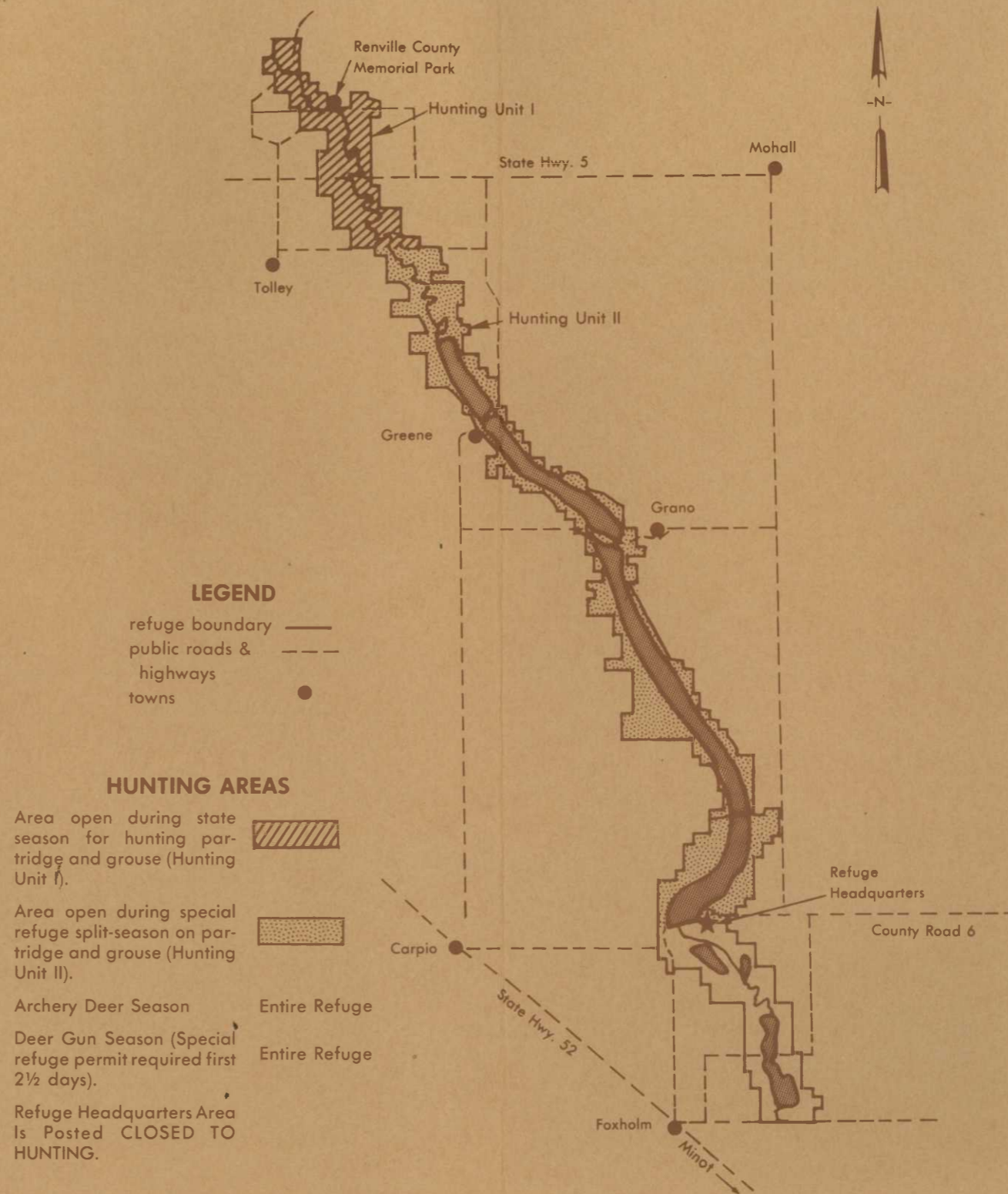
Hunting shall be in accordance with all State laws and the following requirements established by the refuge.

ALL HUNTING

1. Vehicle travel is restricted to public roads and refuge recreation area parking lots. Off-road vehicle use is **prohibited**.
2. A "Pack Your Trash Back Home" program is in effect, so please take all litter home. No garbage receptacles are available.
3. Use of refuge lands is permitted from 5:00 a.m. until 10:00 p.m.
4. It is unlawful to carry a loaded firearm in any vehicle on refuge lands or roads.
5. No open fires or camping are permitted.
6. The area surrounding refuge headquarters and housing is posted closed to hunting.

DEER HUNTING

7. The archery and gun seasons on the refuge will coincide with State seasons.



8. A special refuge permit, in addition to State permit for Unit IIIA2 is required to hunt deer for the first 2½ days of the deer gun season on Upper Souris NWR. Thereafter, any person holding a State Unit IIIA2 permit may hunt on refuge lands for that species and sex of deer as indicated on the State license.
9. It is unlawful to possess a firearm while in the field after your deer tag is filled, except for a shotgun while hunting upland game birds in Unit I.
10. Portable tree stands will be permitted but must be removed daily. No permanent stands may be constructed.
11. The entire refuge will be open for deer hunting, with the exception of the closed area around refuge headquarters and residences. Hunters are reminded that State law prohibits hunting within ¼ mile of an occupied building.

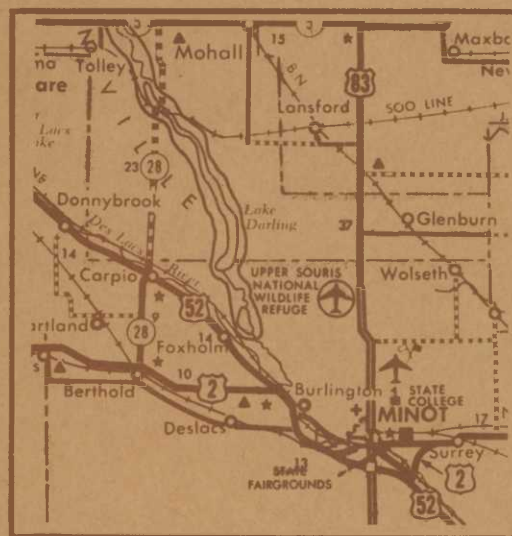
PARTRIDGE AND GROUSE HUNTING

12. Hunting Unit I is open for grouse and partridge during the regular State season for these species. Hunting Unit I is all refuge lands north of the township road that runs east of the town of Tolley, through the refuge at Dam #41, and continues east to State Highway 28.
13. Hunting Unit II is open with State season, except closed from opening of State waterfowl season to close of State deer gun season. Hunting Unit II includes all refuge lands south of the township road that runs east of the town of Tolley, through the refuge at Dam #41, and continues east to State Highway 28, and refuge lands north of the Lake Darling dam.
14. Dogs will be allowed while hunting grouse and partridge on the refuge.
15. Blaze orange vests and caps will be required while hunting grouse and partridge in hunting Unit I during the deer gun season.

ADMINISTRATION AND LOCATION

The refuge is administered and managed by the U.S. Fish and Wildlife Service, Department of the Interior. Headquarters are located near the Lake Darling Dam and can be reached by traveling on Highway 52 to Foxholm, N.D. and then north on county road 11 for 7 miles or Highway 83 north of Minot and west 12 miles on county road 6. Office hours are 8:00 a.m. to 4:30 p.m. Monday through Friday.

Inquiries should be mailed to the Refuge Manager, Upper Souris National Wildlife Refuge, Foxholm, N.D. 58738. Phone 701-468-5467.



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE



RF6-62680-6

GPO 839-873

July 1983

UPPER SOURIS

NATIONAL
WILDLIFE
REFUGE





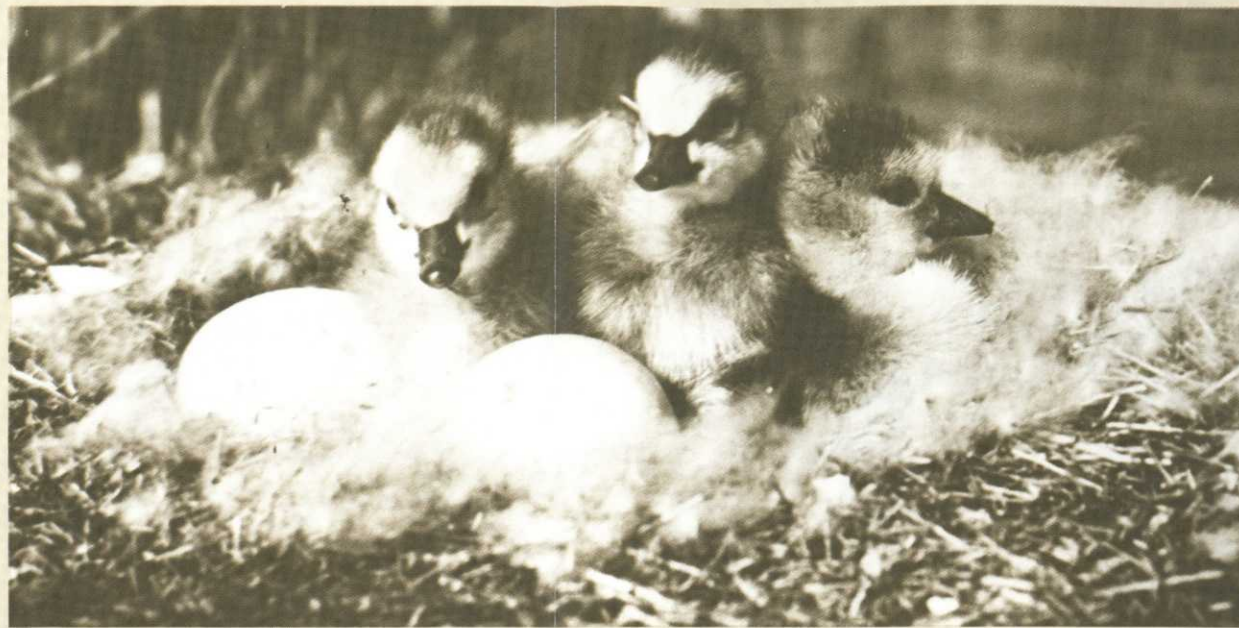
HISTORY

The 1930's brought drought to the Great Plains and disaster to waterfowl. Populations of ducks plummeted to all-time lows and conservationists began to act. A flamboyant political cartoonist from Iowa, Jay N. "Ding" Darling, became director of the newly formed Bureau of Biological Survey and he chose J. Clark Salyer as his top aide.

Darling helped push the Duck Stamp Act through Congress in 1934 and, in 1935, Salyer used Duck Stamp monies to purchase four refuges on the loop of the Souris River.

Two groups, the Civilian Conservation Corp and Works Project Administration, provided large labor forces which built dikes, roads, fences and water control structures. The men were hired locally as well as from other states and as many as 250 men were housed in a military-type camp known as Camp Maurek. Remnants of the camp still exist about 1/2 mile from the present Upper Souris refuge headquarters.

Upper Souris National Wildlife Refuge lies in the beautiful Souris River Valley of northwestern North Dakota and extends for nearly 30 miles along the river.



Newly hatched goslings. USFWS photo.

This 32,000 acre refuge, managed by the U.S. Fish and Wildlife Service, is an important unit in a series of national wildlife refuges in the great waterfowl migration corridor known as the Central Flyway.

Catch of the day! USFWS photo.



MANAGEMENT

The main purpose of the refuge was to provide relief for the dwindling waterfowl populations of the 1930's. Waterfowl reproduction is still the main purpose for managing the marshes and water impoundments. Grasslands and timber stands are managed for deer, grouse, pheasants and other non-migratory species.

Lake Darling, a 9,000 acre lake named in honor of Ding Darling, is the largest of several water impoundments on the refuge. Its primary purpose is to furnish a regulated supply of water to smaller marshes downstream and especially to the larger marshes on the J. Clark Salyer Refuge, 110 miles downstream. The lake was designed to hold a two-year supply of water to safeguard lower marshes against the threat of drought. The dam has also made it possible to reduce flooding and to regulate releases during periods of low flow. Both operations benefit people in the valley below the dam.

The proper management of water permits an active fisheries program on the refuge. This is a joint effort between the U.S. Fish and Wildlife Service and the North Dakota Game and Fish Department. Very stable populations of northern pike, walleye, and yellow perch thrive in the lake and river.

One successful refuge management program has been the re-establishment of a resident Canada goose flock. These magnificent birds were once common but they gradually disappeared with loss of habitat due to changes in land use. The first "honkers" were re-introduced in 1940 and the flock has grown to 250 birds.

WILDLIFE AND WATERFOWL

Waterfowl numbering up to 100,000 can be seen during spring and fall migrations. Whistling swans along with many species of ducks and geese either nest on the refuge or use it as a resting area during their migration. Many species of shorebirds and other waterbirds also use the refuge.

A colony of nesting cormorants and great blue herons is located near the Grano Recreation Area. White pelicans also use the refuge as a loafing area but do not nest here.

White-tailed deer are common on the refuge and an occasional antelope can be seen on the hills above the valley and on the prairie. Rare sightings of elk and moose have also been made. Muskrats are common and careful observation will reveal the tracks of raccoons and mink.

Lists of birds and mammals are available at refuge headquarters to better acquaint you with refuge wildlife.

White-tailed deer fawn. USFWS photo.





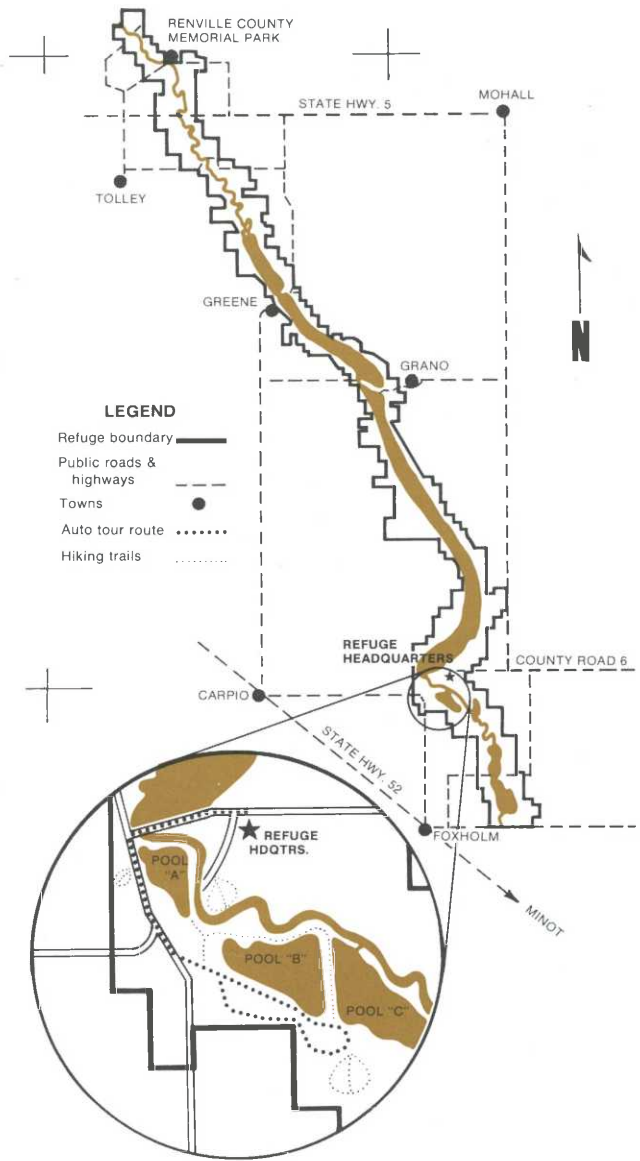
Looking for wildlife. USFWS photo.

VISITOR OPPORTUNITIES

Upper Souris National Wildlife Refuge offers numerous experiences which enable visitors to become acquainted with wildlife. An auto tour route, hiking trails, canoe routes and observation points provide opportunities for environmental education, and bird watching. Photo blinds provide closeup views of the extraordinary dance of the sharp-tailed grouse in early spring. Wildlife interpretive displays at headquarters will help the visitor to better understand the refuge and its objectives. Fishing and hunting are permitted in various areas under special regulations set up by federal and state agencies.

Certain activities are not compatible with wildlife and are prohibited. These include camping, fireworks, off-road vehicles, trespassing in closed areas and littering. Upper Souris has implemented a "Pack Your Trash Home" program. No litter barrels are provided. All public use activities are restricted to the hours of 5:00 a.m. through 10:00 p.m.

The refuge is administered and managed by the U.S. Fish and Wildlife Service, an agency of the Department of the Interior. Headquarters are located near the Lake Darling Dam and can be reached by traveling on U.S. Hwy. 52 to Foxholm and then north seven miles on County No. 11, or on U.S. Hwy. 83, then west 12 miles on County Road 6. Office hours are 8:00 a.m. through 4:30 p.m., Monday through Friday.



U.S. FISH AND WILDLIFE SERVICE
Department of the Interior



RF-6-62680-1



January 1982

1984

PUBLIC USE GUIDE

for
U.S. FISH AND WILDLIFE SERVICE AREAS
in
NORTH DAKOTA

U.S. FISH AND WILDLIFE LANDS IN NORTH DAKOTA

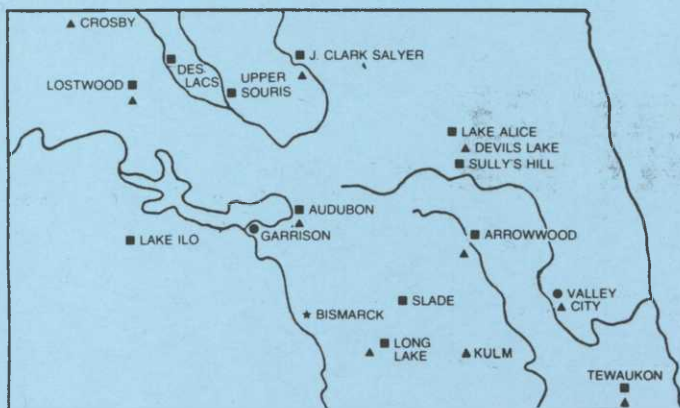
National Wildlife Refuges	205,557 ac.
National Wildlife Easement Refuges (closed to hunting)	66,438 ac.
Waterfowl Production Areas	225,055 ac.

Receipts from Federal Waterfowl Stamps (Duck Stamps) have been used to purchase the majority of these areas. Consult the refuge office or wetland district office (addresses listed on the back) for current rules and regulations concerning public use of U.S. Fish and Wildlife Service lands.

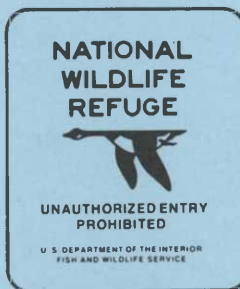
GENERAL RULES

1. Motor vehicles, snowmobiles, and all-terrain vehicles are prohibited unless specific areas are posted as open to this use.
2. Camping and overnight use is prohibited except in designated areas.
3. Keep the area clean—littering is illegal and violators will be prosecuted.
4. Protect your future hunting—violations should be reported to the officials in charge of the National Wildlife Refuge or Wetland Management District.

■ NATIONAL WILDLIFE REFUGE
▲ WETLAND MANAGEMENT DISTRICT
● NATIONAL FISH HATCHERY

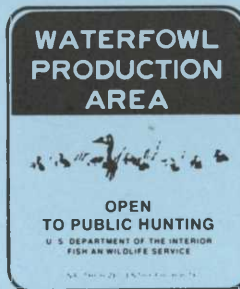


National Wildlife Refuges and Waterfowl Production Areas administered by the U.S. Fish and Wildlife Service are scattered throughout the State of North Dakota. Signing is used to identify Fish and Wildlife Service lands and activities which are permitted or prohibited. Become familiar with the signs and their meaning.



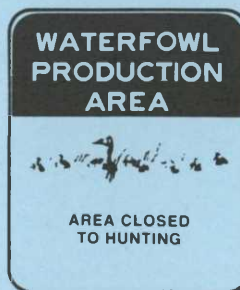
NATIONAL WILDLIFE REFUGES

Marks boundary of National Wildlife Refuges. Entry is prohibited unless otherwise authorized. For authorized activities see "Hunting and Fishing Information" and contact the refuge manager.



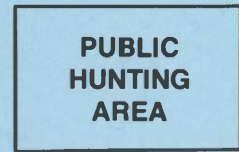
WATERFOWL PRODUCTION AREAS

Marks boundary of Waterfowl Production Areas open to hunting, trapping, fishing and hiking in accordance with State regulations unless otherwise posted. Vehicle use permitted only on designated access routes.

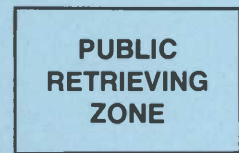


Marks boundary of Waterfowl Production Areas that have been closed to hunting.

REGULATORY SIGNS



Marks boundary of an area in a National Wildlife Refuge open to the hunting of migratory game birds, upland, game and big game in accordance with State regulations.



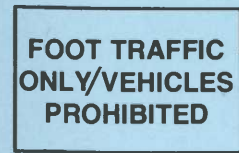
Marks retrieval zones established for the recovery of dead or wounded game. The zones are closed to hunting and firearms. Retrieval dogs are permitted.



Marks boundary of an area in a refuge closed to all entry.



Designates roads or trails open to vehicle use.



Designates roads or trails closed to vehicle use, but open to hiking.

The following National Wildlife Refuges are closed to all hunting, retrieving and disturbance to waterfowl during the hunting season:

- | | |
|--|--|
| Barnes County
Hobart Lake
Stoney Slough
Tomahawk | McHenry County
Cottonwood Lake
Wintering River |
| Benson County
Silver Lake
Wood Lake | McLean County
Camp/Strawberry Lake
Lake Otis
Lake McLean |
| Bottineau County
Lords Lake | Lost Lake
Hiddenwood Lake |
| Burleigh County
Canfield Lake
Florence Lake | Mountrail County
Shell Lake |
| Cavalier County
Billings Lake | Nelson County
Lambs Lake |
| Dickey County
Dakota Lake | Pierce County
Buffalo Lake |
| Dunn County
Lake Ilo | Richland County
Lake Elsie |
| Eddy & Nelson Counties
Johnson Lake | Rolette County
Rabb Lake
School Section Lake |
| Emmons County
Appert Lake
Springwater
Sunburst | Willow Lake |
| Grand Forks County
Kelly Slough
Little Goose | Sargent County
Storm Lake |
| Grant County
Pretty Rock | Sheridan County
Sheyenne Lake |
| Griggs County
Sibley Lake | Slope County
Stewart Lake |
| Kidder County
Hutchinson Lake | Stutsman County
Halfway Lake |
| LaMoore County
Lake George | Towner County
Brumba
Rock Lake |
| Bone Hill | Walsh County
Snyder Lake
Ardoch Lake |
| | Ward County
Hiddenwood Lake |

Waterfowl Production Areas

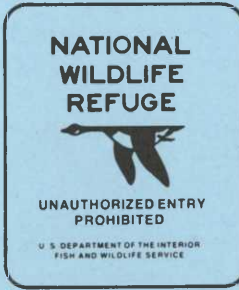
Open to public hunting in conjunction with State seasons unless designated closed for management reasons by "CLOSED" boundary markers.

Maps designating the location of Waterfowl Production Areas are available on a county by county basis from:
Northwest Mapping Company 321 Mandan Street Box 1234 Bismarck, North Dakota 58501
Telephone: (701) 223-1952

For specific information concerning Waterfowl Production Areas contact the Wetland Management District Offices.

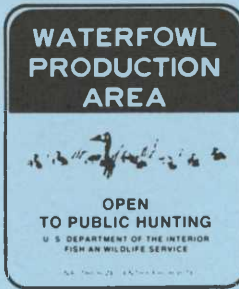
DISTRICT	LOCATION	ZIP CODES	COUNTIES	TELEPHONE
1. Arrowwood Wetland Management District	Pingree	58476	Eddy, Foster, Stutsman, Wells	285-3341
2. Audubon Wetland Management District	Coleharbor	58531	McLean, Sheridan, Ward	442-5474
3. Crosby Wetland Management District	Crosby	58730	Burke, Divide, Williams	965-6488
4. Devils Lake Wetland Management District	Devils Lake	58301	Benson, Cavalier, Grand Forks, Nelson, Pembina, Towner, Walsh, Ramsey	662-2924
5. J. Clark Salyer Wetland Management District	Upham	58789	Bottineau, McHenry, Renville, Pierce, Rolette	768-2548
6. Kulm Wetland Management District	Kulm	58456	Dickey, LaMoore, Logan, McIntosh	647-2866
7. Lostwood Wetland Management District	Kenmare	58746	Mountrail, Ward	848-2722
8. Long Lake Wetland Management District	Moffit	58560	Burleigh, Emmons, Kidder	387-4397
9. Valley City Wetland Management District	Valley City	58072	Barnes, Cass, Griggs, Steele, Traill	845-3466
10. Tewauckon Wetland Management District	Cayuga	58013	Ransom, Richland, Sargent	724-3598

National Wildlife Refuges and Waterfowl Production Areas administered by the U.S. Fish and Wildlife Service are scattered throughout the State of North Dakota. Signing is used to identify Fish and Wildlife Service lands and activities which are permitted or prohibited. Become familiar with the signs and their meaning.



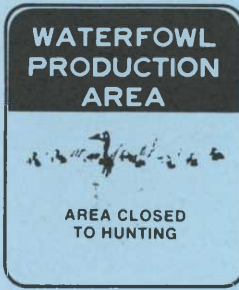
NATIONAL WILDLIFE REFUGES

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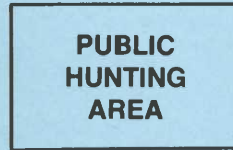
WATERFOWL PRODUCTION AREAS

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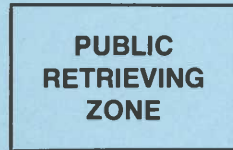


Marks boundary of Waterfowl Production Areas that have been closed to hunting.

REGULATORY SIGNS



Marks boundary of an area in a National Wildlife Refuge open to the hunting of migratory game birds, upland game and pig game in accordance with State regulations.



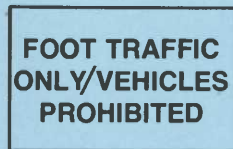
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- | | |
|--|---|
| Barnes County
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Stoney Slough
Tomahawk | McHenry County
Cottonwood Lake
Wintering River |
| Benson County
Silver Lake
Wood Lake | McLean County
Camp/Strawberry Lake
Lake Otis
Lake McLean
Lost Lake |
| Bottineau County
Lords Lake | Hiddenwood Lake |
| Burleigh County
Canfield Lake
Florence Lake | Mountrail County
Shell Lake |
| Cavalier County
Billings Lake | Nelson County
Lambs Lake |
| Dickey County
Dakota Lake | Pierce County
Buffalo Lake |
| Dunn County
Lake Ilo | Richland County
Lake Elsie |
| Eddy & Nelson Counties
Johnson Lake | Rolette County
Rabb Lake
School Section Lake
Willow Lake |
| Emmons County
Appert Lake
Springwater
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Storm Lake |
| Grand Forks County
Kelly Slough
Little Goose | Sheridan County
Sheyenne Lake |
| Grant County
Pretty Rock | Slope County
Stewart Lake |
| Griggs County
Sibley Lake | Stutsman County
Halfway Lake |
| Kidder County
Hutchinson Lake
Lake George | Towner County
Brumba
Rock Lake
Snyder Lake |
| LaMoure County
Bone Hill | Walsh County
Ardoch Lake |
| | Ward County
Hiddenwood Lake |

Waterfowl Production Areas

Open to public hunting in conjunction with State seasons unless designated closed for management reasons by "CLOSED" boundary markers.

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For specific information concerning Waterfowl Production Areas contact the Wetland Management District Offices.

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10. Tewauckon Wetland Management District	Cayuga	58013	Ransom, Richland, Sargent	724-3598

HUNTING AND FISHING INFORMATION

National Wildlife Refuges

Refuge hunting and fishing seasons may be more restrictive than the State seasons. Special refuge regulations may govern hunting activities and in some cases special permits are required. On refuges where boat fishing is allowed motors are limited to 25 h.p. or less. Refuge maps designating areas open to hunting and fishing are available at refuge headquarters.

Refuge	Address	Telephone	Summary of Hunting and Fishing Programs
Arrowwood	Pingree	285-3341	<i>Archery Deer</i> —Portions of refuge open except closed from opening of waterfowl season to close of firearm deer season. <i>Firearm Deer</i> —Portion of the refuge open—IIF2 State license required. Special refuge permit required the first 1 1/2 days. <i>Upland Game</i> —Open in late season following deer firearms season. <i>Furbearers</i> —Fox only by deer tag holder and by all hunters following deer firearm season. <i>Fishing</i> —Entire refuge open during State season except designated areas closed during waterfowl and deer hunting seasons. Contact manager for areas and rules.
Chase Lake	Pingree	285-3341	<i>Archery Deer</i> —Refuge open except closed from opening of waterfowl season to close of firearm season. <i>Firearm Deer</i> —Refuge open—IJ2 State license required.
Audubon	Coleharbor	442-5474	<i>Archery Deer</i> —Refuge open following firearms deer season. <i>Firearm Deer</i> —Refuge open—IK State license required. Special refuge permit required first 1 1/2 days. <i>Fishing</i> —Ice fishing only, snowmobiles prohibited.
Lake Nettie	Coleharbor	442-5474	<i>Archery Deer</i> —Portion of refuge open following firearm deer season. <i>Firearm Deer</i> —Portion of refuge open—IK State license required.
Des Lacs	Kenmare	385-4046	<i>Archery Deer</i> —Portions of refuge open except closed from opening of waterfowl season to close of firearm deer season. <i>Firearm Deer</i> —Portion of refuge open—IIIA2 State license required for area north of Highway 52. IIIA3 State license required for area south of Highway 52. Special refuge permits required first 1 1/2 days. <i>Fishing</i> —Ice fishing only, in designated area.
J. Clark Salyer	Upham	768-2548	<i>Game Species</i> —Open on nine designated Public Hunting Areas in State seasons for Grouse, Partridge, Waterfowl, Pheasants and Deer only. <i>Grouse and Partridge</i> —Open on that portion of the refuge south of the Upham-Willow City Road during State season. <i>Late Pheasant, Grouse and Partridge</i> —Entire refuge open after deer firearm season in accordance with regular State late season. <i>Archery Deer</i> —Entire refuge open with State season, except during the waterfowl hunting season when only the area south of the Upham-Willow City road will be open. <i>Firearm Deer</i> —Entire refuge open with State season; Special refuge permit required first 2 1/2 days; open to any State Unit IIIA4 permit holder thereafter. <i>Fishing</i> —Open on thirteen designated Public Fishing Areas during State seasons. Obtain refuge leaflet for areas and rules.
Lostwood	Kenmare	848-2722	<i>Archery Deer</i> —Portions of refuge open except closed from opening of waterfowl season to close of firearm deer season. <i>Firearm Deer</i> —Portions open—IIIA1 State license required. Special refuge permit required first 1 1/2 days. <i>Grouse and Partridge</i> —Portions south of Highway 50 open except during deer firearm season. Portions north of Highway 50 open only after firearm deer season.
Upper Souris	Foxholm	468-5467	<i>Archery Deer</i> —Entire refuge open with State season. <i>Firearm Deer</i> —Entire refuge open with State season; special refuge permit required first 1 1/2 days; open to State Unit IIIA2 permit holders thereafter. <i>Grouse and Partridge</i> —Mouse River Park unit open with State season; Lake Darling unit open with State season except closed from opening of waterfowl season to close of firearm deer season. <i>Fishing</i> —Designated areas open for bank, boat and ice fishing. Obtain refuge hunting or fishing leaflet for areas and regulations.
Tewaukon	Cayuga	724-3598	<i>Archery Deer</i> —Entire refuge open following the State firearm deer season through November 22. <i>Fishing</i> —Lake Tewaukon and Sprague Lake open during State season, except closed to boats during waterfowl season. Daylight fishing only.
Lake Alice	Devils Lake	662-2924	<i>General Hunting Unit</i> —Portions of the refuge open to hunting of all species in accordance with State regulations and seasons. <i>Special Archery Unit</i> —Open to archery deer hunting only, season restricted. Contact manager for details.
Long Lake	Moffit	387-4397	<i>Archery Deer</i> —Refuge open except closed from opening of waterfowl season to close of deer firearm season. <i>Firearm Deer</i> —Portion of refuge open—II 1 State license required. <i>Fishing</i> —Designated areas open except closed from September 15 to close of deer firearm season.
Slade	Moffit	387-4397	<i>Archery Deer</i> —Refuge open except closed from opening of waterfowl season to close of deer firearm season. <i>Firearm Deer</i> —Portion of refuge open—II 1 State license required.
Lake Zahl	Crosby	965-6488	<i>Archery Deer</i> —Portion of refuge open except closed from beginning of waterfowl season to close of firearm deer season.
Lake Ilo	Dunn Center	548-4467	<i>Fishing</i> —Portions of refuge open in accordance with State regulations, except closed during waterfowl season. Daylight fishing only.



RF-62100

**Department of Interior
U.S. Fish and Wildlife Service**

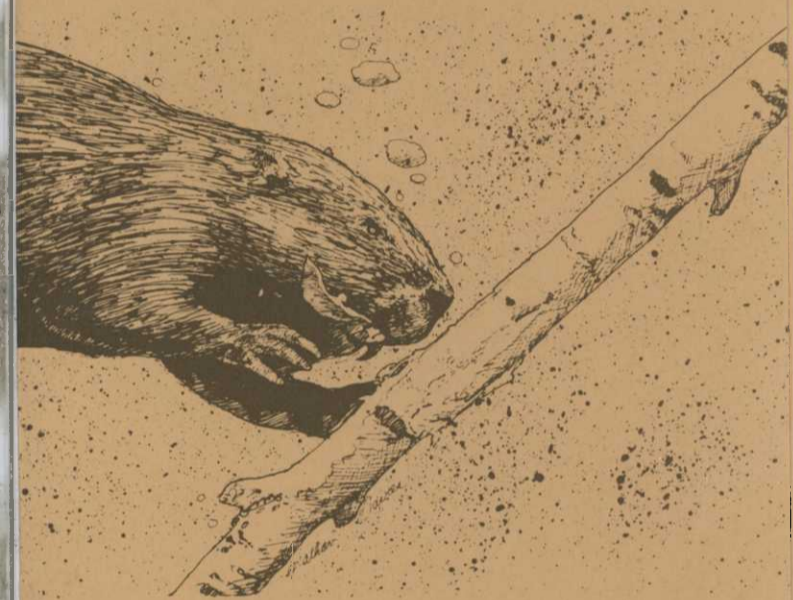


GPO 843-554

July 1984

Mammals of Upper Souris

National Wildlife
Refuge



The splash of a beaver signalling danger, the white tail "flag" of a deer dashing through the trees, a flash of brown as a mouse eludes danger or the bone chilling cry of a coyote. These are just a few of the encounters with mammals that visitors to Upper Souris National Wildlife Refuge may be lucky enough to have.

Upper Souris is located in northwestern North Dakota along the Souris River. It consists of over 32,000 acres of combined wetlands, timber and grasslands. This diversity of habitat makes possible the variety of mammal species that inhabit the refuge.

In all, 35 species of mammals are found on the refuge. Many of these are quite common and can be seen almost anytime while others are nocturnal, very rare, elusive or go into periods of hibernation. These factors together with the diverse habitats make it extremely difficult to observe all species within a short period of time.

MAMMALS OF UPPER SOURIS NATIONAL WILDLIFE REFUGE

Thirteen-lined Ground Squirrel	Eastern Gray Squirrel
Richardson Ground Squirrel	Striped Skunk
Northern Pocket Gopher	Raccoon
Pigmy Shrew	Badger
Masked Shrew	Least Weasel
Short-tailed Shrew	Long-tailed Weasel
Boreal Redback Vole	Mink
Meadow Vole	Porcupine
Prairie Vole	Muskrat
Meadow Jumping Mouse	Beaver
Western Jumping Mouse	Woodchuck
Northern Grasshopper Mouse	White-tailed Jackrabbit
White-footed Mouse	Snowshoe Hare
Deer Mouse	Eastern Cottontail
Big Brown Bat	Red Fox
Little Brown Myotis	Coyote
Red Squirrel	Pronghorn

White-tailed Deer

To the plains Indians and early pioneers, mammals were not only a source of food but also fulfilled other needs of these early people. Items such as tools for farming and hunting, sewing materials, clothing, materials for shelter and transportation were derived from wildlife.

The presence of mammals assured the plains Indians and early settlers of food supply, everyday materials and an economic return. The fur trade and early trading posts depended on an abundance of beaver and buffalo. As settlers pushed west, cows replaced the buffalo and wild game began to disappear from the prairies. Wildlife of the Upper Souris refuge is a remnant of earlier days and a reminder of human changes to the landscape.

In order to see wildlife, choose early morning or evening hours for observation. A pair of binoculars is an asset to finding a camouflaged deer or a



scurrying pheasant. If you are a photographer a camera and patience may reward you with some excellent photos.

Upper Souris National Wildlife Refuge is administered and managed by the United States Fish and Wildlife Service, Department of the Interior. Headquarters are located near the Lake Darling Dam and can be reached by traveling on HWY. 52 to Foxholm and then north seven miles on County No. 11 or on HWY. 83 then west 12 miles on County Road 6. Office hours are 8:00 a.m. through 4:30 p.m., Monday through Friday.



NOTES



RF6-62680-3



September 1981

GPO 832-549

UPPER SOURIS

AUTO
TOUR
GUIDE



Welcome to the Upper Souris National Wildlife Refuge. The refuge was established in 1935 for wildlife management and the preservation and propagation of migratory waterfowl. Upper Souris contains more than 32,000 acres and extends for nearly 30 miles along the beautiful Souris River Valley.

As you proceed along the tour route or hike the trails, we suggest you go slowly to see and enjoy the unexpected things that are not described in the pamphlet nor on roadside interpretive signs. You may see deer browsing in the tall grass, or a brood of ducks headed for the safety of the water. A red-tailed hawk may be soaring high above in search of food. These are some of the unexpected things that help make the tour so enjoyable.

Refuge Headquarters are open Monday through Friday, from 8:00 a.m. to 4:30 p.m. The Outlet Recreation Area, available for picnicking, is located just prior to crossing the dam. The refuge offers eleven public fishing areas. Pamphlets are available at refuge headquarters for further information.

The graphic signs along the route correspond to the points of interest described in the pamphlet. The tour begins at Refuge Headquarters. Proceed across the dam and continue south on County Road 6. The first stop is approximately 200 yards ahead and off to the right.



1 OVERLOOK TRAIL

Overlook trail offers an opportunity to stretch your legs. There are two loops, the 1/2 mile and the 1/4 mile. A panoramic view of the valley and dam are visible from the viewing bench located on top of the first hill.

The large body of water visible from the viewing area is Lake Darling. The lake contains approximately 112,000 acre-feet of water and extends for nearly 20 miles north of the dam. The lake is a popular fishing spot for walleye, northern pike and yellow perch. At its deepest, the lake is about 25 feet deep.

The body of water at the south end of the dam is "A" Pool. "A" Pool is one of a series of three pools that are carefully maintained to provide nesting and feeding habitat for a wide variety of waterfowl.

Proceed past the junction of county roads 6 and 11, take the first left; the next marker is located to the left, just inside the gate structure.



2 PELICAN TRAIL

Pelican trail offers a three mile hike around "B" Pool. Pelicans, Canada geese, blue-winged teal, mallards, deer, muskrat and mink are often seen in this area. The viewing loop to "A" spillway is a 1/4 mile hike one way and is an excellent area to view

waterfowl and a wide variety of other wildlife. Be patient and look carefully; wildlife is wary of strange noises and unexpected visitors.



3 DENSE NESTING COVER

This thick stand of vegetation is one of many areas of dense nesting cover (DNC) planted on the refuge. DNC is a mixture of alfalfa, sweet clover, intermediate and tall wheatgrass. It provides one of the best protective covers for upland nesting ducks, such as mallards, pintails, and shovelers. Some ducks nest as far as two miles from the nearest water. Without adequate protective cover, raccoons, red fox, skunks, and other predators destroy duck eggs and severely limit production.



4 GREEN ASH

The rows of trees in the coulees below are Green ash, (*Fraxinus pennsylvanica*.) They were planted in the late 1930's by the Civilian Conservation Corps.

Green ash is a fast-growing hardwood that is extremely resistant to hot and cold temperatures. Indians used the wood for making bows. Early settlers found this hardwood especially good for hammer and axe handles. Green ash is often used in windbreaks and helps prevent wind and water erosion. In winter, the blowing snow is caught by the trees and provides an increased moisture supply for plants.



5 VIEWING AREA

The Civilian Conservation Corp (CCC) was activated by President Roosevelt in 1933 to alleviate widespread unemployment. Through the establishment of conservation camps, young men could work on forest and conservation projects.

The dike work, nesting island and control structures seen below were CCC projects intended to improve habitat for migratory waterfowl. They are still in use today.

Water levels may be raised or lowered at the control structures to encourage the growth of food-producing aquatic plants. Careful maintenance of water levels stabilizes marsh vegetation and prevents flooding of nesting sites.



6 THICKETS

Thickets such as this one are a valuable source of food, shelter and cover for wildlife. Small birds and mammals find these thickets excellent for escape cover. White-tailed deer, rabbits and porcupines use these areas frequently for feeding. Deer browse is

evident on the black stems of the chokeberry and juneberry bushes.



7 NATIVE GRASSES

As you leave your car at the native grass display, listen to the wind rustling the prairie. The wind sweeps unhindered, rolling the grasses into wave after wave of undulating motion.

The display area is a typical native grassland. Pamphlets are available to explain each of the ten native grasses in greater detail. How many of the native grasses can you identify in the grassland around the exhibit?

8**COULEES**

French fur traders in the 1800's called these long, narrow valleys with low drainage areas, coulees. They are frequented by numerous birds and animals that seek food and shelter, especially in the winter when cold winds sweep across the rolling

native prairie. Look carefully and a deer may be seen in the distance. Deer are most active around dawn and dusk, feeding on tender shoots of plants.

9**COTTONWOOD TRAIL**

Cottonwood Trail received its name because of the large number of cottonwood trees planted here in the late 1930's by the CCC's. Dead or alive, the cottonwood tree is valuable in nature. It is used as a perch for hawks, owls and songbirds and as a home and dining area for flickers and woodpeckers.

Cottonwood Trail consists of two loops. One is ½ mile long and features a scenic overlook area. The longer loop is one mile long and continues from the overlook area down through the coulee and up on the ridges that surround it.

10**CREEPING SHORELINE**

Underwater plants in the center of the pool are slowly killing this marsh! As plants die, they decay. The decayed material falls to the marsh floor and forms a mat called "humus". Humus provides larger plants, such as bulrushes and cattails, with a

place to become anchored. Their roots can then secure necessary soil elements.

Grasses, such as the tall phragmites, and other plants along the shore will gradually occupy the fertile drying humus left behind by the aquatic plants. This process is called plant succession. As a result of succession, the shoreline of a marsh eventually meets in the center. After hundreds of years, this marsh will probably disappear.

11**PRAIRIE WILD ROSE**

The prairie rose (*Rosa arkansana*) is the state flower of North Dakota, and is another example of wildlife habitat. These thickets provide protective cover to a variety of wildlife. The flowers are pink to pinkish-white and bloom from May to July. Wild

roses grow in moist soil and are found on hillsides, in valleys or along streams.

12**DUCKS DINING ROOM**

This marsh is a duck's dining room. The hen brings her ducklings here for their first meal. With necks outstretched, the ducklings skitter across the water in pursuit of mosquitos and water insects. When about six weeks old, ducklings exchange downy

fluff for true body feathers. Soon they begin to feed on plants, dipping their heads and necks under water. Gradually, plants replace animal matter as the duck's major food.

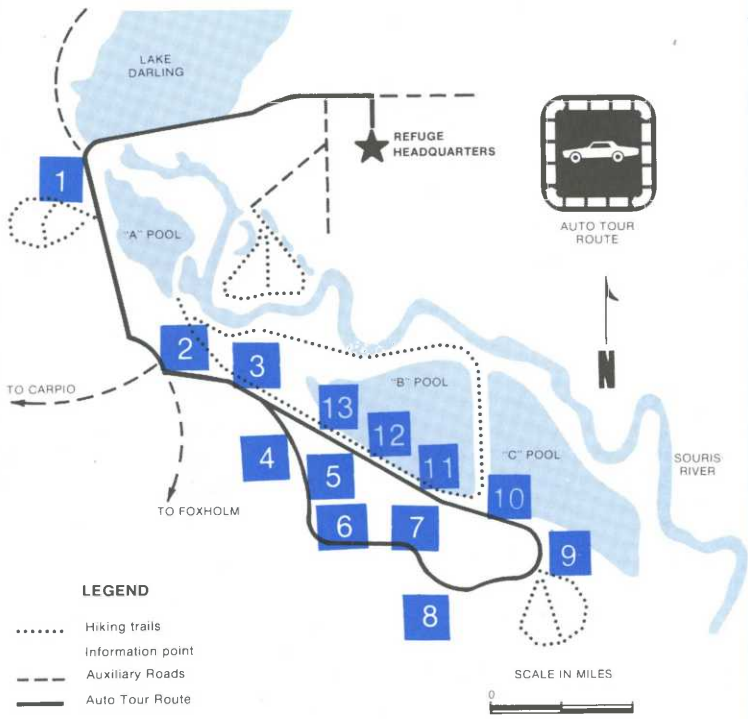
These pools are good places to see a wide variety of waterfowl and other wildlife. A closer look might reveal a muskrat or a mink. Listen to the many different calls of the marsh birds. We encourage our visitors to walk along the dike and take a closer look at a classic example of a changing marsh.

13**ALTERNATIVE NESTING SITES**

Nesting sites for Canada geese were scarce at Upper Souris NWR. Female geese that nested seemed to prefer muskrat houses as nesting sites. As few muskrat houses existed on the refuge, the flax bales which are similar in appearance to muskrat

houses were introduced in 1973 as alternative nesting sites. These large round bales are set out in the winter. The bales are hauled onto the ice and eventually settle through the ice in an upright position. In spring and summer the bales are surrounded by water and are relatively safe from skunks, raccoons, coyotes and other predators which may destroy unprotected nests. Canada geese now nest in abundance on the refuge.

This is the last stop on the Auto Tour Route. Further down the road there is two way traffic, so please drive carefully. We hope you enjoyed your visit and we welcome you back in the future.



U.S. FISH AND WILDLIFE SERVICE
 Department of the Interior



RF-6-62680-10

January, 1982

☆ U.S. GOVERNMENT PRINTING OFFICE: 1982—781-895

Canoe Trails on the Souris River



**Upper Souris National Wildlife Refuge
Foxholm, ND**

UPPER SOURIS NATIONAL WILDLIFE REFUGE Canoe Trails on the Souris River

INTRODUCTION: Upper Souris National Wildlife Refuge (NWR) offers two canoe trails—one 3-mile and one 5-mile route—for your enjoyment. The canoeing enthusiast can take this opportunity to observe wildlife and habitat along the river. The following explains the routes and items of interest for your trip.

THREE-MILE ROUTE (6-MILE ROUND TRIP): Begins at the parking lot southeast of the Outlet Fishing Area and extends downstream to a water control structure. No loading facilities are available at the downstream end so you must return to the beginning of the route. No fishing is allowed on this route. Canoes/boats propelled with oars, paddles, and electric motors are permitted.

FIVE-MILE ROUTE (10-MILE ROUND TRIP): Begins in Renville County Memorial Park and extends upstream to the Refuge boundary. Swenson Bridge (4 miles upstream from park) offers a crossing where canoes can be taken out or launched on County Road No. 3 right-of-way. Fishing is allowed on this route. This area is also open to boats with motors not exceeding 25 HP.

THINGS TO SEE ON THE TRIP:

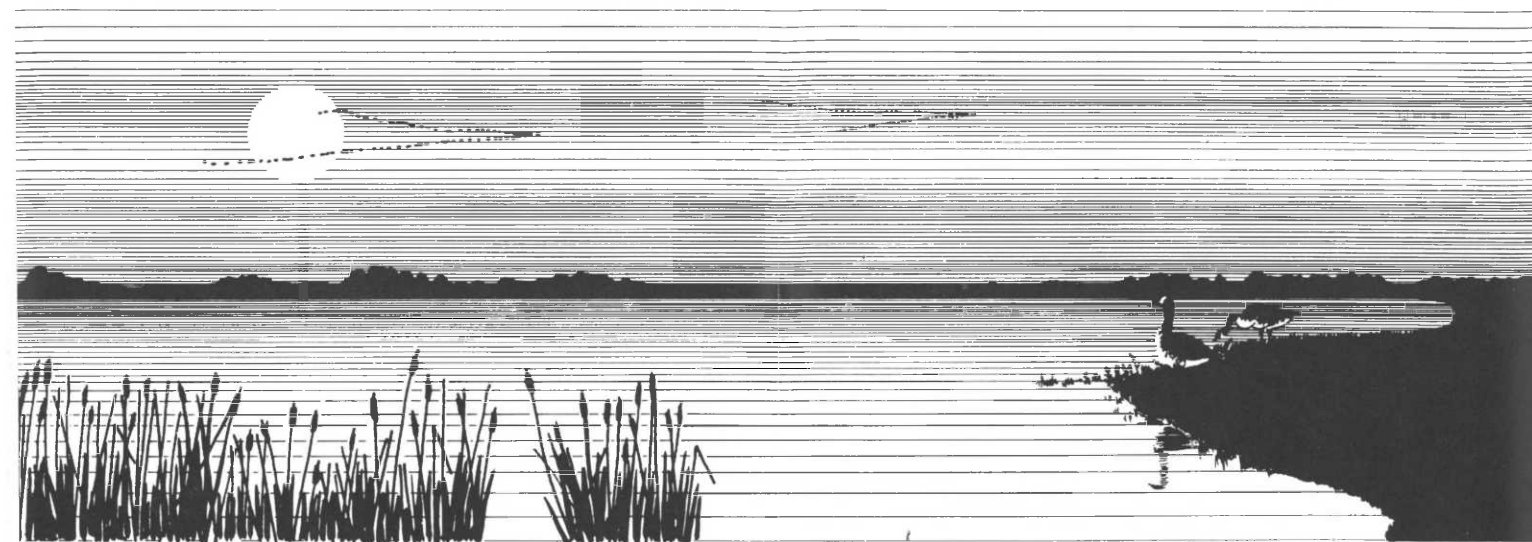
Waterfowl: The river bottoms and marshes through which the Souris River flows provides ideal habitat for many species of ducks. The birds use the river to rear their young and for loafing.

White-tailed Deer: Dense stands of timber and vegetation along the river provide excellent areas for deer. On occasion, deer can be seen drinking from the river but will disappear quickly if disturbed. The river bottom and the protection it offers are very important for winter survival.

Beaver Lodge: Large mounds of sticks, mud, and vegetation mark the homes of beaver. The lodges have underwater entrances. As fall approaches, beaver store up caches of food supplies next to the lodges.

River Oxbows: These are remains of old river channels located away from the main river. They were formed when the river cut a new route and isolated the old river bends from the new channels. These oxbows provide good protection and habitat to many species of wildlife.

Furbearers: Several species of furbearers including raccoon, mink, muskrat, weasel, and beaver make their homes along the river. Muskrat and mink make their homes in the river bank. You may see some of these feeding along the shore or swimming in the river.



Birdlife: A wide variety of birds live along the river bottom. A bird book and binoculars are very helpful. A bird checklist is available at Refuge Headquarters.

Vegetation: A large variety of plants and trees adorn the banks of the Souris. American elm, willow, box elder, and green ash are common. Cattails, bulrush, and other plants are also abundant. All provide necessary wildlife habitat.

Pools, Ditches, and Water Control Structures: These manmade features can be seen along the route. They were constructed in the 1930's to regulate water levels and create wildlife habitat.

Duck Nests: Metal boxes are strapped to several trees at the beginning of the route. These provide nesting structures for wood ducks. Other species such as woodpeckers and owls also use the boxes for homes.

Fishing: The river is also the home for several species of fish including the northern pike, walleye, yellow perch, bullhead, and white sucker. Fishing is not permitted on the 3-mile canoe route.

Other Aquatic Life: Other species including many invertebrates can be found on the river. A large variety of insects provide a good food source for wildlife. Even the pesky mosquito is a valuable link in the food chain.

REMEMBER...

... that certain activities are not compatible with wildlife and are prohibited. These include camping, fireworks, off-road vehicles, trespassing in "CLOSED" areas, and littering. Litter barrels are **not** provided so please pack your trash home. Activities are restricted to the hours of 5:00 a.m. through 10:00 p.m. If you have any questions, office hours are 8:00 a.m. through 4:30 p.m., Monday through Friday.

... all boating activities will close the last Friday in September on Upper Souris NWR.

... to be safety conscious. Wear an approved life preserver at all times while canoeing. Do **not** overload your boat/canoe.

... that your motorized boat must be registered with the State of North Dakota Game and Fish Department.

... to share the river. Be considerate of fishermen's rights by keeping adequate distance between you and them.

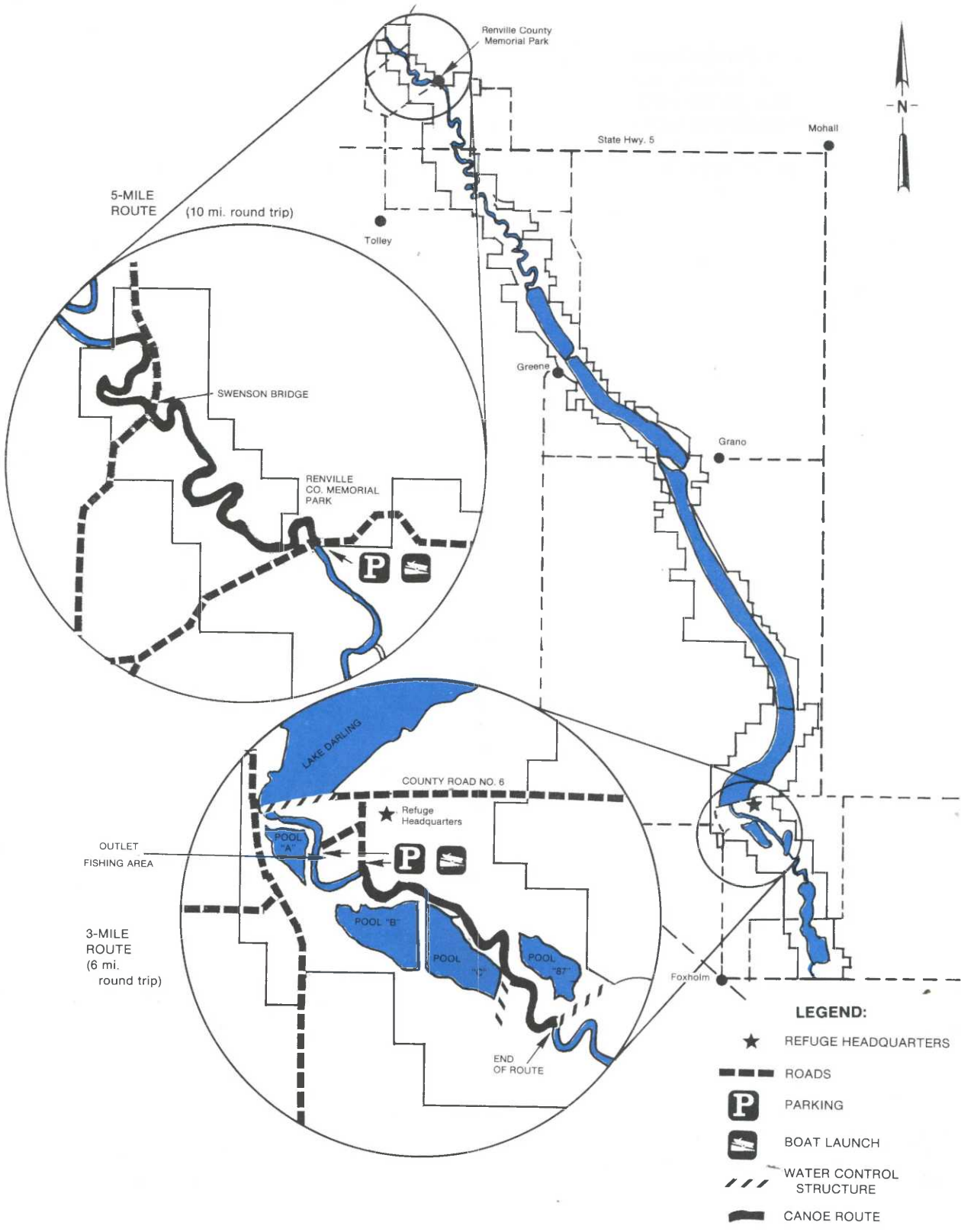
HAVE A SAFE AND ENJOYABLE TRIP!

The Refuge is administered and managed by the U.S. Fish and Wildlife Service, Department of the Interior. Headquarters are located near the Lake Darling Dam and can be reached by traveling on Highway 52 to Foxholm, ND and then north on County Road 11 for 7 miles or Highway 83 north of Minot and west 12 miles on County Road 6.

FURTHER INFORMATION MAY BE OBTAINED FROM:

REFUGE MANAGER
UPPER SOURIS
NATIONAL WILDLIFE REFUGE
FOXHOLM, ND 58738

(701)468-5467



5-MILE ROUTE
(10 mi. round trip)

SWENSON BRIDGE

RENVILLE CO. MEMORIAL PARK

P

Boat Launch

OUTLET FISHING AREA

3-MILE ROUTE
(6 mi. round trip)

LAKE DARLING

COUNTY ROAD NO. 6

★ Refuge Headquarters

POOL 'A'

POOL 'B'

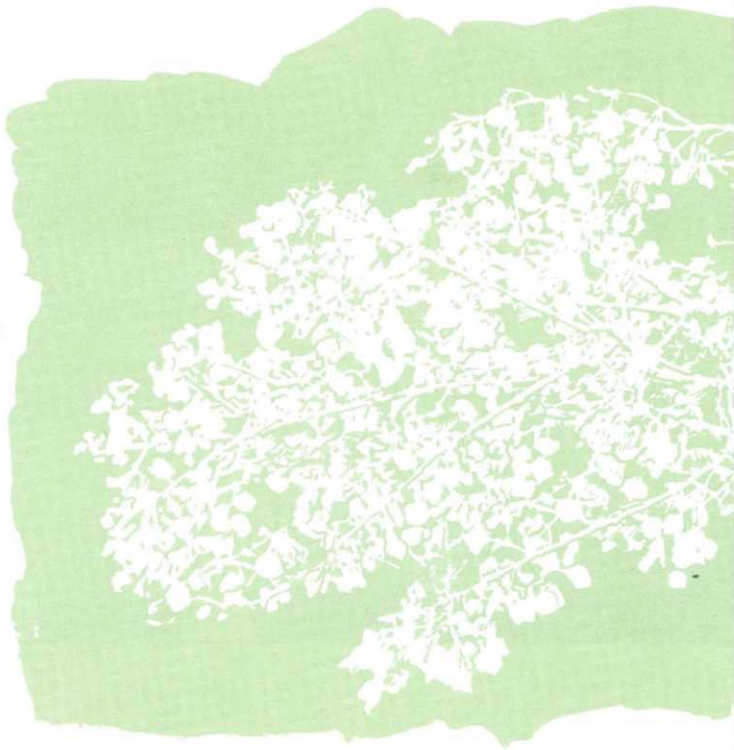
POOL 'C'

POOL 'D'

END OF ROUTE

LEGEND:

- ★ REFUGE HEADQUARTERS
- ROADS
- P PARKING
- Boat Launch
- /// WATER CONTROL STRUCTURE
- Thick Line CANOE ROUTE



Department of the Interior
U.S. FISH AND WILDLIFE SERVICE



RF-6-62680-10

GPO 837-565

January 1983

Upper Souris

National Wildlife
Refuge



Fishing Information

Welcome to Upper Souris National Wildlife Refuge! In order to provide a popular wildlife related activity such as fishing, an extensive fisheries management program is carried out on the refuge. A cooperative agreement exists between the Fish and Wildlife Service and the North Dakota Game and Fish Department in regards to research, tagging, egg collecting and fish stocking. With this cooperation, Lake Darling and the Souris River provide some of the finest freshwater fishing in the area.

Game fish species present are the northern pike and walleye. An occasional small-mouth bass is caught but no large population of this species is present.

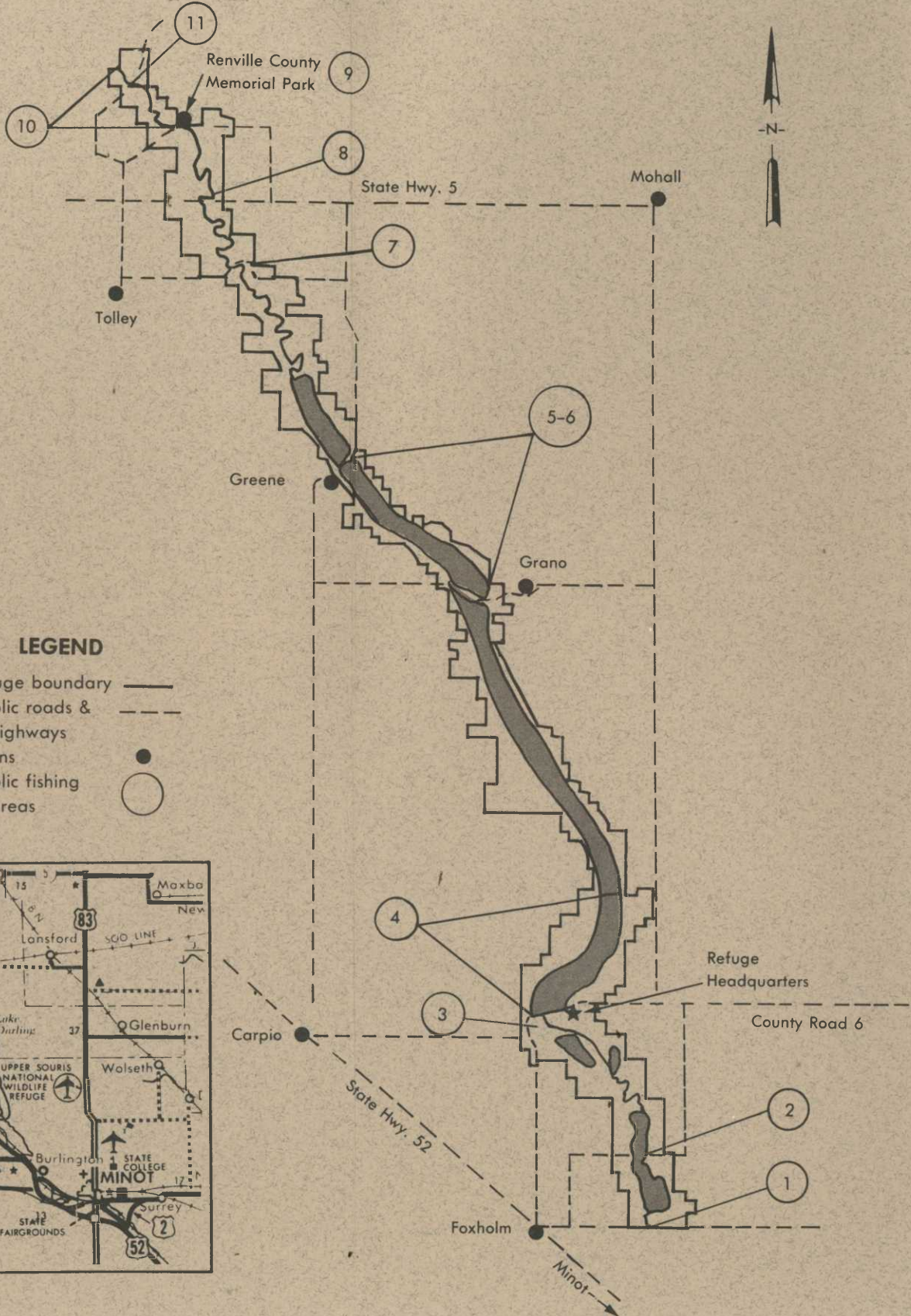
Non-game fish include the yellow perch, white sucker, and brown bullhead. Many species of minnows also inhabit refuge waters.

Regulations set forth by the N.D. Game and Fish Dept. and the refuge must be observed in all public fishing areas.

PUBLIC FISHING AREAS

General locations of public fishing areas are indicated on the map by numbers 1-11. For exact description of each area see the special listing shown below. Areas are open 5 a.m. to 10 p.m.

1. **BAKER BRIDGE** From road right-of-way near bridge and inside loop of river north of county road from bridge west to a point where the county road meets river. The area south of the bridge is private property. Restroom and picnic facilities are available.
2. **SILVER BRIDGE** From road right-of-way and upstream from bridge 200 yards on west shore. Restroom facilities are available.
3. **OUTLET FISHING AREA** Begins at a point 1/4 mile below Lake Darling dam and extends for 600 yards downstream. Restroom facilities, grills, picnic tables are available.



4. **LAKE DARLING DAM-FISHING AREAS** Lake is open to boat fishing from the dam to a point 3 miles upstream. Bank fishing is permitted on west shore from the dam to a point approximately 2 miles upstream from the dam. Boat launching ramps, restrooms, picnic tables and grills are available at all three landings.
5. **LAKE DARLING-GRANO CROSSING** Bank fishing from road right-of-way on both sides of crossing and within the boundaries of the recreation area. Boat fishing on Lake Darling upstream from the crossing to Greene Crossing. Restrooms, boat launching ramps, picnic tables and grills are available.
6. **LAKE DARLING-GREENE CROSSING** Bank fishing from the road right-of-way on both sides of crossing. Boat fishing on Lake Darling downstream from the crossing to Grano Crossing. Restrooms, picnic facilities, and boat launching ramps available.
7. **CARTER DAM** Fall fishing (November 1-end of winter fishing) only on downstream side near water control structure, (east end of dam) and culvert (west end of dam). No facilities are available.
8. **HIGHWAY #5** From road right-of-way near bridge and inside loop of river north of the highway from bridge west to a point where the river meets the highway. No facilities.
9. **RENVILLE COUNTY MEMORIAL PARK** (adjacent to refuge) Bank and boat fishing within the boundaries of the park. County ordinances and state regulations apply within the park. Restrooms, boat launching facilities, picnic tables, grills and overnight camping are available in the park.
10. **RIVER ABOVE PARK TO END OF REFUGE** Boat fishing only to 10 hp motors or less. Boat launching facilities in the park.
11. **SWENSON BRIDGE** Fishing only from road right-of-way. No facilities.

SPECIAL REGULATIONS

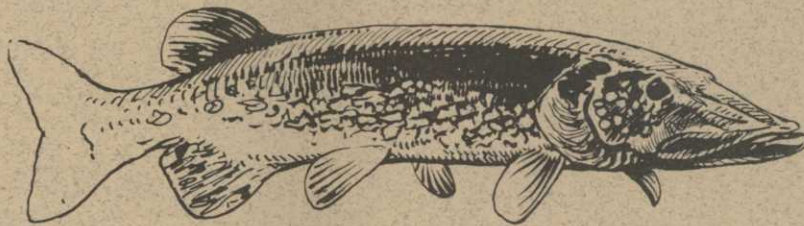
Fishing and boating shall be in accordance with all state laws and following requirements set forth by the refuge.

1. Signs stating "PUBLIC FISHING AREAS" are posted at each area.

Signs stating "AREA BEYOND THIS SIGN CLOSED" indicate restricted areas.

2. Winter fishing⁷
 - a. Areas 1-3, 8-11. Open to winter fishing. No vehicles or fish houses on the river.
 - b. Areas 4-7. Entire lake and river from Lake Darling Dam to Carter Dam open to ice fishing. Fish houses and vehicles are permitted on the ice. No snowmobiles.
 - c. Fish houses must be removed from the refuge no later than March ~~15~~¹.
3. The taking of minnows, frogs and the digging of worms is prohibited.

4. Live minnows or other live bait fish are prohibited in the waters above Lake Darling Dam.
5. ~~Remember, the size limit on northern pike north of Lake Darling Dam is 29" minimum.~~
6. Any outboard motor or combination of outboard motors may be attached to boats or watercraft being used on refuge waters. Only those motors or combinations of motors capable of developing 25 hp or less may be used.
7. Open fires on the ground or ice are prohibited.
8. Littering is prohibited. A "PACK YOUR TRASH BACK HOME" program is in effect so please take all litter home. No garbage receptacles are available.
9. No boats will be permitted on refuge after the last Friday in September of each year. ^{3rd}
10. Refuge fishing areas are open between 5 a.m. and 10 p.m.



ADMINISTRATION AND LOCATION

The refuge is administered and managed by the U.S. Fish and Wildlife Service, Department of the Interior. Headquarters are located near the Lake Darling Dam and can be reached by traveling on Highway 52 to Foxholm, N.D. and then north on county road 11 for 7 miles or Highway 83 north of Minot and west 12 miles on county road 6. Office hours are 8:00 a.m. to 4:30 p.m. Monday through Friday.

Inquiries should be mailed to the Refuge Manager, Upper Souris National Wildlife Refuge, Foxholm, N.D. 58738. Phone 701-468-5467.

U.S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE



GPO 835 - 450

RF6-62680-7

Reprinted May 1982



**SOURIS LOOP
BIRDS**

NORTH DAKOTA

SOURIS LOOP BIRDS

The "Souris Loop" National Wildlife Refuges were established in 1935. They are Des Lacs (18,881 acres), Lostwood (26,747 acres), J. Clark Salyer (58,695 acres), and Upper Souris (32,092 acres). Wetlands consist of restored marshes on Des Lacs, J. Clark Salyer, and Upper Souris and potholes in the rolling hills on Lostwood. Other important wildlife habitats are remnants of the original short-grass prairie, lowland meadow, wooded sandhills, river bottoms, and coulees.

While the waterfowl concentrations of spring, summer, and fall are spectacular, bird observers are generally most interested in the five species of grebes, white pelicans, certain hawks, grouse, cranes, shorebirds, Franklin's gulls, burrowing owls, Sprague's pipits, lark buntings, longspurs, and sparrows—including Baird's and Le Conte's. About 140 species are known to nest on these refuges.

CHECKLIST
Souris Loop National Wildlife Refuges

This list contains 290 species (23 are accidental species) recorded on the refuges since 1935.

Species nesting on the refuge are indicated by a (*). The relative abundance of each species at each season is coded as follows:

S—March-May F—September-November
S—June-August W—December-February

a—abundant common species, very numerous
c—common certain to be seen in suitable habitat
u—uncommon present, but not certain to be seen
o—occasional* seen only a few times during a season
r—rare seen at intervals of 2 to 5 years

S S F W

Common Loon	r	r	r
Red-necked Grebe	a	o	o
Horned Grebe	u	u	u
Eared Grebe	c	c	c
Western Grebe	c	c	c
Pied-billed Grebe	c	c	c
White Pelican	c	c	c
Double-crested Cormorant	u	u	u
Great Blue Heron	u	u	u

S S F W

Little Blue Heron	u	u	u
Cattle Egret	u	u	u
Great Egret (Common)	r	r	
Snowy Egret	r	r	
Black-crowned Night Heron	c	c	c
American Bittern	u	u	u
Least Bittern	r	r	r
White-faced Ibis	r	r	
Whistling Swan	u	c	
Canada Goose	c	u	c
White-fronted Goose	c	c	
Snow Goose (Snow & Blue)	a	a	
Ross' Goose	r		
Mallard	a	c	a
Black Duck	r	r	r
Gadwall	a	c	a
Pintail	a	c	a
Green-winged Teal	u	u	u
Blue-winged Teal	a	c	a
Cinnamon Teal	r	r	
European Wigeon (European Widgeon)	r	r	
American Wigeon (Am. Widgeon)	c	u	c
Northern Shoveler (Shoveler)	c	u	c
Wood Duck	u	u	u
Redhead	c	u	c
Ring-necked Duck	u	o	u
Canvasback	c	u	c
Greater Scaup	r		
Lesser Scaup	c	u	c
Common Goldeneye	u	u	
Bufflehead	u	o	u
White-winged Scoter	r	r	r
Ruddy Duck	c	c	c
Hooded Merganser	o	o	o
Common Merganser	c	u	
Red-breasted Merganser	u	u	
Turkey Vulture	r		
Goshawk		r	r
Sharp-shinned Hawk	o	o	o
Cooper's Hawk	o	o	o
Red-tailed Hawk	c	u	c
Broad-winged Hawk	o	o	o
Swainson's Hawk	c	u	c
Rough-legged Hawk	o	o	o
Ferruginous Hawk	o	o	o
Golden Eagle	o	o	o
Bald Eagle	o	o	
Marsh Hawk	c	c	c
Osprey	r	r	
Gyr Falcon	r		
Prairie Falcon		o	o
Peregrine Falcon	r	r	
Merlin (Pigeon Hawk)	o	o	r
American Kestrel (Sparrow Hawk)	u	o	u

S S F W

Greater Prairie Chicken (1)			
Sharp-tailed Grouse	c	c	c
Ring-necked Pheasant	u	u	u
Gray Partridge	c	c	c
Whooping Crane	r	r	
Sandhill Crane (2)	a	r	a
Virginia Rail	u	c	u
Sora	u	c	u
American Coot	c	c	a
Semipalmated Plover	u	u	
Piping Plover	o	o	o
Killdeer	c	c	c
American Golden Plover	u	u	
Black-bellied Plover	u	u	
Ruddy Turnstone	r	r	
Common Snipe	o	o	o
Long-billed Curlew	r		
Upland Sandpiper (Plover)	u	c	u
Spotted Sandpiper	u	c	u
Solitary Sandpiper	u	u	u
Willet	u	u	c
Greater Yellowlegs	u	c	
Lesser Yellowlegs	c	u	c
Pectoral Sandpiper	c	c	c
White-rumped Sandpiper	r	r	
Baird's Sandpiper	u	u	u
Least Sandpiper	c	c	a
Dunlin	r	r	
Short-billed Dowitcher	r	r	
Long-billed Dowitcher	u	u	c
Stilt Sandpiper	o	o	u
Semipalmated Sandpiper	a	a	a
Western Sandpiper	r	r	
Buff-breasted Sandpiper	r		
Marbled Godwit	u	u	c
Hudsonian Godwit	r	r	
Sanderling	r		
American Avocet	c	c	c
Wilson's Phalarope	c	c	c
Northern Phalarope	a	a	
Herring Gull	r	r	
California Gull	u	r	u
Ring-billed Gull	c	c	c
Franklin's Gull	c	c	c
Bonaparte's Gull	r	r	
Forster's Tern	c	c	c
Common Tern	u	u	u
Black Tern	a	c	c
Rock Dove	o	o	o
Mourning Dove	c	c	a
Yellow-billed Cuckoo	r		
Black-billed Cuckoo	o	o	o

(1) Last observed in 1956
(2) Nesting recorded at J. Clark Salyer in 1973

S S F W

Screech Owl	o	o	o
Great Horned Owl	u	u	u
Snowy Owl	o	o	o
Burrowing Owl	o	o	o
Long-eared Owl	o	o	o
Short-eared Owl	u	u	o
Boreal Owl		r	
Saw-whet Owl	o	o	o
Common Nighthawk	o	o	o
Chimney Swift	r		
Ruby-throated Hummingbird	o	o	o
Belted Kingfisher	o	o	o
Common Flicker (Yellow & Red Shafted)	c	c	c
Red-headed Woodpecker	r	o	r
Yellow-bellied Sapsucker	o	o	o
Hairy Woodpecker	o	o	o
Downy Woodpecker	u	u	u
Eastern Kingbird	a	c	c
Western Kingbird	a	c	c
Great Crested Flycatcher	r	o	o
Eastern Phoebe	r	o	o
Say's Phoebe	o	o	o
Yellow-bellied Flycatcher	r	r	o
Willow Flycatcher	c	c	a
Least Flycatcher	c	c	a
Eastern Wood Pewee	r	o	o
Western Wood Pewee	r		
Olive-sided Flycatcher	o	u	
Horned Lark	a	c	a
Violet-green Swallow	r		
Tree Swallow	c	c	a
Bank Swallow	c	c	a
Rough-winged Swallow	o	o	o
Barn Swallow	c	c	a
Cliff Swallow	a	a	a
Purple Martin	c	c	c
Blue Jay	o	o	o
Black-billed Magpie	u	u	u
Raven		r	
Common Crow	c	u	c
Black-capped Chickadee	c	c	c
White-breasted Nuthatch	o	o	o
Red-breasted Nuthatch	u	c	r
Brown Creeper	u	u	r
House Wren	c	c	c
Long-billed Marsh Wren	c	c	c
Short-billed Marsh Wren	c	c	u
Rock Wren	r	r	r
Mockingbird	r	r	r
Gray Catbird (Catbird)	u	u	u
Brown Thrasher	u	u	u
Sage Thrasher	r	r	r

S S F W

—• American Robin (Robin)	c	c	a	o
— Hermit Thrush	u	u		
— Swainson's Thrush	c	c		
— Gray-cheeked Thrush	c	c		
—• Veery	u	c	u	
—• Eastern Bluebird	o	o	o	
— Mountain Bluebird	u	r	u	
— Townsend's Solitaire	r	r	r	
— Golden-crowned Kinglet	u	u		
— Ruby-crowned Kinglet	u	u		
— Water Pipit	u	u		
—• Sprague's Pipit	u	u	o	
— Bohemian Waxwing	u	u	u	
—• Cedar Waxwing	c	c	c	r
— Northern Shrike				o
—• Loggerhead Shrike	u	u	u	
—• Starling	u	u	u	u
—• Yellow-throated Vireo	o	o	o	
— Solitary Vireo	r	r	r	
—• Red-eyed Vireo	c	c	c	o
—• Philadelphia Vireo	o	o	o	
—• Warbling Vireo	c	c	c	
—• Black-and-white-Warbler	u	o	u	
— Tennessee Warbler	c	c		
— Orange-crowned Warbler	c	c		
— Nashville Warbler		r		
—• Yellow Warbler	c	c	a	
— Magnolia Warbler	o	o		
— Cape May Warbler	r	r		
— Black-throated Blue Warbler	r	r		
— Yellow-Rumped Warbler (Myrtle & Audubon's)	c	c		
— Black-throated Green Warbler	o	o	o	
— Blackburnian Warbler	o	o	o	
— Chestnut-sided Warbler	o	o	o	
— Bay-breasted Warbler	o	o	u	
— Blackpoll Warbler	c	u		
— Palm Warbler	o	o		
—• Ovenbird	u	o	u	
—• Northern Waterthrush	c	u	c	
— Connecticut Warbler	r	r		
— Mourning Warbler	u	o	u	
— MacGillivray's Warbler	o	o	o	
—• Common Yellowthroat (Yellowthroat)	c	c	c	
—• Yellow-breasted Chat	o	o	o	
— Wilson's Warbler	u	u	c	
— Canada Warbler	r	o		
—• American Redstart	u	u	u	
—• House Sparrow	c	c	c	c
—• Bobolink	c	c	c	
—• Western Meadowlark	a	a	a	r
—• Yellow-headed Blackbird	a	a	a	
—• Red-winged Blackbird	a	a	a	o

S S F W

—• Orchard Oriole	o	o	o	
—• Northern Oriole (Baltimore & Bullock's)	u	u	u	
— Rusty Blackbird	u	u	r	
—• Brewer's Blackbird	u	u	u	
—• Common Grackle	c	c	c	r
—• Brown-headed Cowbird	c	c	c	
— Western Tanager			r	
— Scarlet Tanager		r	r	
—• Rose-breasted Grosbeak	o	r	u	
— Black-headed Grosbeak	r			
— Indigo Bunting	r	r		
—• Lazuli Bunting	o	o		
—• Dickcissel	r	r	r	
— Evening Grosbeak	r	r	r	
— Purple Finch	u	u	r	
— Pine Grosbeak			o	
— Hoary Redpoll			r	
— Common Redpoll	c		c	
—• Pine Siskin	c	r	c	r
—• American Goldfinch	c	c	a	r
— Red Crossbill	r	r	r	r
— White-winged Crossbill				r
—• Rufous-sided Towhee	u	c		
—• Lark Bunting	c	a	c	
—• Savannah Sparrow	c	a	a	
—• Grasshopper Sparrow	u	c	u	
—• Baird's Sparrow	u	c	u	
—• Le Conte's Sparrow	u	c	u	
—• Sharp-tailed Sparrow	u	c	u	
—• Vesper Sparrow	u	u	u	
—• Lark Sparrow	o	o		
— Dark-eyed Junco (Slate-colored, Oregon & White-winged)	a	a	r	
— Tree Sparrow	a	a	r	
—• Chipping Sparrow	c	u	c	
—• Clay-colored Sparrow	a	a	c	
—• Field Sparrow	o	o	o	
— Harris' Sparrow	c	c	r	
— White-crowned Sparrow	c	c		
— White-throated Sparrow	a	c		
— Fox Sparrow	u	u		
— Lincoln's Sparrow	c	c		
— Swamp Sparrow	o	o		
—• Song Sparrow	c	c	c	
—• McCown's Longspur	r	r	r	
— Lapland Longspur	a	a	a	c
— Smith's Longspur	o	o		
—• Chestnut-Collared Longspur	c	c	u	
— Snow Bunting	c	c	a	

BIRDS THAT ARE RARELY SEEN ON THE REFUGES AND OUT OF THEIR NORMAL RANGE:

Green Heron	Black-necked Stilt
White Ibis	Barn Owl
Fulvous Whistling Duck	Barred Owl
Oldsquaw	Whip-poor-will
Harlequin Duck	Scissor-tailed Flycatcher
Surf Scoter	Winter Wren
Common Scoter	Northern Parula
Red-shouldered Hawk	Townsend's Warbler
Bobwhite	Hooded Warbler
American Woodcock	Lesser Goldfinch
Whimbrel	Henslow's Sparrow
Knot	

Acknowledgments: To Dr. and Mrs. R.T. Gammell for their contribution in compiling this birdlist.

Further information about the refuges or certain species can be obtained from:

Des Lacs Refuge
Kenmare, North Dakota 58746

Lostwood Refuge
Lostwood, North Dakota 58754

J. Clark Salyer Refuge
Upham, North Dakota 58789

Upper Souris Refuge
Foxholm, North Dakota 58738

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH & WILDLIFE SERVICE



RF-Region 6



1979
GPO 849-947

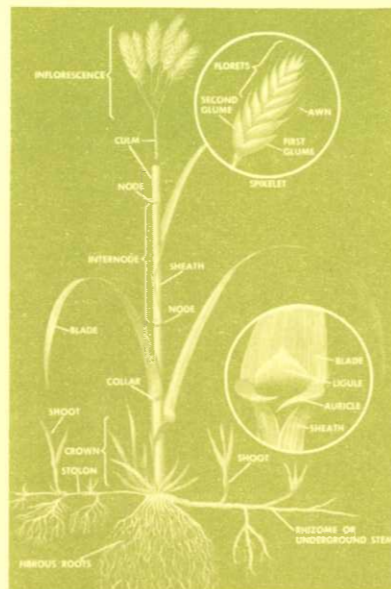
NATIVE NORTH DAKOTA GRASSES



Early pioneers depended on native grasses to provide sod for their homes, feed and bedding for their livestock. We still depend on grass. As one of the most important plant families, it includes native and cultivated forage grasses as well as corn, rice, wheat, rye, barley and oats. This display was established as an educational tool to introduce the visitor to some of the varieties of grasses. Because appreciation and interest develop with knowledge, we hope this leaflet will make the grasses more meaningful to you.

**UPPER SOURIS
NATIONAL WILDLIFE REFUGE
FOXHOLM, NORTH DAKOTA**

Grass has fibrous roots that take in water and nutrients and anchor the plant firmly to the ground. It spreads by seed, rhizomes and stolons or runners. Leaves originate at the nodes and alternate on each side of the stem. They are parallel-veined and composed of three parts — blade, sheath and ligule. The sheath surrounds the stem like a split tube, protecting the new growth. The ligule clasps the stem firmly which prevents dirt and water from fouling the sheath. The culm or stem is usually hollow except at the nodes or joints. As a rule, flowers are perfect, containing both male and female parts.



Switchgrass, a native, warm season, sod forming grass, is a frequent dominant of lowlands. The rather large tear-drop shaped seeds are borne on open seed heads of coarse stems reaching 3-6 feet tall. Identification is simplified by a V-shaped patch of hair on the upper surface of the leaf blade near the stem. Although not as palatable as some grasses, switchgrass is consumed by livestock as long as the stems remain green. Even after maturity, leaves and seed heads are readily eaten. In wetlowlands, switchgrass makes excellent yields of good quality hay and often can be harvested twice a summer.



Prairie sandreed or prairie sandgrass has stems which arise singly from rootstocks, attaining heights of 2-6 feet. Each stem has 10-12 leaves, with flat to inrolled blades, 15-24 inches long, and tapering to a fine point. The flower head is 6-18 inches long, narrow, with erect or ascending branches. Seeds have a basal ring of white hairs half the length of the seed cover. The rhizomes are extensive with the sharp tips pointed much like a rooster's spur. Prairie sandreed is a warm season grass found primarily on sands. It is not particularly palatable during the growing season, but it cures well on the ground and makes good winter feed for cattle.



Green needlegrass, also called feather bunchgrass, is a cool season, perennial, bunchgrass, varying in height from 18-36 inches. The seed head is somewhat compacted. The awns are curved, sharply bent in the middle and about one inch long. Leaves are often rolled, thread-like, 4-12 inches long, with prominent veins above. The ligule and sheath margin are hairy. It remains green late into the season. An important native grass, it grows on fine or medium textured soils with western wheatgrass, needleandthread and blue grama. Green needlegrass is nutritious, palatable, and decreases under grazing use. Awns are not troublesome to livestock as with other needlegrasses.



Blue grama is easily identified by seed heads which resemble a human eyebrow. The seed stalks are from 10-20 inches tall. It differs from hairy and sideoats grama by not having the stiff hairs on the leaf blade margin. Leaves are mostly basal, curling greatly as the plant cures. This perennial, warm season, short grass does best on drier sites. It is best adapted to medium and fine textured, deep soils of rolling uplands. Blue grama increases with grazing pressure frequently replacing the more productive mid- and tall grasses, often giving way to buffalograss. Although normally low in productivity it is nutritious and palatable to all classes of livestock even during winter.



Western wheatgrass is a native, cool-season, sod forming grass. Leaves are stiff, flat when green, and feel rough to the touch. Stems and leaves are generally blue-green giving rise to a less-preferred name, bluestem wheatgrass. It grows on soils ranging from sands to clays. This grass is palatable and nutritious when green in the spring and moderately so during other times of the year. Vigorous rhizomes make western wheatgrass one of the more tolerant of the desirable and abundant grasses to grazing pressure and drought. Grazing abuse, however, especially in May and June will decrease its abundance.



Big bluestem, or turkey foot, is so named because of large size, bluish color, and seed heads which frequently branch into three parts resembling a turkey's foot. This warm season, perennial, tall grass has coarse seed stalks reaching 3-8 feet in height, with numerous large leaves $\frac{1}{4}$ - $\frac{1}{2}$ inch wide, often covered with hairs. It typifies the lowland tall grass community and also grows in protected areas having high soil moisture. Big Bluestem is among the best of the prairie grasses in quality and palatability when it is actually growing. Abundance will quickly decrease with frequent mowing or with heavy grazing pressure.



Little bluestem is a warm season, tufted, leafy, perennial bunchgrass, 1-4 feet tall. Basal portions of stems and leaf sheaths are somewhat flattened, leaves are slightly folded and lacks hairiness on sheaths and lower leaves. Visible growth usually begins in late April or early May. Leaves become bluish-green to reddish-brown at maturity. Seeds are fuzzy and fluffy white at maturity. It is the dominate of many upland plant communities and occurs mainly on sandy soils or on weakly developed soils especially along ridges or steep slopes. Little bluestem is nutritious and liked by livestock when green but it does not cure well. It makes fine hay, but consecutive years of haying will reduce its abundance.



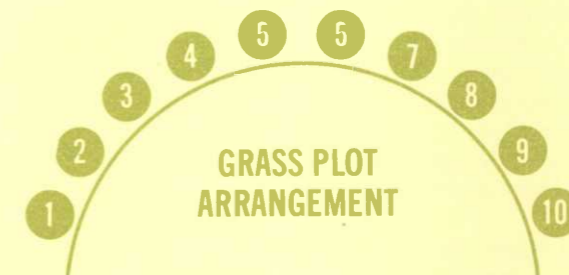
Sideoats grama takes its name from the oat-like florets which appear to hang from the seed stalk along one side. Leaves normally are flat, with stiff hairs along the leaf blade edges. With curing, basal leaves curl and turn white. The entire plant may take on a light reddish appearance late in the summer and fall, similar to the somewhat darker red bluestems. Sideoats grama may be found in many upland plant communities, but is most common on weakly developed soils of steeper slopes. Sideoats grama is relished by all classes of livestock. Growing with little bluestem, sideoats grama usually increases with heavy grazing pressure, but if prolonged it gives way to blue grama and/or increasing or invading forbs.



Prairie Junegrass or Junegrass is a perennial bunchgrass occurring as small tufts normally about two inches in diameter. The dense, contracted spike-type seed heads are 2-5 inches long. Leaves extend to 12 inches, and seedstalks are normally 8-24 inches long. Leaves are stiff, dark green and rough on the upper surface. Growth is completed by mid-June with plants becoming dormant until autumn or the following spring. When green it is good forage and palatable to all livestock as well as deer and elk, becoming less preferred with maturity. Prairie Junegrass is easily overgrazed because it greens earlier than most other native grasses.

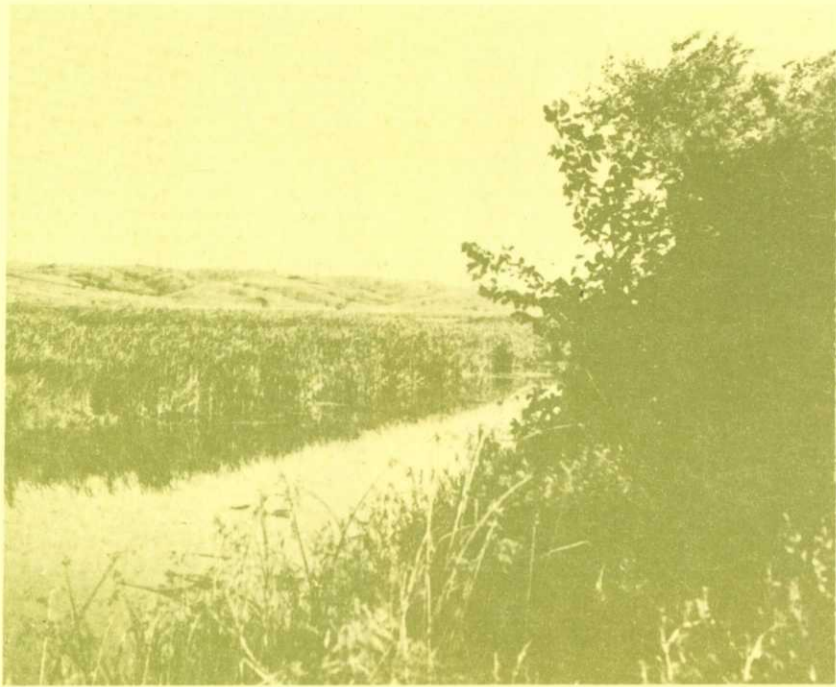


Needleandthread or speargrass is a cool season, perennial bunchgrass with seed stalks reaching 1-3 feet but with leaves mostly basal. It flowers in early June. Sharp pointed seeds have twisted awns 4-5 inches long, giving rise to the common names. The leaves, less than an eighth of an inch wide and 8-12 inches long are rough on the upper surface. Needleandthread, a native midgrass, is an important constituent of the upland prairies, common on coarse and medium textured soils. The grass provides from fair to good forage, especially when green. If grazed during the time the awns are prominent physical injury may result to eyes, mouth and flesh of sheep. Larger livestock seldom are bothered.



- | | |
|---|---|
| 1. Switchgrass — Panicum Virgatum | 6. Big bluestem — An-dropogon gerardii |
| 2. Green needlegrass — Stipa viridula | 7. Little bluestem — An-dropogon scoparius |
| 3. Prairie sandreed — Calamovilfa longifolia | 8. Sideoats grama — Bouteloua curtipendula |
| 4. Blue grama — Bouteloua gracilis | 9. Prairie Junegrass — Koeleria cristata |
| 5. Western wheatgrass — Agropyron smithii | 10. Needleandthread — Stipa comata |

Grass descriptions and reproductions courtesy of the Agricultural Experiment Station, South Dakota State University, Brookings.



Upper Souris National Wildlife Refuge extends for nearly 30 miles along the beautiful Souris River Valley in northwestern North Dakota. Established in 1935, this area of over 32,000 acres is an important unit in the series of waterfowl refuges in the Central Flyway. In addition to the water and marsh areas managed almost solely for fish and wildlife, there are certain areas having dual use. These include fishing, hunting, boating, wildlife observation and special arrangements can be made for berrypickers, photographers, canoeing and others whose activities will not interfere with the primary objectives of the refuge.

A self-guided nature trail is provided just west of the headquarters and main dam. Here the visitor can use their new knowledge to identify the grasses along the trail. Anyone desiring further information on the flora and fauna of the area should stop by the refuge headquarters.



Created in 1849, the Department of the Interior — a department of natural resources — is concerned with the management, conservation, and development of the Nation's water, fish, wildlife, mineral, forest and park and recreational resources. It also has major responsibilities for Indian and Territorial affairs.

As the Nation's principal conservation agency, the Department works to assure that nonrenewable resources are developed and used wisely, that park and recreational resources are conserved for the future, and that renewable resources make their full contribution to the progress, prosperity, and security of the United States — now and in the future.

UNITED STATES DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service
Bureau of Sport Fisheries and Wildlife