

J. Clark Salyer
National Wildlife Refuge
Upham, North Dakota

ANNUAL NARRATIVE REPORT
Calendar Year
1994

U.S. Department of Interior
Fish & Wildlife Service
National Wildlife Refuge System

J. Clark Salyer National Wildlife Refuge

Upham, North Dakota

Annual Narrative Report

Calendar Year 1994

*U.S. Department of the Interior
Fish and Wildlife Service
National Wildlife Refuge System*

REVIEW AND APPROVALS

J. Clark Salyer National Wildlife Refuge

Upham, North Dakota

Annual Narrative Report

Calendar Year 1994

Robert H. Howard

Refuge Manager

5/26/04

Date

Paul Barnett

Refuge Supervisor Review

9/9/04

Date

Richard A. Coleman

Regional Office Approval

9/3/04

Date

INTRODUCTION

The J. Clark Salyer National Wildlife Refuge is located along the Souris River in Bottineau and McHenry Counties of north-central North Dakota. The refuge was established by Executive Order Number 7170 on September 4, 1935, as a refuge and breeding ground for migratory birds. The 58,700-acre refuge extends from Canada southward for approximately 45 miles. The nearest town is Upham, North Dakota, located about three miles from refuge headquarters.

Included within the refuge are 36,000 acres of upland habitat composed of native and introduced grasslands, thick woodlands, shrub thickets and croplands. The northern portion is basically confined to the river valley with a narrow band of adjacent upland habitat. The southern portion of the refuge contains about 16,000 acres of native prairie interspersed with aspen and brush covered sandhills and 4,200 acres of wooded river bottom.

Wetland habitats include high value managed deep and shallow marshes within the Souris River flood plain. Five dikes with water control structures have restored 23,000 acres of open water, marsh and wet meadow habitat for waterfowl production and migration use.

While the primary objective of the refuge is waterfowl production, the area has a very diverse population of other bird species. More than 250 species have been noted, including sharp-tailed grouse on their dancing grounds in spring; Swainson's hawks in great numbers in fall; a wide variety of waterbirds, including five species of nesting grebes; and relatively rare small birds such as Sprague's pipits and Baird's and LeConte's sparrows.

More than 125 species nest on the refuge, some in great numbers. Up to 17,000 Franklin's gulls and colonies of hundreds of double-crested cormorants, great blue herons and black-crowned night herons are found. In an average year, about 18,000 ducklings are produced, including pintail, mallard, gadwall, green-winged teal, blue-winged teal, American wigeon, northern shoveler, black duck, wood duck, redhead, ring-necked duck, canvasback, lesser scaup, and hooded merganser. White pelicans are present on the refuge all summer, while thousands of sandhill cranes, tundra swans, and snow geese use the refuge as a feeding and resting area during migration.

The entire refuge lies within an area which was once Glacial Lake Souris. The surrounding area is old lake bottom with extremely flat topography and a high density of temporary wetlands. These are important for waterfowl production and natural flood storage which improves water quality in the Souris River. Unfortunately, a substantial portion of the original wetlands have been drained.

INTRODUCTION

TABLE OF CONTENTS

Page

A. HIGHLIGHTS 1

B. CLIMATIC CONDITIONS 1

C. LAND ACQUISITION

- | | |
|--------------------|-------------------|
| 1. Fee Title | Nothing to Report |
| 2. Easements | Nothing to Report |
| 3. Other | Nothing to Report |

D. PLANNING

- | | |
|---|-------------------|
| 1. Master Plan | Nothing to Report |
| 2. Management Plan | Nothing to Report |
| 3. Public Participation | Nothing to Report |
| 4. Compliance with Environmental and Cultural Resource Mandates | 3 |
| 5. Research and Investigations | 4 |
| 6. Other | Nothing to Report |

E. ADMINISTRATION

- | | |
|----------------------------------|-------------------|
| 1. Personnel | 4 |
| 2. Youth Programs | 5 |
| 3. Other Manpower Programs | Nothing to Report |
| 4. Volunteer Program | 5 |
| 5. Funding | 5 |
| 6. Safety | 6 |
| 7. Technical Assistance | Nothing to Report |
| 8. Other | 7 |

F. HABITAT MANAGEMENT

1. General	Nothing to Report
2. Wetlands	7
3. Forests	12
4. Croplands	12
5. Grasslands	12
6. Other Habitats	Nothing to Report
7. Grazing	13
8. Haying	13
9. Fire Management	13
10. Pest Control	14
11. Water Rights	Nothing to Report
12. Wilderness and Special Areas	15
13. WPA Easement Monitoring	Nothing to Report

G. WILDLIFE

1. Wildlife Diversity	15
2. Endangered and/or Threatened Species	15
3. Waterfowl	15
4. Marsh and Water Birds	16
5. Shorebirds, Gulls, Terns and Allied Species	16
6. Raptors	Nothing to Report
7. Other Migratory Birds	Nothing to Report
8. Game Mammals	Nothing to Report
9. Marine Mammals	Nothing to Report
10. Other Resident Wildlife	16
11. Fisheries Resources	17
12. Wildlife Propagation and Stocking	Nothing to Report
13. Surplus Animal Disposal	Nothing to Report
14. Scientific Collections	Nothing to Report
15. Animal Control	Nothing to Report
16. Marking and Banding	17
17. Disease Prevention and Control	Nothing to Report

H. PUBLIC USE

1. General	17
2. Outdoor Classrooms - Students	18
3. Outdoor Classrooms - Teacher	Nothing to Report
4. Interpretive Foot Trails	18
5. Interpretive Tour Routes	18

6. Interpretive Exhibits/Demonstrations	Nothing to Report
7. Other Interpretive Programs	18
8. Hunting	18
9. Fishing	Nothing to Report
10. Trapping	Nothing to Report
11. Wildlife Observation	20
12. Other Wildlife Oriented Recreation	Nothing to Report
13. Camping	Nothing to Report
14. Picnicking	20
15. Off-Road Vehicling	Nothing to Report
16. Other Non-Wildlife Oriented Recreation	Nothing to Report
17. Law Enforcement	20
18. Cooperating Associations	Nothing to Report
19. Concessions	Nothing to Report

I. EQUIPMENT AND FACILITIES

1. New Construction	20
2. Rehabilitation	21
3. Major Maintenance	21
4. Equipment Utilization and Replacement	21
5. Communications Systems	Nothing to Report
6. Computer Systems	Nothing to Report
7. Energy Conservation	Nothing to Report
8. Other	Nothing to Report

J. OTHER ITEMS

1. Cooperative Programs	Nothing to Report
2. Other Economic Uses	Nothing to Report
3. Items of Interest	Nothing to Report
4. Credits	Nothing to Report

K. FEEDBACK 22

A. HIGHLIGHTS

Our local groundhog emerged February 1, saw his shadow, and was blown away by winds gusting to 40mph. This was good news, since it meant only 6 more weeks of winter (B).

Gary Williams EOD 1/10 as manager trainee. Gary had spent his three work periods in the COOP program here, so lots of orientation time was saved (E.1).

Rodd Compson was selected to fill the vacant private lands technician position. He immediately started work on the 40 plus FmHA easements (E.1).

The Mouse River Watershed NAWCA grant was approved (E.8).

Ruffed Grouse Society invested \$3,000 in forest management projects on the refuge (F.3).

Over 2,000 acres were burned on the south end in May. All was covered by a plan but not necessarily planned for the same day (F.9).

New North American duck banding record set in September (G.16).

North Dakota's version of the drive by shooting ended with the close of deer season on November 20 (H.8).

Several hundred bird watchers visited the refuge as part of the ABA convention in March (H.11).

B. CLIMATIC CONDITIONS

Brrr? If someone was not accustomed to this year's January -40°F temps and -100° wind chills it could be considered cold. The R&R winter baseball cap might not be warm enough if it gets much colder.

A total of 15.7 inches of snow fell in January with precipitation totaling 0.92 inches or 92 percent above the normal. Ten days had temperatures at -30°F or colder. The coldest temperature was -37° on January 15 and 18. The warmest temperature was 28° on January 23. A total of 26 days had sub-zero readings, and snow depth was 15 inches at the end of the month.

Our local groundhog emerged Feb. 1, saw his shadow, and was blown away by calm winds gusting to 40mph. This is good news since it means only 6 more weeks of winter. We had a break from the cold in mid-February when temperatures climbed into the 30's. The high for the month was 39° on February 18. The low was -42° on February 9. Seven inches of snow were recorded. This brought the total for the winter to 46 inches. Total

precipitation was 0.35 inches. Snow depth on the ground at the end of February measured 17 inches with 3.21 inches of water content.

The weather for most of April was mild and dry. A total of 0.64 inches of moisture was recorded compared to the normal of 1.31 inches. The high temperature was 84° on April 17 and the low was 10° on April 5. Ice went out on refuge marshes and area lakes on April 15.

Weather for May was mild with normal precipitation. At Upham the total rainfall for the month was 2.3 inches. However, many areas in southern McHenry County received two or three times this amount. High temperature was 92° on May 17, and the low was 24° on May 2. The last frost of spring occurred May 9.

Weather for July was mild and dry. Total rainfall was 0.99 inches compared to the normal of 2.15 inches. High temperature was 91° on the 29th and the low was 41° on the 25.

Table 1. Average Monthly Temperatures in °F

Year	May	June	July	Aug	Sept	Ave
1985	58.0	57.3	66.8	61.3	50.5	58.8
1986	55.8	64.8	67.4	66.2	52.9	61.5
1987	59.6	68.4	67.8	62.0	56.9	62.9
1988	59.8	74.3	69.9	67.9	54.5	65.3
1989	56.9	62.4	71.8	68.5	56.1	63.1
1990	52.9	64.2	66.4	67.8	58.1	61.9
1991	56.2	64.9	66.7	69.1	55.2	62.4
1992	57.1	62.3	61.9	62.6	53.2	59.4
1993	54.3	59.0	61.4	64.0	50.2	57.8
1994	56.3	62.3	64.9	65.2	59.6	61.7

Table 2. Total Annual Precipitation and Maximum Temperatures

Year	Days above 90°F	Max. Temp.	Precip. 5/1-9/30	Precip. 1/1-12/31
1985	8	97	11.49	17.70
1986	12	96	8.95	15.99
1987	14	100	11.98	14.85
1988	31	105	9.50	14.06
1989	18	103	10.38	14.51
1990	11	98	13.63	17.72
1991	13	101	12.92	19.35
1992	13	100	5.22	8.93
1993	3	94	16.58	20.24
1994	8	97	10.14	20.97

D. PLANNING

4. Compliance with Environmental and Cultural Mandates

Salyer was selected as the model refuge to develop a boiler plate environmental assessment on public use compatibility. We concluded the time needed to write an EA on such critical issues as berry picking is incompatible with refuge purposes.

After about half the regional boiler plate EA was completed, additional guidance from the WO eliminated the need to address most public use activities. Most were implemented prior to NEPA or had gone through the Federal Register process. We had maintained all along the EA was unnecessary for the same reasons contained in the guidance, but apparently the field's "vision" is not as clear as that found in really important offices.

Draft EA's on public use, upland management, a SUP request on a fee title inholding within an easement refuge, and burning on wetland easements were completed in May and sent to the RO. All but the upland EA were determined to be unnecessary, (after a lot of time was wasted on them). The upland management EA generated only a couple comments. The North Dakota Game & Fish Department supported our approach.

5. Research and investigation

The nest searches in the predator fence area and on the Swearson Point control resulted in 94 nests in the fence and 122 on the Point, and survival was good. The pair of coyotes on the Point may have something to do with that.

Post season nest searches on the refuge islands were completed in July. Hen mortality from mink was very bad on several. Trapping mink in the summer is very difficult, and we obviously were not effective on some islands this year.

E. ADMINISTRATION

1. Personnel

1. Robert L. Howard, Refuge Manager, GM-13, PFT
2. Gary Erickson, Assistant Refuge Manager, GS-11, PFT
3. David Gillund, Wetlands Manager, GS-11, PFT
5. Todd Grant, Wildlife Biologist, GS-11, PFT
6. Gary Eslinger, Biological Technician, GS-7, PFT
7. Wanda Opdahl, Refuge Assistant, GS-6, PFT
8. Robert April, Automotive Mechanic, WG-10, PFT
9. Gary Williams, Refuge Manager Trainee, GS-5, 1/94
10. Bradley Jacobs, Extension Biological Technician, GS-5, Temp, Transferred to Chase Lake NWR, 4/94
11. Rodd Compson, Extension Biological Technician, GS-5, 5/94
12. Chase Marshall, Biological Aid, GS-3
13. Wallus Samples, Biological Aid, GS-3
14. Mark Walker, Biological Aid, GS-3
15. Marlene Goodman, Range Aid, GS-2

Gary Williams EOD 1/10 as manager trainee. Gary had spent his three work periods in the COOP program here, so lots of orientation time was saved.

Brad Jacobs accepted a Partners for Wildlife term position at Chase Lake starting in April. We appreciated his efforts, and he will be missed by our staff and the local landowners.

Rodd Compson was selected to fill the vacant private lands technician position and started on May 4. He immediately began work on the 40 plus FmHA easements.

Marshall, Samples, and Walker EOD as temporary bio-aides on May 16th.

Marlene Goodman EOD on March 6th via an emergency appointment to fill a vacant temporary biological aid position. Her appointment expired on August 4th. Marlene was selected for the temporary range aid position and EOD on August 15th.

Samples and Marshall ended their tours of duty on August 26.

2. Youth Programs

Kory Brandt worked here for 5 weeks as part of the Summer Youth Temporary Employment Program starting in May. He received an additional 80 hours through ND Job Service and worked through 7/29. Erickson attended the orientation meeting for the program on May 25.

Shane Livedalen and Bobbi Bergeron EOD on the June 1 and 13, respectively, as YCC enrollees.

4. Volunteers

Students from NDSU-BB, Turtle Mountain CC, MSU, and several area schools helped band ducks.

5. Funding

The RONS minimum level exercise was completed in January.

Howard went to Denver to lobby for COE transfer funds. We may have won!

A summary of funding is provided in Table 1.

Table 1. Five-year funding summary, J. Clark Slayer NWR, 1990-94

Funding	FY-90	FY-91	FY-92	FY-93	FY-94
1261	241,000	243,000	238,600	257,400	288,700
1261-FLEX	3,000	4,500	9,200	2,800	
1262	158,000	163,000	167,000	185,700	134,600
1262-FLEX	20,000	112,000	142,000	35,100	
1262-MMS					100,400
6860	5,000	5,000	5,000	5,000	5,000
O&M	427,000	527,500	561,800	486,000	528,700
1120	16,000	11,000	30,500	28,000	
1121					43,000
1230		15,300		3,000	
1926				4,928	
1927	10,100	12,500	15,000		
1971					7,300
8610	24,000	7,800	11,000	9,200	9,200
9120	3,400	17,600	6,800	9,400	24,100
TOTAL	480,500	591,000	625,100	531,128	612,300

6. Safety

The station safety and fire equipment checklist were updated in January. The monthly safety meeting was on winter survival. The February monthly safety meeting was stress management/reductions with reminders about winter survival as spring approaches.

Goodman, Williams, Walker, Compson and Samples completed ATV training March 29. Half the cost was picked up by the ATV institute because some of the ATVs had been purchased within the last few years.

Two accident reports were submitted in August. Samples sustained muscle spasms in his back after riding the ATV. The spasms required therapy, medication, and restricted duty work. April aggravated bone spurs in his heel stepping off the semi-tractor.

One accident occurred in September. April suffered a burn on his forearm when he received a slight shock while welding and arced himself when reacting to the shock. Fortunately the injury was much less serious than it first appeared.

8. Other

Bob Barrett, Lostwood WMD, and Ken Sambor, North Dakota Action Group, each spent a day in February enlightening us on North American Wetland Conservation Act grant proposal procedures. We appreciated both of their efforts. Many staff days were devoted to completing the application.

The Mouse River Watershed Enhancement proposal was submitted in April seeking \$352,000 in matching funds. Gillund updated the North Dakota Action Group on the proposal at a meeting at Chase Lake. This ambitious project was funded and will cover 7 counties in north central North Dakota.

F. HABITAT MANAGEMENT

2. Wetlands

The Service's current water management plan identifies the refuge's ultimate goal as management of the pools through a range of conditions which vary from Class I wetlands through Class V wetlands. The plan presents some management options based on a 5-year drawdown cycle and recognizes that up to three years of high water may be needed to kill cattail and prepare for drawdown.

Refuge pools began the year in good shape from the 1993 summer rains. Storage increased by about 27,500 acre-feet by April 30, when all units were at or slightly above full management pool. All pools were free of ice by April 19.

Storage peaked in late April at 83,934 acre-feet and stayed above 61,000 acre-feet for the rest of the year. Year-end storage exceeded storage at the beginning of the year by 5,489 acre-feet.

Total inflow at Bantry was 115,040 acre-feet for the calendar year or 76 percent of the historic annual discharge, which has averaged 152,078 acre-feet for the 58-year period from 1937 to 1994. Measured inflows at Willow Creek, Deep River and Boundary Creek were 18,308; 6,212; and 2,226 acre-feet, respectively. Total measured inflow to the refuge from all sites was 141,786 acre-feet.

Peak inflow at Bantry during the spring runoff period occurred on March 26 at approximately 810 cubic feet per second. Other peaks which resulted from rain events were 471 cubic feet per second on May 1; 594 cubic feet per second on May 27; 816 cubic feet per second on June 27; and 740 cubic feet per second on October 25.

Total outflow measured at Westhope for 1994 was 120,438 acre-feet. Total outflow was 21,348 acre-feet less than total measured inflow.

Peak outflows were generally held from 200 to 300 cubic feet per second below peak inflows to reduce flooding in Manitoba. The timing of rain events and the large marsh area being maintained in the refuge allowed this action with no measurable impact to refuge management. A good water supply has resulted in continued releases into the winter. Flow at the Westhope gage was 125 cubic feet per second at the end of the year.

Outflow during the June 1 to October 31 period was 42,240 acre-feet, 36,171 acre-feet above the 6,069 acre-feet required minimum. Flow was below the required 20 cubic feet per second on 2 days after control was transferred to the low flow structure in September. This was due to calibration problems and possibly some siltation in the structure from erosion of the recently rehabilitated dike.

The Corps of Engineers is working on a contract to riprap the dike to correct the erosion problem. We had hoped to work on field calibration of the structure during May, but high water conditions prevented it. If we need to use the low flow in 1995, we will use a setting that was supplying about 27 cubic feet per second in September and October of 1994 as a starting point. Revised ratings for the main gates were provided by the Corps of Engineers and provided good performance under conditions which required numerous gate adjustments.

Gate movements began at Pool 320 on March 17 as river flow increased. By March 24, at least one gate at each structure was in operation. The center gate at Pool 357 was opened about 2 inches on March 24, but was closed the next day due to poor water quality after consulting with Manitoba.

Gates on all pools except Pool 341 were freed without use of the gate heaters. Heaters were used at Pool 341 for about four hours to free the west gate. All pools were at or near full management level by late March. Pools 326, 332 and 341 were at or above the new storage elevations by April 1 as required by the North Dakota State Water Commission permits for additional water rights. Operation of the Pool 357 gates began again on March 30 to begin passing inflow. Quality of the release improved rapidly with the increased inflow and opening of portions of Pool 357.

Gates were operated on all pools through the rest of the year to pass inflow and to reduce pools to target winter levels. Pool 341 was lowered by 2.5 feet in late summer to allow use of a duck banding site. Control was shifted to the low flow structure for a short time beginning on May 17 and for a longer period starting September 16.

Rubble Masonry Unit

This unit filled with early spring flow and remained full from high stages in the river and from backing from Pool 320. Waterfowl use of the unit was good throughout the year.

320 Unit

This unit was at elevation 1424.8 through the winter and was targeted for 1425.8 for the summer. The center gate was open 1 inch during the winter, and gate manipulations started on March 17 to pass inflow. The pool rose to over spillway at 1525.9 by the end of March and remained high through the rest of the year. The peak elevation of 1526.0 occurred in late May. The year-end level was 1424.9.

Retention of water in this unit for the last three winters and good water conditions throughout the summer of 1994 have fostered a greatly expanded muskrat population. Muskrat activity and extended high water have significantly reduced cattail coverage and have enhanced the interspersed water and emergent cover.

Stoplogs were placed ahead of the screw gate in the tube structure prior to a heavy freeze and the gate was raised to prevent ice damage. Significant leaks occurred between and around the ends of the aluminum stoplogs and under the bottom log. The problem was to be investigated by the Corps of Engineers during 1994, but the work remains to be done.

Benson Subimpoundment

This unit was held high by Pool 326. Significant muskrat activity has helped open cattail stands. Plans to lower Pool 326 and this unit late in the year for anticipated construction in 1995 were hampered by high flow in the Souris.

Freeman Bridge Unit

This unit was flooded by over-spillway conditions in Pool 320. Outlet culverts were unable to handle the flow volume, and water flowed across an access road into the Benson Unit on two occasions. It was held high throughout the summer by Pool 326.

326 Unit

Pool 326 began the year at elevation 1422.0. Gate operation started on March 23 to pass inflow. The pool peaked at 1423.5 (slightly over spillway) on April 4 and was maintained above 1422.8 for most of the summer. Plans to lower the pool through the summer and fall to reduce the level of the Benson Unit were modified because of continued high inflow. The east gate remained open about 7 inches at the end of the year.

Muskrat activity and operation at the new high pool level have greatly reduced cattail stands in the lower and mid portions of the pool. One island was inundated at the new spillway elevation and significant erosion occurred on several islands. The rehabilitated dike suffered muskrat damage and will likely be eroded by wave action in the spring of 1995.

The lift on the east gate failed, and the problem has been referred to the Corps of Engineers for resolution.

Redhead Marsh

This unit was held below the level of Pool 332 by keeping all outlet gates closed and keeping stoplogs in the inlet. The purpose of the lower level is to prevent damage to wet meadow vegetation in portions of the unit.

332 Unit

Pool 322 was to be managed at 1419.6. It began the year at 1419.1 and peaked at 1420.25 on March 24 from flow contributions from Stone Creek and Deep River. Gate operation began on March 23 to pass flows and continued throughout the year. The unit was still high (1419.5) at the end of the year.

Muskrat activity increased significantly, and flooded shoreline areas that were opened by grazing in 1993 received heavy waterfowl use.

341 Unit

This unit was to be held high (1418.2) to put pressure on cattail after planned prescribed burns. The pool was at 1416.2 at the beginning of the year. Gate operation to pass inflow began on March 23 and continued through the year. The pool rose to 1418.65 by April 6. At this level, several acres of private land which are covered by Corps of Engineers flowage easements were inundated.

The duck banding site on this pool could not be operated at the new high level. The pool was lowered to 1415.7 during September to accommodate the banding operation then raised to 1417.2 during October. It ended the year at 1417.0.

Muskrat activity increase in the upper reaches of the pool, and the high level killed much of the Canada thistle that had invaded the marsh edges during the recent dry years.

357 Unit

This pool began the year at 1413.7, peaked above the top-of-gate level at 1415.55 and stayed above 1414.0 for the rest of the year. The year-end level was 1414.4.

The high pool level provided good pair habitat along sections of shoreline that were grazed during dry years. Muskrat activity increased in the upper portions of the pool, but was less dramatic than in other pools.

Refuge pools froze over on November 19. Water was still being passed through one gate at all five major structures at the end of the year.

Changes in area capacity tables, raising of dams 326, 332 and 341 and reduced water supply resulting from construction of dams in Saskatchewan require revision of our water management plan. Also, observation of responses of various pools to the 5-year drawdown cycle, the use of a strict 5-year cycle on all pools is in question. Planning was delayed to get some incite on the effects of the new high pool elevations. Completion of a draft plan and public review are planned for this year.

Rating tables for the 357 low flow and the main gates for all structures were not accurate when gates were first tried. Main gates released about 40 percent more than rating indicated. Settings for the 357 gates and readings from the Westhope gage were used by the Corps of Engineers to correct the table for the main gates, and rating now seem very close. The head differential necessary to maintain a 20 cfs flow through the modified low flow structure is about double that of the original design. Once we worked things out by trial and error in 1993, the structure seemed quite stable at higher pool elevations. The structure was not used much during 1994, so we have not been able to collect enough data to construct a revised rating table.

A pool elevation of 1411.5 or below requires more frequent monitoring and adjustment of the low flow gates. This occurs because the coefficient of discharge for submerged orifice structures, which remains essentially constant when the upstream water depth is greater than four times the height of the opening of the orifice, increases when the upstream water depth is less than four times the orifice opening. This factor was not considered in neither the Service ratings for the original structure nor the Corps of Engineers' rating for the modified structure.

Significant erosion occurred on the 357 dike, and a small area above sheet piling and riprap protection on the downstream side of the 332 structure began to erode at higher river stages. The Corps of Engineers is developing a contract to correct these problems. A portion of the 326 dike was riprapped under a contract modification in 1993. Another extensive section of this dike received muskrat damage during 1994 and has the potential for serious erosion during 1995 as the pool opens further. The problem was reviewed with the Corps of Engineers during the annual inspection of flood control facilities.

Several nesting islands in Pool 326 suffered serious erosion when the new high pool level put water above existing riprap. One island was completely inundated. Island protection was a Souris River Flood Control Project mitigation feature which was dropped by the Corps of Engineers to protect the project cost/benefit ratio.

Plan elevations of the modified spillways and staff gage readings at new spillway levels in Pools 326, 332 and 341 do not agree. The problem has been referred to the Corps of Engineers, and surveys are scheduled for spring 1995.

Electrical costs for the new water control facilities are running much higher than expected. Several heaters in electrical equipment panels and a space heater in the standby generator unit were shut down to save money in February.

Howard met with Dean Knauer and Bonnie Greenleaf (COE) at Upper Souris to discuss the draft operating manual for the new water control facilities.

3. Forests

There are about 8,000 acres of mixed woodland on the southern end of the Refuge. Aspen and some oak are found in the Sandhills and meadows. There are stands of green ash, bur oak, and American elm along the river. Scattered tree plantings are found in old farmsteads and in the headquarters area.

Aspen expansion in the grasslands of the Sandhills has occurred since bison and wildfires were eliminated from the area. It has greatly increased since the refuge was established. Areas that were once part of sharp-tailed grouse census blocks are now part of ruffed grouse drumming routes. Plans are being developed to reverse the trend and restore the native grasslands by using prescribed fire, grazing, and mechanical removal. This will take many years to accomplish but the present condition did not occur overnight. It is only reasonable to expect recovery to take time also.

The Ruffed Grouse Society donated \$3,000 for aspen management work in the Sandhills. We used the money to develop a Challenge Grant. Grant, Howard, and Erickson attended their annual banquet in Bottineau.

Grant marked 9 plots in decadent aspen stands totaling about 46 acres in November. The aspen will be sheared off with a bulldozer and shear blade later this winter.

4. Croplands

Farming agreements were completed for most refuge permittees by April. Share reductions for purchasing grass seed for individual units were made on three agreements.

5. Grasslands

Conditions were the best they have been in several years in May. Some grassland tracts in the WMD and refuge that had looked past the point of no return are looking much better.

Grant attended the Grassland Management Workshop in Valentine, NE. There was not enough space for another staff member from the largest station in North Dakota.

7. Grazing

Rotations and fencing arrangements were completed on all grazing units scheduled for this year in April.

8. Haying

Haying is used to control woody invasion in the river meadows and, to a lesser extent, improve tame grass nesting cover. Willow invasion can happen quickly if the meadows are not hayed or if the cooperators do a poor job. Cattails and weeds have increased the past several years because the meadows have not been flooded as they normally would be.

Sixteen haying permits were issued in July as part of our regular haying rotation program.

A tractor mounted, rotary bush hog mower was used to clear willows in several hay meadows in November. Permittees received deductions from their bill to pay for the work. The mower does a much better, cleaner job than a bulldozer.

9. Fire Management

Initial inspections of fire trucks using a new checklist were completed in January. Fire staff worked with Bob April and Gary Erickson in developing a step-by-step instruction sheet for fire pumper operations. Also, new maps of the refuge, and areas around the refuge, were completed for use in the fire pumpers.

Information on the refuge, woody vegetation invasion, and unique resources were sent to the Regional Fire Management Coordinator, ND Fire Management Officer, and Regional Non-game Migratory Bird Coordinator in January.

Fifteen burn plans covering 4,165 acres were sent to the RFMC in January. In February another burn plan covering 2,250 acres of sandhills was prepared. This one is intended to take advantage of spring flooding in some of the meadows.

Three burns were completed in April. Predator Fence, 44 acres; 326 islands (8), 8.5 acres; and 332 islands (3), 2.4 acres. The acreage total is not impressive, but the waterfowl production benefits will be.

April salvaged an old winch and mounted it on our military surplus fire truck. Numerous small items like flappers, gas cans, flashlights, and a flare gun for remote ignitions were ordered.

One wildfire was discovered on the refuge. A neighbor decided to burn his garbage pit on a Saturday in April with 20+mph winds. Two days later it escaped with 30+ mph winds and burned 8 acres of refuge land and 1.5 acres of private land. High water in Pool 341 was the only thing that stopped what could have been a very dangerous and destructive fire. We still have not been notified that the fire occurred.

Wind and rain prevented our fire crew from completing all but one burn in May. The one we got done was a dandy though. Three hundred eighty-five acres of grass and timber in Unit G-52a,b were burned on the 2nd. Spotting across a 100 to 200 yard wide firebreak started a wildfire which burned another 1,640 acres of timber and grass. All was within a unit with an approved prescribed burn plan, but we just didn't plan on burning it that day. Once again, we learned much more from the wildfire than the prescribed fire. Units from Des Lacs, Upper Souris, Devils Lake, and Arrowwood helped with the fire. Thanks much, but don't put your Nomex away yet. We intend to keep dropping matches.

Wind and rain prevented any burning in June. It has become very obvious we must broaden our prescriptions to include more than spring burns if we expect to get any appreciable acreage burned. At the rate we're going, our fire interval will be 15-20 years, not often enough for this part of the country.

Ten burn plans were modified and approved to include late summer burns in July. FMO Dearborn checked the Sandhills Tower Burn Unit and the proposed BIG KAHOONA burn unit, planning for next year.

Erickson attended the first Prescribed Burning Planning and Implementation course in Austin, TX July 25 to 29. It was a good course for a first run effort.

The fire danger situation across most of the western U.S. prevented any prescribed burning in this area in August.

10. Pest Control

The IPM report and 1994 Pesticide Use proposals were completed. Erickson met with the Angora goat owners to work on grazing plans for 1994 in January. The eventual elimination of USDA mohair payments may eliminate goat grazing as an option for spurge control. Two permittees agreed to use goats on leafy spurge. One supplied the fencing and labor to install it. About 1,300 goats were used on over 600 acres. All this was arranged by our Integrated Pest Management staff.

We initiated the battle against leafy spurge in May, but rain and wind curtailed our spraying efforts.

Erickson collected *Aphthona nigricutis* flea beetles from a Ward County site and released them on 12 refuge sites. Another 11 releases were made with the same species purchased

with grazing receipts. About 3,000 spurge beetles were released on 5 WPA's scattered throughout the WMD. Gillund released flea beetles on the Boreson WPA.

Insects for Canada thistle control were purchased with money from the RO.

12. Wilderness and Special Areas

The ND Chapter of the Sierra Club still wants wilderness area and now they want bison introduced on the refuge. Why didn't we think of that?

Some sportsmen's clubs and NDG&F have a position on the proposed wilderness designation on Salyer. Hopefully the Service will take a stand also.

G. WILDLIFE

1. Wildlife Diversity

The refuge is located in an area where the ranges of eastern and western species overlap, increasing the wildlife diversity found here. Deer, pheasant, partridge, rabbit, grouse, many species of passerine birds, rodents and waterfowl are found on and around the refuge.

2. Endangered Species

Bald eagles are regular visitors in small numbers. They follow the spring and fall waterfowl migrations and can be seen regularly around the marshes.

Other endangered or threatened species that may be found in North Dakota are listed below. There were no sightings of these species in 1994.

Endangered species: Black-footed ferret, American peregrine falcon, least tern, whooping crane, and gray wolf.

Threatened species: Piping plover and arctic peregrine falcon.

3. Waterfowl

A lone cinnamon teal drake was spotted near Dam 1 in May. Four square mile counts were completed on all plots.

The first snow geese of year showed up on the August 30. About 150,000 snow geese were on the refuge at the end of September, quite a bit more than usual for the waterfowl opener. The mild October weather held geese longer than normal. Our peak for October

occurred at the end with a guesstimated 275-300,000 snow geese. Hunting pressure kept dispersing birds across the WMD taking advantage of excellent water conditions.

4. Marsh and Water Birds

Eared grebes are the most abundant marsh and waterbird on the refuge. The breeding population is an estimated 20,000 birds. Black-crowned night herons, cattle egrets, and white-faced ibis, pied-billed grebes, and American coots also raise their young on the refuge. White pelicans are common in the summer months, feeding at the refuge. A nesting colony of pelicans is found on Willow Lake Easement Refuge located 30 miles northeast.

Refuge marshes attracted a variety of birds in May. A pair of Sandhill cranes may have nested again. Cattle and snowy egrets were seen several times. Two white-faced ibis were seen near Freeman Bridge. Bitterns and black-crowned night herons were very abundant.

5. Shorebirds, Gulls, Terns and Allied Species

Many species of shorebirds use the refuge for feeding and nesting. Franklins gulls, ring-billed gulls, common, black and Forster's terns are present on the refuge. Willets, yellow-legs, sandpipers, godwits, and avocets among other shorebird species are also seen throughout the year.

Grant completed a nesting colony survey of Franklin's gulls and eared grebes nesting in 326. Black terns and sora rails were abundant.

10. Other Resident Wildlife

There are many species of resident birds in and around the refuge. The main game bird species are sharp-tailed grouse, ring-necked pheasant, grey partridge, wild turkey and ruffed grouse. Censuses are done each year to determine grouse and pheasant populations. Informal counts done during routine work are done on wild turkey and grey partridge.

Wild turkeys have been on the refuge since introduced in 1979. The turkey population is doing very well in the wooded river bottoms and the sandhill areas. We seem to see a general expansion of the turkeys to private land near the refuge. These areas have more cropland and hayland interspersed, perhaps offering more reliable food sources for the turkeys.

Porcupine, coyote, red fox, squirrels, cottontail rabbit, white-tailed jackrabbit, snowshoe hare, Franklin's ground squirrels, thirteen-lined ground squirrels, weasel, and many other

small mammals are common to the refuge. Moose are becoming more common, and we believe a breeding population now exists on the refuge.

There is no official census of grey partridge on the refuge. Populations have always been low since there is not much preferred habitat on the refuge.

Ruffed Grouse Society invested \$3,000 in forest management projects on the refuge.

The North Dakota Game & Fish Department trapped and transplanted 58 turkeys from a neighbors farmstead in February to reduce complaints. The transplant will further reduce an already low refuge turkey population.

Sharptail grouse counts showed a 15.4 percent decrease from 1992. North Dakota Game & Fish Department surveys showed ruffed grouse were down 31.2 percent. This may be the low point of the cycle, since other areas in ND appear to be increasing again.

11. Fisheries Resources

Northern pike, walleye, yellow perch, and bullheads are the primary fish on the refuge. The refuge has thirteen public fishing areas.

16. Marking and Banding

New North American duck banding record set in September. Banding started on the August 26, and after 3 mornings nearly 1,300 ducks had new jewelry. A big last week of banding at the end of September pushed the total over 10,000. The final tally was 10,242 birds. Combined with the 1,922 birds banded at Sand Lake NWR this met the immature male and female quota for only the second time in over 55 years of banding. This shattered the old record of 9,710 also set here. A big thanks to Audubon NWR for sending experienced help for a couple weeks and to John Cornely for helping get much needed additional equipment.

H. PUBLIC USE

1. General

Many people use the refuge for outdoor education. The prairie, grassland management, water management, waterfowl, law enforcement, hunter safety, and hunting prospects are some topics covered during the year. Picnicking and birdwatching are also significant uses.

News release topics for the month of May included change in refuge deer regulations, prescribed fire and wildfire, revenue sharing and the upland EA.

2. Outdoor Classrooms – Student

Refuge staff worked two Saturdays to allow area students the chance to band ducks and learn about steel shot as part of a promotion for local "Greenwings" from the Towner and Bottineau DU Chapters.

The ND Wildlife Federation Youth Camp once again visited the refuge for a day in March. Presentations on water, upland, predator and waterfowl management were given to 44 campers and counselors. The Bottineau County Wildlife Club grilled burgers for the Campers (and refuge staff who just happened to be in the area) at Thompson Well.

4. Interpretive Foot Trails

The refuge has two foot trails for public use. A short 0.1-mile trail leads from headquarters through a switchgrass seeding to a platform overlooking the Pool 326 marsh. The Sandhills Walk area is an access point to the sandhills, giving visitors the chance to explore some 8,000 acres of mixed bur oak, aspen and grassland community on the south end of the refuge.

5. Interpretive Tour Routes

The refuge has two auto tour routes. A 5-mile Grassland Trail that parallels a portion of Pool 341 offers visitors an opportunity to see grassland and wetland wildlife and scenery. This trail has 7 stops and an interpretive pamphlet which explain the history, features and management of the area. Many birdwatchers go to this area to see Baird's sparrow and chestnut collared longspur.

The second auto tour route starts at headquarters and goes for 22 miles through the marshlands and wooded river bottoms near Pools 326, 320, and the sandhills on the southern end of the refuge. This route gives refuge visitors a chance to see the diversity of habitat found on the refuge and provides information at 18 interpretive sites along the trail.

The Canoe Trail once again became popular as the weather warmed up.

7. Other Interpretive Programs

Erickson met with instructors from Upham Public School on the Internet project.

Williams gave a refuge tour to a group of 3rd and 4th graders from Rolette in April. About 30 Field Biology students drove nearly 200 miles for their annual field trip to the refuge.

In May, our public use crew gave a refuge tour to 32 students in grades 1-4 and 2 teachers from Willow City.

Erickson talked to a natural resource class at NDSU-BB about employment opportunities, or lack thereof, in the FWS.

Erickson gave a talk and video on bird migration to 35, third-sixth grade students in Upham in November.

Williams and Erickson gave a slide show about birds to 12 second graders and 2 teachers in Upham.

8. Hunting

Most waterfowl hunting is done off the refuge on private land. Decoying the large flocks of snow geese that come off the refuge attracts hunters from all over the country. There are nine public hunting areas on the refuge that are open for waterfowl hunting. Most hunters using these areas prefer pass shooting geese as they leave the refuge.

Upland game hunting for grouse, partridge, and pheasants is allowed on the Public Hunting Areas. Grouse, partridge, and turkey hunting is also allowed south of the Upham-Willow City Road.

Howard met with the North Dakota Game & Fish Department (NDG&F) concerning refuge deer seasons. The State has a different opinion on compatibility issues and quality hunting. NDG&F agreed to require refuge deer permit holders to hunt only on the refuge.

Howard, Erickson and Grant went to the Bottineau County Wildlife Club meeting. The topic of discussion was the refuge deer hunt. Roger Rostvet represented the NDG&F department.

Archery season opened and it appears our publicity on permanent stands was effective as fewer stands were found.

The upland game season was slow. A reduced breeding population and poor reproduction during a cool, wet summer resulted in few birds in the field.

The State's first ever deer hunt for youth only was a big hit with several area young hunters. Seventeen first time deer hunters called to ask permission to hunt the refuge. We were open to deer hunting, but State law required each hunter to obtain permission before hunting.

North Dakota's version of the drive by shooting ended with the close of deer season on November 20.

11. Wildlife Observation

Many visitors enjoy non-consumptive use of the refuge each year. Most of the visits are to see the fall and spring bird migrations. Numbers of visits are not recorded. Many visits are on the weekends and many visitors do not stop at refuge headquarters.

Several hundred bird watchers visited the refuge as part of the America Birding Association convention in June. Random observations of license plates and the Guest Register showed birders from Minnesota, Oklahoma, Louisiana, Florida, Canada, Scotland and England visited the refuge. Many returned for more birding after discovering the tremendous diversity and abundance of wildlife and habitat found here.

14. Picnicking

Picnickers use the Thompson Well site, the Sandhills Tower picnic area, the Headquarters Tower picnic area and some of the public fishing areas. No effort is made to record the number of visits.

17. Law Enforcement

Staff completed the LE refresher in Tucson, AZ. Less than glowing reports on the first LE refresher were received from Dave "Hold the Pepper Please" Gillund.

The rest of us are hoping for a 3 week blizzard so we can work on EAs instead of Numb Johns. (January)

Gillund apprehended 3 ethically challenged deer hunters with untagged deer on the refuge. It appears they may have been "comparison hunting" with a group of local residents that did not have refuge tags. They likely looked over their harvest each day and decided if they wanted to try for bigger bucks on another day or stick with what they had already killed. They were "non-residents" from the Bismarck area.

Williams collected 8 illegal deer stands before the season ended. As the popularity of bow hunting increases, our problems with deer stands also increase.

I. EQUIPMENT AND FACILITIES

1. New Construction

A new, \$8,000, single stall, 3 roll restroom was installed at the 320 fishing area. We can't afford to replace maintenance help or the toilet paper, but the restroom is sure nice.

2. Rehabilitation

The well at the Sandhills Tower Picnic Area was replaced thanks to BAR drought relief funding. Who would have thought that project would have been selected when we submitted several a couple years ago.

Two boat docks were installed on the Canoe Route as 504/MMS projects in March.

Work began on the observation deck, picnic shelters, and access path at the HQ. New double walled fuel tanks were installed, and the underground tanks removed.

Work began in July on modifying the office parking area to meet accessibility standards.

3. Major Maintenance

The YCC crew removed just over a mile of old fence.

Gravel was spread on about 1.25 miles of the Scenic Trail auto route.

Dugouts in G-34 South and G-39a were cleaned out using grazing deductions.

4. Equipment replacement

A 1,000-gallon fiberglass tank ordered from Pleasure Products, Moorhead, MN and the old pump from the old slip-in unit were modified to make a big fire unit.

A 200-gallon BB-4 slip-in fire pumper was received.

A new banding trailer, band boards and 6 new cages were put to use in our banding operation thanks to John Cornely.

A 5-ton dump truck was picked up at the AFB to replace our "Archaeological Dodge". We will beat up the box hauling rock in this one instead of our larger truck purchased with FWS money. April distributed several portable heaters, also obtained from DOD, at the maintenance workshop held in Devils Lake.

A small JD riding lawn mower was picked up at the Minot AFB. This will replace a 1985 Chevy pickup. Think I'm kidding?

K. FEEDBACK

The annual survey of Duck Stamp purchases among FWS employees is symptomatic of some problems in the organization. The Duck Stamp is symbolic of our agency, the backbone if you will, yet the percentage of employees buying a stamp is fairly low. It is certainly much lower than expected. Are we getting so far removed from our roots that we are losing our identity?

We heard the FWS characterized as "the Rodney Dangerfield of public land management agencies". This seems somehow appropriate since it appears most people know us, they just don't respect us.

We were fortunate to receive no special funds from the Challenge Grant or Watchable Wildlife programs. We do not have enough staff to do the work anyway. If any other stations are interested in avoiding such extra work, the secret is to submit only projects which actually produce critters instead of kiosks, etc.

The station's morale committee began a new program. We now make a special effort to look on the bright side in all situations. Each month one topic is selected for special recognition from the numerous "good news" items we receive. The competition was fierce but this May's winner was, "Because we have 3 unfilled positions, we now have enough vehicles for each employee and almost enough money for gasoline for each vehicle." The new restroom came in a close second.

The recent turmoil and resultant paper generation concerning mistakes on time sheets is a little ridiculous. The way the current system appears to work allows us to accurately track whether 001 appears in the top left corner but leaves us mystified when trying to track how many hours were spent on work categories. When we need estimates of time spent on things like easement enforcement or habitat management, we have to page through our work logs. There are also many times during the year when we estimate time spent on up to 40 percent of the pay period because we need to send the time sheets early. Talk about the tail wagging the dog. Can't we move to a method of completing time sheets **after** the end of the pay period. I believe it is used elsewhere, especially with time clocks.