J. Clark Salyer
National Wildlife Refuge
Upham, North Dakota

ANNUAL NARRATIVE REPORT
Calendar Year
1993

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

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REVIEW AND APPROVALS

J. Clark Salyer National Wildlife Refuge

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Robert L Howard — Refuge Manager — 5/26/04 — Date

Bob Barnett — Refuge Supervisor Review — 9/9/04 — Date

Richard A Coleman — Regional Office Approval — 9/13/04 — 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

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A. HIGHLIGHTS

We started out dry and ended up wet (B).

Vacant maintenance positions are being temporarily held open to help with Regional budget problems (E.1).

Problems were experience with operation of the new low flow water control structure at Dam 357 (F.2).

Goats help with weed control (F.10).

A refuge wilderness area designation was proposed (F.13).

Over 100,000 ducks have been banded at this station (G.16).

Several problems were experienced with new water control facilities constructed by the corps of Engineers (I.2).

B. CLIMATIC CONDITIONS

A refuge weather station was maintained during 1993 as an official weather record for the National Oceanic and Atmospheric Administration.

Most of our snow cover disappeared during March with very little runoff. In April and May, things were looking very grim for the summer. We began getting some rain in June, and total precipitation for the year was 20.24 inches which is 22 percent above the normal of 16.61 inches. Cool temperatures throughout the summer reduced the rate of evaporation.

D. PLANNING

4. Compliance with Environmental and Cultural Mandates

An environmental assessment for a proposed late season fox hunt was developed in February, circulated for internal review, and sent to the State for review and concurrence.

5. Research and investigation

Post season nest searches were completed on most of the islands in the study during July. Preliminary results show decreased nesting attempts and increased predation. Low water levels in all pools this spring and the steadily increasing cattails around most islands are the likely causes.

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. Duane Dockter, Maintenance Helper, WG-7, CS
10. Bradley Jacobs, Extension Biological Technician, GS-5, Temp
11. Chase Marshall, Biological Aid, GS-3
12. Rodd Compson, Biological Aid, GS-3
13. Tony Jacobson, Biological Aid, GS-3
14. Gary Williams, Coop Student, GS-4
16. Walsus Samples, Biological Aid, GS-3

Coop-ed employee Williams dodged winter storms between ND and Oklahoma and EOD January 15.

Paul Halko, an excellent 3-season temporary employee who was unable to compete for the FWS Cooperative Education Program, was selected for the SCS Cooperative Education Program in February.

Marshall, Samples,, Williams and Compson

Tony Jacobson accepted a Coop position with the Corps of Engineers at Riverdale, ND in June. This the second temporary in the past year to get picked up as a Coop Student by other federal agencies.

Duane Dockter accepted a lateral to Des Lacs NWR in June. The move is good for Doc and Des Lacs but not so good for us. He will be tough to replace. Doc's last day was the July 23. He will be missed.

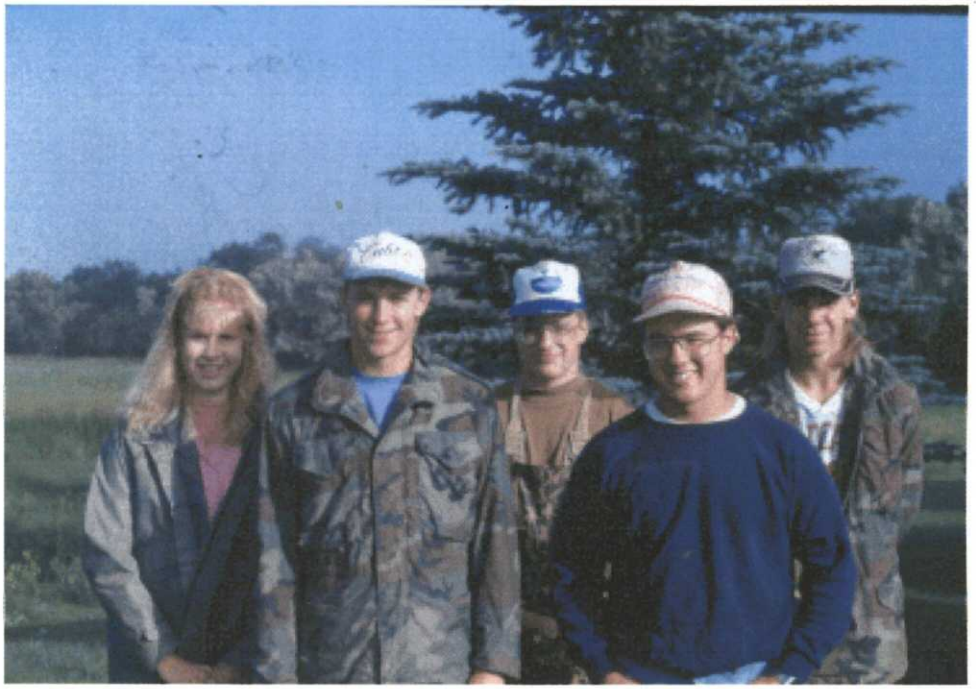
Williams returned to OK on the August 31 for his last semester of college, and Wallace Samples returned to school in August as well.

2. Youth Programs

Ryan Johnson and Constance Nermoe work as YCC's for the summer.

3. Other Manpower Programs

Joshua Schultz, a local youth employed by the ND Job Service, was stationed here in late May for 200 hours of work. He received another 160 hours of work from Job Service in July and finished his work appointment in August.



Front Row: YCC Johnson, Volunteer Corey Eslinger
Back Row: YCC Nermoe, Volunteer Chad Eslinger, Job Service - Schultz

4. Volunteer Program

We met with Al Aufforth, NDSU-BB, in March to discuss some work projects for 12-14 students this spring. This effort has potential for a long-term arrangement supplying labor to accomplish important work without using rare and endangered refuge personnel.

These volunteers donated 108 hours checking wood duck nesting structures, girdling aspen clones, and helping survey potential wetland creation projects during April and 60 hours planting part of 4,000 bushes on Gadwall Island in May.

5. Funding

Preliminary rumors about the budget in January indicated the light at the end of the tunnel would not be turned off but would be switched to off-peak rates to save money.

Erickson, April, and Opdahl attended a "BUDGET BRAINSTORMING" meeting in April. There will have to be some hard decisions made the next couple years by the RO and the field.

Howard attended a budget strategy meeting and a mini project leader meeting in Jamestown in December.

A schedule of funding for the refuge and WMD over the past five years is shown in Table 1.

Table 1. Five-year funding summary, J. Clark Slayer NWR and WMD, 1989-93

Funding	FY-89	FY-90	FY-91	FY-92	FY-93
1261	245,000	241,000	243,000	238,600	257,400
1261-FLEX		3,000	4,500	9,200	2,800
1262	161,000	158,000	163,000	167,000	185,700
1262-FLEX		20,000	112,000	142,000	35,100
6860	5,000	5,000	5,000	5,000	5,000
O&M	411,000	427,000	527,500	561,800	486,000
1120		16,000	11,000	30,500	28,000
1230			15,300		3,000
1926					4,928
1927		10,100	12,500	15,000	
8610	35,000	24,000	7,800	11,000	9,200
9120		3,400	17,600	6,800	9,400
TOTAL	446,000	480,500	591,000	625,100	531,128

6. Safety

Howard volunteered seven hours helping the Bottineau County Wildlife Club teach hunter safety in Bottineau.

Staff were recertified in CPR and participated in a first-aid course in March.

First aid kits with basic protection from contaminants, pesticides, etc. were assembled during a March staff meeting.

8. Other

April and Dockter went to workforce diversity training in Bismarck in May.

In October, Erickson, Grant and Opdahl received performance awards, and Eslinger was presented with a Special Achievement Award for his outstanding work on wetland easements.

Gillund and Howard attended an August PL meeting in Minnesota. The TQM introduction was very interesting.

In August, Howard met in Jamestown with the Private Lands Committee to discuss future staffing for the program in North Dakota.

Staff and families enjoyed a noon Christmas party. A surprise visit from Santa highlighted the event.

F. HABITAT MANAGEMENT

2. Wetlands

Total inflow at Bantry was 52,110 acre-feet for the calendar year or 34 percent of the historic annual discharge, which has averaged 152,728 acre-feet for the 57-year period from 1937 to 1993. Measured inflows at Willow Creek, Stone Creek, Deep River and Boundary Creek were 5,380; 1,450; 12; and 1,000 acre-feet, respectively. Total measured inflow to the refuge from all sites was 59,950 acre-feet.

Peak inflow at Bantry during the spring runoff period occurred on April 2 at approximately 25 cubic feet per second. This measurement was influenced by backwater from ice. Peak inflow at Bantry for the year was the result of summer rains and occurred on August 5 at approximately 643 cubic feet per second.

Low precipitation through the winter and little snow accumulation resulted in extremely poor runoff. Total flow at Bantry for the spring runoff period (January through April) was 944 acre-feet. Measured flow at Willow Creek, Stone Creek, Deep River and Boundary Creek during this period totaled 1,055 acre-feet. Refuge storage increased by slightly over 4,000 acre-feet. Total storage at the end of April was 60,259 acre-feet below planned storage. All pools were free of ice by April 19.

Total storage for J. Clark Salyer pools dropped slightly during May and total storage for refuge pools and Lake Darling was below the drought criteria. All refuge gates remained closed to conserve water. The only movement of control gates was a temporary test opening by the Corps of Engineers.

Operation of gates began on June 1 to supply water to Pool 357 for the release to Manitoba. Flows in the Souris River increased during late May from the Eaton Irrigation District release and picked up significantly during June from summer rains. A planned release from Lake Darling was canceled. Above normal rainfall during June, July and August resulted in strong inflow throughout the summer and fall. Total precipitation was 6.91 inches in July or 4.51 inches above the normal of 2.40 inches. Refuge pools rose throughout the month and required considerable water control operations. At month's end, the Souris River was expected to flood some refuge meadows. Flood conditions

between the refuge and Towner resulted in some accusations that we were backing water up onto private land. We would have to have 11 feet of water going over the 320 spillway to back water that far! Total precipitation for the year was 20.24 inches which is 22 percent above the normal of 16.61 inches. Cool temperatures throughout the summer reduced the rate of evaporation. Water was spread out in all five pools to reduce the rate of rise in any one pool.

After consulting with Manitoba, the center gate on the 357 structure was opened on August 23 to release additional water to help stabilize refuge pools. The extra release was terminated and control of flow was shifted back to the low flow structure on September 27 to allow for construction in Manitoba. The center gate was again opened slightly between October 26 and October 31 to supply additional water for filling a small reservoir in Manitoba. The low flow gate was closed between November 1 and November 19 to allow use of a low crossing for a refuge construction project. It was reopened to about 10 cubic feet per second on November 19 and remained open at the end of the year.

Refuge pools froze over on November 5. Gates at 326, 332 and 341 were closed on December 17, and Souris River inflow is being distributed between Pools 321 and 326.

Storage peaked on September 7 at 61,025 acre-feet. A display of end-of-month storage for the five main impoundments is given in Table 4. Year-end storage exceeded storage at the beginning of the year by 40,476 acre-feet (Table 5).

Total outflow measured at Westhope for 1993 was 15,780 acre-feet. Total outflow was 40,490 acre-feet less than total measured inflow.

At the May 27, 1993 meeting in Minot, the International Souris River Board of Control invoked the "Severe Drought Criteria" and directed that 3,600 acre-feet were to be delivered during the months of June, September and October. The low flow gate was opened to release approximately 10 cubic feet per second on May 31. It took longer to charge the channel between the 357 structure and the gaging station than expected, and flow was not at the required level until June 2. Flow was again below 10 cubic feet per second on June 11 due to plugging of the trash rack. The release was increased to about 20 cubic feet per second on June 17 at Manitoba's request to help fill some reservoirs. Because of problems with the rating curve provided with the new gates, the flow did not achieve 20 cubic feet per second until June 22. Total storage in Lake Darling and the refuge pools was back above the drought criteria by the end of June, and releases were maintained above 20 cubic feet per second until October 31, with the exception of July 31, when the flow dropped to 19 cubic feet per second. There were problems with the gage at that time, and the release could not be measured accurately.

The desired release rate during the August 23 to September 27 period to help stabilize refuge pools was 100 cubic feet per second. Calibration of the new main gates was in

error, and the actual release rate approached 140 cubic feet per second for part of the period. The release rate from October 27 to October 31 to help refill the reservoir was about 62 cubic feet per second.

This was the first year of operation for the modified low flow structure. The structure did not perform according to the supplied operating tables, and early operation was somewhat frustrating. Many hours of running back and forth to 357 were required to get the modified low flow structure calibrated. The true output at higher rates of release varies from the calculated output to a much greater degree on the modified structure than on the old setup. Once set, however, the structure supplies a fairly stable rate of release, especially at higher pool elevations. We will be working with the Corps of Engineers to resolve problems with calibration of the low flow and main gates.

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.

5. Grasslands

Eslinger and Grant attended a SCS/FWS Grass Seeding workshop in Bismarck.

Grazing alfalfa (Rangelander) was broadcast on about 50 acres of tame grass in G-32a in May. We are allowing the cattle to stomp the seed into the soil.

A barley cover crop for erosion prevention was broadcast on 32 acres along the airstrip in September.

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 cooperator does a poor job. Cattails and weeds have increased the

past several years because the meadows have not been flooded as they normally would be.

9. Fire Management

Several unsuccessful attempts were made on prescribed burns for cattail in February. Fuel moisture was obviously higher than the fuel model indicated it should be.

A lightning strike on a goose structure in Pool 341 in May ruined the structure but did not burn the cattail choked marsh. An opportunity lost!

Two burns were completed by regular refuge staff in their spare time during May, the 54-acre Hanson DNC/switchgrass unit and the 103-acre 357 gaging station unit. Williams completed the basic fire behavior training at Jamestown. Howard completed the "Fire Management for Line Officers" training.

Part of the Grassland Trail Unit was burned June 1. The 640-acre burn was routine but spectacular in the 200 acres of cattails.

Four prescribed burn plans (875 acres) for fall burns were prepared and submitted to the Regional Fire Management Coordinator in July. The ignition dates on seven approved cattail burn plans (4,620 acres) were modified to burn earlier in the fall. After last winter's experience, it became obvious cattails will not burn according to fuel model predictions, and winter burning, especially over ice, is probably not possible.

Three wildfires occurred on the refuge in October, and we were fortunate to contain them. The first was at a Ward Williston oil well on the west side of 357. This 1.4-acre fire went out on its own but could have reached the marsh and burned for several miles. Part of the CCC Camp burned during two wildfires. The first on October 11 appeared to have started along the highway and burned 6.5 acres. It reignited on October 18 from some smoldering material underground and burned another 5 acres. It will probably continue to burn underground until it burns itself out or we get a good snow cover.

During October, we completed a 40-acre prescribed burn on an area that had not been burned since 1977. The fire penetrated the aspen clones, and we are encouraged by the potential results of this fire. We could not get the right weather for two more burns covering 1,100+ acres.

Thirteen prescribed burning plans covering over 3,100 acres were prepared or updated in December, even though we may not have enough people to do the burning. Grant continued working on calculating rates of woody invasion in the meadows/sandhills area. What has and is happening down there is scary. Unless we are able to obtain some extra staff and money for increased fire management, we may lose something very unique.

10. Pest Control

Howard attended the Noxious Weed Management Short Course in Bozeman, Montana in April.

Erickson and four area goat owners drafted and submitted a grant proposal on noxious weed management to the North Dakota Department of Agriculture in March. The proposal calls for comparing weed control using herbicides, mowing, and confined goat grazing using 350 angora goats. The proposal was rejected in April. They felt spurge control was a FWS responsibility and wanted nothing to do with working on Federal land.

The goat herding began again in May with 1,400 angora goats munching an excellent supply of leafy spurge. About 1.3 miles of boundary fence were modified in July to accommodate angora goats in a 75-acre unit. The goat owners supplied 2,300 feet of mesh fence and 3 strands of hi-tensile wire was added to the remainder.

Leafy spurge continued to expand, weather delayed spraying operations, and the number of complaints was up. Rain and wind made spraying leafy spurge very difficult through much of the season. Everyone we talked to was amazed by the amount and spread of spurge in the area. Once again, we ran out of time before we ran out of spurge that needed treating. We responded by phone to one complaint from Congressman Pomeroy's office.

About 76 acres of Canada thistle were mowed to prevent a "seed blizzard" in August. Wet conditions prevented many cooperators from haying weed patches before they went to seed.

12. Wilderness and Special Areas

In May, we discovered 15,600 acres of Salyer refuge had been included in a Sierra Club wilderness proposal. The proposal was developed without any input from the Service. Implementation of the proposal would cause serious habitat management problems and decrease the biodiversity of the area. Ron Shupe, Mike McEnroe, Howard, and Erickson met with Todd Herreid of the local Sierra Club concerning the proposal, but the organization declined to remove the refuge unit from the overall proposal.

Erickson and Howard attended the North Dakota Chapter of the Wildlife Society council meeting in June to express the Service's concern with the Chapter's blanket endorsement of the wilderness proposal. Howard briefed the Bottineau County Commission on the proposal in July and the McHenry County Commission in August. Erickson attended an August public meeting in Towner sponsored by the local Stockmen's Association where the topic of discussion was the wilderness proposal and it's potential effect on the refuge. We were able to clear up misconceptions that this was a refuge proposal and explain our management goals. No support for the proposal was heard from the group.

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 and/or Threatened 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 1992.

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

The first round of nest dragging on the predator fence and control area was completed in May, and the second round was finished in June. Nesting attempts in the predator fence were just over half of last year's, but apparent success was higher (86 percent). Only 2 of 55 nests were destroyed by predators. The control area showed a 14 percent apparent success with only 8 of 57 nests successful.

Snow goose numbers pushed 100,000 by the end of September. About 250,000 ducks were on refuge pools.

One ring-necked duck and 89 mallards were found in open areas below water control structures during the mid-December waterfowl survey.

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.

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.

A pair of sandhill crane with one young were seen on the July 2 and 14 just west of the Willow Creek bridge. This is the first confirmed observation of nesting sandhills in North Dakota since 1973. The earlier record was also on Salyer refuge.

7. Other Migratory Birds

Repairs were made on 25 bluebird boxes, and 8 new boxes installed on the bluebird routes during March. Thirty salvageable bird specimens were donated to North Dakota State University - Bottineau for use in ornithology classes.

The Christmas bird count was completed with 17 species being observed, including an adult bald and a golden eagle along the Souris River.

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 interspersion, 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.

Retention of some water in all pools during the winter of 1992-1993 and good water conditions during the summer of 1993 have greatly increase our muskrat population,

especially in Pools 320, 326 and 332. The combination of muskrat activity and high water is having a significant impact on the cattail problem which resulted from several years of poor water conditions. Our basic plan for 1994 is to hold as much water as possible in all pools to keep pressure on the cattails.

11. Fisheries Resources

Northern pike, walleye, yellow perch, and bullheads are the primary fish on the refuge. The refuge has thirteen public fishing areas. Some success was reported at the 320 fishing area and a few of the fishing areas north of refuge headquarters. The drought has essentially eliminated the marginal fishery that once existed here.

16. Marking and Banding

A February analysis of our banding program since 1935 revealed the fact that the 100,000th duck was banded last fall.

Five banding sites were prepared and baited in August. Banding consumed much of our time in September. Initial success ran us short on bands until John Cornely (Migratory Bird Coordinator) and Sand Lake NWR came through with extra bands. The final tally revealed the total effort necessary to meet mallard age/sex goals. The Salyer crew banded 9,710 ducks and fell 1 immature female mallard short of making all goals. Sand Lake's contribution of 72 ducks with 1 immature female mallard put us over the top. The help we received from Tewaukon and Audubon was very much appreciated. Also, we appreciated the support from Jon Cornely that allowed us to acquire new rockets.

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.

Television interviews on wilderness were done with both Minot channels. Other news articles/interviews include: Sandhill crane nesting, snow geese sightings, wilderness, Wildlife Federation Camp activities, water levels, piping plovers and banding.

2. Outdoor Classrooms – Student

Sixteen students and one teacher went along on grouse counts with Erickson on four separate April mornings. A wide variety of critters were seen, including moose on three mornings, the undisputed highlight for the kids.

Also in April, the North Dakota State University-Bottineau range management class observed part of the 320 dike prescribed fire and toured last year's Sandhills Tower aspen burn.

The annual tour for the North Dakota Wildlife Federation Youth Conservation Camp was held in June. Thirty-seven campers and 4 counselors learned about wetland, upland, predator, and general wildlife management. The Bottineau Wildlife Club grilled burgers for the group at Thompson Well.

Howard gave a presentation and refuge tour to 20 sixth-graders and 22 second-graders from Leeds.

An October refuge tour was given to the 3rd, 4th, and 6th grade students from Maxbass.

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.

An excellent article about the canoe trail in the "Outdoors" column of the Minot Daily News generated interest in the trail. Several people and groups called or stopped by to enjoy the canoeing. The Bottineau Cub Scouts canoed the trail and camped at Thompson Well.

6. Interpretive Exhibits/Demonstrations

Erickson helped judge the Upham School science fair in February.

Erickson spoke to the range management class at North Dakota Ste University - Bottineau on grassland management in March.

In April, Erickson spoke to the Upham School business class about job interviews, job performance, etc. and read "A Summer in the Life of Wild Mallards" as part of the 2nd grade "Mystery Reader" program.

Howard and Williams each spent a July day at the FWS booth during the State Fair in Minot.

A raptor mount and literature were loaned to Maxbass Elementary for some lessons.

Howard gave presentations on FWS career opportunities at the Regional Career Day and presented a program for the DU Greenwings Banquet in Bottineau.

Grant took a rocket net, standards, and explosives to North Dakota State University-Bottineau to give them a demonstration on the rocket system used for banding. These students give us a lot of help with our banding program.

Erickson spoke to the Natural Resource Orientation class at NDSU-BB about career opportunities/obstacles in the FWS.

7. Other Interpretive Programs

National Wildlife Week packets were distributed to area schools, but no programs were requested by any of the schools. "The Wonders of Wetlands" (WOW) workbook was sent to several instructors.

Ten college instructors from junior colleges with wildlife programs in the U.S. and Canada were here for a Saturday tour in May. The diversity of habitats and wildlife impressed them all.

Nine day-care kids and their nanny were here for a tour on a warm, windy August afternoon. Only a parent can pull those tours off.

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.

News releases on last season's goose nesting on structures and a proposal to open the refuge to a late season fox hunt were prepared in March.

Turkey season ended on the May 9. Based on turkey observations, success was probably not very good.

The first waterfowl hunting interview of the season was done with a Watertown, SD radio station.

The hunting report series was started again in September on KBTO radio in Bottineau, and several interviews were done with a Watertown, South Dakota radio station.

The phone rang almost continuously in September as hunters called asking for advice on where, when, and how to hunt. Nimrod ratings are similar to past years. We dropped our aerial surveys this year for funding reasons, so the population information we are providing is little more than a guess.

Howard met in September with the Bottineau Chamber of Commerce hunting committee to keep tabs on their planned goose hunting contest. Some controversy on the hunt has developed between the committee and the North Dakota Game and Fish Department.

Goose hunting was quite poor and inconsistent. Continual, daily hunting pressure from an overabundance of hunters decoying and shooting from road ditches made the geese extremely decoy shy and wary. Duck hunters, mostly nonresidents, did very well.

We were entertained by comments on our deer hunting questionnaire. Confusion between the words hunt and stampede still exists with many hunters indicating a preference for the latter.

9. Fishing

Refuge Staff joined personnel from five other agencies and organizations to hold a fishing day at Lake Metigoshe for the ND Wildlife Federation Youth Camp.

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.

In July, we met with Gordon Berkey to discussed details for the tours to be held during the American Birding Association convention in 1994. At least two tours of the refuge will be offered to those attending the convention.

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

Officers completed the annual training at Marana, Arizona. Erickson attended the hearing before the U.S. Magistrate concerning a Violation Notice he had written during the deer season. The subject plead guilty, hoping for mercy on the fine. The fine did not change, but the subject was allowed to make installment payments.

I. EQUIPMENT AND FACILITIES

2. Rehabilitation

The $10.5 million (U.S.) contract awarded in August, 1990 to Industrial Builders by the Corps of Engineers for refuge structures work to be accomplished on Upper Souris and J. Clark Salyer National Wildlife Refuges as part of the Souris River Flood Control Project was still open at the end of the year. Construction has been completed, and the operation of the structures on Upper Souris Refuge was turned over to the Fish and Wildlife Service. The two refuges are waiting to receive the operating manuals from the Corps of Engineers. The pre-final inspection of the project was completed in October.

In May, U.S. Geological Survey completed some work on the Westhope gage weir. The construction crew had to be called back to the refuge to remove some fill material used for an equipment pad from the river.

About 2 miles of the Scenic Trail auto tour route were worked to remove high shoulders. Rains created a mess, leaving the trail unpassable for several days.

Our first bills for electrical power to the new water control structures and carp control were higher than expected. Our estimates were based on monthly minimums of $25 each on Dams 320, 326, 332, and 341 and $100 for Dam 357. Strip heaters in electrical panels at the four upstream structures will not operate within the minimum charge, and the minimum at 357 was increased to $167/month. In addition, one of the contractors apparently switched on the carp control for a short period creating a 63.6KW demand and a $424.60 demand charge.

A consultant hired by Dam Safety was here to inspect Dams 320, 326, 332 and 341 in October. He had not been informed of the major rehab completed by the Corps of Engineers last year!

3. Major Maintenance

Ice conditions in refuge pools were poor despite very cold temperatures. Pickups and the payloader broke through while doing cattail control, and servicing nesting structures was difficult.

Test runs of the gate heater at the 320 structure were made for the Corps of Engineers' Cold Weather Region Lab in February. Corps contract representatives ran a test on all other gates and found most of them working very well. One trunion arm heater at the 326 structure is to be replaced.

Much of the 504 work in the office restrooms was completed in July once the plumbing supplier got the right fixtures.

Part of the trail to the 357 gaging station was graveled in November, but the river crossing became unpassable and the project was stopped. The borrowed dozer from Des Lacs helped us pull out our dump truck. Thanks.

4. Equipment Utilization and Replacement

We delivered a payloader from Minot AFB to Tewaukon NWR in January, and picked up another payloader with a backhoe attachment for our use.

In December, we picked up 2 one-ton pickups with 11,000 and 170,000 miles on them from the Minot AFB. They will replace 1978 and 1985 models that have seen better years. The tanker previously obtained from the Base was converted to electric start with starters also secured from the Base.

6. Computer Systems

After spending most of 2 days trying to access CC:Mail we opted for the Pony Express. Now our only cost is oats.

Use of FAX is in many cases cheaper than regular mail. But, it still costs money, especially if the cover page has pictures of critters or other graphics. Those images use a lot of telephone time. Cover pages should be as simple as possible since they contain very little essential information.

J. OTHER ITEMS

1. Cooperative programs

Erickson attended the Bottineau County Food and Agriculture Committee meeting on July 27. The county, state, and federal agency representatives present had heard a lot about the wilderness proposal, and the meeting gave us the chance to explain what we knew about it and clear up some inaccurate information.