

NARRATIVE REPORT

1992

LAKE ILO NATIONAL WILDLIFE REFUGE

DUNN CENTER, NORTH DAKOTA

REVIEW AND APPROVALS

LAKE ILO NATIONAL WILDLIFE REFUGE

Dunn Center, North Dakota

ANNUAL NARRATIVE REPORT

Calendar Year 1992

Donald Bozovsky
Donald Bozovsky

7-1-93
Date

David A. Potts
Project Leader

7-2-93
Date

Tom Matthews
Associate Manager, ND

8/24/93
Date

[Signature]
Regional Office Approval

8/20/93
Date

LAKE ILO NATIONAL WILDLIFE REFUGE
(Pretty Rock, White Lake, Stewart Lake NWR's)
Dunn Center, North Dakota

ANNUAL NARRATIVE REPORT
Calendar Year 1992

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



Sunrise steam, rising from Lake Ilo, looking southwest toward headquarters. 5/92 DJB

INTRODUCTION

Lake Ilo National Wildlife Refuge is located near the center of Dunn County in west central North Dakota. The refuge consists of 3,197 acres of fee title lands, 716 acres under flowage and refuge easement, and 120 acres under flowage easement. The main water area is composed of Lake Ilo, a 1240 acre impoundment created by a 1,525 foot long dam and fixed elevation spillway constructed in 1937 across Spring Creek.

Land Type Inventory of Fee Title Lands, Lake Ilo NWR, 1992

Land Type	Acres	% of Total
Native Grasslands	1,215 ac.	38.0%
Open Water	940 ac.	29.4%
Marsh	390 ac.	12.2%
DNC/Planted Grasses	318 ac.	9.9%
Cropland	169 ac.	5.3%
Administrative	102 ac.	3.2%
Trees	63 ac.	2.0%
Total	3,197 ac.	100%

* Does not include changes due to recent dam safety work.

Lake Ilo NWR is located within the Missouri Slope physiographic region of North Dakota and the mixed grass prairie biome containing wheatgrass, needlegrass, stipa, and grama grasses. With an average annual rainfall of only 16.76 inches, the climate is characterized by hot dry summers with occasional thunderstorms, and cold winters. Topography of the area is characterized by gently sloping hills separated by nearly level terraces and swales. Land relief on the refuge ranges from 2,190 to 2,340 ft. msl. Wetlands in the immediate area of the refuge consist of creeks, small man-made impoundments and stock ponds, with relatively few shallow sloughs.

The surrounding land is used almost exclusively for agriculture, with cropland occupying approximately 35% of the area. Another 40% remains in native prairie and is used for grazing or haying. Approximately 8% of the area is covered with introduced grasses and legumes.

Lake Ilo Refuge is a satellite station of the Audubon National Wildlife Refuge Complex headquartered in Coleharbor, North Dakota. Lake Ilo Refuge staff also administers the White Lake NWR, a 1,040 acre fee area; Stewart Lake NWR which consists of 640 acres of fee title land and 1,590 acres of refuge and flowage easement; and Pretty Rock NWR which is 800 acres of refuge and flowage easement.

Lake Ilo NWR and its satellites were established in 1939 and 1941 respectively, by Executive Order. The primary objective is to provide waterfowl production and migration habitat. Secondary objectives include providing habitat for other migratory birds and protection and enhancement of resident wildlife. Environmental education and wildlife/wildlands oriented recreation are permitted where compatible with other objectives.

INTRODUCTION

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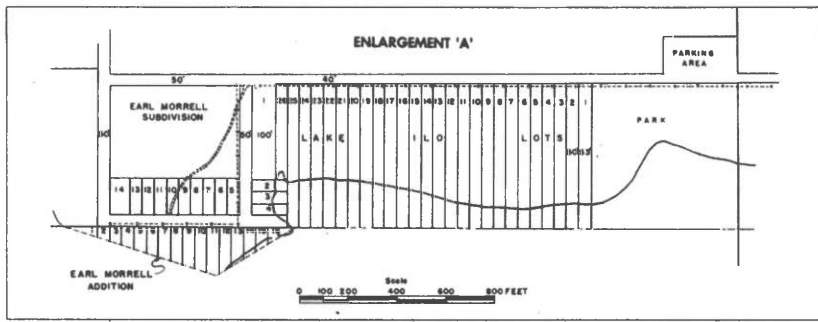
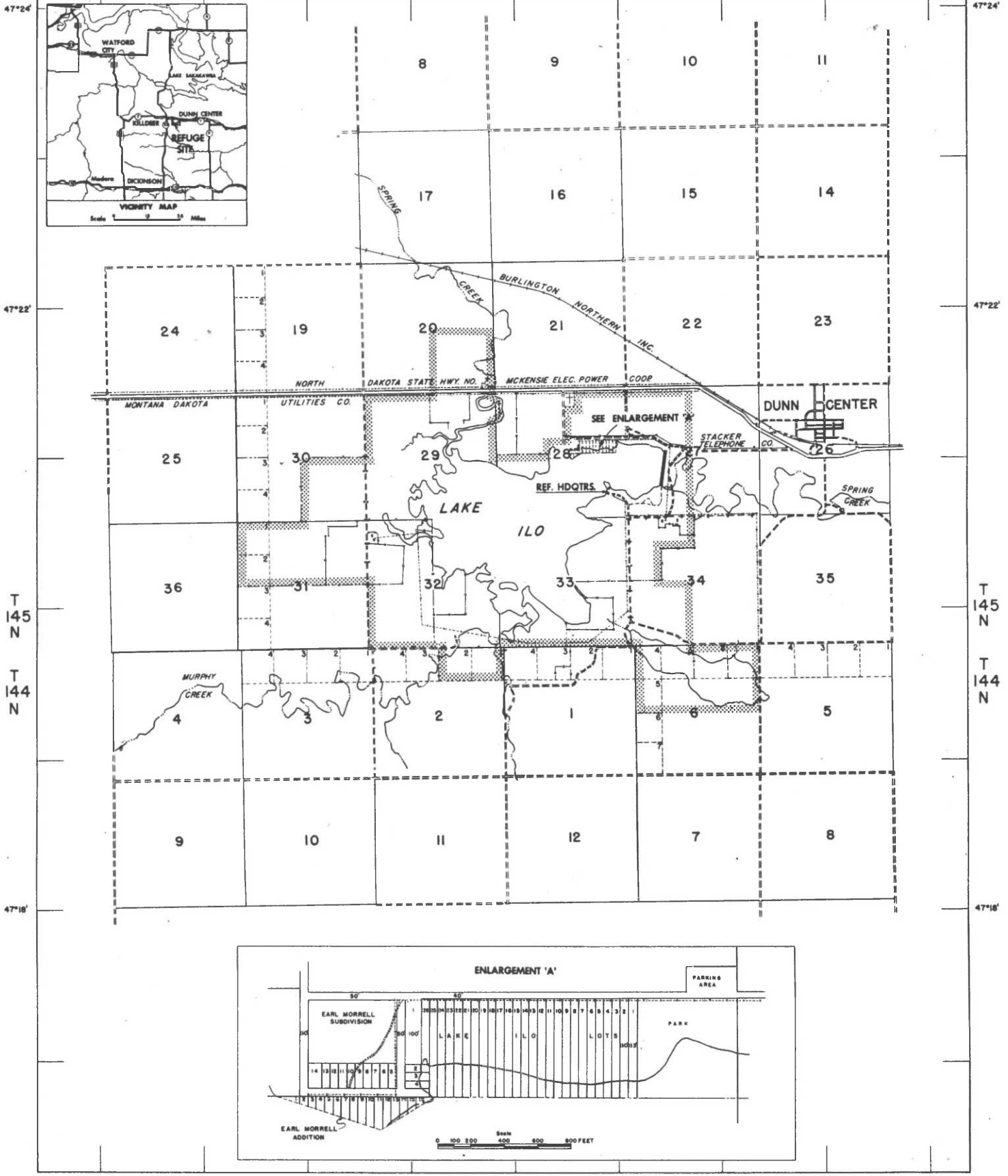
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LAKE ILO NATIONAL WILDLIFE REFUGE

DUNN COUNTY, NORTH DAKOTA

FISH AND WILDLIFE SERVICE

UNITED STATES
DEPARTMENT OF THE INTERIOR
102°44' R95W R94W 102°42' 102°40' 102°38' 102°36'



COMPILED IN SURVEYS AND MAPS FROM SURVEYS BY THE USGS AND FWS

FIFTH PRINCIPAL MERIDIAN



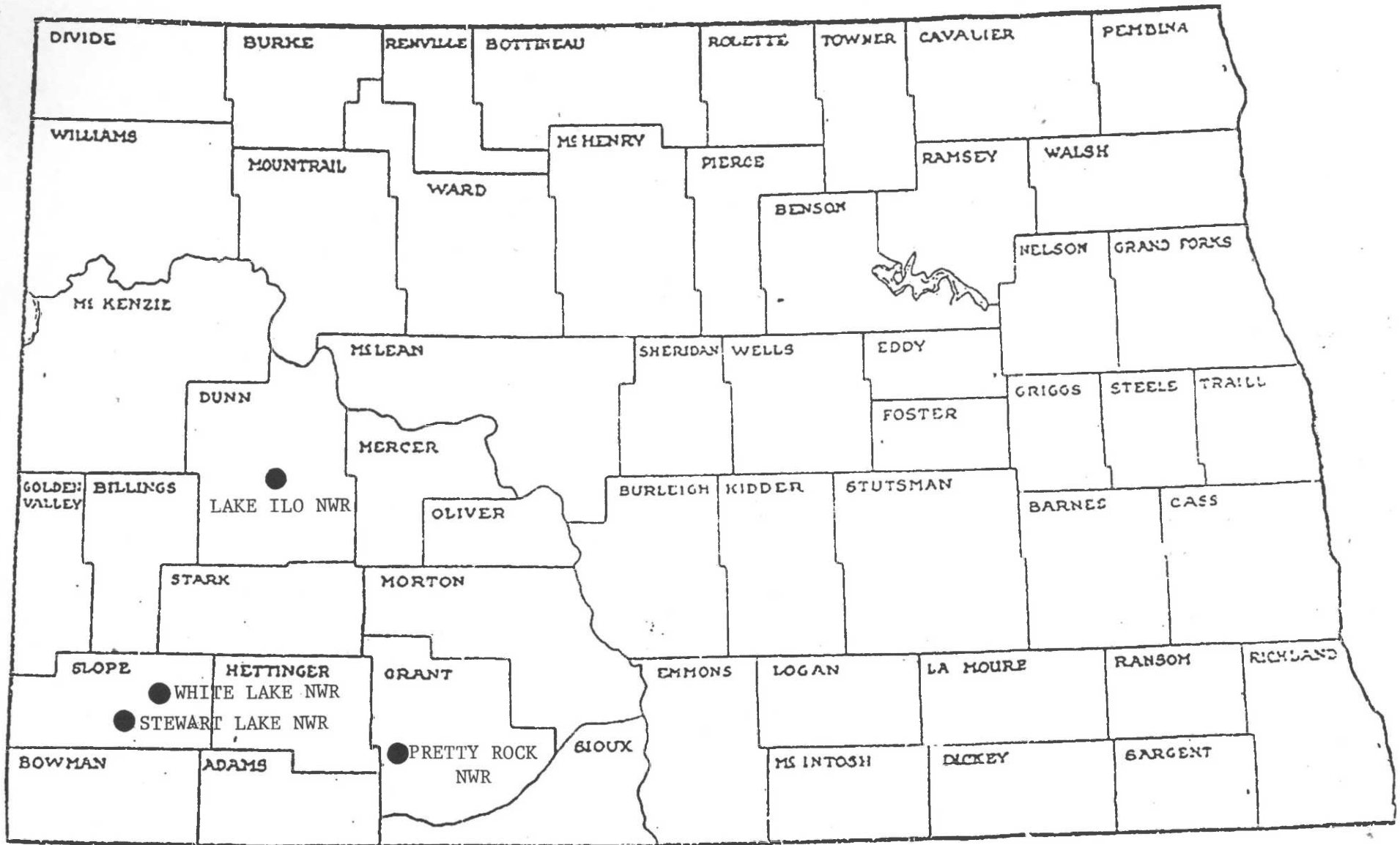
13°
MEAN DECLINATION
1975

DENVER, COLORADO SEPTEMBER 1974
REVISED: August, 1977

6R N.D. 307 403

NORTH DAKOTA

LOCATIONS-LAKE ILO NWR AND SATELLITE REFUGE'S



A. HIGHLIGHTS

The Draft Lake Ilo Dam Environmental Impact Statement was completed and a public hearing was held to discuss it. (Section D.3 & 4)

Another archaeological survey was completed on the most significant site within the exposed portion of Lake Ilo. (Section D.4)

Two significant personnel actions were undertaken. (Section E.1)

Endangered and threatened species had another banner year. Bald eagle numbers were high once again, piping plovers and peregrine falcons were also observed. Three whooping cranes were observed near the refuge. (Section G.2)

Canada goose production reached an all time high of 159 birds. (Section G.3)

Over 8,000 sandhill cranes visited the refuge in April. (Section G.4)

Upland bird populations, particularly pheasants and sharp-tailed grouse, continued to rise to very high numbers. (Section G.10)

B. CLIMATIC CONDITIONS

The FWS is a cooperative observer for the National Weather Service and gathers climatological data with NWS equipment at Lake Ilo refuge headquarters.

The winter of 1991-92 was very mild and light snowfall amounts didn't look like it would ease the drought that we had experienced since 1988.

Precipitation was scarce throughout the year and we received average or above average amounts of precipitation in January and November only. The remaining months were far from what we wanted to relieve the drought.

We experienced mild temperatures during the year. The summer was cooler than normal and agricultural crops and peoples gardens did not mature as fast and in some cases, not at all. We received an early snowfall on October 15 and 30 but it did not stay for long as it had melted shortly there after. Warm temperatures the remainder of the year prevailed.

Spring ice out occurred on Lake Ilo around March 25. It froze up again for the winter on October 16, a month earlier than normal, due to an early snow storm.

Table 1. Temperature and Precipitation for Calendar Year 1992, Lake Ilo
NWR.

<u>Month</u>	<u>Precip. (in.)</u>	<u>Normal</u>	<u>Snow</u>	<u>Max. Temp. (°F)</u>	<u>Min. Temp.</u>
Jan.	.46	.40	6.00	53	- 17
Feb.	.25	.48	4.50	61	0
Mar.	.75	.60	5.25	64	9
Apr.	1.48	1.60	4.00	83	14
May	1.06	2.35	-	93	31
June	2.52	3.69	-	92	31
July	1.25	2.17	-	92	41
Aug.	1.91	2.05	-	103	34
Sept.	.68	1.65	-	97	23
Oct.	.40	.87	2.00	94	9
Nov.	1.15	.51	9.50	48	10
Dec.	.31	.39	6.00	40	- 19
TOTAL	12.22	16.76	37.25	103.	Extremes - 19

C. LAND ACQUISITION

2. Easements

Our FmHA Easements are as below. The only activity in 1992 was a permit was issued to farm and re-seed a few fields on the Bosch easement.

Lake Ilo NWR Managed FmHA Easements:

Table 2.

Tract	Total Acres	Wetland Basins	Wetland Acres	Buffer Zones	Buffer Acres	Flood plain Acres	Grass-land Acres	Tree/Brush Acres
Bosch	1720.0	3	3.7	2	4.2	593.8	273.9	0
Jepson	2502.0	0	0	0	0	0	2404.0	0
Robinson	1716.0	0	0	0	0	0	1322.0	0
Blees	960.0	1	42.0	0	0	0	196.5	0
Sailer	931.0	0	0	0	0	0	931.0	0
Perry	408.0	0	0	0	0	0	481.0	0
Heinert	1865.0	0	0	0	0	0	1865.0	0
Winckler	880.0	0	0	0	0	0	880.0	0
Schober	44.0	0	0	0	0	15.0	29.0	0
Totals	11026.0	4	45.7	2	4.2	608.8	8382.4	0

D. PLANNING

3. Public Participation

The Lake Ilo Dam Restoration Environmental Impact Statement Hearing was held on July 1. Sixty four people attended the meeting held in Killdeer. Various aspects of the proposed alternatives were discussed. The FWS had chosen alternative number 4, which lowers Lake Ilo 4.5' from the original basin. This brought about lively discussion as most people in the area are opposed to anything except full restoration. As of December 1992 it was looking like the FWS would be going with a modified version of full restoration. The FWS will manage water level drops of up to 2.5' to provide habitat for endangered species and waterfowl. This has not been announced to the public as of the end of 1992.

4. Compliance with Environmental and Cultural Resource Mandates

The final draft of the Modification of Lake Ilo Dam Environmental Impact Statement was completed and was available to the public in June. The EIS included six alternatives for restoration. One alternative was not considered feasible because it did not address dam safety deficiencies. This alternative was required by The National Environmental Policy Act. Five other alternatives were considered from no lake at all to full restoration. The FWS chose to base the EIS on alternative 4 as discussed in Section D3.

Work by the Bismarck Fish & Wildlife Enhancement Office continued on the Draft Coordination Act Report. Much data and comments was continually provided by refuge staff.

An extremely important archaeological discovery was found within Lake Ilo when it was lowered for dam safety purposes in 1989. Indian artifacts have been found dating from 11,000 years ago to historic times indicating almost continuous habitation of the area. Further survey work was initiated in

1992.

The Departments of Anthropology of Washington State University and the University of North Dakota were contracted to do the initial phase of cultural resource mitigation on selected properties on the refuge. The primary objectives of archaeological data recovery were from the prehistoric site (32DU955A) known as the Folsom site, and two historical architectural sites, the CCC and WPA dams. In addition, educational and interpretive materials will be created for display purposes.

Field work began on August 1 and a full crew was on hand by the 10th. A total of 12 archaeologists were involved during the field phase of the work. Backhoe trenches, 1X1 meter hand excavations, and soil corings were used to gather data on geology and to retrieve artifacts. Several Folsom projectile points along with other more recent prehistoric artifacts were again found in 1992. The Folsom points range from 10,500 to 11,000 years old. On a visit to the work site, the Region 6 archaeologist, Rhoda Lewis, excavated an incontext (undisturbed beneath the surface) Folsom point. This apparently was the first known recovery of such a point in North Dakota.

Field work was completed by mid-October. Lab work was then initiated at WSU.

As part of the contract, an educational film was shot by a professional film studio from Grand Forks, ND. They shot footage of archaeological work in progress and interviewed people responsible for the work. Don Bozovsky was also interviewed on the refuge views of the archaeological work.

The project historian continued to search for and locate information on the features of the historic CCC and WPA dam sites.



Archaeologists doing their thing, in the drawdown area of Lake Ilo. The filming crew is busy during their phase of the work.

10/92 DJB



Excavation samples were water screened to retrieve the archaeological resources. 8/92 DJB

E. ADMINISTRATION

1. Personnel



1

2

3

4

5

6/92 DJB

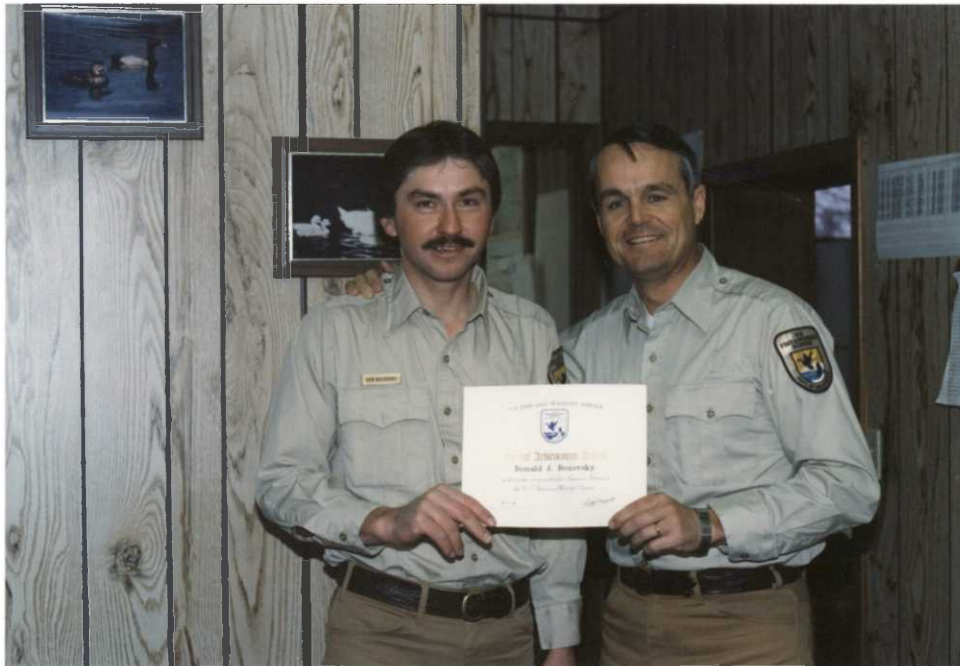
Lake Ilo

1. Donald J. Bozovsky, Biological Technician, GS-0404-07, PFT, EOD 3/27/88. Promoted to Refuge Operations Specialist, GS-485-07, 12/13/92.
2. Gregory T. White, Biological Technician, GS-5, PFT, EOD 5/4/91.
3. Mark Krom, SCA Volunteer, EOD 4/20/92 to 7/24/92.
4. Gustavo Anchondo, NDSYETP Worker, EOD 7/6/92 to 8/21/92.
5. Julie Feser, Refuge Volunteer, 6/92 to 7/92
6. Wanda L. Bozovsky, Refuge Volunteer, 1/92 to 12/92.

Complex Office

1. David G. Potter, Project Leader, GM-13
2. Peter Smith, Asst. Refuge Manager, GS-12
3. Marilyn Wohlk, Refuge Assistant, GS-6
4. Duane Brenneise, Maintenance Mechanic, WG-10

Two very significant personnel actions were taken in 1992. Don Bozovsky was promoted to Refuge Operations Specialist tentatively as of 12/13/92, pending the completion of a mandatory drug screening. The personnel action went through officially on 1/10/93 however. The personnel action was submitted due to Don's good work as the field manager of Ilo and the ever increasing responsibilities that are developing at the station.



Don Bozovsky accepting his Special Achievement Award
from Project Leader Dave Potter. 11/92

Don, along with most of the refuge complex personnel, received a Special Achievement Award in October for superior performance.

For the first time in refuge history, a second PFT position was received. New work demands were becoming much too difficult for one person to handle. Greg White was hired to fill the position. He had experience working for the nearby, Fort Berthold Indian Reservation's Game & Fish Department. He came on board in the middle of the spring busy season and was exposed to the onslaught of refuge life.

The Audubon NWR Complex received the Partners for Wildlife Award from Regional Director Ralph Morgenweck, for their exceptional duties in the private lands enhancement program for North Dakota. Ilo's crew contributed to the effort by working on wetland creations in the west river area of North Dakota.

Table 3. Staffing Pattern, Lake Ilo NWR, 1988-1992.

	<u>Permanent</u>		<u>Temporary</u>	<u>Total FTE</u>	<u>(YCC, ND Job Service)</u>
	<u>Full-Time</u>	<u>Part-Time</u>			<u>Youth</u>
FY-92	2			1.4	1
FY-91	1		1	1.3	1
FY-90	1	1	1	1.3	0
FY-89	1	1	2	1.66	1
FY-88	1	1	1	1.5	1

2. Youth Programs

The YCC program was not used this year at Ilo. The one YCC position for Ilo was used at Audubon. Instead Ilo used the North Dakota Summer Youth Employment and Training Program. This program has worked out in the past. The advantage is that it does not cost the FWS anything. We received, Gus Anchondo from Killdeer, a hard working, intelligent individual, who completed numerous assignments for us. We were happy with his work.

4. Volunteer Program

The refuge hosted its third SCA volunteer in as many years. Mark Krom from Roan, Indiana was chosen for the position. Mark was introduced to a number of refuge activities. He did a good job and learned a great deal about wildlife management.

Julie Feser from Glen Ullin, ND was signed up as a refuge volunteer. She assisted in doing numerous wildlife surveys on several days in June and July.

Wanda Bozovsky, Don's wife, continued to volunteer time whenever possible. Her duties included clerical work, getting the mail in town, answering the phone and moving vehicles to work project sites.

Adjacent landowners were signed as volunteers for White Lake NWR and Pretty Rock NWR. Since 1985 Doug Nordby and Ed Hochhalter agreed to record periodic observations of waterfowl and other wildlife, and to report any unusual or illegal activity, rare or endangered species, abnormal weather conditions, disease outbreaks, broken fences, etc. Since the refuges are located at least 90 miles away from Lake Ilo and are not visited as often as we wish, the volunteers serve as important eyes and ears for the refuge manager.

Doug Nordby's hired man was also signed up as a volunteer. He assisted Don

Bozovsky in the placement of nesting bales in White Lake NWR.

5. Funding

Lake Ilo is funded as part of the Audubon Complex. The budget for the Complex is shown in Table 2.

Table 4. Funding Comparisons 1988 - 1993, Audubon Complex

Sub-Activity	Fiscal Year					
	1993	1992	1991	1990	1989	1988
Base 1261	275,110	216,000	225,000	223,000	223,000	233,000
1261 Pr.P.	5,000	-	20,000	-	-	-
1262	90,500	106,000	106,000	101,000	124,000	53,000
1262 Flex	134,200	114,000	188,000	10,000	-	-
ARMM's	-	-	-	-	-	78,000
6860	6,000	6,000	6,000	6,000	6,000	6,000
8610	7,100	7,000	5,739	4,500	8,000	9,700
9120	2,300	7,900	6,600	-	-	-
YCC	4,200	4,200	3,000	3,000	3,000	3,000
1230 N. Am.	3,000	-	15,000	-	-	-
Extension	46,500	30,440	28,400	16,000	-	-
1902-05*	113,309	107,914	89,662	54,594	25,675	38,600
1929-29**	7,000	3,000	1,000	1,200	2,400	-
TOTALS	687,209	595,454	694,401	419,675	392,675	423,700

* GDU land management transfer funds

** GDU planning transfer (allocated from FWE - Bismarck)

6. Safety

No lost time accidents occurred at the refuge in 1992. One traffic accident occurred however. SCA volunteer, Mark Krom was involved in a highway traffic accident. He was behind a payloador and was about to turn into an approach. As he began to turn left, a lady passed him and struck him in the front driver's side of the FWS pickup. No one was hurt but both vehicles received substantial damage, with the private vehicle getting the worst of it. It was determined to be the other driver's fault.

The refuge maintained its cooperative agreement with the West Dunn Fire Protection District.

A radon mitigation system was installed in the Ilo residence in February. A sub-slab suction system was put in place to create a negative pressure in the basement and prohibit radon from entering. The system proved successful and radon levels were at or below 4pCi/L (EPA recommended safe levels) after installation.

Marshall Fox from the Denver Dam Safety Office conducted the usual dam safety inspections on the Ilo and Stewart Lake Dams.

Monthly safety meetings were held when the refuge had temporary staff on board and occasionally the remainder of the year. The most significant safety item addressed was the Lake Ilo dam safety project. This project is covered in detail in Section F.2.

Several traffic signs were obtained and installed on unsafe portions of refuge roads to make things safer for refuge visitors.

7. Technical Assistance

The following surveys were requested of refuge staff: mid-winter waterfowl survey, mid-October goose survey, mid-continent white fronted goose and sandhill crane survey, the mourning dove coo count survey, pheasant crow count survey, and the upland game roadside count.

Don compiled the quarterly bird observation reports for compilation by Gordon Berkey from Minot, ND. He compiles the western North Dakota reports and they are also compiled into the Northern Great Plains Report for the Audubon Society.

8. Other Items

Refuge revenue sharing checks were delivered to the treasurer of Dunn County for Lake Ilo NWR and Slope County for White Lake NWR and Stewart lake NWR. Dunn County received \$4,212 while Slope County received \$1,916.

Don Bozovsky attended the following training sessions and significant meetings during the year:

- Refuge Officer Annual Law Enforcement Refresher, Marana, AZ - January 27-31
- ND Chapter of the Wildlife Society Meeting, Fargo, ND - February 13-14
- Introduction to Computers & Word Processing, Dickinson, ND - Jan.-May
- Ilo Refuge & Area Weed Control Meeting, Dunn Center, ND - March 4
- Ilo Dam Restoration EIS Hearing, Killdeer, ND - July 1
- American Heart Association CPR Training, Audubon NWR - July 20
- Law Enforcement Firearms Requalification - September 11
- American Red Cross Standard First Aid, Audubon NWR - November 24
- SCS/FWS Farm Bill Coordination Meeting, Dickinson, ND - December 1

Greg White completed the following training:

- Private Pesticide Applicators Training, Killdeer, ND - May 8
- ATV operators training, Watford City, ND - June 24
- American Heart Association CPR Training, Audubon NWR - July 20
- American Red Cross Standard First Aid, Audubon NWR - November 24

F. HABITAT MANAGEMENT

1. General

Lake Ilo NWR is located within the Missouri Slope Vegetative Zone of North Dakota, with an average annual rainfall of only 16.76 inches. Wetlands in the surrounding area consist primarily of creeks, small manmade impoundments and stock ponds, and relatively few shallow sloughs. The surrounding land is used almost exclusively for agriculture, with cropland occupying about 35% of the area. Another 40% remains in native prairie, used for grazing and haying, and approximately 8% of the area is covered with introduced grasses and legumes.

During the past year the following amount of wetland creation and nest structure work was completed as a result of the U.S. Fish and Wildlife

Service's Private Land Extension Program: Two wetland creations totaling 3.5 acres were completed. This station has just gotten into wetland creation work on private lands. The staffing has not been able to commit the time. In 1993, with the addition of a private lands biologist, we will be able to complete a large number of wetland creations in this extremely productive area of the state. All we need is water, the ducks in this part of the state will respond.

2. Wetlands

Wetlands comprise approximately 33% of the total acreage on Lake Ilo NWR. The largest body of water, Lake Ilo, is approximately 1,240 acres in size. Approximately 890 acres are open water with a maximum depth of 14-15 feet, and 350 acres are cattail and bulrush marsh, located on the south and west edges of the lake. Next in size is the 145 acre Lee Paul Slough. The slough is regenerated by Lake Ilo waters via a narrow canal between the two bodies of water.

Lake Ilo was formed in 1937 following construction of the 1,525 foot long dam and concrete spillway by the Works Progress Administration. The Lake Ilo dam blocks Spring Creek, a tributary of the Knife River, and receives drainage from a 136 square mile area.

The Lake Ilo Dam is classified as a high hazard dam because of its potential for loss of life and property damage downstream if the dam should fail. Its hydrologic capabilities are considered inadequate. In 1988 seeping and piping problems were discovered and considered extremely dangerous and temporary corrective measures were made to make it safe. A seven foot notch was installed in the spillway to lower the lake.

With the current lake elevation being seven feet lower than normal, several hundred acres of water area is gone. It went from a 1,240 acre lake at the old spillway crest elevation (2190.5) to a 278 acre lake at the crest elevation of 2183.5. This was a decrease of 962 acres or 78% of the normal size.

Restoration plans and alternatives and an Environmental Impact Statement have been developed to permanently correct the situation. This is described in detail in this and previous narrative reports.

Light run-off was received in Lake Ilo during early spring. Ice and wave action have partly plugged the spillway inlet channel such that the Lake Ilo rose to 2184.2 before spilling (normal spilling is 2183.5). Discharge from the spillway was only .75" at its maximum. By the end of April, all discharge ceased. The lake level continued to recede the remainder of the year and it froze up 1.1 feet below the spillway notch.

Dam safety monitoring continued again in 1992. Monitoring consisted of: checking boreholes, monitoring the gravel filter drain pipe, checking spillway discharge and lake levels. The Denver Dam Safety Office conducted its usual safety inspection on the Ilo Dam in June. The Simplified Test Verification for the Ilo Dam Emergency Action Plan was conducted in April.

The Fish & Wildlife Enhancement office conducted a contaminants study on Lake Ilo. They collected water, sediment, and water birds and egg samples for analysis. The results have not been received as of the writing of this report.

Because of the inability to recharge Lee Paul Slough from Lake Ilo, it

remained dry throughout the year. No localized run off was received either.

Other natural and man made wetlands received very little water during the year. Some of them had just enough water to attract a duck or two and most of them dried up during the summer.

Pool 3 (by Riley Point) a managed wetland with a control structure on it had around 2-3 feet of water in it in the spring. The water came from 1991 fall and winter, flowing spring flows, light snow runoff and spring rains. Spring flows and sparse rains helped maintain at least 1 to 1.5 feet of water in it through the summer and fall.

Table 5. Lake Ilo Water Levels, CY-1992. Spillway Crest - 2190.5 feet.
Seven Foot Dam Safety Notch Crest - 2183.5

<u>Month</u>	<u>Elevation</u>	<u>Area (acres)</u>	<u>Capacity (ac/ft)</u>
Jan.*	2182.9	200	550
Feb.*	2182.3	150	400
Mar.*	2184.3	300	890
Apr.	2184.3	300	890
May	2184.2	290	880
June	2183.8	260	740
July	2182.95	195	540
Aug.	2182.7	180	500
Sept.	2182.55	170	470
Oct.	2182.4	160	400
Nov.*	2182.4	160	400
Dec.*	2182.4	160	400

* Frozen over most or all of month

Ice Out - March 25

Lake Froze - October 16

Note: A ridge in the spillway approach channel does not allow water to pass until elevation 2184.2, .7' higher than normal.

Note: Area and capacity quantities are based on GEI Consultant information in 1989. These are much lower than previous figures.

3. Forests

Timbered areas on Lake Ilo are limited to 18 shelterbelts comprising 38 acres, and 25 acres of predominately cottonwood located along shorelines and stream courses. Most of the shelterbelts are mature stands of elm, Russian olive, ash, caragana, buffaloberry, blue spruce, and ponderosa pine.

Through a cooperative effort with the Dunn County Soil Conservation District, we are able to obtain tree seedlings free of charge after their planting operation comes to an end. These trees are planted in odd areas near other trees and near the office/shop and residence. The following were planted:

caragana	150
ponderosa pine	75
Russian olive	40
chokecherry	20
Total	285

In addition, the local Cub Scout troop planted about 30 trees near the boat ramp.

One wood cutting permit was issued to remove dead falls from inside the

electric predator fence and inside and near the Ilo park. The trees were hampering weed control work and trees in the park were hazards to park visitors.

4. Croplands

The cropland program is managed under cooperative agreements. Cooperators conduct agricultural activities for the refuge in return for which they plant and harvest crops from refuge fields. Two fields totaling 6 acres are force account farmed while the remainder are farmed by cooperators.

Table 6. Farming Activity for CY-1992

Farm Unit	Field	Crop	Acres	Cooperator's Share (% or Acres)	Government's Share % of acres	
					Harvested	Unharvested
AU-3	1	fallow	4.5			
	3	fallow	5			
	6	fallow	8			
	2	wheat	3			3
	10-13	wheat	7.5	5		2.5
	* 18	Wheat/Millet	2.0			2.0
AU-5	3	fallow	5.5			
	4	wheat	6	6		
	* 5	Wheat/Millet	4			4.0
AU-6	1,3	wheat	9	9		
	11	wheat	7	5		2
	2,4	fallow	8.5			
	8	Wheat	5			5
	10	fallow	7			
AU-9	4,6	Fallow	16			
	3	Wheat	7	7		
	5	Wheat	7	2.3	2	2.7
8,10,12A,12B		Fallow	30			
	7,11	Wheat	20	20		
	9	Wheat	10		8	2
			<u>172</u>	<u>54.3</u>	<u>10</u>	<u>23.2</u>

* Force Account Farmed

All wheat listed as harvested in the table was baled into large round bales and placed into protected areas near trees for winter wildlife food. The 26.5 bales from this year, were used extensively by deer, fox squirrels, and upland wildlife during the fall and winter.

5. Grasslands

Grasslands account for 1,533 acres on Lake Ilo NWR, approximately 49% of its total acreage. Of this total, approximately 1,215 acres are untilled native sod, and 318 acres are previously tilled cropland that was planted with primarily tame grass mixtures before 1970. With waterfowl production as the

refuge's number one objective, it is important that these grasslands are managed to their optimum potential for wildlife, particularly waterfowl, nesting and use.

A ten acre field, number 4a in Farm Unit AU 5 was seeded to warm season native grasses in 1988. It was a failure due to the drought and quack grass invasion. It was again seeded to warm season natives (consisting of Big Bluestem, Little Bluestem, Indian Grass, Switchgrass, and Side-oats Grama) in 1992 after haying and disking in 1990 and fallowing in 1991. It was sprayed with Glyphosate in the spring and seeded in mid-June. The grass catch was excellent and when matured should make excellent cover. Several people said it couldn't be done this far west. We proved them wrong.

7. Grazing

The table below shows the grazing activity. We are on our way to implementing a grazing system for all possible grazing areas. It will be much easier to plan for this once the Ilo Dam is restored and we can rely on the available water and fence that is already in place.

Table 7. Grazing Activity for CY-1992

<u>Cooperator</u>	<u>Acres</u>	<u>Location</u>	<u>Dates</u>	<u>Grass Type</u>	<u>AUM's</u>	<u>Desired Results</u>
Tony Stroh	60	NW1/4 Sec.31 Unit 1	7/1 - 7/28	Cool Season Natives	35.9	Rejuvenate Reduce litter
Tony Stroh	45	NW1/4 Sec.32 Unit 2	6/29 - 7/23	Cool Season Natives	32.0	Rejuvenate Reduce Litter
Tony Stroh	28	N 1/2 Sec.29 Unit 3	7/10 - 7/30	Tame and Cool S. Nat.	27.0	Weed Control Rejuvenate
Tony Ridl	28	SE1/4 Sec.27 Unit 1	5/21 - 6/9	Cool Season Natives	21.6	Rejuvenate Reduce Litter
Tony Ridl	28	SE1/4 Sec.27 Unit 2	6/10 - 6/27	Cool Season Natives	21.6	Rejuvenate Reduce Litter
Tony Ridl	30	NW1/4Sec.34 Unit 3	6/28 - 7/18	Cool Season Natives	25.2	Rejuvenate Reduce Litter
Tony Ridl	31	NW1/4Sec.34 Unit 4	7/19 - 8/9	Cool Season Natives	26.4	Rejuvenate Reduce Litter
	<u>250</u>				<u>189.7</u>	

8. Haying

Haying on Lake Ilo is used to rejuvenate the grass/legume stands by removing litter and encouraging new legume growth. Native grass stands that would be difficult to burn or graze may also be hayed.

Areas in a tame grass/legume mixture were scheduled to be disked and harrowed to release them from their sod bound condition and to stimulate legume growth. We normally delay this operation until the spring of the following

year due to usually dry conditions in the summer. Spring is usually moist enough to do a good job and there is less risk to the grass from winterkill.

Table 8. Lake Ilo NWR Cooperative Haying Program, 1992

<u>Cooperator</u>	<u>Acres</u>	<u>Grass Type</u>	<u>Desired Results</u>	<u>Payment</u>
Mike Stroh	14	DNC	Breakout for	Chisel plow field tree planting
	11	Hwy ROW	Reduce snow drifts	Refuge 1/4 bales
Tony Stroh	9	Natives	Rejuvenate	Refuge 1/3 bales
	4	DNC	Rejuvenate	Refuge 1/3 bales
	31	DNC	Rejuvenate	Disk and harrow in 1993
Dave Stroh	12	DNC	Rejuvenate & weed ctl.	Refuge 1/3 bales
	5.5	Natives	Rejuvenate & weed ctl.	Refuge 1/3 bales
	5	Hwy ROW	Reduce snow drifts	Refuge 1/4 bales
Tony Ridl	20	Natives	Rejuvenate	Refuge 1/3 bales
	11.5	Refuge Roads	Reduce snow drifts	Refuge 1/4 bales
	<u>123.0</u>			

A total of 27 bales were received as our share from cooperators for use as nesting bales.

9. Fire Management

A cooperative agreement was maintained between the FWS and the West Dunn Fire Protection District for providing fire protection and suppression for refuge lands and facilities. No prescribed burning was conducted in 1992, however, we intend to get more involved with this as time goes on.

10. Pest Control

Lake Ilo NWR is plagued by more than its share of noxious weeds, including leafy spurge, Canada thistle, absinth wormwood, and field bindweed. Our efforts are organized into a 3 pronged attack on weeds via chemical, mechanical, and cultural control.

Weed control efforts were very good in 1992. Chemical and mechanical control methods were both heavily used. The chemical 2,4-D amine was used for leafy spurge and absinth wormwood with relatively good control. The use of Curtail herbicide on Canada thistle was a welcomed addition. This herbicide was recommended by the county agent and is considered one of the best herbicides for Canada thistle control. It appeared that good control was achieved, but we will see how effective it actually was when we look at these areas in 1993.

Canada thistle areas that are not sprayed are mowed to halt seed dispersal and to decrease the plants' carbohydrate root reserves. Canada thistle has spread into the cattail edge from the old shoreline of Lake Ilo in the past three years due to the lake's drawdown. This has increased the acreage considerably. An extra effort has to be made to control this to eliminate the seed dispersal and satisfy neighbor's complaints.

Table 9. Noxious Weed Control Summary - 1992

<u>Noxious Weed</u>	<u>Acres Sprayed</u>	<u>Acres Mowed</u>	<u>Acres Grazed</u>
Leafy spurge	<1		
Wormwood Absinth	2.6		
Canada thistle	<u>65.6</u> 69.2	<u>100</u> 100	<u>28</u> 28

We are getting a good handle on a large patch of wormwood. This area has been reduced in size in recent years. We did take on one new area inside a tree planting which did increase acreage in 1992. Leafy spurge is not a major problem and the small amount present receives full attention.

Mother Nature provided us again with a species of insect that took a liking to Canada thistle. Painted lady butterfly larvae, Cynthia cardui, were observed again eating thistle plants. Large numbers of larvae were found on patches of thistle in Lee Paul Slough and around Lake Ilo. It was hoped that they would defoliate the thistle plants as they did in 1991, but they suffered a major set back. Late frosts killed the majority of the insects and the expected benefits disappeared.

The Dunn County Commissioners and the county weed control board chairman were made aware of noxious weed control activities on Lake Ilo by letter.

Because of past weed complaints, we made two efforts to inform refuge neighbors of control activities on the refuge during and after the spraying season. Neighbors were contacted and updated on what had been done during the spraying season. We also mentioned that some of them also had noxious weeds adjacent to the refuge. The second effort was to call a meeting in the winter to discuss our control efforts and plan for the coming year. We cooperated with the County Weed Board Chairman to organize and hold the meeting. The county weed board and several landowners attended. This type of meeting disseminates our information to the interested parties and provides feedback, both positive and negative, which is helpful for all involved.

A surprise inspection was conducted by the ND Ag. Depts., Pesticide Division. He inspected the application records and storage facilities and found no problems.

G. WILDLIFE

2. Endangered and/or Threatened Species

Once again a very high number of bald eagles were observed. A total of 29 were observed. This was the third year in a row that abnormally high numbers of eagles were observed. A slight fish winterkill occurred this year on the western 1/3 of Lake Ilo and this was favorable for feeding eagles. High numbers of waterfowl in the spring have also created conditions that are to their liking. Bald eagle use has increased greatly since 1989, the year Lake Ilo was drawdown for dam safety reasons.

Golden eagles frequent the refuge as usual. Several pairs nest in the nearby badlands. Refuge visits have been on the rise in recent years

Table 10. Bald and Golden Eagle Observations 1992

Date	Bald Eagle		Golden Eagle	
	Adult	Immature	Adult	Immature
1/16			2	
3/5		*1		
3/9	*1			
3/17	*1		1	
3/19		*4		
3/22	*2	1		
3/25	*1	*1		
4/11			1	
4/12		1		
4/14		4		
4/21		1		
4/22				1
4/23		1		
4/27		1		
4/28				*1
6/1	1			
7/17			1	
8/20				1
10/7	1			
10/16				1
10/18		1		
10/26				1
11/2				*1
11/14		1		
11/15	1			
11/19				1
11/20	*2			
11/22		*1		
11/28	1			2
12/14				1
Total Observed	11	18	5	10
Total Use Days		59		50

* Bird(s) remained for more than one day

Table 11. Eagle Sighting History 1986-1992

	Bald Eagle Sightings		Golden Eagle Sightings	
	Spring	Fall	Spring	Fall
1992	21	8	7	8
1991	24	7	4	7
1990	10	4	10	1
1989	20	8	1	4
	[Ilo Dam Notched and Lake Lowered March 1989]			
1988	2	3	0	1
1987	Incomplete data		Incomplete data	
1986	2	2	Incomplete data	

Once again piping plovers returned to the refuge. The first observation occurred on 6/23 when one adult was found during a plover survey. No other plovers were observed the rest of the year. High water in the spring inundated the narrow edge of mudflats that was available for nesting. This created undesirable nesting conditions and the birds were believed to have gone to Lake Sakakawea to find suitable nesting sites. Piping plover numbers have fluctuated since the Lake Ilo drawdown in 1989. This was the worst year since that time.

Four adult peregrine falcons were observed on the refuge during the year. One bird was observed on the following days: 1/7, 4/13, 9/29, and 11/22.

A farmer sighted three whooping cranes about eight miles northwest of the refuge on April 18. He reported it to us on April 21 and we verified the sighting the same day. One pair and an immature bird were sighted feeding in grain fields and roosting in a nearby wetland. They remained there until April 22 when the local newspaper reporter got too close trying to photograph them. They then departed northward. Needless to say, we were not too happy with this.



Two adult and one immature whooping cranes were observed eight miles northwest of the refuge.
4/92 DJB

3. WaterfowlDucks

February 28 was the first day ducks were observed on the refuge. Pintails and common mergansers were the first ducks observed. First appearance chronology is listed below.

2/28	3/1	3/2	3/3	3/9	3/17	3/18
Pintail	Mallard	Common Goldeneye	Redhead	GWT	Lesser Scaup	Hooded Merganser
Common Merganser				Wigeon	Gadwall	
3/19	3/27	4/13	5/2	5/6		
Ring-Necked Duck	Shoveler	BWT Red-breasted merganser	Ruddy Duck	Wood Duck		
Canvas-back		Buffle-head				

Table 12. Duck Population Peaks

Species	Spring		Fall	
	1992	1991	1992	1991
Mallard	1,650	11,134	300	970
Pintail	9,165	2,645	50	2
Gadwall	340*	1,435	105	310
BWT	80*	870	-	4
GWT	600	2,110	15	75
Shoveler	410	582	425	100
Wigeon	160	350	45	61
Canvasback	12	125	3	4
Redhead	100	140	250	100
Lesser Scaup	135	1,500	-	2,800
Ring-necked	2	131	45	40
Ruddy	8*	30	3	6
Common Goldeneye	25	65	2	-
Bufflehead	10	12	7	34
Common Merganser	205	175	10	-
Wood Duck	2	-	-	-
Totals	12,904	21,306	1,260	4,506

* Indicates peak reached during breeding season

The peak duck total for the spring from the table was 12,904 but the most ducks counted on one day was 11,133 on 3/17. The one day peak for the fall was close to 900 on 10/16. The early cold weather influenced numbers and resulted in fewer birds.



Waterfowl are taking advantage of good habitat conditions on Lake Ilo. Other species including endangered species are also benefiting.

3/92 DJB

The last 300 mallards left for their southern homes during the week of 11/16. They had remained in an area kept open by them and Canada geese, well after Lake Ilo had frozen over in October.

Waterfowl pair counts for Lake Ilo, White Lake, Stewart Lake, and Pretty Rock NWR's were conducted on May 28-29, 27, 27, and 28 respectively.

Nest dragging in 1986 and 1987 revealed apparent nest success rates ranging from 59% to 71%. We believe that these high success rates continue today.

Waterfowl production estimates are in the table below. Total production for dabbling ducks on Lake Ilo NWR increased but diving duck production was reduced significantly again in 1992. Lack of suitable nesting cover was the cause due to the Lake Ilo drawdown and lack of water in Lee Paul Slough. Some cattail and bullrush is increasing on the lakes edge and a small amount of nesting habitat is becoming available. The satellite refuge's production fell due to extremely low water levels. More information is available in their respective portions of this report.

Table 13. Waterfowl Production, 1992

	Lake Ilo NWR	White Lake NWR	Stewart Lake NWR	Pretty Rock NWR
Mallard	439+	63-	152+	7-
Gadwall	397+	126-	159-	0-
Pintail	131+	33-	61-	7-
GWT	30-	23+	0-	0-
BWT	74-	30+	35-	0-
Wigeon	72+	19-	5-	0-
Shoveler	79+	21-	12-	0-
Wood Duck	7	0	* 0	* 0
Redhead	5	* 5+	* 0	* 0
Ring-necked Duck	0	* 0	* 0	* 0
Canvasback	0	* 0	* 5+	* 0
Lesser Scaup	0	* 0	* 0	* 0
Ruddy	9+	* 5+	* 0	* 0
	1,242+	330-	429-	14-

* Diver production was significantly reduced due to low water and reduced flooded nesting habitat

Trend: "+" means increase from 1991 and "-" means a decrease. No "+" or "-" means it remained the same.

Islands within Lake Ilo now have ample vegetation. Nest dragging has revealed that duck and goose production is increasing due to the increased cover. The islands that have sparse cover or no cover at all are important for shorebird nesting. The ten islands range in size from 20' in diameter to approximately 1.5 acres. All islands had water around them during the early spring. Eight islands were drug twice. The two largest islands were affected by receding water and turned into peninsulas. Predation by a mink on these islands decreased production by 31%.

Island Nest Production 1992

Species	Total Nests	Successful	Unsuccessful	Cause of Loss	% Success Each Group
Mallard	9	7	2	Predation	
Gadwall	3	1	2	"	
Pintail	2	2			69%
Wigeon	2	1	1	"	
Canada Goose	13*	10	3	Abandoned	77%
R.N. Pheasant	11	4	7	4 Predated 3 Abandoned	36%
American Avocet	10	Unknown			-
Killdeer	1	Unknown			-

* Two nests were on nesting bales on two islands

The peninsula electric predator fence on the west end of Lake Ilo was in-operational again in 1992 due to Lake Ilo drawdown. We did not nest drag this area in 1992.

Eleven wood duck boxes were available for the nesting season. No woodies used them but other "critters" found them useful. American kestrels nested in 5 boxes. One other box was used as kestrel roost site and four others were used by fox squirrels. Wood duck numbers have declined since the Ilo drawdown in 1989. None have ever nested in a woody box.

Two mallards nested on nesting bales in Lake Ilo. One was successful and one abandoned its nest.

Two waterfowl brood count were conducted, one in conjunction with a piping plover survey on 6/23 and a formal count on 7/17. Results are below:

Species	Number of Broods		Number of Young	
	1st Count	2nd Count	1st Count	2nd Count
Gadwall	0	20	0	102
Mallard	9	2	48	10
Pintail	5	7	25	36
Shoveler	1	2	9	7
Wigeon	0	1	0	6
BWT	-	-	-	-
Totals	16	32	89	161

Geese

The first Canada geese were observed February 28 when 48 were seen. The first observation of snow geese was March 30 when 325 were seen and the first observation of white-fronted geese was on May 2 with 4 observed.

Table 14. Goose Peak Numbers 1992

Species	Spring	Date	Fall	Date
Canada goose	600	3/6	600	10/26
Snow goose	1,000	3/31	-	-
White fronted goose	15	5/8	250	10/16
Ross' goose	30	4/21	-	-
Totals	1,645		850	

The spring peak number of geese was 1,250 consisting of 1,000 snows and 250 Canadas. The highest number of geese here at one time in the fall was 675 consisting of 425 Canadas and 250 white-fronts.

The snow goose populations that visit the refuge are comprised of nearly 100% white phase.

According to the refuge bird list, Ross' geese have never been sighted on the refuge. On 4/21 a confirmed sighting of 30 was recorded. On 4/23 the total dwindled to 18. They left within the next day or so.

The last white-fronted geese (250) remained until 10/17 and the last Canadas (600) the week of 11/16. The fall migration was lower than in previous years due to cold weather early on, which pushed birds south sooner than normal.

Canada goose production increased after a successful year. On March 21 one goose was believed to have already started incubation. On April 20 the first brood of 1 gosling was observed. The majority of hatching was completed by May 4.

A refuge record of 46 Canada geese nested on the refuge. Thirty-three of these nested on structures, 11 on islands (see duck section) and two on the ground along Murphy Creek. Other geese were suspected to have nested on the ground on the easement portion of the refuge, however only known nests were used in production figures. A total of 159 Canada geese were produced. This is up considerably from previous years and it is an all time high.



Canada goose production has been on the increase for several years. Production totaled 168. 5/92 DJB

Table 15. Nesting Structure Use by Canada Geese in 1992.

Location	Structure Type	Number	No. Suitable for Nesting	No. Nests	Nest Outcome	Success
Lake Ilo	Lge round bales	41	39	27	26 successful 1 abandoned	96%
	Tubs	8	8	4	4 successful	100%
*Lee Paul Slough	Lge round bales	13	0	0	----	---
	Cattail stacks	4	0	0	----	---
**Other Ponds	Lge round bales	9	1	1	1 Successful	100%
	Tub	6	2	0	----	
Easement Refuge	Tub	3	3	1	1 Successful	100%
Totals		84	53	33	32 successful 1 abandoned	97% 3%

* Dry wetland

** Only one wetland with water
(1 bale & 2 tubs available)

Swans

Tundra swans are occasional visitors to the refuge. None were observed in 1992.

4. Marsh and Water Birds

The great blue heron rookery located at Riley Point did not fare well. For the second year in a row no herons nested. Herons were observed frequenting old nests in the spring but none were believed to have nested as evidenced by later observations. A storm in 1990 blew down some of the nests with young in them. It is believed that the number of nests available and possibly the lowering of Lake Ilo have had an influence on their nesting.

American white pelican and double-crested cormorant numbers were about the same as in recent years. These two species travel back and forth from Lake Ilo to Lake Sakakawea almost daily. One count on May 14 revealed 65 pelicans and another count on 4/20 counted 150 pelicans and 70 cormorants.

The first observation of sandhill cranes occurred on April 3 when they were observed flying over the refuge. Three days later, April 6, 8,000 cranes were observed spiraling down for a stopover on the refuge. They landed in a nearby grain stubble field and fed there until dusk, when they come into Lake Ilo to roost. They headed north on their migration the next day. This was a refuge record. The habitat conditions since the Lake Ilo drawdown have made things favorable for cranes. No other cranes were observed until May 2 when 15 were counted. Sandhill cranes were again observed in October when only a small number were observed. One hundred were counted on 10/13 and six were observed on 10/26.

Common loons are listed as a rare visitor to the refuge. One was observed in Lake Ilo on May 22.

The eared grebe nesting colony present in Lee Paul Slough in 1987 has not nested the last four years due to extremely low water levels. Approximately 50 and 100 grebes were observed on Lake Ilo on May 7 and 22 respectively. Only three were counted during waterfowl pair counts.

Western grebes could be commonly seen during the spring and summer months. Coot numbers were extremely low during the year.

5. Shorebirds, Gulls, Terns and Allied Species.

Good diversity and numbers of shorebirds were observed by incidental observations and waterfowl surveys. A shorebird survey was completed on 6/23 in Lake Ilo. The following birds were observed:

Wilson's Phalarope	130	American Avocet	27	Least Sandpiper	6
Killdeer	75	Marbled Godwit	28	Willet	4
Lesser Yellowlegs	32	Spotted Sandpiper	20	Am. Avocet Broods	2

American avocets and killdeer were known to take advantage of good nesting habitat. A few avocet nests were found while conducting a piping plover survey and during nest dragging operations on islands. Nine Wilson's Phalaropes, one American Avocet and one Killdeer were found nesting on islands. Killdeer also nested on Lake Ilo's shoreline.

During waterfowl pair counts 300 Wilsons phalaropes, 50 American avocets, 61 marbled godwits, 2 willets, and 2 piping plovers were counted.

On April 13, 200 ring-billed gulls were counted on Lake Ilo. They were taking advantage of the dead fish from the portion of Lake Ilo that winterkilled.

6. Raptors

Numerous raptor species frequented the refuge in 1992. Species included the bald eagle, golden eagle, osprey, turkey vulture, red-tailed hawk, northern goshawk, Swainson's hawk, northern harrier, rough-legged hawk, sharp-shinned hawk, ferruginous hawk, Cooper's hawk, American kestrel, merlin, and prairie and the peregrine falcon. Great-horned, long-eared and short-eared owls were also observed. Burrowing owls reside in a prairie dog town located two miles east of the refuge.

Both great-horned and long-eared owls nested on the refuge. It is not known how many great-horned owls nested but at least one long-eared owl nest was confirmed. Five American kestrels also nested in wood duck boxes.

7. Other Migratory Birds

The mourning dove call-count survey was conducted for the Office of Migratory Bird Management on May 29. The count is conducted in McKenzie County, some 70 miles northwest of Lake Ilo.

Total number of calls has been deleted from this count as directed by OMBM.

	Doves Heard	Doves Singles	Seen In Pairs (Total Birds)
1992	17	13	4
1991	32	21	8
1990	25	13	18
1989	10	14	2
1988	24	10	2

A bluebird nesting box trail had 45 boxes available for the nesting season. No bluebirds nested however, 43 boxes were used by other birds. Thirty-three swallows and 18 house wrens successfully fledged young. Some of the same boxes were used by swallows and later by wrens. Three eastern bluebirds were observed eyeballing a few boxes on March 27 but they didn't cooperate.

Table 16. First Arrival Dates of Various Migratory Birds

	1990	1991	1992
Common Loon	4/18	5/12	5/22
Eared Grebe	4/20	4/19	4/20
Western Grebe	4/22	5/1	4/24
A. White Pelican	3/29	4/6	4/3
Double Crested Cormorant	4/18	4/19	4/8
Great Blue Heron	4/8	4/3	3/27
Osprey	4/19	5/17	4/20
Bald Eagle	3/19	1/4	3/5
Northern Harrier	2/13	3/15	3/4
Northern Goshawk	1/6**	1/3**	1/1**
Red-tailed Hawk	3/26	3/25	3/19
Rough-legged Hawk	4/9	4/23	4/6
Golden Eagle	1/3	3/25	1/16
American Kestrel	4/8	*	3/16
Merlin	1/15	-	-
Peregrine Falcon	5/9	5/20	1/7
American Coot	4/20	4/18	4/13
Sandhill Crane	4/8	4/5	4/3
Killdeer	3/11	3/17	3/20
American Avocet	4/20	4/19	4/13
Greater Yellowlegs	4/20	4/4	4/13
Willet	*	4/19	4/24
Marbled Godwit	4/20	4/20	4/23
Mourning Dove	4/13	4/10	4/14
Long-eared Owl	1/9	*	4/10
Short-eared Owl	3/29	1/3	*
Screech Owl	2/16	-	-
Belted Kingfisher	*	4/3	4/23
American Crow	3/13	3/25	3/22
Mountain Bluebird	3/14	*	3/5
American Robin	2/16	3/15	3/8
Western Meadowlark	3/20	3/20	3/17

* Species observed but not documented

** Have wintered here all 3 years

- Species not observed

Waterfowl are listed in Section G.3

8. Game Mammals

White-tailed deer numbers continue to increase. Production was good and the population is about at its long term average. The population normally increases during the hunting season and winter. This year was no exception. A peak of 90 was reached in November for the 91-92 winter and a peak of 100 was reached in January for the winter of 92-93. At large herd of least 79 deer were counted in the Lee Paul Slough area during the winter.

Above average numbers of deer remained on the refuge during the spring and summer. A good crop of fawns was produced. Excellent grass cover in the dry portion of Lake Ilo may have been a contributing factor.

A white-tailed buck (a small 4X4) was observed in late May with antlers. This is four months later than usual.

Mule deer are infrequent visitors to the refuge, even though they are very common just 15-20 miles away in the Little Missouri River valley. One mule deer was observed on April 3. It was not observed again.

The antelope population continues to increase in the area. More animals are showing up around the area and frequenting the refuge. A herd of 15, the largest group of the year, was observed in Mid-March just across the refuge boundary. Single bucks could be occasionally observed during the summer. One doe was believed to have used the refuge to give birth. Most of the antelope in the general area concentrate their activity about one to two miles from the west boundary.

Some furbearer populations are on the rise due to light trapping and hunting pressure. Fur prices are way down and the incentive to trap is no longer there. Coyote numbers are on the rise in the refuge and it appears that their home range is much smaller than normal. They are remaining on the refuge where food is more plentiful. Coyotes were commonly observed throughout the year and could be heard howling at sunset almost daily.

Striped skunk numbers have decreased in recent years. This is probably due to the high number of coyotes. Only one was observed in 1992.

Beaver numbers have decreased dramatically due to lowering the water level of Lake Ilo, though a slight increase was observed in both 1991 and 1992. The population increased to about 10 animals.

White-tailed jack rabbit and fox squirrel numbers appear to be stable. Eastern cottontail rabbits have increased significantly since the grass seeded in the Lake Ilo mudflats has created good cover.

10. Other Resident Wildlife

Sharp-tailed grouse numbers increased significantly. At least three active leks were located. We did not have time to do a formal survey but did get a cursory count when going by. We intend to find all of the leks on the refuge and do a thorough census in 1993. The lek in Sec. 29 is a newly located lek.

Sharp-tailed Grouse Lek Survey 1992		
Location	Number of Males	Number of Females
SW 1/4, Section 29	7	3
NE 1/4, Section 31	20	1
SE 1/4, Section 33	7	2
Total	34	6

Production was good. The fall population was estimated at 225 birds.

Gray partridge numbers did not increase. Very few birds were observed on the refuge. The fall population was estimated at 30-40 birds.

Ring-necked pheasants are the most prevalent game bird on the refuge. The population continues to increase due to good nesting conditions and excellent cover provided by the newly established grass seeding in the Lake Ilo basin. Grass 3 to 6 feet tall provided excellent escape and winter cover. Fall population estimates put the numbers at around 2,000 birds which is up from 1,500 in 1991. A bumper crop was produced.

A pheasant crow count and an upland game roadside count was conducted on the refuge. Both counts use ND Game and Fish Dept. procedures.

Table 17. Pheasant Crowing Count Survey (5 stops, 8.7 miles and 2 minutes/stop)

	<u>Count Numbers</u>	<u>Total Calls</u>		<u>Average Calls/Stop</u>	
		<u>1992</u>	<u>1991</u>	<u>1992</u>	<u>1991</u>
	1	225	116	45	23.2
	2	171	89	34.2	17.8
	3	270	87	54	17.4
Totals	3	666	292	44.4	19.4

Table 18. Upland Game Roadside Count (Route Run 3 Times)

<u>Bird</u>	<u>Number of Broods</u>	<u>Number of Adults</u>	<u>Number of Immatures</u>
Pheasant	5	28	30
Sharp-tailed Grouse	-	-	-
Gray Partridge	-	-	-

<u>Other Wildlife</u>	<u>Total</u>
Mourning Doves	67
Jack Rabbits	0
Cottontails	7
Tree Squirrels	0
White-tailed Deer	8
Raptors	
Northern Harrier	2
Red-tailed Hawk	7
American Kestrel	2
Prairie Falcon	1

11. Fisheries Resources

Lake Ilo suffered a major winterkill in the winter of 1988-89. Since that time, no effort has been made to re-stock fish. Fish are re-populating the lake annually from upstream sources and the lake itself.

Lake Ilo suffered a slight winterkill again in the winter of 1991-92. Numerous rough fish were found on the shoreline on the western half of Lake

Ilo in the spring. This portion of the lake is separated from the deeper portion of the lake by a hump in the lake bottom west of the boat ramp. Though water connects the two areas, the hump freezes to the bottom and keeps the two apart. The water in the western portion of the lake is shallower and is more susceptible to winterkill. The deeper portion of the lake is also susceptible to winterkill due to the Lake Ilo drawdown.

No formal test netting was completed in Lake Ilo. The only netting done was during the Wildlife Field Day on May 13. Two frame nets were placed in the lake to show the kids how the operation was done and to show them that there were fish in the lake. As expected, most of the fish in the nets were rough fish, with white suckers being the most plentiful. They were in the process of spawning. Several northern pike were also caught, ranging in size from two to five pounds.

15. Animal Control

Trapping is conducted on Lake Ilo NWR to keep predator and furbearer populations in check. One SUP was issued to Daryl Dukart of Dunn Center, ND to trap during the 1992-93 season. We required them to set and maintain at least 10 sets for skunks. This meant the trapper had to put more pressure on skunks, etc. and not focus only on higher priced furbearers. Quotas were unlimited, except for beaver and muskrat which were not trapped due to extremely low numbers. After the permit was issued the permittee backed out of the permit, saying that he did not have enough time to do the job.

Spring predator trapping was conducted for account on the refuge. An average of eleven 220 conibear traps in wooden box sets were maintained from April 27 to July 22. Much of this work is done incidental to other activities with the SCA volunteer devoting the most time.

Table 19. Animal Control Activity - CY-1992

	Coyote	Red Fox	Raccoon	Skunk	Mink	Accidentals
Trapping						
Permittee	-	-	-	-	-	-
FWS Trap	-	-	-	9	-	-
Incidental						
Shooting	$\frac{1}{1}$	$\frac{-}{0}$	$\frac{1}{1}$	$\frac{1}{10}$	$\frac{-}{0}$	$\frac{1 \text{ cat}}{1 \text{ cat}}$
Totals	$\frac{1}{1}$	$\frac{-}{0}$	$\frac{1}{1}$	$\frac{1}{10}$	$\frac{-}{0}$	$\frac{1 \text{ cat}}{1 \text{ cat}}$

H. PUBLIC USE

1. General

Public use increased on Lake Ilo NWR in 1991. Visits, primarily made up of fishing, picnicking and wildlife observation totalled 3,789 which is about a 411 increase from 1991.

The public's conception of Lake Ilo NWR is that of being only a big lake that fishing, picnicking and at one time swimming existed, and that's all. An effort is being made to inform the public that there's more to it than that. This is being helped by stepped up grassland management, farming program changes, removing unsightly junk, improving public use areas, etc. which can be seen by visitors. Also press releases, interviews and word of mouth

whenever possible are all used to inform the public that something else is being done at Lake Ilo other than counting ducks and watching fisherman, as has been conceived before. This is going to be a long and slow process but we will hopefully be rewarded with the public's appreciation.

Six news releases were issued during the year. At least 16 other articles were written by reporters for various newspapers in this area. Five of the 16 articles were based on personal interviews with refuge personnel. Topics of the releases and articles ranged from archaeology, restoring Lake Ilo and the EIS, to nesting Canada geese.

2. Outdoor Classrooms - Students

Dickinson State University students taking an Ornithology class made a trip to the refuge April 24. Don Bozovsky showed them waterfowl on Lake Ilo and a sharp-tailed grouse dancing ground.

On April 28, Don gave the local Girl Scout Troop a refuge slide presentation in the refuge office and later took them out to look at birds on the refuge.

A refuge tour was given to the Halliday High School Vo-Ag class on May 8. Later that day the local Cub Scouts planted around 30 trees (donated by the Soil Conservation Service) on the refuge.

On May 13 the refuge and the Dunn County SCS sponsored a wildlife field day on Lake Ilo NWR. Personnel from both agencies gave presentations, a nature hike, etc. to the 5th and 6th graders from Killdeer and Dodge Public Schools. Around 100 students attended the outing. The highlight of the day was when refuge personnel pulled frame nets from Lake Ilo. A large number of fish were caught. The white suckers were ready to spawn so they got to see what eggs and milt were all about.



Don Bozovsky instructing one of the 5th and 6th grade groups in the SCS-FWS sponsored field day. Around 100 students attended. 5/92 WLB

In October the Killdeer Earth Science Class toured the Folsom Archaeological Site within Lake Ilo's mudflats. The archaeological crew was working at the time and was gracious enough to give them a tour and answer questions.

6. Interpretive Exhibits/Demonstrations

Though the office is small, the major portion of one wall is devoted to public exhibits. A leaflet display/dispenser has been built and placed near the office entrance and other interpretive items have been slowly added to the office to make things more appealing to visitors.

8. Hunting

Lake Ilo NWR is closed to all hunting. Boundary areas are hunted frequently during pheasant and deer seasons. State Highway 200, which runs along the north refuge boundary, is a favorite cruising area for road hunters.

9. Fishing

Fishing is a major recreational pursuit on Lake Ilo NWR. Only about 152 visits were made, which is up about 17 from last year but way below the norm prior to 1988. The reason for the decline in use was the winterkill during the 1988-89 winter. Most people do not want to spend their time fishing since the winterkill, even though a small fishery still exists. Also, most people that inquired about fishing thought that the lake was closed.

10. Trapping

Recreational trapping on Lake Ilo NWR is discussed in Section G.15.

12. Other Wildlife Oriented Recreation

The majority of the public use on the refuge was that of people driving through the refuge observing wildlife, etc. or hiking. A total of 3,125 visits were estimated for these two activities. This is an increase of 210 from 1991.

14. Picnicking

A seven acre park in the northeast corner of the lake is maintained by Dunn County under Special Use Permit. The park has been a prominent feature in refuge visitation since the lake was established. It contains a wood concession stand and picnic shelter built by the County, and a rock bathhouse and two pit toilets constructed by the FWS. The park area is entirely tree covered and the County mows the grass during the summer.

Since Lake Ilo has been lowered seven feet, fewer people want to spend their time picnicking in the park. Only one group picnic rented the concessions buildings during the summer. Approximately 160 people did use the area in 1992 which is up from 1991. Our 1988 visitation, when the lake was at normal pool was around 830.

17. Law Enforcement

The only person with law enforcement authority is Don Bozovsky. A good working relationship is needed and maintained with the local Sheriff's Department, the State Game Warden and the local police department.

Don attended the 40 hour LE refresher training at Marana, AZ from January 27-31 and the fall firearms qualifications at Upper Souris NWR on September 11.

Law enforcement activities consist of patrols during high public use times such as hunting or fishing seasons or an occasional night time patrol. Not a lot of time is spent on specific LE patrols, instead most violations are encountered incidental to other duties.

The year had fewer problems and violations as compared to the last few. Four violation notices were written and numerous warnings were given.

Law Enforcement Activities 1992

<u>Date</u>	<u>Violation</u>	<u>Number</u>	<u>Disposition</u>	<u>Total Fines</u>
10/20	Trespass on a NWR	4	Each paid \$50	\$200

The four individuals cited for trespass were actually hunting pheasants. Because of the circumstances they were cited for a lesser penalty.

Two separate state violations were encountered near the refuge. One involved an untagged antelope and the other involved two people hunting too close to an occupied dwelling in the city of Dunn Center. All of the information was turned over to the state warden.

Archaeological violations have decreased since 1990. This was thought to be due to previous signing, press releases, and enforcement cases. Another contributing factor was that vegetation covers the remaining area of the mudflats of Lake Ilo, making surface collection much more difficult than in the past.

Several low flying aircraft were observed "buzzing" Lake Ilo. Unfortunately getting registration numbers is difficult, especially the three inch lettering. No warnings were given out.

Below is a summary of verbal and written warnings issued in 1992.

Enter refuge after hours	4 (3 adult, 1 juvenile)
Operation of ATV on public roadway	1 (1 adult)
Trespass - Closed Area	2 (2 adults)
Total	7

I. EQUIPMENT AND FACILITIES

1. New Construction

A 14' X 66' pre-fab house trailer received through excess property in 1991 was installed directly east of the office/shop building. Water, electrical, and sewer lines had to be installed. Don and Greg from Ilo and Maintenance Worker, Duane Brenneise and Bio. Tech., Brian Mautz from Audubon NWR installed the house, installed the service lines and skirted the house. Additional improvements were done inside the house. All services were connected to existing lines within the shop. The sewer line was connected to the office/shop septic tank to reduce costs and to minimize disturbance to the possible archaeological resource.

Archaeological clearance to dig in the service lines was obtained from Rhoda Lewis, Region 6 Archaeologist. Rhoda inspected the installation and checked for archaeological resources. What was found was insignificant and the information was passed on to the State Historic Preservation Officer.



Duane Brenneise pulling the bunkhouse into place with the dozer. Brian Mautz walks along to help guide him into place. 9/92 DJB

2. Rehabilitation

Two windmills that were to be used for the grazing program received attention after years of non-use. One complete windmill was made functional with the existing equipment. All it needed was some internal parts. Another received a pump jack that pumps the water out with a gasoline engine. This windmill will be repaired to operate off of the wind, with the replacement of the head, in the future. All repairs were payed for via grazing receipts to improve the units. They were not useable without the water source.

In June, the residence water well that also supplies the water to the office/shop had to be repaired. The electric motor went out and due to its old age could not be replaced. Instead, a new motor and pump had to be replaced.

3. Major Maintenance

Maintenance of a recurring nature included: blading roads, fence repair, sprayed noxious weeds, mowed refuge trails and roads, repaired and replaced nesting material in goose nesting structures and wood duck boxes, strapped and installed nesting bales, miscellaneous painting, winter snow removal, general vehicle and building maintenance, sign maintenance, lawn care and trash pickup at public use areas.

4. Equipment Utilization and Replacement

The following large items were added to the refuge:

- New 2355 John Deere Tractor with 245 loader
- New 717 John Deere Rotary Mower
- Surplus International TD-14A Dozer from Tewaukon
- Zenith Data Systems Computer with a Fujitsu DL 2400 Printer
- New, 2, AT&T programmable telephones
- New Wajax Pacific Fire Pumper (engine & pump) for an existing pull type pumper. Replaces a poor engine and pump.

The dump truck was borrowed out to Des Lacs NWR for their use in hauling riprap.



A new John Deere 2355 Tractor and 245 loader and its mate, a 717 John Deere Rotary Mower was purchased to replace a safety hazard Massey Ferguson Tractor and to increase noxious weed control capability. 6/92 DJB

5. Communications Systems

The refuge was included in the FTS 2000 phone system. Two new programmable phones were purchased to accommodate the long numbers that need to be dialed. Rotary dial phones which were used previous to this upgrade, would have required a lot more of your fingers doing the walking. The FTS phone system is making a tremendous savings in the refuge budget, even if it sometimes takes a little bit longer to get through.

6. Computer Systems

The refuge received a computer system (mentioned in Section I.4). It was put to immediate use and makes our lives a lot easier.

8. Other

The following improvements were made on the refuge residence:

- Installed a radon gas removal system (see Section E.6)
- Purchased an AT&T model 722 telephone
- Purchased an AT&T telephone answering machine since the refuge line is hooked up to the residence
- Purchased a set top tuner for the wireless cable TV system
- Repaired iron filter and installed an in line water filter
- Installed two new steel doors and storm doors

J. OTHER ITEMS

4. Credits

Don Bozovsky wrote and typed the entire report. Refuge Assistant, Marilyn Wohlk assembled the report.

K. FEEDBACK

When is this station going to become a wetland district? There are many things that have happened to this station over recent years to warrant an expansion to this status.

Lake Ilo NWR staff is responsible for the management of four NWR's in Southwestern North Dakota. Total acreage is 8,103 acres of which 4,877 acres (60%) are owned in fee and 3,226 (40%) are easement. The fee title total has increased with the purchase of a portion of Stewart Lake NWR. More staff have been added with a new Bio. Tech. in 1992, and at the writing of this report in 1993, a new Private Lands Bio. Tech. to work West River. The Lake Ilo Dam is to be restored at a multi-million dollar price tag. This will improve numerous aspects of the refuge. The refuges are beneficial to not only waterfowl but endangered species as well. The most significant archaeological resource in Region 6 is currently in Lake Ilo. The Private Lands program is expanding. A person is devoting a full time effort in creating wetlands in this area of the state which is known for excellent waterfowl nest success. Farm Bill activities is now a refuge responsibility over six counties in West River Counties. FmHA Conservation Easements are coming in that we must handle. A 1,200 acre Bureau of Reclamation mitigation area has been purchased and will be transferred to us. We are now able to purchase Waterfowl Production Areas and Wetland Easements and the list goes on. This area is not the sleepy little place that it used to be many years ago. It is time for the Service to recognize the potential of this station and to recognize it as a Wetland District.

Long time Bio. Tech., Chesley Dinkins passed away on February 15. He had retired in 1983 after 47 years as the field manager of Ilo. He devoted his life to the development of the refuge and its satellites. He is buried in the Dunn Center Cemetery which is adjacent to the refuge boundary. He wouldn't have had it any other way!

With all the many things we do as Service employees it is a wonder we survive. We have to be a "Jack of all trades" and go above and beyond the call of duty sometimes. I don't have to go into all the gory details about our plight, as we all know what we do and what we are expected to do. Sometimes you feel like the squirrel in the picture below - burned out-out of gas. But the funny thing is we keep going because we are dedicated to the resource. My hat is off to you!



WHITE LAKE NATIONAL WILDLIFE REFUGE
Dunn Center, North Dakota

ANNUAL NARRATIVE REPORT
Calendar Year 1992

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

INTRODUCTION

White Lake National Wildlife Refuge is a 1,040 acre fee title area located along U.S. Highway 85, four miles east of Amidon, North Dakota in Slope County. The refuge was established in 1941 as a refuge easement area of 960 acres. In 1959, the 960 acres under easement were purchased along with another 80 acres to set the boundaries as they are today.

The refuge is administered as a part of the Audubon National Wildlife Refuge Complex by the Refuge Manager stationed at Lake Ilo NWR. The station is located 90 miles from the Lake Ilo headquarters. Visits were made to the refuge to conduct surveys, maintenance, inspections and to monitor work projects.

Public use on the refuge is by special use permit only. The lake does not have a viable fisheries. U.S. Highway 83 passes along the north boundary and affords the public a view of the area. A roadside rest/scenic view area was proposed many years ago in a development plan, but has never come to pass.

WHITE LAKE NATIONAL WILDLIFE REFUGE

UNITED STATES
DEPARTMENT OF THE INTERIOR

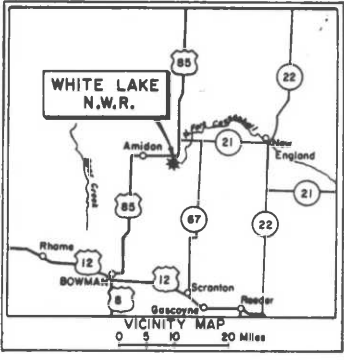
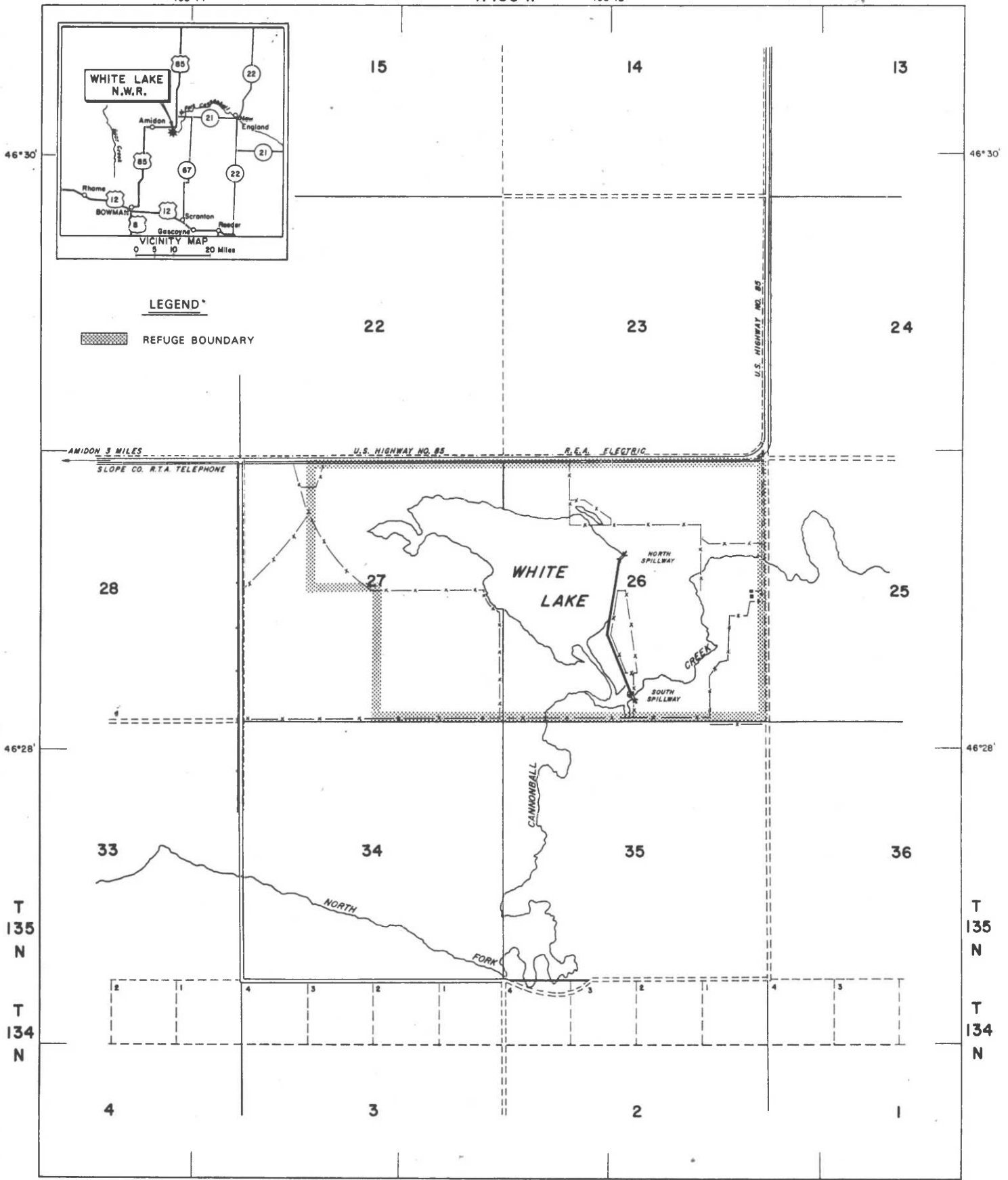
SLOPE COUNTY, NORTH DAKOTA

UNITED STATES
FISH AND WILDLIFE SERVICE

103°14'

R 100 W

103°12'



LEGEND*

REFUGE BOUNDARY

COMPILED IN THE DIVISION OF REALTY FROM SURVEYS BY BLM AND FWS

DENVER, COLORADO MARCH, 1960
REVISED: FEBRUARY 1985



B. CLIMATIC CONDITIONS

The below data was collected by Mr. Roy J. Frederick, a NOAA observer located at the Slope County Courthouse in Amidon, ND, five miles west of the refuge.

Table 1. Temperature and Precipitation for CY-1992, White Lake NWR

<u>Month</u>	<u>Precip. (in.)</u>	<u>Normal</u>	<u>Snow</u>	<u>Max. Temp (°F)</u>	<u>Min. Temp</u>
Jan	.23	.37	1.0	55	-21
Feb	.08	.37	-	65	4
Mar	.76	.54	-	73	19
Apr	.39	1.53	-	81	17
May	.48	2.54	-	93	26
June	1.74	3.85	-	94	30
July	3.05	2.23	-	89	43
Aug	1.72	1.49	-	97	35
Sept	1.03	1.41	-	96	38
Oct	.16	.74	-	94	17
Nov	.79	.50	.5	58	8
Dec	.27	.35	4.0	45	-29
Totals	10.7	15.92	5.7	97	Extremes -29

F. HABITAT MANAGEMENT

2. Wetlands

White Lake is the largest body of water on the refuge at approximately 190 acres, and the major waterfowl attractant in the immediate area. It is impounded by an earthen dam containing two spillways constructed of concrete and petrified wood. There is currently no positive water control on the lake, which averages about 4 feet in depth. A dam built by beavers adjacent to the south spillway in 1983 impounds an additional 18 inches of water above the spillway crest during periods of high water. During these periods, saline flats located on the west and south side of White Lake are inundated and provide an additional 30 acres of waterfowl brood and loafing habitat. Providing positive water control for these areas would represent a major step toward increasing waterfowl use on the refuge. Seven other impoundments created by earthen dikes and two dugouts total approximately 40 acres.

White Lake was about 3' (Elev. 90) below the spillway crest and held only about 131.5 surface acres or about 4' of water in winter and early spring. White Lake did not fill due to minimal runoff. It froze up at elevation 87.98 feet in late October. Most other small wetlands held some water and two filled during the spring. The wetlands that filled maintained some water in them throughout the year. All were used heavily by waterfowl.

The Fish & Wildlife Enhancement Office conducted a contaminants study on the refuge. Collection of water, sediments, water birds, and eggs were analyzed. The results have not been received at the writing of this report.

2. Grazing

Mr. Brice Stegner, a refuge neighbor, was issued a SUP to graze on the east side of White Lake. The area was approximately 70 acres of old DNC. This was the second year of grazing this unit. The grazing period was from 6/19 to 7/23 at a rate of 35.8 AUM's in each of two units. Mr. Stegner had to maintain 1.6 miles of electric fence to keep the cattle in the area. Results were good but one more year of grazing will be needed. This was the fifth grazing permit issued in the past five years. After many years of no grazing management, we are on our way. As part of the permit, the cooperator received a deduction for spraying noxious weeds on the refuge.

3. Having

Doug Nordby the refuge neighbor to the southwest, was issued a haying permit for 40 acres of old DNC. As payment for the hay, he is required to disk and harrow one field twice in the spring of 1993. He was required to leave one-third of the bales on the other field for nesting bales to be put out on White Lake. The Highway 85 road right-of-way was also hayed by Nordby. He was to give the refuge one-fourth of the hay as payment. These bales were used as nesting bales.

10. Pest Control

Approximately 45 acres of Canada thistle and bull thistle was sprayed with 2,4-D by the grazing cooperator. In the past the FWS sprayed 17 acres on the average.

The 10'X10' patch of leafy spurge that was found and sprayed in 1991 could not be located. It is possible that we achieved enough control in 1991 to keep it from coming up.

G. WILDLIFE

1. Endangered and Threatened Species

One immature golden eagle was observed on 8/20. A piping plover survey was conducted on June 22. No plovers were observed.

2. Waterfowl

Ducks

A waterfowl survey was conducted on May 4. A total of 710 ducks were tallied. No counts were done during the peak of the spring migration due to other work loads.

Waterfowl production was down compared to 1991. Total production was 330 ducks. Low water decreased dabbling productivity and the attractiveness to diving ducks was decreased as there was no flooded emergent vegetation in White Lake itself. See the Lake Ilo NWR waterfowl section for further

details.

Due to low water, the island on the west side of White Lake was connected to the mainland. No nest dragging was conducted.

A brood count was conducted on July 16:

<u>Species</u>	<u>Number of Broods</u>	<u>Total Young</u>
Gadwall	14	93
Mallard	1	5
Pintail	1	1
Blue-winged teal	1	2
Green winged teal	<u>1</u>	<u>1</u>
Total	18	102

On 8/27 1,000 ducks were tallied. Only one duck count was conducted in the fall. On October 21, the lake was frozen over and no ducks were observed. Only 170 Canada geese were observed.

Geese

On May 4, 83 Canada geese were counted. No counts were conducted during the peak of the migration due to other work demands.

One fall goose count on 10/21, shortly after freeze up, tallied 170 Canada geese.

Goose production was high again in 1992. An estimated 71 Canada geese were produced. There were 15 known nests on the refuge. No nests were on the one acre island on the west end of White Lake. Due to low water, the island turned out to be a peninsula in 1992. All known nests were on structures. For the first time ever on the refuge, Canada geese nested on tubs.

Table 2. Nesting Structure Use by Canada Geese in 1992.

<u>Location</u>	<u>Structure Type</u>	<u>Number</u>	<u>No. Suitable for Nesting</u>	<u>No. Nests</u>	<u>Nest Outcome</u>	<u>Success</u>
White Lake	Large round bales	11	11	10	10 successful	100%
	Tubs	1	0	-		-
	4-legged structure	2	2	2	2 successful	100%
Other Ponds	Large round bales	5	5	1	1 successful	100%
	Tub	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u> successful	100%
Totals		21	20	15	15 successful	100%

4. Marsh and Water Birds

Around 800 sandhill cranes were observed on 10/21 flying over and landing on and off the refuge.

On May 4, 180 eared grebes and three western grebes were observed. One great blue heron was present on 8/20. Twenty eight white pelicans were also observed on the same day.

5. Shorebirds, Gulls, Terns, and Allied Species

Four long-billed curlews were observed on 8/27. Three black-bellied plovers were also observed the same day. Wilson's phalaropes, marbled godwits, willets and American avocets were present in small numbers during the spring and summer. One upland sandpiper nest was found on 5/27.

6. Raptors

Common raptor species are occasionally observed on the refuge. One golden eagle was observed on 8/20. One prairie falcon was observed on 8/27.

8. Game Mammals

White-tailed deer were not observed as often as in past years, numbers seemed to be down.

Two antelope were observed on May 4. This was the first observation in several years.

10. Other Resident Wildlife

A sharp-tailed grouse dancing ground was discovered on a hilltop on the south side of White Lake in 1988. This lek was again active in 1992. Around 40 grouse use this hill top for their springtime ritual.

6. Animal Control

Butch Clendenen of Amidon was issued a SUP to trap White Lake NWR. The permit stated that beaver, and muskrat were not to be trapped. We restricted him from trapping more than 4 coyotes. Mr. Clendenen was required to set out 10 sets that were to be targeted for skunks. He caught 4 skunk, 5 fox and 3 raccoons, and 2 coyotes.

7. Disease Prevention and Control

Inspections were made but no signs of diseased birds were found in 1992.

STEWART LAKE NATIONAL WILDLIFE REFUGE

Dunn Center, North Dakota

ANNUAL NARRATIVE REPORT

Calendar Year 1992

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

STEWART LAKE NWR

INTRODUCTION

Stewart Lake National Wildlife Refuge is located in Slope County about eight miles southwest of Amidon, North Dakota. The refuge consists of 1,590 acres of flowage and refuge easement land and 640 acres owned in fee title. In 1936, approximately 1,906 acres of perpetual easements were obtained. In 1939 another 320 acres were put under easement and 3.99 acres were given to the government by Dugald A. Stewart, for park and recreational use (this area was very popular during the 1940's and 50's for family picnics and swimming). In 1991, 636 acres of refuge easement land was purchased in fee title. The FWS now owns all of Section 12 which consists of native grass and the majority of Stewart Lake itself. The refuge was established by Executive Order on February 3, 1941.

The refuge is administered as a part of the Audubon NWR Complex by the Refuge Manager stationed at Lake Ilo NWR. The station is 17 road miles southwest of White Lake NWR and 107 miles from the Lake Ilo headquarters.

STEWART LAKE NATIONAL WILDLIFE REFUGE

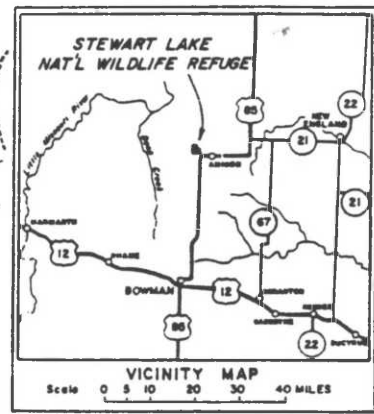
UNITED STATES
DEPARTMENT OF THE INTERIOR

SLOPE COUNTY, NORTH DAKOTA

UNITED STATES
FISH AND WILDLIFE SERVICE

103°27'

R 102 W R 101 W

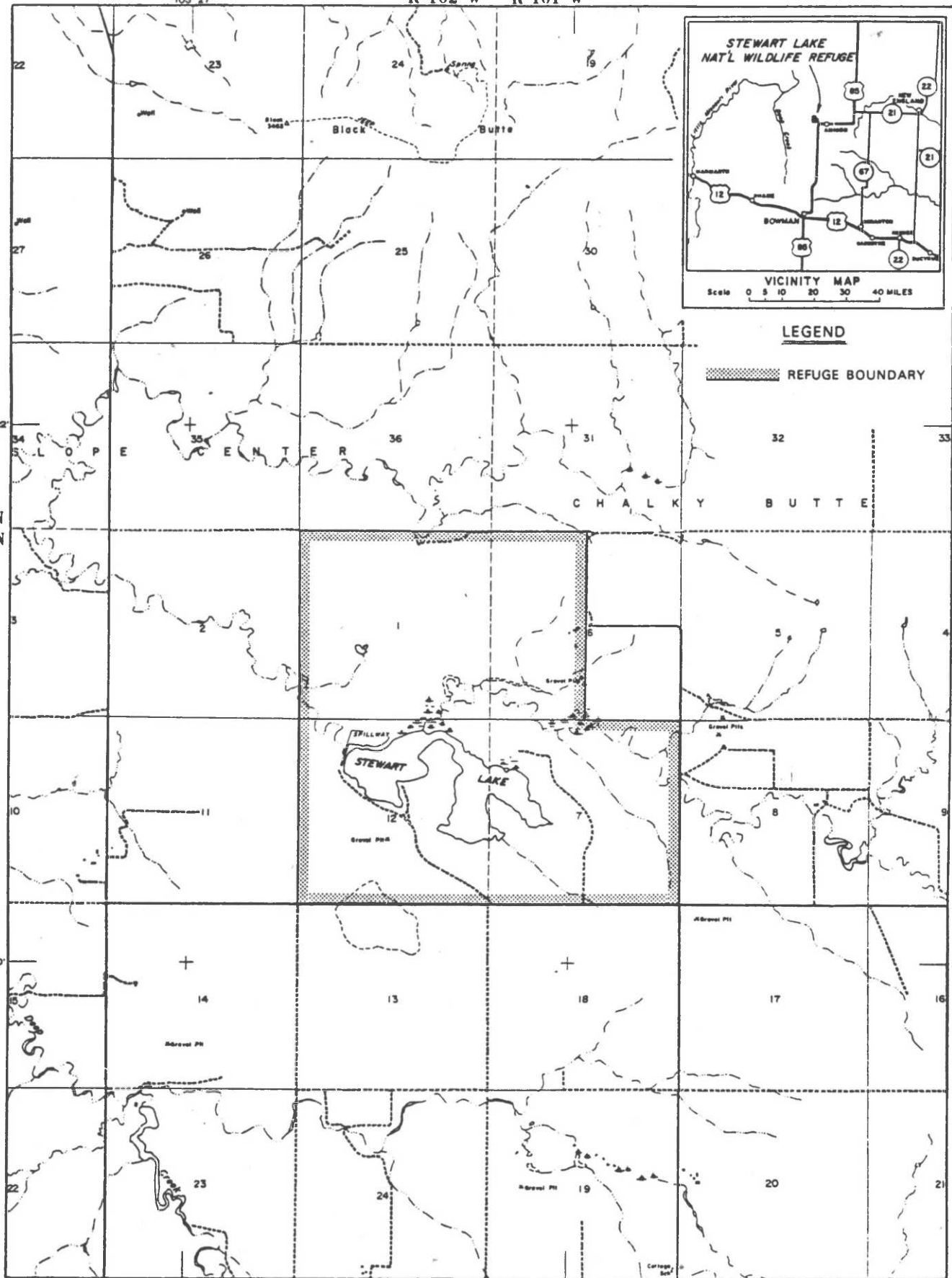


LEGEND

REFUGE BOUNDARY

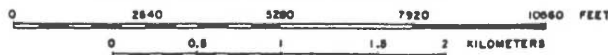
T 134 N
T 133 N

T 134 N
T 133 N



COMPILED IN SURVEYS AND MAPS
FROM SURVEYS BY U.S.G.S. AND U.S.F.W.S.

FIFTH PRINCIPAL MERIDIAN



LANVER, COLORADO

AUGUST 1979

13°
True North
Magnetic N
MEAN
DECLINATION
1973

GPO 852 - 775

6R N.D. 324 403

B. CLIMATIC CONDITIONS

See White Lake NWR narrative for summary of weather conditions in 1992.

F. HABITAT MANAGEMENT

2. Wetlands

The water level on Stewart Lake in early spring was elevation 151, or 3 feet below spillway crest with a total of 123 surface acres of water. Some spring run-off and rains, which were above normal in July and August, helped maintain the water at a fair level during the remainder of the year. The lake froze up at elevation 150.43 in October. An island that had eroded over the years was exposed again in 1992.

A request was again received from the State Department of Transportation, to remove water from Stewart Lake for the U.S. Highway 85 road construction project. The contractor that removed water in 1991 was allowed to remove the remainder of his total and a new contractor was allowed to remove 1 million gallons. Neither one removed any water.

The Bismarck Fish & Wildlife Enhancement office continued to collect bird samples for contaminants studies. Elevated selenium levels were detected in gadwall ducklings in 1989. Levels have decreased since that time. It was theorized that the reason for the elevated levels was, the low water level with little to no run-off, which in turn concentrated the selenium. Since that time, at least some run-off was received and the levels have in turn decreased.

5. Grasslands

Stewart Lake NWR contains approximately 2,033 acres of native grasslands and rock outcroppings surrounding the 197 acre Stewart Lake. A tributary of Deep Creek is impounded by an earthen dam with a rock and concrete spillway. The lake is also spring fed. These springs are on the east end of Stewart Lake.

The surrounding uplands have been severely overgrazed for several years and provide little nesting cover for waterfowl. The new fee title acquisition will help to correct this. The first year of rest showed promise and the grasslands should recover nicely in a few years.

An area containing approximately 157 acres is surrounded by a 4-strand barb wire fence that is for the most part intact. This area is under easement whereby all use by cattle and people is prohibited between April 1 and July 15. About 60 acres of this easement is no longer necessary since it is included in the new fee title acquisition area.

G. Wildlife

2. Endangered and Threatened Species

Eagles and peregrine falcons are occasionally observed on the refuge. None were observed in 1992. A piping plover nesting survey was completed on June 22. One adult plover was observed. As far as we know, this was the first documented observation on Stewart Lake.

3. Waterfowl

The only pre-pair count survey was conducted on 5/4. A total of 835 ducks were counted of which most of the total was made up of mallards, pintail, gadwall, BWT, GWT, shoveler, and wigeon. Smaller numbers of divers were counted. Only three Canada geese were observed.

Waterfowl pair counts were down from 1991. Diver production was reduced due to low water and little flooded emergent vegetation. Dabbling duck production was also down. Production totaled 429 ducks. Waterfowl production figures are in the Lake Ilo NWR waterfowl section.

Ten Canada geese were produced by three pair of geese. Six mallard tubs and six four-legged-double decker structures were available. None of the mallard tubs were surrounded by water in 1992. The three geese used the four-legged structures for nesting.

A waterfowl brood count on July 16 tallied the following.

<u>Species</u>	<u>Number of Broods</u>	<u>Total Young</u>
Gadwall	4	18
Wigeon	1	1
Mallard	<u>2</u>	<u>10</u>
	7	29

A count on 8/20 tallied 1,400 ducks and 130 Canada geese and on 8/27, 200 Canada geese and 1,000 ducks were counted. On 10/21, 450 Canada geese, 5 snow geese, and 16 white-fronted geese and 800 ducks (750 mallards) were observed.

4. Marsh and Water Birds

On May 4, 51 eared grebes were counted. The nesting colony was active again in 1992, even with low water levels.

On August 27, 19 white pelicans were counted on the refuge.

5. Shorebirds, Gulls, Terns and Allied Species

No long-billed curlews were observed in 1992. This species is very rare in North Dakota. Stewart Lake is in an area where they do occur.

The following observations were made:

	<u>May 4</u>	<u>May 27</u>
Wilson's Phalarope	12	66
American avocet	11	
Marbled godwit	2	1
Least Sandpiper	200	
Short-billed Dowitcher	9	
Killdeer	2	

6. Raptors

An osprey was observed on May 4, eating its prey, which appeared to be a small mammal. It was over a half-mile away from water.

8. Game Mammals

Pronghorn antelope are the most common big game animals on the refuge. One male antelope was observed on 5/4. On 8/27, 24 antelope were observed which consisted of ten does, twelve kids, and 2 bucks.

11. Fisheries Resources

Years ago Stewart Lake was a heavily used fishing lake. With the construction of other reservoirs in the area fishing activity declined. The old area fisheries biologist from the North Dakota Game & Fish Dept. continued to stock this lake with northern pike over the years. The lake was restocked after a possible winterkill in 1989, with 15,000 northern pike fingerlings. With the low water levels that we have experienced since that time, a winterkill certainly could have happened. To our knowledge, it has not been re-stocked since.

12. Wildlife Propagation and Stocking

Thirty-five giant Canada geese were obtained from the banding operation at Audubon NWR and transported to Stewart Lake to speed up the resident flocks production. The release was made due to poor production experienced during the last several years. The release consisted of 5 adults, 22 female juveniles and 8 juvenile males. Greg White, and volunteers, Mark Krom and Julie Feser participated in the banding operation at Audubon NWR and the release at Stewart Lake.

I. EQUIPMENT AND FACILITIES

1. New Construction

In February, five, four-legged nesting structures were built and installed in Stewart Lake in both fee title and the easement portion of the lake.

PRETTY ROCK NATIONAL WILDLIFE REFUGE

Dunn Center, North Dakota

ANNUAL NARRATIVE REPORT

Calendar Year 1992

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

PRETTY ROCK NWR

INTRODUCTION

Pretty Rock National Wildlife Refuge is located in Grant County, eight miles south of New Leipzig, North Dakota. The refuge is comprised of 800 acres of flowage and refuge easement obtained in 1936. The refuge was established by Executive Order on February 3, 1941.

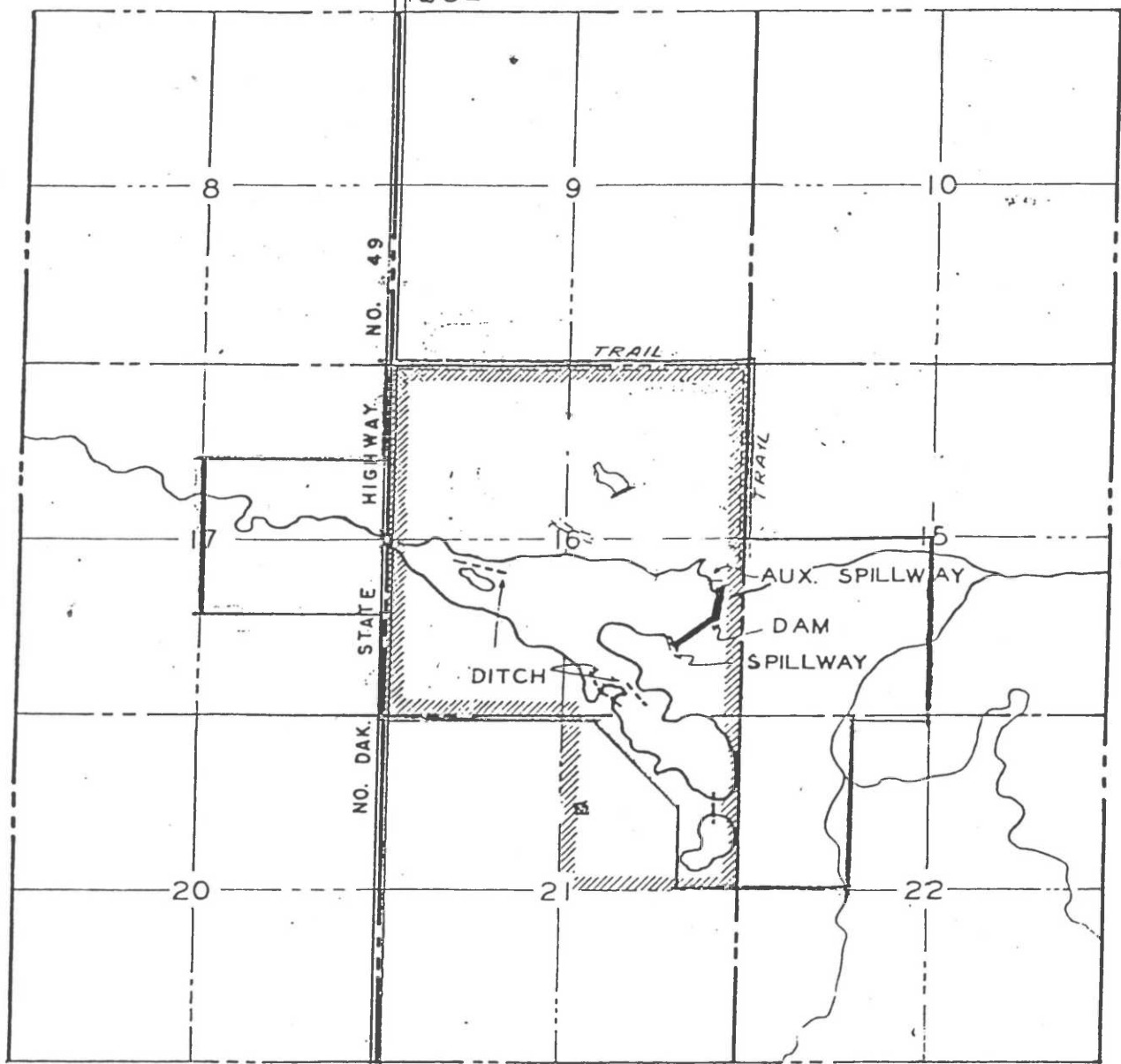
The refuge contains 640 acres of revokable flowage and refuge easement and 160 acres of perpetual flowage and refuge easement.

The State Land Department owns and administers 640 acres of land within the refuge with grazing proceeds going to the schools within the state. The remaining 160 acres is privately owned.

The refuge is administered as a part of the Audubon NWR Complex by the Refuge Manager stationed at Lake Ilo NWR. The station is 117 miles southeast of Lake Ilo headquarters and 83 miles east of the nearest other satellite, White Lake NWR.

PRETTY ROCK

T-132 N



8 MI. TO NEW LEIPZIG, N.D.
ON N.D. HWY. NO. 21 AND ON
MILW. AND N.P. R.R.

NO. DAK. STATE HIGHWAY NO. 49

NO. DAK.

20 MI. TO SO. DAK. LINE

R-90 W

U. S. DEPARTMENT OF THE INTERIOR
 FISH AND WILDLIFE SERVICE
 LOCATION MAP
Pretty Rock
 NATIONAL WILDLIFE REFUGE
 GRANT COUNTY, NO. DAK.

B. CLIMATIC CONDITIONS

The data found in Table 1 was collected by Mr. Daryl T. Hupel, a NOAA observer located approximately 9 miles southeast of the refuge.

Table 1. Temperature and Precipitation Data, Pretty Rock NWR, 1992.

<u>Month</u>	<u>Precip. (in.)</u>	<u>Normal</u>	<u>Snow</u>	<u>Max. Temp. (°F)</u>	<u>Min Temp.</u>
Jan	.33	.29	6.1	61	- 19
Feb	.16	.30	3.2	71	1
Mar	.75	.63	4.3	71	11
Apr	.60	1.65	1.2	91	7
May	1.73	2.85	-	93	25
June	5.00	3.59	-	87	33
July	2.09	2.22	-	86	40
Aug	1.29	2.08	-	92	37
Sept	.22	1.38	-	90	21
Oct	.42	.88	6.0	92	2
Nov	.84	.43	8.0	46	8
Dec	.46	.27	10.0	46	- 23
Total	13.89	16.57	38.8	93	Extremes - 23

F. HABITAT MANAGEMENT

Pretty Rock NWR consists of a shallow marshy slough roughly 147 acres in size surrounded by 650 acres of native grassland. Since the government only maintains refuge and flowage easements on this area, little to no Service management activity is carried out. Although this area is grazed season long, the current land renter and landowner, Ed Hochalter, has generally maintained the upland area in excellent condition for both his grazing operation and waterfowl nesting. However, due to the last five years of drought, the grasslands have been overgrazed.

Pretty Rock Lake froze up in the winter of 1991-92 with very little water in it. By May, the first trip to the refuge during the year, the lake was completely dry. Three of the small coal mine ponds downstream of the spillway did hold good water however. Above average rains in June helped to partially recharge the lake. The lake froze up at around elevation 145 or five feet below spillway crest.

G. WILDLIFE

3. Waterfowl

No spring or fall waterfowl surveys were completed. No water in the lake made that decision easy in the spring and low water and other duties prevented a count in the fall. Pair counts were done on the little water that was available in the coal min ponds. Waterfowl production was estimated at 14 ducks. This was down considerably.

Waterfowl production figures are in the Lake Ilo NWR waterfowl section.

Canada geese once again nested on the refuge. This was the third year since 1987 that geese were produced. Eight mallard tubs and seven double decker, four-legged nesting structures were available. Only two tubs in coal mine ponds were surrounded by water. The two four legged structures were also high and dry. Four Canada geese nested on four, four-legged structures, even though they were not in water. All were successful and production was estimated at 19.

No brood counts were conducted due to low water and other more pressing duties.

I. EQUIPMENT AND FACILITIES

2. Rehabilitation

The Pretty Rock spillway is in need of major repairs. Refuge force account work was done to try to repair the damage. The major holes and voids were cemented shut at the spillway crest and the voids in the stilling basin were marginally filled. The voids were larger than we had anticipated once we started to enlarge the entrance holes to pour the concrete into. Not enough hand mixable sand and concrete were hauled to the refuge to complete the work so a cement truck was called in to finish the job. At best, the repairs are a "band-aid" that may or may not hold when heavy water flows come over the top. Considering the amount of voids inside of the spillway and the condition of the rubble/masonry material, money should be sought for immediate repairs. Funding sources have been sought in the past and are continually asked for, but to no avail.