

**MARK TWAIN NATIONAL  
WILDLIFE REFUGE**

**ANNADA DISTRICT**

**Clarence Cannon National  
Wildlife Refuge  
Annada, Missouri**

**ANNUAL NARRATIVE REPORT  
Calendar Year 1989**

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

# MARK TWAIN NATIONAL WILDLIFE REFUGE

## ANNADA DISTRICT

Annada, Missouri

### ANNUAL NARRATIVE REPORT Calendar Year 1989

*M. Ross Adams*  
Refuge Manager

2/14/90  
Date

*[Signature]*  
Project Leader

2/14/90  
Date

\_\_\_\_\_  
Refuge Supervisor Review

\_\_\_\_\_  
Date

\_\_\_\_\_  
Regional Office Approval

\_\_\_\_\_  
Date

## INTRODUCTION

Clarence Cannon National Wildlife Refuge, located in Pike County, Missouri, one mile east of Annada, is situated within the Mississippi River floodplain adjacent to Pool No. 25. The refuge has 12 manageable moist soil units totaling 1,362 surface acres, 237 acres of green tree reservoirs, 4 semi-permanent water bodies totaling 72 acres, 750 acres of recently tilled cropland and 1,326 acres of other lands including forests, brush, grass and water. Total acreage is 3,747. A levee around the perimeter of the refuge provides protection from the Mississippi River floodwaters in most years.

The refuge was purchased fee title in 1964 with funds from the sale of migratory waterfowl stamps. The refuge, named after Congressman Clarence Cannon, was established with the primary objective of providing a feeding and resting area for waterfowl during migration. Recent emphasis has elevated the importance of management of moist soils to provide for the needs of waterfowl and other wildlife while de-emphasizing the cropland management program.



5                      6                      7  
 4                      1                      3                      2

### Personnel

1. N. Ross Adams, Refuge Manager,  
GS-11, PFT, EOD 1/23/84
2. Susan L. Bolander, Assistant Refuge  
Manager, GS-9, PFT, EOD 7/5/87
3. Carolyn A. Watts, Office Assistant,  
GS-5, PPT, EOD 4/19/81
4. John D. Allan, Maintenance Mechanic,  
WG-9, PFT, EOD 2/20/67
5. Christopher R. McSpadden,  
Maintenance Mechanic Trainee,  
WG-5, PFT, EOD 5/8/89
6. Jonathan Suddarth, YCC Enrollee
7. Allison Schaffer, YCC Enrollee

## INTRODUCTION

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## A. HIGHLIGHTS

Office Assistant Watts, Maintenance Mechanic Allan, and Managers Bolander and Adams received Special Achievement Awards for their excellent work in performance year 1989 (Section E.1).

The refuge staff received a Special Act Service Award for completing the year without an accident (Section E.6).

Assistant Manager Bolander was selected for a position with the Fergus Falls Wetland Management District (Section E.6).

Maintenance Mechanic Trainee McSpadden was converted to permanent full-time (Section E.1).

The 1,037-acre Gregory Landing Division was added the Annada District of the Mark Twain Refuge (Section C.1).

In 1989, the refuge experienced the second driest year in refuge history. December was 18° F colder than average with the lowest recorded temperature in refuge history (-28° F) (Section B).

The Service purchased a five-acre parcel owned by David Hyde allowing completion of the levee rehabilitation project without interruption (Section C.1 and I.2).

Maintenance Mechanic Allan restored 32 wetlands working in cooperation with Ottawa staff in Indiana and Ohio (Section E.8).

Four conservation easements were recommended on Farmers Home Administration properties bringing the total to 18 in northern Missouri (Section E.8).

Maintenance Mechanic Allan coordinated Force Account Team projects completed on Sherburne and Squaw Creek Refuges (Section E.8).

## B. CLIMATIC CONDITIONS

Weather in 1989 was hot and dry. Precipitation was 9 1/2 " below normal; the second driest year in refuge history. Pumping was required in both the summer and fall to bring water into moist soil units. Even with 760 hours of pumping, water levels were well below optimum. December was extremely cold and dry. Temperatures fell well below zero for two weeks and set an all-time refuge low temperature record of -28° F.

Climatic conditions are summarized in Figures 1 and 2, page 2.



# 1989 Precipitation Compared to Average Precipitation

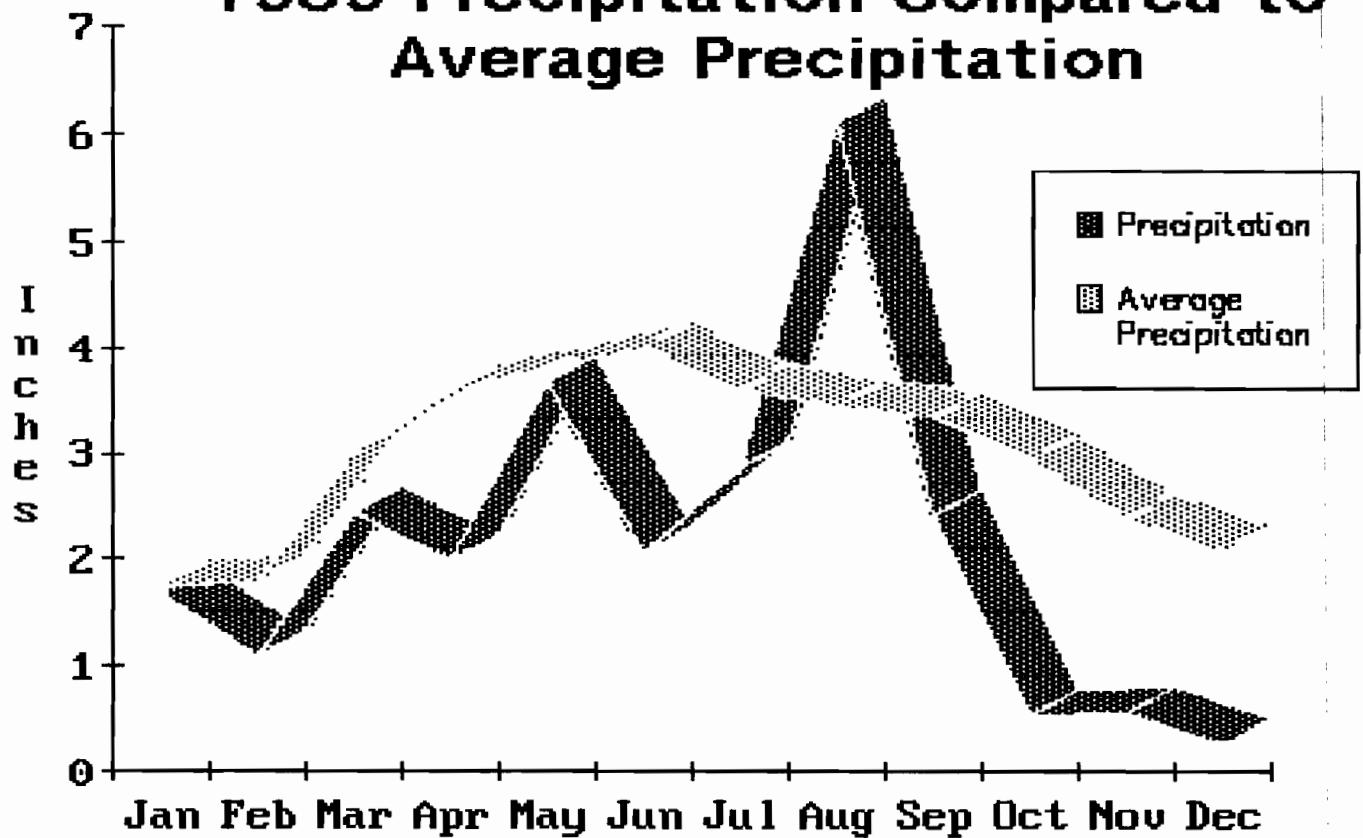


Figure 1

## Temperature Extremes Clarence Cannon NWR - 1989

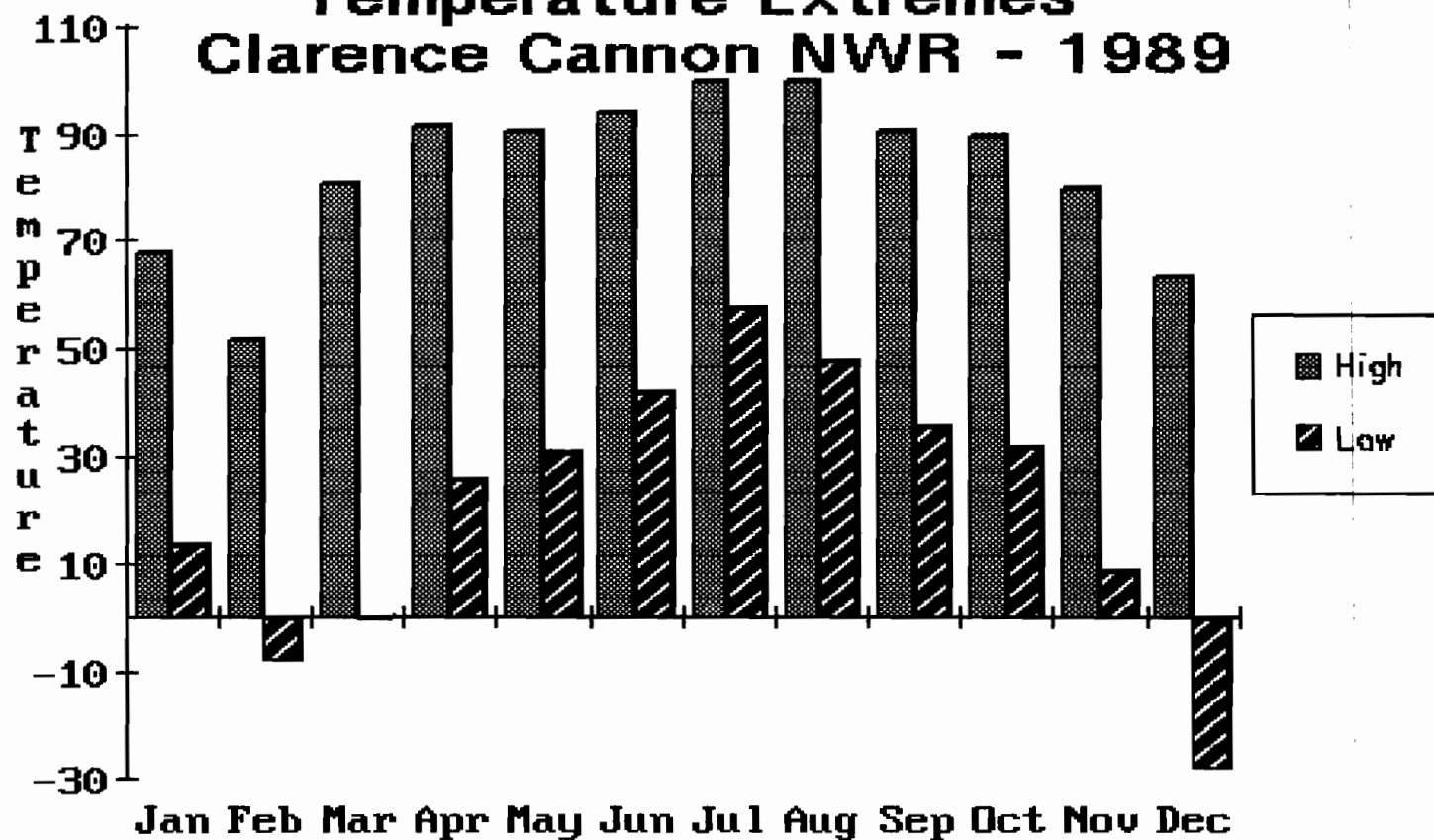


Figure 2

## C. LAND ACQUISITION

### 1. Fee Title

The Service purchased the last segment of the main levee remaining in private ownership. Mr. David Hyde was paid \$6,135 for 4.65 acres. The Elsberry Drainage District was paid \$1,830 for a quit claim deed to right-of-way interest on the 4.65 acres. Acquisition of this parcel allowed completion of the levee reconstruction project without interruption.

Three properties from FmHA inventory have been proposed for fee title acquisition. None have been approved by the Farmer's Home Administration.

The 1,037-acre Gregory Landing Unit was purchased on January 17, 1989.

### 2. Easements

Refuge staff inspected 20 properties and recommended four easements. The total number of easement proposals is now 18.

## D. PLANNING

### 2. Management Plan

The Forest Management Plan and amendments to the Water Management Plan and Hunting Plan were approved.

### 4. Compliance with Environmental and Cultural Mandates

The development of MSU 8 was cleared through the Corps of Engineers and the Missouri historic preservation officer.

## E. ADMINISTRATION

### 1. Personnel

Assistant Manager Bolander was selected to fill a vacancy at the Fergus Falls Wetland Management District. She will report in February, 1990.

The Assistant Manager position at Annada District was upgraded to a GS-9 in April.

Secretary Watts was promoted to Office Assistant, GS-5 in December.

Office Assistant Watts, Maintenance Mechanic Allan and Managers Bolander and Adams received Special Achievement Awards for the extra efforts put forth in performance year 1989.

Assistant Manager Bolander received an award for her development of a

computer application for storing and analyzing data on refuge resources.

Christopher McSpadden completed two, eight-week training sessions as a Maintenance Mechanic Helper. Chris is a graduate of the automotive maintenance school at the Mingo Job Corps Center. He was converted to permanent, full-time status after successfully completing the second training session at this station.

Maintenance Mechanic Allan successfully completed a two-week training session at Wheeler Refuge to qualify him to certify operators in the safe, effective use of refuge equipment including farm tractors, front-end loaders, backhoes, and bulldozers.

Contract Inspector Burnett, on loan from Swan Lake Refuge, resigned in January to pursue other opportunities.

## 2. Youth Programs

The refuge hosted an eight-week, non-residential Youth Conservation Corp (YCC) camp. The two enrollees were involved in easement posting, painting, and general facility maintenance.



YCC Enrollees Jon Suddarth and Allison Schaffer  
posting a conservation easement in Marion County.  
SLB (7/89)

## 4. Volunteer Program

A student of Tarkio College (Tarkio, Missouri) spent three weeks at the refuge taking photographs for a refuge slide show. Two refuge neighbors

volunteered as eagle nest observers, keeping records of activity at the bald eagle nest.

Over 250 volunteer hours were logged this year.

#### 5. Funding

A summary of refuge funding over the past five years follows:

FY	O & M	Special Maintenance Funds	1120	8260	1520
1989	\$185,300	\$4,994 Quincy LE and computer	\$1,000	\$1,898	
1988	\$139,500	\$1,100,000 Flood Damage Supplemental \$ 31,500 ARMMS \$ 14,285 Contaminants		\$1,786	\$3,400
1987	\$138,000	\$ 37,000 Small ARMMS \$ 250,000 Large ARMMS			\$2,500
1986	\$132,100	\$ 7,000 Small ARMMS		\$1,649	\$7,500
1985	\$153,000	\$ 33,000 Small ARMMS		\$2,561	\$7,500

A change order to the \$825,254 levee rehabilitation project added \$42,551 from the 1988 Flood Damage Supplemental monies to complete the 1,000 feet of levee lying on the newly acquired David Hyde property. This work was completed in June.

Another change order added \$82,949 to rehabilitate 3,000 feet of gravel road damaged by the 1986 flood. Completion of this work is expected in early 1990.

The Quincy office provided \$3,558 for a Dell computer, software and table and \$1,436 for law enforcement gear for District Staff.

#### 6. Safety

No lost time accidents occurred in 1989.

Safety Officer Bolander conducted a safety and health inspection in May. No major safety problems were noted.

The refuge received an Award of Safety Accomplishment for an accident-free year. Each member of the staff was presented with a Special Act Service Award for this achievement.

#### 8. Other (Farm Bill and Force Account Team)

Maintenance Mechanic Allan worked for three weeks with the staff of Ottawa



Refuge restoring wetlands in northeast Indiana and northwest Ohio. Allan's skilled use of dozers and backhoes resulted in 32 restored wetlands.

Maintenance Mechanic Allan inspected proposed projects on Sherburne, Squaw Creek, Swan Lake, Meredosia, and Savannah for possible construction by the Force Account Team. The team constructed a barrier island on Sherburne to protect a water control structure from ice damage. The work was done in weather with temperatures dropping to  $-20^{\circ}$  F. The job was completed just in time for the spring thaw and reflooding of the wetland. The team also reconstructed a dike on Squaw Creek to improve water management on one of their wetlands. In all, Allan spent ten weeks on Force Account Team activities. This program appears to be an excellent utilization of Service people and equipment to accomplish much needed projects for resource management. However, loss of the Maintenance Mechanic for extended periods of time slowed progress on the development of District projects.

Wetland drainage near the Delair Division in Pike County, Illinois continued at an accelerated pace since the Sny Drainage District cleaned their main ditch effectively lowering the water level by approximately 3 1/2 feet. Manager Adams worked with Manager Meyers and Farm Bill Coordinator Groutage in an effort to stop illegal drainage and restore damaged wetlands. The problem was discussed with the U.S. Army Corps of Engineers, the local ASCS office, and the Sny Island Drainage District.



Barton Pond, Pike County, Illinois, part of the accelerated drainage activities of the Sny Island Drainage District. NRA (12/89)

## F. HABITAT MANAGEMENT

### 2. Wetlands

The refuge currently has twelve manageable moist soil units (MSU's) totalling 1,375 acres, three green tree reservoirs (GTR's) totalling 237 acres, and four semi-permanent water bodies totalling 72 acres. A new 40 acre moist soil unit was developed in 1989, but a water control structure has not yet been installed.

No draw downs were initiated in 1989, because evaporation was so high and precipitation so low that all units were dry by June. Pumping in two units held water at levels of 6" or more in order to provide brood habitat for waterfowl. These units, in addition to Big Pond, which held water all summer, provided 175 acres of brood habitat. All three green tree reservoirs were dry all summer.

Irrigation of two units was attempted in order to set back cocklebur growth. This was somewhat successful, but with the hot, dry conditions, the water levels quickly dropped again. MSU 2 has traditionally been a problem, containing up to 40 percent cocklebur. One half of the unit was mowed in 1988 before cocklebur went to seed. The results were excellent; in 1989, this mowed half produced only 5 percent cocklebur while the unmowed half produced over 35 percent cocklebur. Another portion of this unit was mowed in July of 1989 to remove a 10-acre patch of cocklebur and dodder (*Cuscuta* spp.). This area then produced a vigorous stand of wild millet, in spite of the late date. While disking and irrigation would probably be the ideal control for cocklebur, mowing is also an effective option. Since this station does not have a large disk or a large budget for pumping, it is our only option.

Pumping for fall migrants began in September. Water in many units was brought to acceptable, though not optimum, levels by October. Additional pumping was required in November to maintain these levels.

Of the 1,375 acres of moist soil units on the refuge, 350 acres had enough water for fall migrants.

The refuge pump is capable of flooding all units, but it would require 50 days of continuous pumping and 7,000 gallons of diesel fuel to accomplish this. The refuge operation budget cannot fund this much pumping, so we fall short of accomplishing our primary objective. An initial project worksheet will be submitted for annual funds for pumping needs in years of drought.

### 3. Forests

Frost heave contributed substantially to the mortality among 12-18 inch trees planted by a contractor in November 1988. The 41 percent survival rate fell short of the 80 percent guarantee so the contractor replanted 5,300 trees in May to replace the dead ones. Survival among the replanted trees exceeded 80 percent.

#### 4. Croplands

The cooperative farmer planted 244 acres of soybeans, 315 acres of corn, and 146 acres of wheat overseeded with clover. The farmer harvested all the soybeans and 226 acres of corn leaving all wheat and 89 acres of corn as food for waterfowl and other wildlife.

The crops were excellent considering the dry conditions during the growing season. The corn averaged 135 bushels per acre and the soybeans averaged about 50 bushels. The wheat was planted about the 10th of September and was in prime condition when goose numbers started to build in late October. Most wheat was consumed by mid-December when freeze-up forced the geese south.

#### 9. Fire Management

No prescribed burning was accomplished on Cannon in 1989.

#### 10. Pest Control

The cooperative farmer sprayed 261 acres with 4.5 pounds of Eradicane per acre, 54 acres with 1 pound of Roundup per acre, and 289 acres with 9 ounces of 2,4-D per acre to control grasses and weeds in corn ground. He sprayed 244 acres with 1.25 pounds of Treflan per acre, 57 acres with .2 ounces of Classic, and 167 acres with 8 ounces of Blazer per acre to control weeds in soybean ground. The rates of application are expressed as weight of active ingredients per acre.

### G. WILDLIFE

#### 2. Endangered and/or Threatened Species

Bald eagles frequent the refuge between October and March. A peak of 33 eagles occurred on December 5th. Total use days for the year were 998, a record high and up 25 percent from last year. A bald eagle nest in the Goose Pasture Green Tree Reservoir was active from October 1988 to March 1989, but the birds then left the refuge. Activity resumed in January, but is not frequent.

A peregrine falcon was seen on the refuge in September.



Immature bald eagles are a common sight at Cannon.  
SLB (12/89)

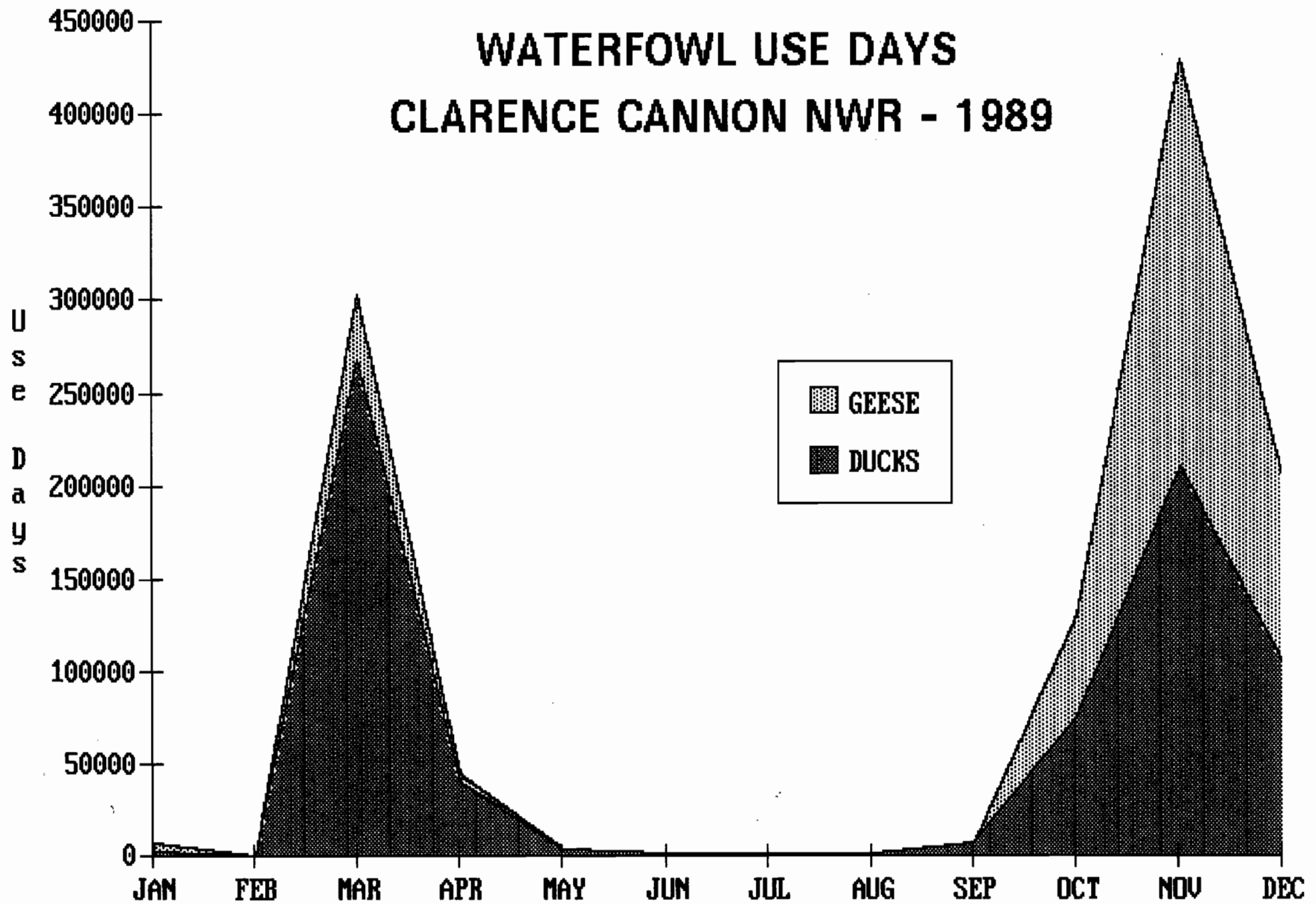
State endangered and threatened species seen this year include king rail, northern harrier, little blue heron, black-crowned night heron, Mississippi kite, yellow-headed blackbird, and snowy egret.

### 3. Waterfowl

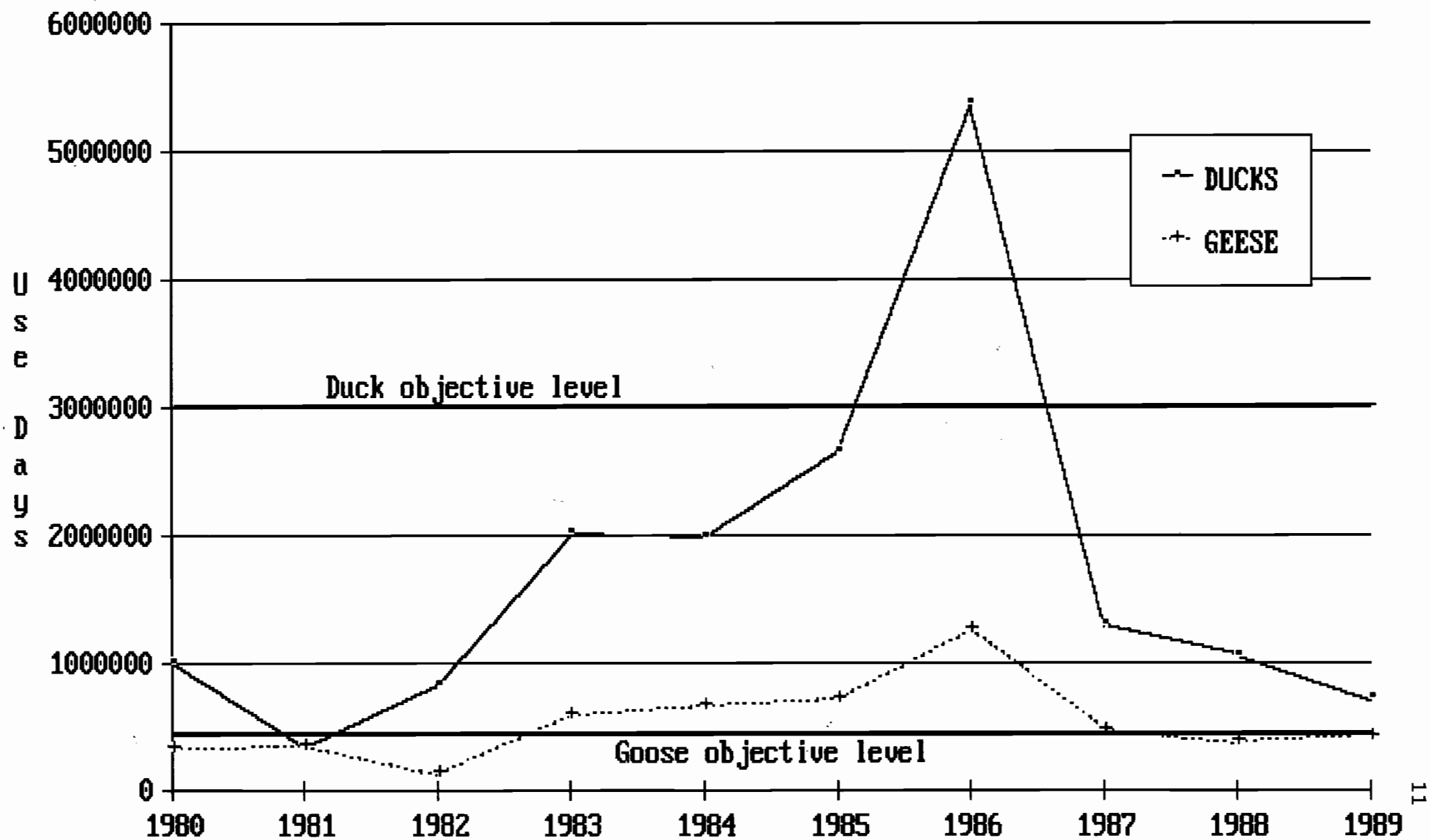
Waterfowl use days are summarized in Figure 3, page 10. Duck use days continue to decline each year, and are not even close to objective levels, as shown in Figure 4, page 11. There are two main reasons for this decline: there are less ducks in the fall flight and there is less wetland habitat available on the refuge. Unless more money becomes available for pumping, the habitat in dry years will continue to be inadequate.



# WATERFOWL USE DAYS CLARENCE CANNON NWR - 1989



# WATERFOWL USE DAYS - CLARENCE CANNON NWR - 1980 to 1989





Snow geese congregated in Big Pond after all other units had iced-over. SLB (12/89)

Waterfowl production was as follows:

Blue-winged teal	3
Hooded merganser	6
Mallard	40
Wood duck	<u>157</u>
Total	206

#### 4. Marsh and Water Birds

Use days for this group changed little from 1988. Most use occurred in the units that were maintained for waterfowl brood habitat.

One unusual sighting was three sandhill cranes, seen on November 13th.

#### 5. Shorebirds, Gulls, Terns, and Allied Species

Use days changed little from 1988.

#### 6. Raptors

Raptor use days were 1,460, well over the past four years' average of 840. A dramatic increase in Northern harrier use days occurred.

#### 11. Fisheries Resources

Adult bass, crappie, and bluegill were delivered to the refuge in April by Chuck Suprenant, Fisheries Services. These fish were stocked in Raybourne Slough in accordance with the 1988 Fish Management Plan. Unfortunately, drought conditions resulted in the death of all fish stocked.



Chuck Suprenant and Assistant stocking fish in Raybourne Slough. SLB (4/89)

#### 15. Animal Control

One special trapping permit was issued to a local trapper in order to reduce beaver and muskrat populations. Beaver had been plugging culverts and blocking ditches in the Crane Pond area. To date the trapper has removed eight beaver and nine muskrats. One beaver weighed 70 pounds, another weighed 54 pounds.

#### 17. Disease Prevention and Control

Two snow geese and a coot were collected in late October. Refuge staff performed a field necropsy on one bird and suspected avian cholera. The remaining birds were sent to the National Wildlife Health Center. The birds did not have cholera; cause of death was unknown.

Refuge staff closely monitored the refuge and found no additional dead birds.

## H. PUBLIC USE

### 1. General

Public use is limited to driving, hiking, photography, and other non-consumptive uses. Hunting, fishing, and trapping are not permitted on the refuge. Visitation is estimated at 1,000 per year; most of this occurs on weekends when the office and visitor center is closed. Most visitors come to see waterfowl and eagles during the fall months.

### 17. Law Enforcement

Occasional problems occur with vehicle trespass after sunset, though no signs of poaching or vandalism have been found.

## I. EQUIPMENT AND FACILITIES

### 1. New Construction

Maintenance Mechanic Allan worked in northeast Indiana and northwest Ohio with staff from Ottawa Refuge. Thirty-two wetlands in the area now offer prime habitat for the benefit of water-oriented wildlife that wasn't available before this team set about to restore lost or deteriorated wetlands.

The contract to rehabilitate the east levee was amended to include 1,000 feet of the levee in the southeast corner of the refuge which was finally acquired by the Service after three years of frustrating efforts and negotiations by refuge and realty staff. This was a key parcel and completion of construction on this segment of the levee now provides full protection from flooding to an elevation of 451.5 feet above mean sea level.

Maintenance Mechanic Allan constructed 1,000 feet of low level dike to hold water in MSU 9. This new unit will provide an additional 40 acres of moist soil habitat on the refuge.





John Allan using the D-8 to build the MSU 9 dike.  
SLB (9/89)



MSU 9 dike after completion. SLB (9/89)

Maintenance Mechanic Allan reversed the crank for raising the flap gate on the inlet structure at the pumphouse and elevated it four feet. This project will allow the flap gate to be raised during flood stage to bring water into the refuge by gravity flow.

#### 4. Equipment Utilization and Replacement

The M-44 truck and Shield-Bantam crane unit was transferred to the Surplus Property Division of Missouri. They plan to pick up the Huber-Warco grader in 1990, which has developed engine problems and is no longer operational. Estimated costs for repairs on both units were prohibitive.



Studebaker M-44 and Schield-Bantam being loaded  
for removal by the State of Missouri. SLB (12/89)

A 4X4 pick-up truck ordered to replace the aging 1/2 ton truck should be delivered in early 1990. Two other pick-up trucks are old, have high mileage, and need to be replaced.

The stake truck is also old and terribly under-powered for refuge needs. This truck should be replaced as soon as funds are available.

The lower unit went out on the Polar Kab 70 h.p. Johnson outboard stranding refuge staff on the Gardner Division. Repair costs totaled \$635. There were maintenance problems with the work boat also. Both units should be replaced.

#### 6. Computer Systems

The refuge received a second computer station with software. Computers have proven extremely valuable in reducing administrative time and in analyzing data to help with decision-making.

#### 7. Energy Conservation

Energy use was about average, though more diesel fuel for pumping was used due to the dry weather. No special energy conservation measures were initiated this year.

### J. OTHER ITEMS

#### 4. Credits

Secretary Watts typed and assembled the report.

Managers Adams and Bolander wrote Sections A and F.10.

Bolander wrote Sections B; C.2; E.2, 4 and 6; F.2 and 9; G; H; I.6 and 7.

Adams wrote Sections D.2, 3, and 4; E.1, 5 and 8; F.3 and 4; I.1, and 2; and J.4.