MARK TWAIN NATIONAL WILDLIFE REFUGE

Quincy, Illinois

ANNUAL NARRATIVE REPORT

Calendar Year 1985

NATIONAL WILDLIFE REFUGE SYSTEM
Fish and Wildlife Service
U.S. DEPARTMENT OF THE INTERIOR

NARRATIVE REPORT

MARK TWAIN NATIONAL WILDLIFE REFUGE

1985

COMPLEX HEADQUARTERS - QUINCY, ILLINOIS

WAPELLO DISTRICT OFFICE - WAPELLO, IOWA

- Louisa Division
- Big Timber Division
- Keithsburg Division

ANNADA DISTRICT OFFICE - ANNADA, MISSOURI

- Clarence Cannon NWR
- Delair Division
- Gardner Division

BRUSSELS DISTRICT OFFICE - BRUSSELS, ILLINOIS

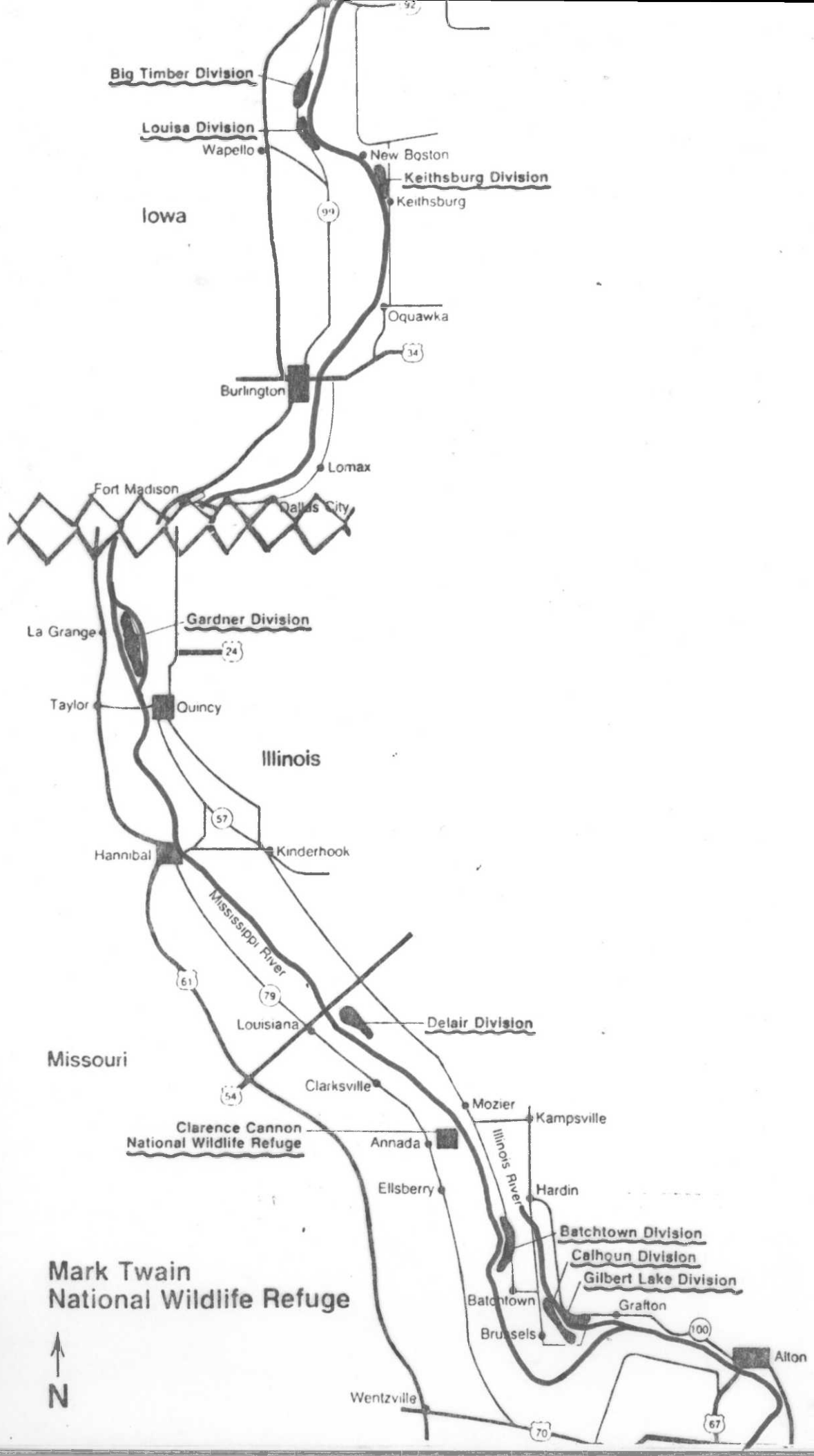
- Calhoun Division
- Batchtown Division
- Gilbert Lake Division
- Portage Islands Division

DEPARTMENT OF THE INTERIOR

UNITED STATES FISH AND WILDLIFE SERVICE

MARK TWAIN NATIONAL WILDLIFE REFUGE

QUINCY, ILLINOIS


Big Timber Division
Louisa Division
Wapello
New Boston
Keithsburg Division
Keithsburg
Iowa
99
Oquawka
34
Burlington
Lomax
Fort Madison
Dallas City
La Grange
Gardner Division
24
Taylor
Quincy
Illinois
57
Hannibal
Kinderhook
Mississippi River
61
79
Louisiana
Delair Division
Missouri
54
Clarksville
Mozier
Kampsville
Clarence Cannon
National Wildlife Refuge
Annada
Illinois River
Ellsberry
Hardin
Batchtown Division
Calhoun Division
Gilbert Lake Division
Batchtown
Grafton
Brussels
100
Alton
Mark Twain
National Wildlife Refuge
N
Wentzville
70
67

CALENDAR YEAR - 1985

REFUGE STAFF

ROBERT H. STRATTON, JR., - PROJECT LEADER, GM-13. . . . . QUINCY, ILLINOIS

BERT M. (MIKE) ANDUSS - ASSISTANT PROJECT LEADER, GS-11 . . QUINCY, ILLINOIS

T. SCOTT BATES - OUTDOOR RECREATION PLANNER, GS-11. . . . . QUINCY, ILLINOIS

RITA R. BERGSTRASSER - SECRETARY, GS-5. . . . . QUINCY, ILLINOIS

GERALD E. CUMMINGS - DIVISION 2 BIOLOGIST - GS-12 . . . . . QUINCY, ILLINOIS

A. WAYNE STANLEY - REFUGE MANAGER, GS-11. . . . . .WAPELLO, IOWA

LEROY E. HOVELL, JR. - ASSISTANT REFUGE MANAGER, GS-9 . . . . .WAPELLO, IOWA
RETIRED EFFECTIVE MAY 24, 1985

MARVIN C. MC CARTY - ASSISTANT REFUGE MANAGER, GS-7 . . . . . .WAPELLO, IOWA

SALLY JACK - SECRETARY, GS-4. . . . . .WAPELLO, IOWA

ALEXANDER B. MC NEIL - MAINTENANCE WORKER, WG-9 . . . . . .WAPELLO, IOWA

N. ROSS ADAMS - REFUGE MANAGER, GS-11 . . . . . ANNADA, MISSOURI

KEVIN WILLIS - ASSISTANT REFUGE MANAGER, GS-7 . . . . . ANNADA, MISSOURI
TRANSFERRED TO LAKE ILO NWR, NORTH DAKOTA, JULY 7, 1985

BRAD MC KINNEY, ASSISTANT REFUGE MANAGER, GS-7. . . . . ANNADA, MISSOURI
TRANSFERRED FROM CRAB ORCHARD NWR, AUGUST 16, 1985

CAROLYN A. WATTS - SECRETARY, GS-4. . . . . ANNADA, MISSOURI

JOHN D. ALLAN - MAINTENANCE WORKER, WG-9. . . . . ANNADA, MISSOURI

KEITH KIRBY - TRACTOR OPERATOR, WG-5. . . . . ANNADA, MISSOURI

GEORGE W. PEYTON - REFUGE MANAGER, GS-11. . . . . BRUSSELS, ILLINOIS

ERIC N. SMITH - REFUGE MANAGER (TRAINEE), GS-7 . . . . . BRUSSELS, ILLINOIS
TRANSFERRED TO DE SOTO NWR, IOWA, FEBRUARY, 1985

DEBRA KIMBRELL - ASSISTANT REFUGE MANAGER, GS-7 . . . . . BRUSSELS, ILLINOIS
TRANSFERRED FROM MINGO NWR, MAY, 1985

DEBRA D. KUHN - SECRETARY, GS-4 . . . . . BRUSSELS, ILLINOIS

EUGENE A. SIMON - MAINTENANCE WORKER, WG-9. . . . . BRUSSELS, ILLINOIS



A "COMPLEX" STAFF

Bob Stratton Rita Bergstrasser Mike Anduss
Jerry Cummings T. Scott Bates

GENERAL

A. Organization

Completing thirty-seven years as a Complex of refuge units along the Mississippi, the concept of this type of management continues to provide outstanding results in the field of waterfowl management. The three District Offices responded to day-to-day programs plus special operations necessary to meet overall Complex objectives. Necessary coordination, assistance, and guidance from the Quincy Office was provided throughout the year.

Projects involving Quincy staff included Right-of-Ways (ROW), Corps of Engineers (COE) Timber Management, numerous video productions, steel shot programs, UMR Environmental Management Plan (EMP), Cooperative Agreements for General Plan lands, barge fleeting proposal meetings, dredge spoil sites, Recreation Technical Section meetings, Upper Mississippi Recreation Committee (UMRC), etc.

Sales from surplus farm crops, primarily corn and soybeans, were deposited in a special account and withdrawn as 8260 monies for maintenance on General Plan lands. This is a continuing agreement between the COE and the U.S. Fish and Wildlife Service for use of monies from the sale of surplus farm crops. One must point out that although the funds are a means of completing some unfunded projects, their availability from year to year is totally dependent on weather and river flood flucuations. In other words, if no surplus crops are produced, no funding is realized! Expenditures for 1985 amount to $5,114.00.

The total 1985 Annual Work Plan budget for the Quincy Office was $140,500, all in activity 1260, Refuge O&M. This amount covered only the minimum operations expenses. No basic or expansion funds were available during the year.

B. Personnel

Staff changes for the year were as follows:

Eric Smith, Assistant Manager at the Calhoun District, transferred to DeSoto National Wildlife Refuge in February.

Debra Kimbrell transferred to the Assistant Manager's position at Calhoun District from Mingo National Wildlife Refuge in May.

Kevin Willis, Assistant Refuge Manager at Clarence Cannon District, transferred to Lake Ilo National Wildlife Refuge, North Dakota, in July as the On-Site Manager.

Brad McKinney transferred from Crab Orchard National Wildlife Refuge to Clarence Cannon District as Assistant Manager in August.

Leroy Hovell retired as Assistant Manager at Louisa District in May and is now residing in Burlington, Iowa.

More information on individual staff changes may be found in each individual District's report.

Rita Bergstrasser, Quincy Secretary, received a Quality Step Increase for her continued high level of performance and response to increased work loads.

T. Scott Bates received a Superior Performance Award for his work with the Mark Twain Regional video program.



"Less taxes, of course" but a quality step increase, nonetheless! And well deserved too.

"It started with one tape, one camera, and one button!" Look at us now Ma! Scott Bates at his work bench; a much deserved award.



C. General Activities:

1. On Refuge Activities

Once again the Accelerated Refuge Maintenance Management (ARMM's) program kept staff members on their toes trying to "keep up" with an unseen computer. ARMM's monies totalled $173,800 throughout the Complex. District breakdown of ARMM's is listed in each individual District report. After all was said and done, much was accomplished that would otherwise have been just a dream!.

The administrative transfer of the 1,450-acre Bear Creek area, including four (4) islands in the Mississippi River, to the Cannon District from State of Illinois management was completed during January. The Gardner Division now totals approximately 5,426 acres. The Corps of Engineers (who own these lands) still maintain a public campground, miscellaneous project lands for their own use and cabin leases within the unit boundaries. Farming (124 acres) is largely handled by the Complex Leader due to its proximity to Quincy. It should be noted that this is the first year in five that a crop has been produced successfully on the Bear Creek Unit. This was accomplished through the efforts of the new Cooperative Farmer, Greg Adair, despite flood waters from the Mississippi River. Previous crop management was handled by the State of Illinois from their Rosedale office, 120 miles south of the area.



The Gardner Division of the Mark Twain with the new Bear Creek Unit shown in the center; these 5,426 acres represent some of the last "old growth" bottomland timber in this reach of the Mississippi River.

RHS 8/85

The proposal for purchase of the 1,076-acre Gregory Landing Division in Clark County, Missouri, is pending as the year closes. The tract lies on the Missouri shore of Pool 20. This bottomland timber and cropland/marsh area represents some of the only wildlife habitat along this pool. A public meeting with adjoining landowners, hunting club representatives, and the Clark County Commissioners was held in December. Quincy Project Leader Stratton, District Manager Adams and Biologist Maureen Murphy, Regional Office Realty staff, presented management proposals and general information to the group. Comments from the assembled landowners/commissioners indicated overwhelming support for the purchase by the Fish and Wildlife Service.

Complex visitors included Doug Johnson, Facility Manager, our main contact in keeping up with the ARMM's program in the Regional Office; John Ellis, RF-2 Supervisor, inspection tour of Clarence Cannon NWR District (Gardner, Delair and Cannon Divisions); Tim Feavil, COE Division Forester; Donna Kostka, Regional Office, and Hank Schneider, Upper Mississippi Refuge re: PSA video; Pat Larson and Tom Kelley, RO-PSW/TS, Public Use Program Review; and Roger Boykin, Forester from Crab Orchard NWR on General Plan (GP) land timber management programs.



Refuge Supervisor Ellis (left) discusses new moist soil unit management with District Refuge Manager Ross Adams at the Delair Division. The new water control structure both men are standing on represents the first phase of a major rehabilitation effort in Delair's water management program.

RHS 6/85

The Quincy staff was directly involved in two rights-of-way (ROW) applications. One individual requested a ROW through the Louisa District to reach a private hunting club. This request was eventually refused. The Sny Levee District's request for a ROW on the Delair District is still pending, with approval likely in 1986.

Staff attended COE timber management meetings at both Quincy, Illinois, and Wapello, Iowa, commenting on TSI work and species rejuvenation on GP lands.

Steel shot public meetings were set up in Monmouth and Hardin, Illinois and two others were arranged in the St. Louis, Missouri, area. The Quincy staff attended and assisted with the Monmouth, Illinois, meeting.

Comments were provided on State proposals on the COE Upper Mississippi River Environmental Management Plan involving General Plan land management by Missouri, Iowa and Illinois. In addition, the Quincy Office also submitted two acquisition projects for purchase consideration should the $245,000,000 plan ever develop.

All State General Plan management plans were reviewed, comments made, and submitted to the COE for approval. With minor modifications or comments, all were signed off by the District Engineers in Rock Island and St. Louis.

Mark Twain personnel were in attendance at a meeting involving barge fleeting adjacent to the Gilbert Lake Division. Those attending included COE planners, Ecological Services and a local hunting organization, the Migratory Waterfowl Hunters, Inc. Plans are "on hold" for the time being.

Outdoor Recreation Planner Bates was involved in the meeting of the Recreation Technical Section of the Upper Mississippi River Conservation Committee regarding placement of dredge spoil (sand) for river beach recreational use, planning and preparation for needed river recreational use surveys and review and input on proposed recreational developments on the Upper Mississippi.



Dredging and spoil deposition are major projects along the pooled portion of the Mississippi. Siltation is the number one "problem" we face in our management.

RHS 7/85

Project Leader Stratton attended the three-week Advanced Refuge Managers' Training Session in Washington, D. C., March 11-29.

Staff assisted/participated in the Gardner Division deer hunts of the Clarence Cannon District for the drawing of permits, numerous hunters' inquiries, and law enforcement patrol.

The Complex Office was used as a Command Post Base of Operations in March to conclude a sting operation conducted by both Illinois Department of Conservation investigators and Fish and Wildlife Service Special Agents. Arrests for illegal commercial fishing and sale of migratory birds were made in the Quincy area.

Division 2 Biologist Jerry Cummings visited refuges in RF-2 during the year for biological evaluation of their programs or for inspection purposes. Inspections were held at DeSoto, Crab Orchard, Mingo and Union Slough Refuges.

The major biological programs evaluated were concerned with farming and the use of pesticides and fertilizers in this program. The opportunity to convert to bio-farming was explored in addition to the potential for developing additional moist soil units. With an emphasis on production, a program of Buttonbush (Cephalanthus occidentalis) plantings was initiated along the river to create wood duck brood cover in areas that lacked this type of habitat. Planting of bottomland tree species (pin oak, sycamore, green ash, etc.) were continued on areas of the Mark Twain, Chautauqua and DeSoto Refuges. The elimination of insecticides on all RF-2 refuges was a welcome directive that was long overdue. Greenbelt areas were established with a 100-foot belt of cover adjacent to all water bodies and a 20-foot belt adjacent to ditches. The benefit these two actions will have on the refuge environment is immeasurable.

Numerous meetings were attended throughout the period:

- Scoping meeting for DeSoto Master Plan - Twin Cities, Minnesota
- Bio-Farming Workshop - Ames, Iowa
- Regional Programmatic - Twin Cities, Minnesota
- Management Analysis by W.E.L.U.T. on Squaw Creek, Mound City, Missouri
- Canvasback Habitat Update - LaCrosse, Wisconsin
- Bio-Farming in the Region - Kansas City, Wildlife Assistance Office
- Pre-Retirement Seminar - Twin Cities, Minnesota

A chapter on moist soil plant management was written for the new Refuge Manual and all management plans submitted to the Regional Office were reviewed and concurred on.

On a more personal note, I would like to say that NEVER in my career have I experienced the overwhelming support for my efforts as I have since my move to Quincy. "These guys (and Rita) are just great." My only regret is that retirement looms just around the corner and I must plan on leaving this stimulating work environment (maybe I'll just stay around until the big 70)!

PUBLIC AFFAIRS

Public affairs efforts by the Mark Twain Complex Office in 1985 included twelve news releases, interest group presentations, displays at conservation shows, and continuing work with the pilot videotape program.

Presentations were given at an environmental education conference, a local Audubon Society meeting and to a group of Cub Scouts during the year. The environmental education presentation was made by the Complex Outdoor Recreation Planner to approximately 30 elementary school teachers at a workshop sponsored by Western Illinois University and covered opportunities for use of National Wildlife Refuges as environmental study sites. The local Audubon Chapter had requested a speaker to discuss the possibility of the "adopting" the Mark Twain Refuge under Audubon's "Adopt-A-Refuge" program. After much discussion on their part about what we (the Fish and Wildlife Service) could do for them, the ball was left in their lap -- as of the end of the year, nothing further has been heard from them.

Manned displays were provided at two conservation shows during the year. The Outdoor Recreation Planner took the refuge's Duck Stamp display to the Quad Cities' Outdoor Show at Rock Island, Illinois, as a cooperative effort with the Rock Island Ecological Services Office and Upper Mississippi Wild Life and Fish Refuge, and used the same display at a Hunting and Fishing Day show sponsored by the Corps of Engineers at Mark Twain Lake in northeast Missouri. At the Rock Island show, the Service's two and one-half minute "Duck Stamp Story" videotape was available via a visitor-activated remote-start system. At the Mark Twain Lake show, videotape playback equipment was set up in a tent and a variety of wildlife programs were shown throughout the day.

The Duck Stamp display with the two and one-half minute videotape was also provided to one of the Quincy banks as an unmanned display for a one-week period with moderate use by bank patrons (the use was high enough that tellers in the lobby area where the display was located could recite the program by heart.



Conservation display at the Rock Island OUTDOOR SHOW - a joint effort of the Mark Twain, Upper Mississippi, and the Ecological Services office in the Quad-Cities.

TSB 9/85



The portable "Duck Stamp Story" display with Mark Twain's visitor-activated video equipment provided an eye-catching display for Mercantile Bank customers. Even the security guard took time out from his duties!

TSB 8/85

A variety of news releases were issued by the Quincy Office in 1985 including stories on the addition of the Bear Creek Unit to the Gardner Division, the bald eagle/steel shot controversy and public meetings, opening and closing of the Gardner Division to public use, and pre- and post-hunt releases concerning the Gardner Division deer hunts. In addition, the Complex staff provided tours and information to an Illinois Department of Conservation staff writer who wrote a feature story on the refuge's Illinois divisions that appeared in the Department's widely read conservation publication, "Outdoor Highlights". A copy is appended to this report.

Although we did not have time this year to make school presentations during National Wildlife Week, we were able to provide 100 local teachers with teacher packets and purchased a copy of the National Wildlife Federation's slide/tape show which was borrowed for classroom use by 25 teachers.

The refuge's pilot videotape production project is still alive, but we're not sure how well as we go into 1986. Although the value of videotape communications, both internally and with the public, has been amply demonstrated, the worsening funding situation and the time demands of such a program have severely restricted our outputs. Each of the three Mark Twain district offices was able to purchase playback equipment in 1985, but at year end, we have not been able to provide programming for its use. There does not appear to be money in the FY-1986 budgets for any production.

Videotape from the refuge files was provided to the local television stations along with a number of the news releases. We continue to find this use of our video production capability one of the most beneficial applications of the technology; one that shows immediate benefits in terms of television station and viewer recognition of Fish and Wildlife Service programs.

Productions that were accomplished during the year were more regional in scope. The thirty-second public service announcements produced for Upper Mississippi Refuge in 1984, went on the air in 1985 and have apparently been having the desired effect of increasing public awareness of the existence of the refuge. The first of a set of programs for Swan Lake National Wildlife Refuge was completed during the year, "Return of the River Otter", the six-minute story of reestablishment of that species to the refuge in recent years. Unfortunately, budget reductions will not permit any further work in 1986.

In August, our "Have-Camera-Will-Travel" Outdoor Recreation Planner travelled north to Seney National Wildlife Refuge, Michigan, to videotape a wetlands management workshop conducted as part of a Region 3 Project Leaders' Meeting. In early CY-1986, the nine hours of field tape will be edited down to a series of six one-hour tapes to be sent as a training series to Region 3 refuges. This will be the first use of video as an internal training tool, one that may have more and more value as overall budgets and travel funds become more limited. In early November, two days were spent on Upper Mississippi Refuge collecting field tape for a set of programs on the problems faced by migrating canvasback ducks, particularly disturbance by recreational boaters. This project is slated for completion prior to the 1986 fall migration.

Early in the year, Mark Twain's Outdoor Recreation Planner (videographer) was asked to present a workshop on videotape production and its interpretive applications to the Missouri Association of Interpretive Naturists. Based on post-workshop evaluations, the twenty interpreters and park managers who attended the four-hour session seemed to benefit from the session, but we all learned that it would take at least an entire day, if not two, to cover the basic subject matter adequately.

CREDITS

Anduss - Sections A, B, C

Bates - Section C and Photos

Bergstrasser - Proofreading, Final Typing, Assembly

Cummings - Section B

Stratton - Editing, Photo Captions, Photos

A Legacy of Land

Stretching 250 miles along the Mississippi River, Mark Twain Refuge is a haven for wildlife and sportsmen



by Jim Huffstodt
Information & Education

The wind-whipped waters of the Mississippi River flash beneath the keel as the 18-foot Boston whaler vibrates from the powerful thrust generated by a 150 horsepower engine.

On our port side slumbers the green covered length of Long Island. This is one of 32 islands lying within the Gardner Division of the Mark Twain National Wildlife Refuge, headquartered a few miles downstream at Quincy. Knowledgeable hunters praise Long Island as one of the prime white-tailed deer hunting sites in Illinois.

Scott Bates, outdoor recreation planner with the Mark Twain Refuge, throttles down the engine as we enter a narrow water path leading through this nest of islands. The chutes provide easy access to a place where waterfowl, beaver, deer and other wild creatures thrive.

"This is a beautiful place to drift through at twilight or early morning," Bates said. "You can't believe the quiet. One early morning we saw eight or nine deer lying along the bank as we came by. They didn't even stir, and we were only a few yards away. It was a wonderful sight."

The Mark Twain Wildlife Refuge is a wonderful sight for conservationists, too. Its nine major divisions are strung along a 250-mile stretch of the Mississippi River beginning south of Muscatine, Iowa and ending just north of Grafton, Illinois. The refuge protects approximately 25,000 acres of valuable wildlife habitat, including bottomland timber, marsh and cropland planted for waterfowl feeding purposes.

After our waterborne tour of the Gardner Division, the importance of the Mark Twain Refuge was outlined at Quincy headquarters by Bob Stratton, a project leader with the U.S. Fish and Wildlife Service.

"If you've ever flown in a light plane over Illinois, you understand how important preserving these remaining patches of habitat is," Stratton said. "There isn't a great deal of natural habitat remaining in relative terms. Our mission is to preserve and protect the 25,000 acres along the river system which are so important to the thousands of migrating waterfowl. That's why the Mark Twain was created."

Managing the Mark Twain is a complex process. Stratton and his subordinates must deal with state governments in Iowa, Missouri and Illinois, the U.S. Army Corps of Engineers and its various district offices, and a total of 17 different state and Federal legislative districts. The Mark Twain is a valuable resource not only for waterfowl conservation, but as a recreational resource utilized by hikers, canoeists, boaters, anglers, wildlife photographers and hunters.

A large national map in Stratton's office dramatizes the importance and unique aspect of the Mark Twain Refuge. More than 400 yellow pins mark the locations of the National Wildlife Refuges. Only two, Stratton explains, are essentially river oriented: the Mark Twain and the Upper Mississippi River National Wildlife and Fish Refuge headquartered at Winona, Minnesota.

Although the Mark Twain National Wildlife Refuge was formally established in 1958, the area's valuable marsh, sloughs, ponds, islands, bottomlands and backwaters are outgrowths of the U.S. Army Corps of Engineers massive navigational program initiated in the 1930s.

Stratton explained that the Corps purchased thousands of acres at that time. Eventually, lands not needed for the navigational projects were turned over to the U.S. Department of the Interior for conservation purposes.

Five of the nine major divisions within the Mark Twain--encompassing approximately 16,000 acres--are located in Illinois. The U.S. Fish and Wildlife Service works closely with the Department of Conservation in developing comprehensive wildlife management plans for the river floodplain.

The first of the Illinois sections is the Keithsburg Division, a 1,400 acre tract of bottomland located near the town of the same name. This maze of backwater, ponds, and bottomland forest is open for fishing and small game hunting, except



during the Illinois waterfowl season when the area is closed for waterfowl protection purposes.

The Gardner Division is located six miles upstream from Quincy. The area includes four major islands, chief of which is Long Island. A very popular deer hunting program takes place each year on the seven mile long island under U.S. Fish and Wildlife supervision. In total, the Gardner Division consists of 6,500 acres of bottomland, including approximately 2,500 acres of basically undisturbed old growth forest. The area is utilized for wildlife observation, fishing, and mushroom and nut gathering. It remains closed during the waterfowl season.

The Delair Division lies within the Sny Island Levee and Drainage District in Pike County. The Mark Twain Refuge actively manages 1,620 acres of this wetland strip, located between the main levee on the east bank of the Mississippi River and the valley bluffs on the east side of the valley. The Delair Refuge includes cropland, marsh and water located near navigational pool 24. This area is primarily a waterfowl refuge and is managed as a true "sanctuary," closed to the public at all times.

The Batchtown Division consists of 2,249 acres located in Calhoun County, about 12 miles north of the confluence of the Mississippi and Illinois rivers. The area includes timbered islands, narrow sloughs, river channels and small agricultural areas bordered by the main channel of the Mississippi River. Fishing and wildlife observation are allowed except during the waterfowl season.

The other major segments of the Mark Twain include the Big Timber Refuge in Iowa, totaling 1,757 acres; the Clarence Cannon Refuge in Pike County, Missouri, totaling 3,747 acres; the Portage Islands Division near St. Charles, Missouri, totaling 142 acres; and the Louisa Division in Iowa, totaling 2,609 acres.

All these independent islands of wetland habitat form a natural bridge for migrating waterfowl as they move from the northern breeding grounds to the southern wintering areas each year. The protection of this bridge is vital to

Ducks soaring into the air are a common sight along the Mark Twain National Wildlife Refuge. Consisting of nine major divisions strung along a 250 mile stretch of the Mississippi River, the refuge protects 25,000 acres of wildlife habitat. Five of the divisions, totaling 16,000 acres, are in Illinois, with the other components located in Missouri and Iowa. (Photo courtesy of the U.S. Fish and Wildlife Service.)









The many faces of the Mark Twain (clockwise from bottom): an endangered bald eagle occupies a day roost; a combine harvests a corn crop which provides food for waterfowl; a trapper displays his catch during a special trapping program to prevent over-population; George Peyton, manager, Calhoun Division, inspects moist soil plants planted as food for waterfowl.

hundreds of thousands of Canada geese, blue geese, snow geese, mallards, wood ducks, canvasbacks, pintails and a dozen other species. At various times, 150,000 ducks and geese may be found on any one division.

On the refuge lands, the U.S. Fish and Wildlife Service utilizes a number of management approaches to maximize the area's waterfowl carrying capacity. This habitat enhancement sometimes consists of planting cropland in areas which later will be flooded, or controlling water levels through the use of low dikes and water control structures. Croplands are planted on a cooperative basis, with independent farmers providing the labor and seed while agreeing to leave a certain percentage of the harvest for waterfowl. In some cases, the refuge sells part of its share of the crop with the money supporting various habitat enhancement programs on the Refuge.

> 'If you've ever flown over Illinois, you can understand how important it is to preserve these remaining habitat patches'

The Mark Twain refuge land, approximately 25,000 acres, constitutes only a part of a much larger 100,000 acre stretch of river bottomland which falls under the General Plan (or GP designation), Stratton explained. These additional lands are managed under a cooperative agreement with the U.S. Corps of Engineers and other involved agencies, such as the Department of Conservation.

The various agencies coordinate their waterfowl management plans under the aegis of the Mark Twain Wildlife Refuge. Stratton explained that this coordinating function is vitally important in developing a comprehensive wildlife plan that serves the overall needs of the Mississippi Flyway.

The important habitat preserved within the refuge also serves as home to a wide variety of wildlife, including the endangered bald eagle. Every year, from about January through March, several hundred bald eagles winter down by the open water at places like Pool 21 near Quincy and Pool 19 at Keokuk, Iowa.

What is the Mark Twain Wildlife Refuge? Beyond the statistics, plans and paperwork, the Mark Twain is the river itself--the great, powerful Mississippi, whose waters nourish a kaleidoscope of life. A great painter might suggest the essence of this great river country by capturing the way a bald eagle perches in an old cottonwood; the frenetic early morning industry of a beaver bustling along a backwater; the silhouette of a great blue heron frozen against a setting sun; or the white snow storm that erupts across the sky when a thousand snow geese take flight.

For further information about the refuge contact: The Mark Twain National Wildlife Refuge Headquarters, Suite 100, 311 N. Fifth St., Quincy, IL 62301; or telephone (217) 224-8580.

Louisa National Wildlife Refuge
Wapello, Iowa

Annual Narrative Report
Calendar Year 1985

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



McCarty McNeil Stanley Jack

PERSONNEL

	Name	Title/Grade	Status
1.	Wayne Stanley	Refuge Manager, GS-11/5	PFT EOD 9/20/82
2.	Chet McCarty	Assistant Manager, GS-7/2	PFT EOD 12/09/84
3.	"Beanie" McNeil	Maintenance Mechanic, WG-9/5	PFT EOD 2/10/62
4.	Sally Jack	Secretary, GS-4/1	PFT EOD 5/27/84
5.	Leroy Hovell	Assistant Manager, GS-9/10	Retired 5/24/85

REVIEW AND APPROVAL

Wayne Stanley 2/10/86
Submitted by Date

Complex Review 2/11/86
Date

John W. Ehli 3/25/86
Regional Office Review Date



YCC PERSONNEL

Name	Dates
Jim McNeil	6/10/85 - 8/15/85
Ramona Haight	6/10/85 - 8/15/85
Jeff Ashby	6/10/85 - 8/15/85

VOLUNTEERS

Name	Hours
Jack Gustison (Photography)	160

Introduction

The Louisa Refuge is comprised of the Louisa, Big Timber and Keithsburg Divisions of the Mark Twain NWR. The refuge was essentially formed under the Fish and Wildlife Coordination Act of 1958 (P.L. 85-624). Prior to 1958 the refuge was managed on a "post and patrol" basis as a portion of the Upper Mississippi Wild Life and Fish Refuge. Except for the 40-acre headquarters site and 20-acre public access at Keithsburg, the entire refuge is General Plan Land owned by the U.S. Army Corps of Engineers and managed by the Fish and Wildlife Service under a co-operative agreement.

Primary objectives for the refuge include (1) provide undisturbed feeding and resting areas for migratory waterfowl and (2) improve and maintain existing habitat to perpetuate optimum annual production of wood ducks. Secondary objectives include maintenance of balanced populations of resident wildlife, maintenance of river bottom habitat in a natural state and providing for limited day use recreation.

The 2,609 acre Louisa Division is located in Louisa County, Iowa, six miles east of the city of Wapello. From 1919 until 1947 the refuge was part of the Muscatine-Louisa County Drainage District and a constant effort was made to drain and farm the area. With the Corp's 9-foot river channel project, the refuge was acquired mainly through condemnation procedures. Presently, the refuge is comprised of 984 acres of bottomland timber, 400 acres of cropland, 197 acres of moist soil, and 759 acres of open water, marsh and sloughs. The headquarters is located on the Louisa Division. The State of Iowa's Lake Odessa Management Area (4,000+ acres) borders the refuge on the south. This area is managed by the Iowa Conservation Commission under a cooperative agreement with the Corps of Engineers and Fish and Wildlife Service. ICC's management emphasis is directed toward public hunting.

The 1,758 acre Big Timber Division is located three miles north of Louisa in Louisa County, Iowa. The refuge lies outside the Mississippi levee and therefore is dominated and managed by the fluctuations of the Mississippi River. The refuge consists of 1,258 acres of bottomland hardwood timber and 500 acres of sloughs and marshes. The refuge is open to year-round public use including hunting and fishing in accordance with applicable State of Iowa regulations.

The Keithsburg Division is located one mile north of the city of Keithsburg in Mercer County, Illinois. The unit is 45 road miles (one way) from the Louisa headquarters. Prior to acquisition the refuge was intensively drained and farmed (700+ acres). Presently, the refuge is comprised of 775 acres of bottomland timber and 585 acres of open water and marsh. Active management consists of water management.

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K. FEEDBACK

A. HIGHLIGHTS

Waterfowl populations lowest on record...

ARMM program eliminates backlog of facilities and equipment maintenance...

New shop facility scheduled for FY86...

B. CLIMATIC CONDITIONS

Weather wise the year was a mixed bag. Precipitation was below normal in April through September with an accumulated deficit of 9.5 inches compared to normal. In October and November the accumulated precipitation was 7 inches above normal. For the year, precipitation was 2.45 inches below. From a farmer's perspective, the growing season was grossly deficient in rainfall, and when it came time to harvest the meager crops, fields were too wet. The cooperative farmer has not harvested 60 acres of soybeans to date on Louisa NWR because of rain and snow.

D. PLANNING

2. Management

Chapters of the Refuge Management Plan completed during the year included Cropland Management, Fire Management, Law Enforcement, and Sign Plan (ORP Bates). The refuge Trapping Plan was amended to include trapping on Turkey and Otter Islands of the Big Timber Division.

Annual plans completed included Prescribed Burning, Annual Trapping Proposal, Water Management/Use, Pesticides Use Proposal, and General Plan Land Report and Plan. A considerable amount of time was obligated on preparing and updating the refuge's Inventory of Refuge Projects.

E. ADMINISTRATION

1. Personnel

The following displays the refuge's staffing pattern over the past five years:

	PFT	PPT	TFT	FTE Totals
FY86	4	-	-	4.00
FY85	5	1	-	4.26
FY84	3	1	-	3.67
FY83	2	1	-	2.56
FY82	2	1	1	3.06

WEATHER DATA

1985

Month	Precip.	Normal	Differ.	Snow-fall	Temperature Average High	Average Low	Extreme High	Date	Extreme Low	Date	Remarks
Jan.	1.61	1.51	+ .10		27	8	39	6	-14	19	
Feb.	1.19	1.30	- .11		31	15	52	28	-17	1	
Mar.	2.55	2.44	+ .11		53	35	80	28	20	6	
Apr.	.84	3.12	-2.28		70	47	86	18	28	9	
May	3.95	3.98	- .03		77	56	93	26	40	3	
June	.61	4.40	-3.79		79	59	94	8	50	20	
July	2.50	3.45	- .95		87	65	93	8	54	23	
Aug.	1.65	1.94	- .29		80	54	94	9	52	2	
Sept.	2.04	4.23	-2.19		76	35	98	5	33	27	
Oct.	6.01	2.54	+3.47		65	45	76	26	34	6	
Nov.	5.67	2.10	+3.57	T	43	30	60	17	10	29	
Dec.	1.45	1.51	- .06	32.2	26	6	44	30	-18	19	
Annual	30.07	32.52	-2.45	32.2			98	Sept. 5	-18	Dec. 19	

Data collected at NWS station Lock and Dam #17, Mercer County, Illinois.

Assistant Manager Hovell retired 5/24/85 and is now enjoying the easy life in Burlington, Iowa.

Secretary Jack was promoted to GS-4 on 5/27/85.

2. Youth Programs

Youth Conservation Corps was the only youth program sponsored by the refuge this year and it was excellent--the best in the last three years. Enrollees were reduced to three from six the previous years. They worked four days per week (Monday - Thursday) for ten weeks beginning June 10. Past years they worked five days per week for eight weeks. The enrollees enjoyed the four day work week and the staff had a chance to catch up on other duties which brings us to the one persistent problem. Because of funding, it was again necessary to supervise the YCC program with permanent staff at a cost of $4,500 and 300 staff hours. In mid-summer the assistant manager, who had been supervising the YCC, left for a ten week vacation in Georgia (FLETC) so the manager had to assume that responsibility.

The YCC crew removed duck blinds and reposted boundaries on Big Timber NWR including Ramsey, Turkey and Otter Islands on the Mississippi River.

On Keithsburg NWR they installed barrier posts to the newly enlarged parking lot and planted bottomland hardwood seedlings between the lot and the road.

On Louisa NWR they helped remove water control structures from M.S. 2 and 3, planted bottomland hardwood seedlings (see Section F.3. for details) on a 10 acre site and helped install 18-inch screw gates, tubes and access structures creating M.S. 6 and 7. And, of course, painting, washing, yard maintenance, trash pick up, etc. was part of the program.

No disciplinary problems were encountered. One boating accident occurred (see Section E.6. for details). The EE portion occurred at the work sites discussing the projects in relation to refuge management. The crew worked hard, turned out quality work and had fun at the same time. More NWR's should be so lucky!

4. Volunteers Program

Due to a shortage of funds, equipment and manpower to support the program, the volunteer program was scaled back during the year. The refuge had only one active volunteer during the year. Jack Gustison continued work on updating photography files. Jack constructed several photo blinds on the refuge utilizing his own design and materials. Over the past three years Jack has contributed over 400 hours to the refuge program and provided excellent photos and information for our files.

5. Funding

5-Year Funding Pattern

	FY86	FY85	FY84	FY83	FY82
1260	95.6	147.6	137.0	137.6	83.0
8260	--	0.3	6.7	17.1	24.9
1520	5.5	5.5	10.0	--	--
ARMM	154.0	102.8	24.0	--	--
RPRP	15.0	--	--	--	--
Total	270.1	256.2	177.7	154.7	107.9

FY85's AWP was amended several times during the year mainly to job order funds for ARMM projects or to delete them. This caused some confusion in planning and completing projects, but overall the year ran quite smoothly. One job order project (5.0) was cancelled by the R.O. and the funds transferred to another station. 1260 funds were adequate to conduct operations at a level somewhat above the minimum operating level thanks to the R.O. picking up the tab for moving costs associated with the new assistant position (4.8). Lump sum leave payments associated with the retirement of an assistant manager were also paid from 1260 funds (3.0).

FY86 will be a challenge as 1260 funds fall approximately 25.0 shy of covering a Minimum Operations Level and 6.0 shy of covering salary costs alone. We cannot explain the 35% decrease other than Gramm-Rudman chose to start with Louisa first. ARMM funds are earmarked for specific projects and RPRP funds are earmarked for removal of an overhead powerline on the refuge. Buddy, can you spare a dime!

6. Safety

Two accidents occurred this year, both roll-overs, but that's where the similarity ends.

June 26 a jon-boat with two YCC enrollees aboard took on water and rolled over in the Mississippi River. They were transporting duck blind debris removed from Turkey Toe Island (Big Timber NWR) to a pick up site on Louisa NWR. Enrollee Haight was struck on the side of the head during the roll-over. No bumps, bruises or lacerations were inflicted, but a headache and a doctor's examination resulted in one day lost time. The week prior enrollees were instructed in water safety and all were wearing PFDs. Contributing factors leading to the mishap were fatigue from the hot weather and hard work plus the debris was not distributed properly and may have exceeded capacity. It was a good learning experience. Luckily the cost in personal injury and property loss was minimal. Boating safety was again reviewed with cautions on how much and where to position load.



CPR Training for staff and YCC personnel...

6/85 CM

July 28 Maintenance Mechanic McNeil was mowing the roadway atop the Keithsburg levee and turned off onto the Spring Slough access road. Weeds and brush were hiding the edge of the road. The left front tire dropped over the edge sending the tractor sliding down the enbankment 15 to 20 feet on its left side. Luckily McNeil was not injured. The tractor has an enclosed cab and McNeil was wisely wearing his seat belt. Repairs to the tractor totalled $684.25. Side slopes on the levee average 2:1 with considerable sections approaching 1:1. Re-conditioning the levee to a safer, more maintainable slope was previously identified on IPW's and estimated at $600,000.

8. Other Items

Refuge revenue sharing checks were presented to Louisa ($262.00) and Mercer ($167.00) counties. These small payments are due to the limited fee title acreage on the District.

The ROW request generated by refuge neighbor Jerry Cocklin in 1984 was resolved in mid-1985. The Corps of Engineers was nearing a decision to deny Mr. Cocklin's request when a U.S. Congressman entered the procedures. Mr. Cocklin claimed to have an historical access through the refuge and the Congressman wanted us to work out a solution. The Congressman and COE were finally convinced there was no evidence of historical use by the Cocklin family and granting a ROW through the refuge would not be compatible with the primary purpose of the refuge. Mr. Cocklin's ROW request was finally denied by the Corps of Engineers.

F. HABITAT MANAGEMENT

1. General

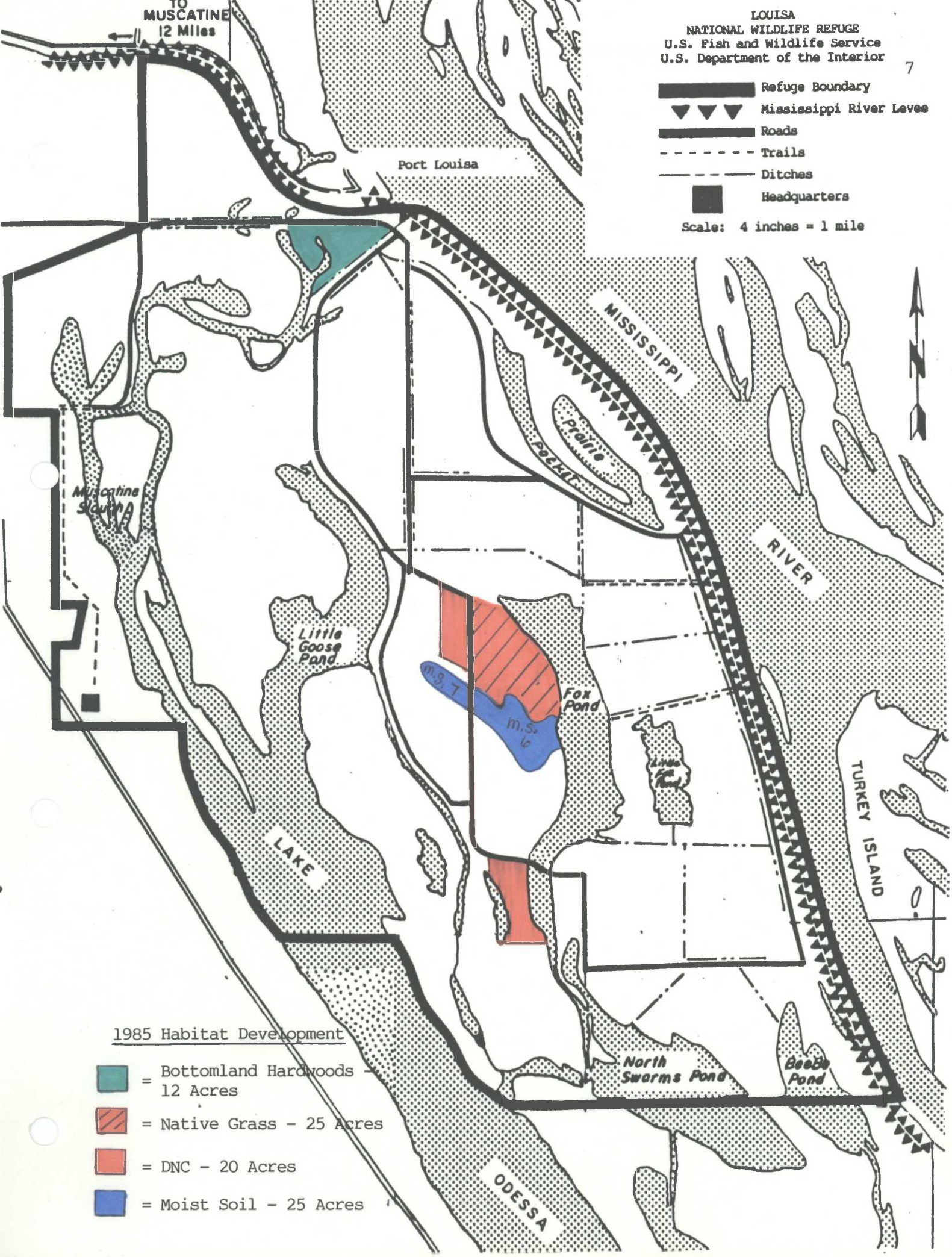
Mississippi River Pool #17 is adjacent to Louisa NWR. Pool elevations and/or precipitation in any given year will make or break the habitat conditions on the refuge. Regardless of the strategy and methods of control, Mother Nature and the lockmaster have ultimate control. Whenever the river rises above elevations in the refuge, water seeps in. Upon receding, seepage back through the levee into the river is somewhere between insignificant and nonexistent. What else can be expected of a levee constructed of river sand.

This year was no different. We prepared a Water Management Plan but Old Man River didn't heed it. Water levels in the refuge during the spring started out good but by May were 1.8 feet above what is considered full (536.0 MSL). This fall filling the moist soil units began and proceeded on schedule. In mid-October the rains came and the river rose. Fox Pond was being kept dry via pumping to finish a ditch cleanout project. October 14, after pumping all day at 14,000 GPM, the level in Fox Pond was still rising. From a mud flat (532.0 MSL) the pond filled (536.02 MSL) in eight days without opening a single gate. That is three feet of water on 65 surface acres thanks to "Mother Nature."



General Habitat Conditions - Field 2

5/85 WS


LOUISA
NATIONAL WILDLIFE REFUGE
U.S. Fish and Wildlife Service
U.S. Department of the Interior
Refuge Boundary
Mississippi River Levee
Roads
Trails
Ditches
Headquarters
Scale: 4 inches = 1 mile
TO MUSCATINE 12 Miles
Port Louisa
MISSISSIPPI
RIVER
Prairie
Pecket
Muscatine Slough A
Little Goose Pond
m.s. 7
m.s. 6
Fox Pond
LAKE
TURKEY ISLAND
North Swarms Pond
Beebe Pond
ODESSA
1985 Habitat Development
= Bottomland Hardwoods - 12 Acres
= Native Grass - 25 Acres
= DNC - 20 Acres
= Moist Soil - 25 Acres

2. Wetlands

Moist Soil 1

M.S. 1 received relatively little waterfowl use both spring and fall. Prior to discing in the summer of 1983 it was a dominant attraction on the refuge. It did provide some breeding pair and brood use before drawdown in conjunction with Fox Pond beginning June 24. Moist soil plant production was mainly smartweed and wild millet but was devoured by birds and insects before the fall migration. Reflooding occurred October 2 - 7.

Moist Soil 2

Waterfowl and muskrat usage was minimal. Drawdown began June 24 in conjunction with Fox Pond. Inlet and outlet ditches were cleaned out via force account. Strips were disced in vegetation at a 90° angle to the east boundary road to examine response of vegetation and waterfowl. Vegetation composition was not determined. Reflooding began mid October via rainfall and dike seepage.

Moist Soil 3

Waterfowl and muskrat usage was minimal. Strips were disced in vegetation like M.S. 2 to examine vegetation and waterfowl response. It did stimulate smartweed growth and provide open water areas for waterfowl. However, moist soil food production was minimal and the waterfowl responded likewise this fall. Drawdown began June 24 and reflooding began mid-October. One breeding pair of blue-winged teal was observed during April and May.

Moist Soil 4 - Little Fox Pond

Waterfowl use was poor. Muskrat houses numbered 61, the highest concentration on the refuge. Their survival was uncertain because of the summer drawdown and habitat was limited to the ditches. During drawdown great blue herons and common egrets were abundant. The unit was heavy disced twice to control willow and cottonwood and stimulate moist soil plant growth. The west half was broadcast seeded to Japanese millet which grew rank but was devoured by blackbirds before the fall migration. The eastern half grew back into smartweed but didn't mature before fall. Little Fox Pond produced nearly 100% wild millet but suffered the same fate as the smartweed. Drawdown and reflooding was in conjunction with Fox Pond.

Moist Soil 5

Waterfowl use was light but the muskrats liked it erecting 41 huts this fall. Some breeding pair and brood use was observed until drawdown.



M.S. 4 dominated by willow and cottonwood prior to control...

5/85 WS



M.S. 4 following double discing to control brush encroachment -

7/85 WS

Drawdown and reflooding was in conjunction with Fox Pond. The west half of the unit was mowed to control brush and examine response of vegetation and waterfowl. Evaluation to be completed in 1986.

Moist Soil 6

A dike was constructed late summer. By November 1 approximately 1.5 acres open water was visible next to the dike. November 18 it was 95% full with water over to the center road. Waterfowl use was better in the spring before the dike was constructed, but don't let that deceive you. The last ten days before fall freeze-up it became a popular hangout for both ducks (mostly green-winged teal and mallards) and geese.

Moist Soil 7

The only waterfowl use was late spring and late fall. An 18" tube was put under the center road connecting M.S. 6 and M.S. 7. An 18" screw gate was installed on the M.S. 7 side. The gate was closed October 8 and was 75% full by November 18. Japanese millet was planted, grew rank, and was devoured by blackbirds before the fall migration.

Moist Soil 8

This unit hosted first 400 geese then 2,000 mallards during the last two weeks of October. During the spring, most of the activity was from breeding pairs and one brood. The unit was mainly a loafing site and access to an unharvested soybean field this fall.

Moist Soil 9

Waterfowl use was good late spring and early fall. For example, April 8 approximately 3,000 ducks, mainly green-winged teal, pintails, wigeons and mallards, were observed. October 7, 3,000 waterfowl were counted, mainly pintails, mallards, wigeons, Canada geese and gadwalls. Breeding pair and brood use was moderate with five broods this season, three at once. Shorebird use was light due to the late drawdown with mainly yellowlegs and "peeps". Drawdown began June 24 and reflooding was September 24 - 30.

Moist Soil 10

Both spring and fall waterfowl use was late and light. Breeding pair and brood use was minimal recording two blue-winged teal and one mallard pair with one wood duck brood sighting. Drawdown began June 24 and reflooding was September 24 - 30.

Fox Pond

Waterfowl use was light during the spring and good during the fall. The water level was above 536 all of March, April and May. On June 24 drawdown began for the ditch cleanout project. Three thousand feet of ditch was contracted to be cleaned out by blasting in August. When finished we were 1,400 feet short of our goal, a miscalculation. To circumvent the problem it was decided to link up the Fox Pond ditch to the M.S. 2 and 3 drainage ditch. This will be completed in 1986. Upon drawdown, lush stands of sedges, spikerush and smartweed began growing. In order to complete the drawdown, the diesel-driven 14,000 GPM pump was used. Pumping began July 9 and terminated October 14 when water was rising faster than the pump could discharge because of rain and dike seepage. Total gallons of diesel fuel used was 1,215. By October 25 the pond was filled from rain and dike seepage.

Prairie Pocket

Prairie Pocket has historically had very little waterfowl use. This year was no exception. An attempt will be made to drawdown the unit to stimulate emergent and adequate growth.

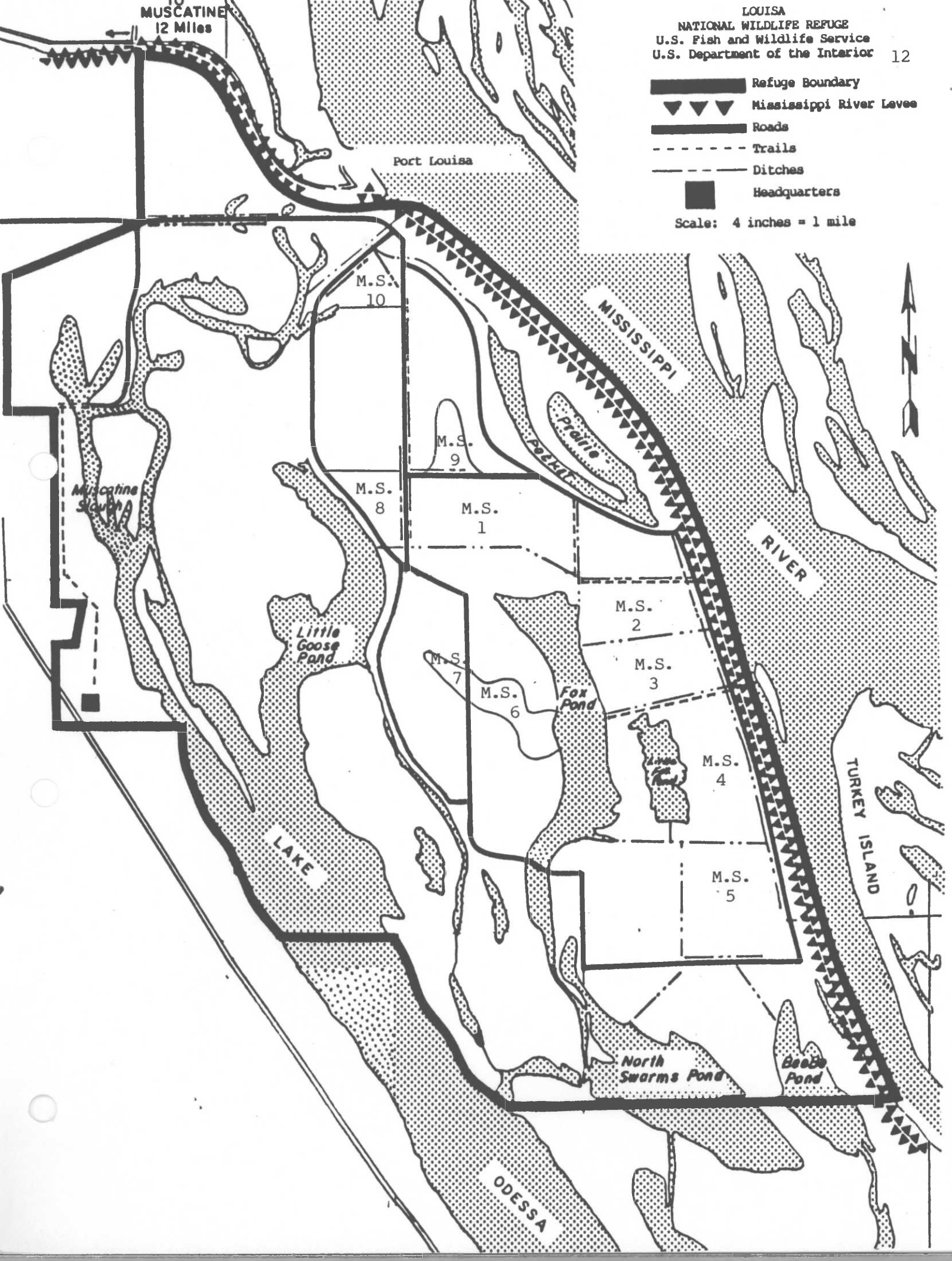
Goose Pond/Muscatine Slough

Waterfowl use was good early spring and late fall. Most likely this is due to limited open water elsewhere at both times. Water levels are maintained in conjunction with ICC Lake Odessa. When they lowered the lake level this summer in cooperation with the Fox Pond ditch project, excellent stands of sedges, spikerush and wild millet began growing along the edges. However, the water level was again raised mid-August drowning the moist soil plants before given a chance to mature. The unit did have good early waterfowl use.

All impoundments were frozen over prior to Thanksgiving--one of the earliest freeze ups on record.

3. Forests

Field #22, 10 acres, was planted in mid-June with bottomland hardwood seedling trees (see Big Timber NWR, Section F.3. for project details). The additional concern on Louisa is the substantial deer population not present on Big Timber. This will be a definite factor in the survival of the trees.


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Trails
Ditches
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Scale: 4 inches = 1 mile
TO MUSCATINE 12 Miles
Port Louisa
M.S. 10
M.S. 9
M.S. 8
M.S. 1
M.S. 2
M.S. 3
M.S. 4
M.S. 5
M.S. 6
M.S. 7
Muscatine Slough
Little Goose Pond
Fox Pond
Prairie Patch
MISSISSIPPI RIVER
LAKE
TURKEY ISLAND
North Swarms Pond
Beebe Pond
ODESSA



Bottomland hardwood planting...

4/85 CM

4. Croplands

The purpose of the cropland program on Louisa is to provide food for migrating waterfowl. The program suffered a minor set back when one of the two cooperators on the refuge quit, reasoning the refuge had been a losing venture for him for the past several years.

Initial plans in 1985 were for one cooperative farming agreement encompassing approximately 300 acres of corn/soybeans under a modified cash rent system coupled with approximately 200 acres of other wildlife crops--primarily winter wheat and Japanese millet. 1985's cash rent was set at $35/acre for all corn and soybean acreage planted.

Abnormally high water levels in the Mississippi impacted the farming program for the fifth year in a row. Cooperators were able to plant only 75 acres of corn and 120 acres of soybeans with planting completed by mid-June. One hundred acres of Japanese millet was planted at a rate of 20 lbs./acre in mid-July. Eighty acres of winter wheat was planted at a rate of 1.5 bu./acre in mid-August. An extremely dry month of August reduced crop yields substantially. Millet stands appeared lush but seed failed to develop. Also, blackbirds cleaned out millet fields prior to the arrival of any sizeable numbers of waterfowl. Soybeans were very late in maturing with the cooperator attempting harvest in November. Heavy rainfall in October and November and an early freeze up forced the cooperator to abandon 60 acres of standing soybeans. These flooded fields were utilized heavily by mallards and Canada geese. No crop impaction problems were observed.

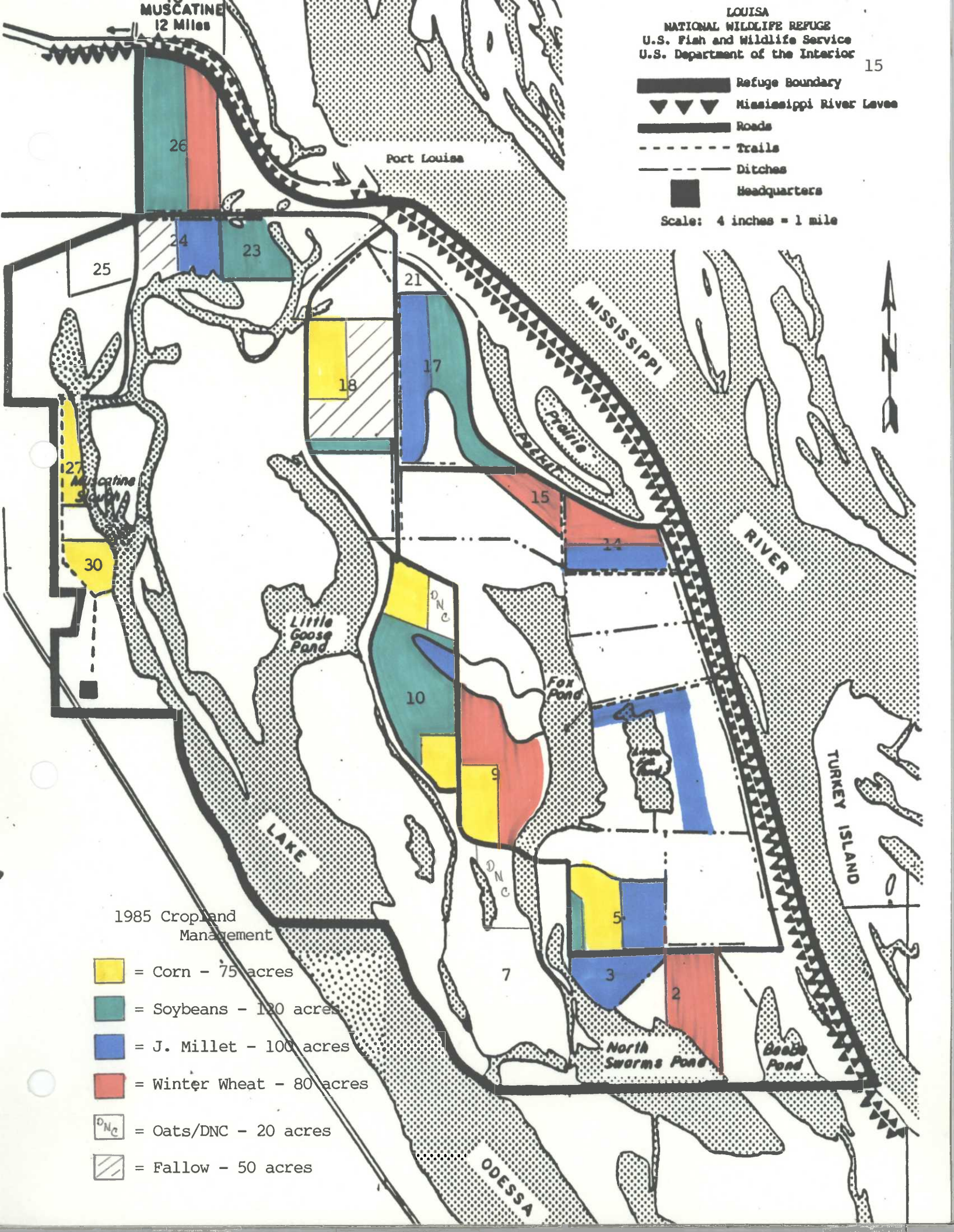
Corn harvest was completed in mid-September or about two weeks earlier than normal on the refuge. Canada geese made good use of the early harvest and failed to establish feeding flights off the refuge until mid-November. Corn yields were highly variable 40 - 110 bu./acre depending on the fields. Winter wheat browse was well established prior to the arrival of any sizeable numbers of geese in mid-September. By the time most geese had departed in mid-November, most wheat fields had been approximately 80% consumed.



9/85 JG

The refuge also received 25 acres of standing corn via the modified cash rent system as overwinter food for resident wildlife primarily deer, turkey and pheasant. The standing corn will be mowed in early spring to provide additional food for spring migrants. The 5-acre patch of standing corn in Field 18 supported an average of 18 turkeys and 20 deer daily during most of November and December.

The cooperator was also required to plant 20 acres of DNC. The DNC mix used was a mixture developed for the PIK program and heavy on alfalfa and cool season grasses. The DNC was planted in mid-March with an oat cover crop. A very poor catch resulted from inadequate rainfall following the oat harvest and the month of August. Plans are to reseed this acreage in 1986.


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RIVER
Prairie
Pothole
Little Goose Pond
Fox Pond
LAKE
TURKEY ISLAND
North Swarms Pond
Beebe Pond
ODESSA
26
25
24
23
21
18
17
15
14
27
30
10
9
7
5
3
2
DNC
1985 Cropland Management
= Corn - 75 acres
= Soybeans - 120 acres
= J. Millet - 100 acres
= Winter Wheat - 80 acres
= Oats/DNC - 20 acres
= Fallow - 50 acres



ARMM Cropland Conversion - Roundup application prior to native grass seeddown...

5/85 WS



ARMM Cropland Conversion - Native grass seeddown on Sand Ridge.

6/85 CM

5. Grasslands

Via a small ARMM project, 25 acres of the sand ridge (Field 9) was seeded to native grass. The purpose was to retire very marginal cropland and provide additional waterfowl nesting cover. The field had been seeded to a hay mixture in the mid-70's but the field had not been maintained and the stand virtually disappeared. In early spring the field was burned and allowed to green up and was then sprayed with Roundup at a rate of 1 quart/acre. Results were very poor and the field was sprayed a second time approximately two weeks later resulting in very good control. Native Grass Materials, Inc., Galesburg, Illinois, was contracted to seed locally harvested native grass and forbs. The seeddown was completed on 6/20/85. The mixture consisted primarily of big bluestem, Indian grass and switch grass. A very heavy infestation of foxtail appeared approximately two weeks later and the entire field was mowed in early July. Plans are to burn the field for the next couple of years to establish the stand. Total cost of the project was $4,800 or $192/acre.

There are five other areas of native grass plantings on the refuge totalling 30 acres. High spring water levels have nearly wiped out two of the stands. In 1985, Indian grass and big bluestem had begun to reappear in these fields but were very sparse.

9. Fire Management



Things aren't always the way they appear!
A routine burn on Unit #5.

5/85 CM

No wild or otherwise unplanned fires occurred this year. Of the 172 acres approved in the 1985 Prescribed Burning Plan, 46 acres were burned. Units 2, 4, and 5 were burned as prescribed. The Michael Creek portion of burn unit #1 was completed (10 acres) but due to sparse cover and poor weather conditions, only two acres of river levee burned. Unit 3 was a partial success limited by wet ground and unfavorable weather conditions. Following is a table and map of the burn units.

Burn Unit	Acres Approved	Acres Burned
1	100	12
2	9	9
3	48	10
4	5	5
5	10	10
Totals	172	46

10. Pest Control

The following table displays chemical controls used on Louisa:

1985 Chemical Use Summary

Cooperative Farming:

Chemical	Amount	Acreage	Crop	Pest(s)
Atrazine	60 lbs. A.I.	60	Corn	Foxtail, cocklebur
Bladex	20 lbs. A.I.	15	Corn	Foxtail, cocklebur
Sutan	198 lbs. A.I.	120	Soybeans	Johnsongrass

Fertilizer:

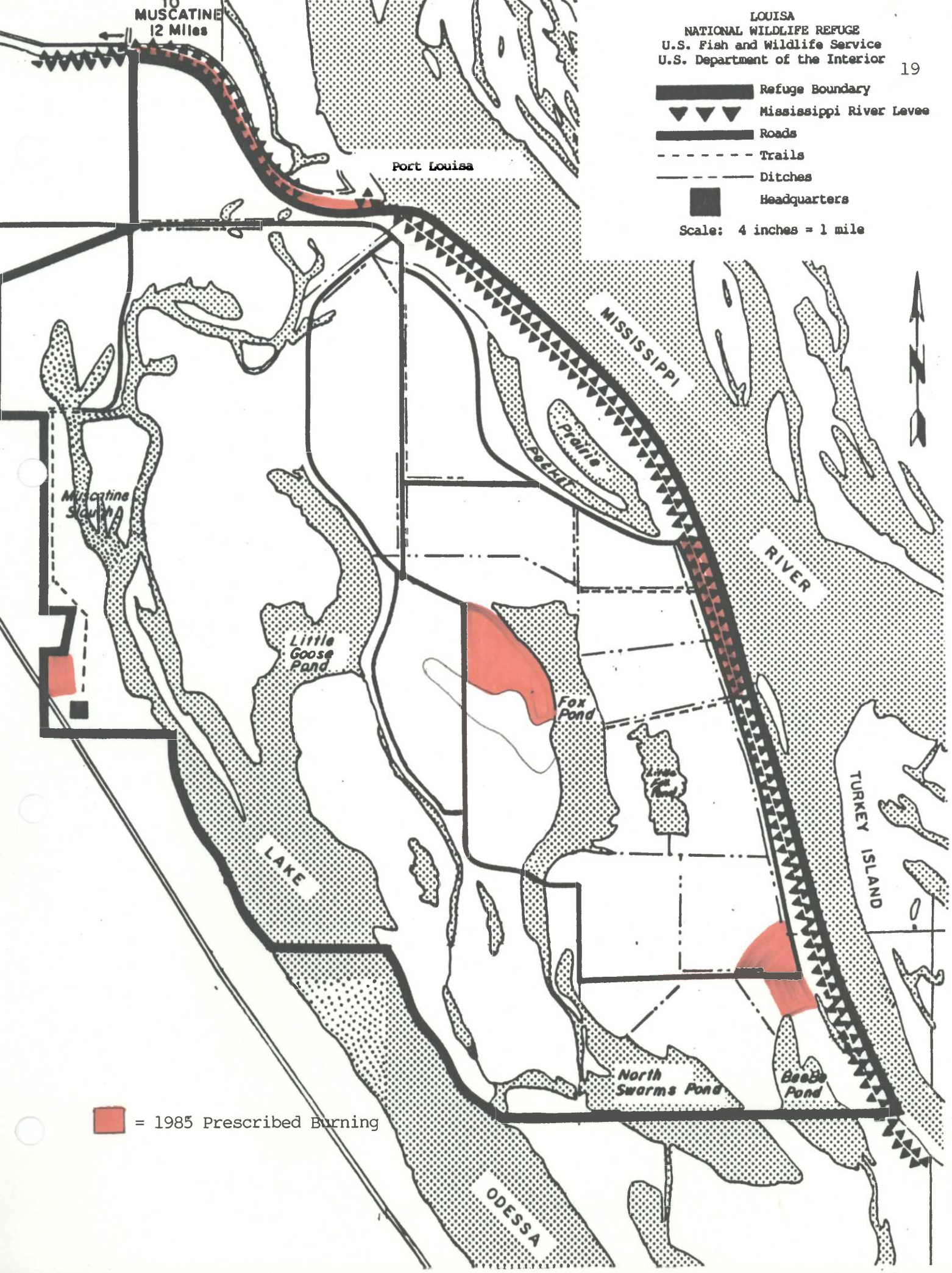
Anhydrous - applied on 75 acres of corn at a rate of 120 lbs./acre.

Force Account:

Roundup	50 lbs. A.I.	50	Native Seeddown	Foxtail, cocklebur alfalfa
Weedone (2,4-D)	40 lbs. A.I.	20	Levee Brush Control	Willow, cottonwood maple

The use of insecticides is not permitted on the refuge.

Maintenance Mechanic McNeil is the only certified applicator on the refuge and is certified in both Iowa and Illinois.


LOUISA
NATIONAL WILDLIFE REFUGE
U.S. Fish and Wildlife Service
U.S. Department of the Interior
Refuge Boundary
Mississippi River Levee
Roads
Trails
Ditches
Headquarters
Scale: 4 inches = 1 mile
TO MUSCATINE 12 Miles
Port Louisa
MISSISSIPPI
RIVER
Prairie Pocket
Muscatine Slough
Little Goose Pond
Fox Pond
LAKE
TURKEY ISLAND
North Swarms Pond
Beebe Pond
ODESSA
= 1985 Prescribed Burning

G. WILDLIFE

2. Endangered and/or Threatened Species

Bald eagles were common during the spring with up to 30 birds utilizing the refuge from late February until early April. Fall use was down considerably from previous years with none observed until November. A peak population of 13 was recorded in late November. Due to ice up of refuge impoundments and the Mississippi River, no eagles were observed during December.

One peregrine falcon was observed during November.

3. Waterfowl

Waterfowl use during the year was very disappointing. Spring and fall populations were well below average. The spring peak occurred during the week of March 14 and included 10,500 ducks and 400 geese. The fall peak included 29,850 ducks and 9,000 geese during the second week of November.

The first spring migrants were observed on February 25 consisting of 100 Canada geese and 20 common mergansers. Ice out was complete by March 5 and spring populations reached a peak of 400 Canada geese and 10,500 ducks on March 14. As usual, mallards accounted for the bulk of the duck population. By mid-April few ducks remained.

Wood duck production was estimated at 465 birds and was slightly above the five year average. Mallard production was estimated at 60 birds which was nearly equal the five year average. Efforts on waterfowl brood and breeding pair counts were again hampered by abnormally high water levels. From casual observations, however, nearly all brood use was associated with shallow flooded crop fields and moist soil areas. The first wood duck brood was sighted April 30--about two weeks earlier than average.

Nest dragging efforts on selected upland areas i.e. grasslands and idle crop fields yielded no nests for the second consecutive year. The method used involved two ATV's dragging a 5/16-inch chain (50-foot length). Efforts will continue in 1986. A total of six mallard nests were discovered incidental to other activities. All but one of the nests were located adjacent to roads, in some cases within inches of the gravel surface. All of the nests were unsuccessful with all falling to predators--raccoon, skunks, and crows. Roadside burning, a past annual practice, was eliminated in 1985 and roadside mowing was delayed until August 1 in an effort to provide additional nesting cover.



Nest dragging on HQ native grass stand...
field burned in early May.

6/85 SJ

The first fall migrants--80 Canada geese--arrived August 22. Populations were very slow in building and by the opening of the Iowa early waterfowl season ducks totalled only 2,000 with mallards conspicuously absent. For most of the fall, coots outnumbered ducks considerably. A peak population of 29,850 was recorded representing the lowest peak ever recorded for the refuge and down an amazing 70% from the long-term average. Use days totalled 1,967,380, down 60% from the long-term average. State management areas and refuges across eastern Iowa all displayed similar declines. Due to heavy rains in October and November, habitat conditions were near excellent both on the refuge and in the private sector. Fall plowing was very limited and food was abundant. However, feeding flights failed to develop until mid-November just prior to freeze up. The duck hunting season in the area was a near bust. Many hunters sacked up their decoys early and essentially stated they had heard populations were in bad shape but didn't expect this bad. One group of nine hunters hunted every day of the season and took a grand total of 25 ducks--once going nine days in a row without firing a shot. On the state's controlled hunting area on Lake Odessa the season was the poorest on record for ducks.

The goose situation was a little brighter and quite different. Peaks of 9,000 Canada geese and 1,000 snow geese were recorded. The peaks were a little under the long-term average but the highest total since 1981. Total use days equalled 435,220. Prior to the goose hunting opener (9/28) the population totalled 2,800; but, in mid-September, cooperative farmers harvested refuge corn fields. Very little harvest

LOUISA NATIONAL WILDLIFE REFUGE
Average Monthly Waterfowl Population

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
American Coot			225	1331	11	50	50		16	3,000	1,500	
Swans												
Geese: White-Fronted												
Snow Blue			81						2	700	870	
Canada		10	193	2	4	7	10	8	800	5,600	6,025	15
Ducks: Mallard		2	750	269	80	250	300	300	200	2,000	9,800	31
Black			20							15	125	
Gadwall			30	12						350	28	
Pintail			61	70	4				10	800	200	
Green-winged Teal				481	1	30			20	700	180	
BW/Cinn Teal			11	156	17			150	350	200	18	
Am. Widgeon			183	150					40	600	380	
Shoveler			85	52	3					75	20	
Wood Duck			11	200	175	400	700	1500	500	150	120	
Redhead										25	45	
Ring-necked			57							100	180	
Canvasback			27							60	160	
Lesser Scaup			208	440						250	650	
Bufflehead & Goldeneyes			2	3							60	75
Ruddy			60	33	1					100	140	
Total Ducks		2	1505	1866	281	680	1000	1950	1120	5,425	12,106	106
Grand Total		12	2004	3199	296	737	1060	1958	1938	12,025	20,501	121

Louisa NWR
Peak Waterfowl Populations/Use Days

YEAR	DUCKS	CANADA GEESE	SNOW GEESE
1959	98,583/ 938,525	1,000/	2,500/
1960	45,672/ 596,386	1,170/	5,000/
1961	101,385/1,833,654	980/	6,500/
1962	41,255/ 50,209	920/	1,600/
1963	70,880/ 108,353	1,050/	4,000/
1964	150,850/4,409,503	1,325/129,535	1,000/
1965	252,005/8,508,878	1,700/142,555	2,100/
1966	200,810/7,656,761	1,650/141,848	4,500/
1967	102,565/4,585,262	1,800/139,312	3,500/
1968	61,630/2,917,119	2,000/166,819	3,000/
1969	42,310/1,743,031	2,200/172,947	2,500/
1970	170,800/7,353,072	3,600/168,373	3,500/
1971	206,000/6,726,204	3,000/156,104	4,500/
1972	207,720/6,028,301	4,000/159,803	3,000/
1973	207,000/2,808,872	4,000/170,723	3,000/
1974	80,000/2,707,702	2,500/130,170	1,750/
1975	69,710/3,438,595	6,000/363,968	700/
1976	64,655/2,592,101	4,800/413,968	3,000/
1977	76,500/4,557,099	15,000/701,900	7,200/
1978	113,260/4,135,786	17,800/783,855	4,700/
1979	124,010/7,049,697	10,600/975,950	2,500/
1980	54,869/4,701,337	11,500/926,326	2,700/
1981	171,820/8,634,990	12,500/592,997	1,400/
1982	121,200/3,777,730	8,400/465,500	2,500/19,385
1983	65,000/3,190,925	6,500/262,275	300/11,270
1984	47,000/1,695,220	5,500/348,900	2,500/20,500
1985	27,825/1,967,380	9,000/380,220	1,000/55,000

had been completed in the private sector. As a result, the first few weeks of the goose season were a near bust for goose hunters as geese did not leave the refuge. To complicate matters, geese began using private land approximately two miles south of the refuge. Geese found the area attractive since the landowner had a captive flock (38) which he was openly feeding and did not allow hunting on his land. Goose numbers built reaching a peak of 5,000 with most utilizing a 5-acre "goose pasture." Hunters were quick to capitalize on the area forcing the closure of a 1/2 mile area around the farm as a "baited area." From neck collars observed the birds were utilizing the refuge as an evening roosting area and utilizing the private "refuge" as a feeding and loafing area in the daytime. Interestingly, the state's Lake Odessa controlled hunting area lies directly between the two "refuges" and as a result goose hunters recorded the highest goose kill ever for the lake.

4. Marsh and Water Birds

Great blue herons are the most common bird of this group on the refuge. A peak of 75 birds was recorded in mid-July corresponding to the draw-down of Fox Pond. A sizeable rookery is located north of New Boston, Illinois, approximately three miles from the refuge.

Six white pelicans were observed near Swarms Pond in mid-September.

Other species present during the year included sora rails, great egrets, cormorants, American bitterns, black and yellow-crowned night herons, cattle egrets, and pied-billed grebes.

5. Shorebirds, Gulls and Terns

Shorebird use was confined largely to M.S. 9 and Fox Pond. Use was dominated by greater and lesser yellow legs. Several nesting killdeer were observed during the year.

6. Raptors

The most common raptors observed during the year included barred owls, great-horned owls and red-tailed hawks. Numerous other "chicken hawks" frequented the refuge but no attempts at formal surveys are made for these species.

8. Game Mammals

The refuge supports a healthy deer population estimated at 60 animals. During the winter months the population generally more than doubles as deer move to the refuge from private farm land. Deer hunting is not permitted on the refuge, but hunting around the refuge maintains a healthy population.

Main furbearers include muskrat and racoon with good populations. Beaver are present with two known colonies and cause few problems.

Coyote and fox are also present in very limited numbers.

10. Other Resident Wildlife

Turkeys continued to increase with two broods sighted during the year. The population is estimated at 30 birds.

The pheasant population nose dived in 1985. Sightings were infrequent at best and no broods were observed during the year.

Quail are found only on the bluffs of Louisa. Two coveys were observed around the headquarters and several others on private land adjacent to the refuge.

15. Animal Control

The refuge was divided into two units with the middle road being the divider. A news release was published to solicit interest and explain the sealed bid application system. Target species were raccoon, muskrat and skunk trapped according to Iowa regulations. The season ran from November 2 through January 29. Zone 1 (east of the middle road) was awarded to Clarence Hill, Grandview, Iowa, for $410. Zone 2 was awarded to Lee Siefken, Burlington, Iowa, for $155. Following is a table of trapping effort and species taken.

	Bid	Days Trapped	Muskrat	Raccoon	Skunk
Zone 1	$410	11/12-12/13 (42)	104	33	0
Zone 2	$155	11/02-11/11 (9)	6	8	11

Fur prices were low plus the low water levels July to mid-October kept interest in trapping down this year. The Zone 2 trapper said he was going to wait until the waterfowl had left before he would trap in earnest. The ducks did but he didn't!

16. Marking and Banding

No Canada geese were banded this year. The quota was 200. But that doesn't mean we didn't try. Efforts began in early October and ended mid-November with the nets frozen to the ground. Three different rocket net sites were tried baiting them with ear corn. This fall the geese exhibited disturbingly different habits. In years past the geese seemed to adapt easily to our presence, but this fall they remained in an agitated state flushing at the mere sight or sound of a vehicle. As a result, tours after November 21 were cancelled.

Neck collar observations ended early December with the geese leaving. This year 408 observations of 100 Canada geese were completed compared to 343 and 83 last year. The quota was 600 observations. Of the 100 geese seen this year and the 83 last, 18 were return sightings. Twelve of the 18 were banded here. Many of the Canada goose flock, about 30%, were Richardson's. To date, neck collars have not been observed on these.

H. PUBLIC USE

1. General

Public use was down substantially from last year. Down from 11,000 reported visits to 5,000 this year. In reality this estimator may be more conservative than his predecessor in reporting last years data. Also, a major contributing factor was the decline in fishing activity which accounts for 40% of Louisa's public use (see H.9.). Visitor interest was up compared to 1984 for viewing the fall migration but a problem developed limiting public access (see G.3.).

A summary of public use is provided on the appended forms.

2. Outdoor Classrooms - Students

During May Assistant Managers Hovell and McCarty presented programs on goose banding to Louisa and Washington County Conservation Days sponsored by the ICC. The program reached 430 sixth grade students.

Both Muscatine and Kirkwood Community Colleges held outdoor classrooms during the spring and fall migrations instructing 100 students.



Rocket Net Demonstration - Washington County Conservation Days...

PUBLIC USE REPORT

TR Code			Organization Number							Name			Report Period Yr	Report Period Mo	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	0	1	0						0	0						

OUTPUT TYPE	LINE CODE									NO. VISITS	ACTIVITY HOURS	NON-STD TOT. RPTS
	18	19	20	21	22	23	24	25	26	27-35	36-45	46-55
INTERPRETATION												
Wildlife Trails - Nonmotorized												
Self Guided	0	1	1	0	0	0	0	P	S	507	570	
Conducted	0	1	2	0	0	0	0	P	C			
Wildlife Tour Routes - Motorized												
Self Guided	0	2	1	0	0	0	0	P	U			
Conducted	0	2	2	0	0	0	0	P	T	451	996	
Interpretive Center	0	3	0	0	0	0	0	P	R			
Visitor Contact Station	0	4	0	0	0	0	0	P	Q			
Interpretive Exhibits - Demonstra												
Self Guided	0	5	1	0	0	0	0	P	A	795	440	
Conducted	0	5	2	0	0	0	0	P	M			
Other On-Refuge Programs	0	6	0	0	0	0	0	P	P			
ENVIRONMENTAL EDUCATION												
Students	1	0	0	0	0	0	0	P	E	585	463	
Teachers	1	1	0	0	0	0	0	P	B	37	26	
RECREATION-WILDLIFE CONSUMPTIVE												
Hunting Mig. Birds - Waterfowl												
Ducks	2	0	1	0	0	0	0	P	D			
Geese	2	0	2	0	0	0	0	P	G			
Swans	2	0	3	0	0	0	0	P	N			
General Waterfowl	2	0	4	0	0	0	0	P	W			
Hunting Mig. Birds - Other	2	0	5	0	0	0	0	P	X			
CONTROL TOTALS	9	9	2	0	0	0	0	R	Z			

Region_____ Station Louisa NWR Date Prepared 1985

Name_____

Form 3-239a
Rev. 12/75

Fish and Wildlife Service
Division of Wildlife Refuges

28

TR Code			Organization Number							Name			Report Period	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	Yr 15	Mo 16 17
	0	1	0						0	0					

PUBLIC USE REPORT

OUTPUT TYPE	LINE CODE									NO. VISITS	ACTIVITY HOURS	NON-STD TOT. RDUs
	18	19	20	21	22	23	24	25	26	27-35	36-45	46-55
RECREATION-WILDLIFE CONSUMPTIVE (c't												
Hunting Resident Game												
Upland Game Birds	2	1	1	0	0	0	0	P	L			
Big Game				(Species Code)								
Deer - Gun	2	1	2					P	H			
Deer - Bow	2	1	3					P	J			
	2	1	4					P	K			
	2	1	4					P	K			
	2	1	4					P	K			
	2	1	4					P	K			
Small Game	2	1	5	0	0	0	0	P	Z			
Other Game	2	1	6	0	0	0	0	P	U			
Trapping	2	1	7	0	0	0	0	U	G	38	190	
Fishing												
Warmwater	2	2	1	0	0	0	0	U	W	2035	4937	
Coldwater	2	2	2	0	0	0	0	U	C			
Saltwater	2	2	3	0	0	0	0	U	S			
Clams, Crabs, Oysters, Frogs	2	2	4	0	0	0	0	U	Y	50	100	
Other Consumptive Wildl. Rec.	2	3	0	0	0	0	0	U	M	35	65	
RECREATION-WILDLIFE NON-CONSUMPTIVE												
Camping	3	0	0	0	0	0	0	U	H			
Picnicking	3	1	0	0	0	0	0	U	B			
CONTROL TOTALS	9	9	2	0	0	0	0	R	Z			

Region _____ Station Louisa NWR Date Prepared 1985

Name _____

Form 3-239b
Rev. 12/75

PUBLIC USE REPORT

TR Code	Organization Number	Name	Report Period Yr	Report Period Mo
3 0 1 0				

OUTPUT TYPE	LINE CODE									NO. VISITS	OUTPUT UNITS	NON-STD TOT. RPUs
	18	19	20	21	22	23	24	25	26	27-35	36-45	46-55
RECREATION-WILDLIFE NON-CONSUMPTIVE											Act.Hr.	
Wildlife/Wildlands Observation												
Foot	3	2	1	0	0	0	0	U	E	130	245	
Land Vehicle	3	2	2	0	0	0	0	U	N	195	170	
Boat	3	2	3	0	0	0	0	U	L	55	95	
Other	3	2	4	0	0	0	0	U	P			
Photography	3	3	0	0	0	0	0	U	T	43	91	
Field Trials	3	4	0	0	0	0	0	U	X			
RECREATION - NON-WILDLIFE												
Camping	4	0	0	0	0	0	0	R	C			
Picnicking	4	1	0	0	0	0	0	R	P			
Swimming	4	2	0	0	0	0	0	R	S			
Boating	4	3	0	0	0	0	0	R	B			
Waterskiing	4	4	0	0	0	0	0	R	W			
Off Road Vehicling	4	5	0	0	0	0	0	R	V			
Other	4	6	0	0	0	0	0	R	M			
TOTAL VISITS TO REFUGE	0	9	0	0	0	0	0	P	V	4956		
[redacted]												
FISH & WILDLIFE INFORMATION											Per.Sers.	
Public Inquiries	5	0	1	0	0	0	0	F	P		314	
News Releases	5	0	2	0	0	0	0	F	N		7	
Personal Appearances	5	0	3	0	0	0	0	F	A		4	
Professional Services	5	0	4	0	0	0	0	F	S		1	
Exhibits	5	0	5	0	0	0	0	F	E		1	
CONTROL TOTALS	9	9	2	0	0	0	0	R	Z			

Region_____ Station Louisa NWR Date Prepared 1985

Name_____

Form 3-239c
Rev. 12/75

3. Outdoor Classrooms - Teachers

Louisa did not host any teacher outdoor classrooms this year. However, next year (1986) we would like to sponsor and invite teachers, naturalists, conservation club leaders, etc. to a workshop on the refuge. The idea is to familiarize them with the refuge and show them its potential as an outdoor classroom. Our goal is to train them for self-guided use of the refuge.

4. Interpretive Foot Trails

Use of the foot trail was equal to last year. Upgrading and lengthening the nature trail has been planned (LSA #21) but not funded yet. The new trail section would follow the Muscatine Slough Road to the parking lot at the entrance of the refuge on the Port Louisa Road.

5. Interpretive Tour Routes

Louisa does not have an auto tour route open to the general public. Tours are limited to groups, usually grade schools in the area and conservation-type clubs. The fall migration is the main attraction. This year the staff gave 10 tours involving 461 people.

6. Interpretive Exhibits/Demonstrations

Assistant Managers Hovell and McCarty participated in the Outdoor USA Show in Rock Island, Illinois, held February 16 and 17. Along with Ecological Services and Upper Mississippi, Savanna District, personnel, we manned an information booth.

8. Hunting

Louisa NWR is closed to all hunting except shooting with a camera.

9. Fishing

Angling is the single most popular activity on the refuge. This year, however, activity was down 52% from last. Midway through late summer there wasn't enough water to drown a worm. To perform the ditch clean-out project on Fox Pond, it was necessary to drain and pump the pond dry. And, of course, to do this the only water source was closed off plus Lake Odessa/Muscatine Slough levels were lowered 3 feet. Sport fishing comprises about 40% of all refuge visits.

16. Other Non-Wildlife Oriented Recreation

In June of this year a Muscatine couple were wed on the observation deck next to the office in a small, informal ceremony.

17. Law Enforcement

Assistant Manager McCarty received law enforcement authority in September which provided the refuge with two staff members with law enforcement authority for the first time. Excellent cooperation continued with SA Kocal and ICC Conservation Officers during the year. SA Walt Kocal provided assistance with all waterfowl openers and deer season and processed all violation notices issued by the refuge.

One U.S. Magistrate hearing was held during the year on a case involving failure to remove a duck blind from Turkey Island following the 1984 waterfowl hunting season. The Magistrate found in favor of the defendant stating we had failed to prove the defendant owned the hunting blind. It's worth noting the defendant, an Iowa Congressman, was the only individual to hunt from the blind during the 1984 season.

Small ARMM funds enabled us to equip service revolvers with night sights and acquire other gear such as leather, body armor and a LE shotgun. Manager Stanley and Assistant Manager McCarty requalified with the service revolver at Springfield in October. Manager Stanley attended the 40-hour LE refresher training and firearm qualification at Crab Orchard in April.

The controversy over eliminating permanent duck hunting blinds on the Big Timber Division nearly disappeared in 1985. Regulations implemented in 1985 included: (1) no blind construction prior to September 1 (2) blinds of wood and brush only (3) blinds available on first-come first-served basis (4) blinds to be removed 72 hours after close of season. There were no known violations of the regulations during the year. Temporary blinds constructed decreased substantially with only 15 blinds constructed on the refuge compared with 25 blinds in place in 1984. A number of hunters on Turkey and Otter Islands simply switched to boat blinds or hunted from shore.

A firing line problem continued to develop on the Mississippi River boundary of Louisa. A total of 18 permanent blinds were constructed on a mile stretch of the river with the blinds within inches of the refuge boundary. Most shooting is pass shooting and/or sky busting usually with very little hope of retrieving birds especially ones falling into the refuge. Several dead/crippled ducks and geese were observed along the river levee during the season. The same area becomes more crowded with blind boats when the Illinois season closes and birds begin feeding flights to and from Illinois. The State of Iowa does not want to regulate the blinds or hunting for fear of losing revenue from hunting licenses.

Steel shot became mandatory in Iowa in 1985 and was accepted well by the vast majority of hunters we contacted. Complaints were generally heard from the sky busters--former 00 buckshot shooters. No lead shot cases were made by refuge officers and only a couple of cases were made by State C.O.'s on Lake Odessa.

Trespass cases continued to decline with only 8 in 1985 compared with 10 in 1984. Improved signing and increased visibility resulting from an increased staff has greatly reduced this historic problem.

Late in the year a county deputy sheriff was stopped on the refuge after being observed shining a spotlight for wildlife. The deputy was given a verbal warning but could not understand our lack of "professional courtesy." Shortly after, we received a letter from the county sheriff stating "no lights will ever shine on federal property in the county again."

1985 LE Case Summary

Date	Location	Violation	Disposition	Fine	Officer(s)
3/17/85	Louisa	Fishing w/o license	State	$ 31	C.O. Dessner
	Louisa	Fishing w/o license	State	$ 31	C.O. Jennings
6/14/85	Big Timber	Camping	FOC	$ 25	Stanley
		Littering	FOC	$ 25	Stanley
		Damage to plants	FOC	$ 50	Stanley
6/16/85	Louisa	Unregistered boat	State	$ 31	C.O. Dessner
6/17/85	Louisa	Camping	FOC	$ 25	Stanley
9/22/85	Turkey Island	Attempt overbag - wood duck	FOC	$ 100	SA Kocal
10/04/85	Louisa	Comm. fishing w/o permit - 2*	FOC	$ 200	Stanley/McCarty
		Trespass - 2	FOC	$ 100	Stanley/McCarty
10/08/85	Louisa	Trespass - 3	Open	$ 300	Stanley
10/26/85	Otter Island	Motorboating ducks - 2	FOC	$ 250	Stanley/SA Kocal
	Turkey Island	No federal stamp	FOC	$ 50	Stanley/SA Kocal
11/06/85	Big Timber	Trapping - 2	FOC	$ 300	Stanley/McCarty
11/13/85	Louisa	Taking pheasant	FOC	$ 200	McCarty
11/26/85	Big Timber	Littering	FOC	$ 50	McCarty
		22		$ 1,768	

Warnings Issued:

Trespass - 3 (Verbal)
Violation of Blind Regulations - 2 (Verbal)
Spotlighting - 1 (Verbal)
Failure to carry hunting license - 1 (Verbal)

*Individuals also charged six violations in State courts and fined a total of $600 plus confiscation of all fishing equipment--nets, tubs, depth finder, fuel cans, etc. Since a bank owned the boat, motor and trailer they were returned.

I. EQUIPMENT AND FACILITIES

1. New Construction

FY86 ARMM funding included 100.0 for construction of a new shop facility. The new facility will replace the existing temporary shop occupied since 1983. Preliminary engineering estimates for the new facility (36' x 60' wood frame) come to 155.0. To accommodate the increase all small ARMM projects for FY86 were cancelled and the funds added to the shop project. Bid invitations are to be issued early in 1986 with construction to commence in the summer.

M.S. 6 Development: 5.0 in small ARMM funds was provided to develop a new moist soil unit on the west side of Fox Pond. Development entailed installation of an 18-inch screw gate control structure and construction of a 200-yard long low-level dike. Installation of the screw gate was completed by YCC personnel and construction of the dike was completed by contract. Total cost of the project was $2,200 for the 15-acre moist soil area.

M.S. 7 Development: YCC personnel removed an existing drain culvert from the center road and replaced the culvert with an 18-inch screw gate control structure. The result was a new moist soil area (10 acres) with water management capability. Total cost of the project was $600 utilizing funds remaining from the M.S. 6 project.

2. Rehabilitation

J.O. 30190-1260-59 - Fox Pond Ditch Cleanout (Large ARMM): Fox Pond serves as a "sump" for all moist soil areas on the refuge. Water can then be released into Lake Odessa via gravity flow or by pumping. The drainage ditch running through Fox Pond had not been cleaned since the refuge was acquired (1958) and as a result was almost entirely silted in. The project entailed cleanout of the ditch in order to improve gravity flow capabilities and overall water management on Fox Pond and moist soil areas. The project was awarded to American Explosives Services, Springfield, Illinois, at a cost of $7,950. The project was accomplished by blasting and the ditch cleaned to a depth of 4 feet with a top width of 12 feet. A total of 3,000 linear feet was completed under the contract and accomplished in two days. Following the blasting, Fox Pond was maintained as dry as possible for a period of two months via pumping in order to allow the ditch banks and spoil to stabilize and dry. The remainder of the ditch (1,700 feet) was cleaned via force account utilizing the Bantam truck mounted crane. The project could not have been completed had it not been for excellent cooperation from ICC Lake Odessa personnel. Lake Odessa was lowered a full 3 feet during the summer months to accommodate the project. Without the lowering, seep water from the lake would have prevented completion of the project.



ARMM Ditch Cleanout Project - Fox Pond...

8/85 WS



Aerial View of Fox Pond and Ditch Blasting Progress...

8/85 RS

J.O. 30190-1260-61 - Road Rehab. (Large ARMM): Project involved re-gravelling the east and south boundary roads with a three inch layer of Class A road stone. The River Products Company, Iowa City, Iowa, completed the 2.0 mile project at a cost of $7,490.

J.O. 30190-1260-9K - HQ Water Filtration System (Large ARMM): The headquarters water treatment system began malfunctioning in late 1984 and completely gave out in early 1985. The system simply rusted away due to high iron and sulfer content in the water. Bid openings for a new system were delayed twice after vendors complained the designed system was too complicated and not enough time to prepare a bid. The bid opening was finally held 9/19 with bids ranging from $9,293 to $24,000. Interestingly, the vendors who complained about the process failed to submit bids. Empire Water Conditioning, Moline, Illinois, was awarded the contract at $9,293. The new system included iron filters and liquid chlorinators to resolve problems with hydrogen sulfide. A start work order was not issued until late November. In early December on a weekend temperatures dropped below zero and the heater in the pump house broke down resulting in frozen water pipes and broken pipes in five places. Luckily the new system had not been installed. The headquarters was without water for over a week until the pump house heater was replaced and the water treatment system installed on December 11. The final test of the system took place the following day and was left to Maintenance Mechanic McNeil. Beanie had a drink of water--his first at the refuge in over 14 years--and the new water system was declared a success.

J.O. 30190-1260-9H - HQ Asphalt Parking Rehab. (Large ARMM): Bid invitations were sent to over 15 local vendors. At the bid opening it was discovered no one had bid on the project. All vendors were contacted and asked why they had not bid. Most responses were to the effect the project was much too complicated and called for materials and methods that they could not furnish. Vendors were again contacted and asked to view the project and submit a bid based upon their own preferred materials and methods. Several bids were received and ranged from $4,500 - $11,000. Following this, Engineering cancelled the project stating they didn't think the project would do any good anyway. So now we are left with several hundred square yards of asphalt that is breaking up at an accelerated rate and will cost much more to repair in the future.

The headquarters remodelling was completed during the year with the aid of small ARMM funds. New conference room chairs and conference table were acquired. Central air conditioning was installed by Lord's Plumbing and Heating, Mediapolis, Iowa ($1,800). Video equipment storage cabinets matching the existing barn board decor were constructed in the conference room. The cabinets also provide additional office supplies storage as well as a small library. Gustison Construction, Wapello, Iowa, completed the project ($935).



ARMM Water Treatment Rehab. Project - Prior to replacement of the water treatment equipment, this is what HQ water looked like--it smelled even worse--coffee anyone!

9/85 CM



Following installation of new treatment equipment--coffee now has a coffee taste...

1/86 CM

4. Equipment Utilization and Replacement

Two new vehicles were received during the year. A 1-ton Dodge 4 x 4 flat bed was equipped with tool boxes and a power lift gate and became the refuge maintenance vehicle. A Dodge Ramcharger 4 x 4 was received and became a dual purpose vehicle--law enforcement and passenger.

A 1979 Chevy Luv 4 x 2 pickup was surplused following the YCC program and was finally purchased at public sale ($1,495).

Other equipment surplused during the year included rotary mowers (2), jeep trailers (2), manual typewriter, IH cub cadet riding mower, photocopier, electric typewriter, window air conditioner, metal lathe and pakset radio. Most items went to the State of Iowa General Services.

Small ARMM funds enabled us to upgrade a considerable amount of equipment during the year including:

--binoculars (4)
--spotting scopes (2)
--camera equipment
--slide file system
--drafting equipment
--electronic typewriter
--Toshiba photocopier
--desk calculators (2)
--misc. shop tools and equipment
--ATC cyclone seeder
--post hole auger
--Bush Hog tandem disk
--rocket net and detonator
--law enforcement shotgun
--body armor
--video tape equipment (monitor, deck and controller)

The aging heavy equipment fleet continues to cause concern due to increasing shortage of replacement parts and increasing frequency of required repairs to keep the equipment running. The Bantam crane was utilized extensively during the year on force account ditch cleanout operations. The machine has reached such a state of disrepair that we cannot move it to either Big Timber or Keithsburg for needed work at those sites. Much of the problem with heavy equipment is the lack of storage space. Equipment such as the crane, D-7 dozer, Cat-12 grader, Terrain King mower, rotary mowers and a number of other items must be left outdoors to weather.

The pumping station at Keithsburg was not operated during the year. The pumping station (diesel) on Louisa was operated a total of 564 hours during the year at a cost of $1,080.

5. Communications System

ARMM funding enabled acquisition of two new mobile radios which were installed in the new vehicles received during the year. Two hand held portables were also acquired for use in maintenance, law enforcement and YCC programs. All refuge vehicles are now equipped with mobile radios with FWS frequency.

One State radio was acquired from SA Kocal and installed in the new LE vehicle. Each refuge officer is now able to communicate with State CO's.

The new mobile radios were to contain the Louisa County Sheriff frequency. We ran the red tape jungle to obtain permission for the frequency, but prior to installation we were informed we could not use the frequency. It seems FCC has no record of the sheriff ever being issued a license for the frequency. Therefore, we can, but can't, communicate with the sheriff's office in emergency situations.

6. Energy Conservation

Energy conservation efforts have not gone well over the past few years as can be seen from the following table:

Energy Use

	FY85	FY84	FY83	FY82	FY81
Gasoline (gal.)	1,915	1,318	1,659	1,806	1,916
Diesel (gal.)	1,966	970	755	602	1,232
Electricity (KWH)	22,353	21,307	18,843	16,442	15,350
Propane (gal.)	1,800	1,400	1,230	1,660	1,390

Increase in staff, O & M and ARMM funding account for most of the increase. The temporary shop facility accounts for the increase in electrical consumption. Electric and propane use will continue to increase in FY86 following construction of the new shop facility.

The station's fuel allocation for FY85 was 4,100 gallons. Actual usage totalled 1,915 gallons of gas and 1,966 gallons of diesel or 76% of the total allocation. 1,215 gallons of diesel were used for pumping activities to complete ARMM projects and moist soil production.

J. OTHER ITEMS

1. Cooperative Programs

The refuge staff participated in several cooperative programs during the year:

--Dredge Spoil On-Site Inspection Team	Staff
--UMRCC Wildlife Technical Section	Staff
--Canada Goose Banding	Staff and Land
--COE Timber Stand Mapping and Sales	Staff
--COE ROW and Permit Application Review	Staff
--Spring Lake Ecological Preserve Advisory Panel	Staff
--Louisa County Resource Area	Staff

2. Items of Interest

Staff training during the year included:

Stanley -	40 hr. LE Refresher & Firearms Qualification	Crab Orchard & Springfield
	CPR and First Aid Training	
McCarty -	Basic LE Training	FLETC
	Administrative Workshop	St. Paul, MN
	CPR and First Aid Training	
Jack -	Administrative Workshop	St. Paul, MN
	Procurement Training (Warrant)	Correspondence
	CPR and First Aid Training	
McNeil -	CPR and First Aid Training	

3. Credits

We all confess!



After 34 years of service with the Fish and Wildlife Service, Leroy E. Hovell has retired. His entire career was work in refuges.

1951	Noxubee NWR, Mississippi
1952 - 1955	Mattamuskeet NWR, North Carolina
1955 - 1956	White River NWR, Arkansas
1956 - 1959	Upper Miss, Lansing District
1959 - 1961	Horicon NWR, Wisconsin
1961 - 1974	Crab Orchard NWR, Illinois
1974 - 1983	Muscatatuck NWR, Indiana
1983 - 1985	Louisa NWR, Iowa

FROM ALL OF US LEROY,
THANK YOU

Big Timber National Wildlife Refuge

Annual Narrative Report
Calendar Year 1985

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

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F. HABITAT MANAGEMENT

1. General

The refuge, being outside the river levee, is all bottomland hardwoods with backwaters and sloughs plus a few old fields. The real Habitat Management Plan was written by "Mother Nature" long ago and is revised sporatically without consulting us. Therefore, our management philosophy is to remain flexible. This year our efforts were concentrated on reforestation of two old farm fields (see F.3.) and duck blind debris removal.

3. Forests

Two old fields totalling 26 acres were planted with bottomland hardwood tree seedlings. Species were selected that were native to the area and provided the best bottomland habitat including cavities for wood ducks. ICC Forester Stan Tate and COE Forester Tim Feavel were consulted regarding species, species mix, age class, site preparation, planting rate and site maintenance. Using their invaluable help, the planting was a success. Following are details of the project:

Species: Northern pin oak, green ash, a mix of shagbark, shellbark and butternut hickory, swamp white oak, sycamore and northern pecan.

Planting rate: 1,230 seedlings per acre having a 6' x 6' spacing.

Species mix: Tree seedlings per acre:

Northern pin oak	300
Swamp white oak	150
Green ash	150
Hickory mix	450
Sycamore	150
Northern pecan	30
	1,230

Site preparation: We were prepared to spray with Round up (1 quart/acre) and/or mow. As it turned out, neither was necessary because planting occurred just as green up began and standing vegetation was minimal.

Planting methods: A tree planter was borrowed from ICC Lake Odessa operating off the three-point hitch on a tractor and four OST bars were purchased. The OST bars were to be used in areas inaccessible to a tractor. When the project was completed the bars, luckily, were used very little.

Planting strategy: Foresters like rows of trees but the sight of rows causes a biologist to shake his/her head and mumble. Over the objections of the maintenance mechanic, the assistant manager decided there would be no rows. We would plant in an increasing spiral beginning in the center of the field. After learning that a tractor-pulled planter won't plant in a spiral and after a generous helping of crow, we began to plant irregular rows.

Site maintenance: None was planned. They will have to make it on their own.

Monitoring: The project's success will be determined by annual transects. The data will be used to determine growth rate and survival in general by species.

Nursery sources:

Forrest Keeling Nursery
Highway 79 South
Elsberry, Missouri 63343

3,000 swamp white oak
1,000 northern pecan

Smith Nursery
Charles City, Iowa

3,000 northern pin oak
5,000 green ash

State of Illinois

15,000 shagbark, shellbark and butternut hickory
5,000 sycamore

Costs:

32,000 seedlings	$ 5317
Equipment maintenance, repair and fuel	$ 225
100 man hours at $21.75/hour	$ 2175
Storage in walk-in refrigerator April 4 - 30	$ 300
	$ 8017

Comments/Problems: In general, the project went well. We learned from our mistakes. We anticipated some delays because of unpredictable conditions (weather, river level, field conditions, etc.) but we didn't think it would be nearly a month. Conditions were not favorable when the trees arrived the last week of March. We opened up the arrivals, about 10,000, and healed them in. When things

didn't improve a walk-in refrigerator was located and the trees were stored beginning April 4. The seedlings that were healed in were rebagged and stored also. Concern is with the survival of these. Seedlings left in their shipping container and refrigerated without opening seemed to be in much better condition when planted. In the future a refrigerator will be located in advance and money for storage will be budgeted.

G. WILDLIFE

2. Endangered and/or Threatened Species

Bald eagles continue to use the refuge during their spring and fall migrations. A peak population of six was recorded during February.

3. Waterfowl

Because of the nature of Big Timber, censusing waterfowl to provide meaningful data is at best difficult. The best information we have is the aerial census done weekly by the Illinois Natural History Survey during the spring and fall.

Breeding pair and brood surveys are an exercise in futility because visibility and accessibility in the flooded timber is poor at best. As nearly everywhere else, migrating waterfowl populations were down dramatically. Production was estimated at 0 mallards and 165 wood ducks. Following is a table of monthly waterfowl populations.

H. PUBLIC USE

1. General

Big Timber Division is open to public use throughout the year. Being located on the river side of the levee, vehicle access is limited to a parking lot at Kilpeck Landing (managed by C.O.E.) on the north end and a parking lot and boat ramp on the south managed by us. Because of the limited vehicle access, use as an outdoor classroom is limited.

8. Hunting

Big Timber, including Ramsey, Turkey and Otter Islands, is open to public hunting in accordance with state regulations. Some small and big game hunting occurs, but 80% of the interest is in waterfowl.

Many of the waterfowl hunters erect temporary blinds on the refuge. This year seven were constructed. Almost half of the YCC's activities involved removing old blinds and cleaning up the litter. Letters were sent to last years blind owners and news releases made

BIG TIMBER NATIONAL WILDLIFE REFUGE
Average Monthly Waterfowl Population

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
American Coot			150	294						3900	650	
Swans												
Geese: White-Fronted												
Snow Blue				20							50	10
Canada			10	33						550	80	70
Ducks: Mallard			333	152		50	150	200	200	1900	180	138
Black			12	2						17	10	5
Gadwall			16							175	20	
Pintail				8					30	288	18	
Green-winged Teal				13					100	413	60	
BW/Cinn Teal				63				200	590	75		
Am. Widgeon			78	45					75	925	10	
Shoveler			30	53						45		
Wood Duck			10	200	100	200	500	800		60	5	
Redhead										90		3
Ring-necked			12	118						238		8
Canvasback			25	83						168		25
Lesser Scaup			50	350						475		16
Bufflehead & Goldeneyes												183
Ruddy			25	37						350		4
Total Ducks			591	1124	100	250	650	1200	995	5219	303	382
Grand Total			751	1471	100	250	650	1200	995	9669	1083	462

regarding blind construction regulations. Blinds were to be removed within 72 hours after the close of the waterfowl season. Compliance was generally good. Due to freeze up a week before the season closed, the field checking was not possible. However, this spring, dressed in our new anti-exposure coveralls (if we can't afford them we won't go) we will be checking for compliance.

9. Fishing

Sport fishing is the most popular public use accounting for 80% of the pie. According to the ICC, it is one of the top spots in the state. There wasn't a week all year that the anglers weren't at it. Two feet of ice, -20° or 102°, mosquitos or duck hunters didn't keep them away.

10. Trapping

Trapping is not allowed on Big Timber itself. However, Turkey and Otter Islands, parts of the division, were open for bid this fall. Because of high water, no one was interested in the $100 minimum bid.

11. Wildlife Observation

Some wildlife observation does occur from boaters or hikers entering over the dike or from Kilpeck Landing on the north end.

I. EQUIPMENT AND FACILITIES

2. Rehabilitation

The public restroom (vault) at the public access had deteriorated to such a condition the facility was surveyed and removal commenced late in the year. Early freeze up prevented completion of the project. Removal of the structure will improve parking and traffic flow on this heavily used access.

Fish and Wildlife Service
Division of Wildlife Refuges

6

PUBLIC USE REPORT

TR Code				Organization Number							Name			Report Period Yr		Mo	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
[illegible]	0	1	0						0	0							

OUTPUT TYPE	LINE CODE									NO. VISITS	ACTIVITY HOURS	NON-STD TOT. RPTS
	18	19	20	21	22	23	24	25	26	27-35	36-45	46-55
INTERPRETATION												
Wildlife Trails - Nonmotorized												
Self Guided	0	1	1	0	0	0	0	P	S			
Conducted	0	1	2	0	0	0	0	P	C			
Wildlife Tour Routes - Motorized												
Self Guided	0	2	1	0	0	0	0	P	U			
Conducted	0	2	2	0	0	0	0	P	T			
Interpretive Center	0	3	0	0	0	0	0	P	R			
Visitor Contact Station	0	4	0	0	0	0	0	P	Q			
Interpretive Exhibits - Demonstra												
Self Guided	0	5	1	0	0	0	0	P	A			
Conducted	0	5	2	0	0	0	0	P	M			
Other On-Refuge Programs	0	6	0	0	0	0	0	P	P			
ENVIRONMENTAL EDUCATION												
Students	1	0	0	0	0	0	0	P	E			
Teachers	1	1	0	0	0	0	0	P	B			
RECREATION-WILDLIFE CONSUMPTIVE												
Hunting Mig. Birds - Waterfowl												
Ducks	2	0	1	0	0	0	0	P	D	145	725	
Geese	2	0	2	0	0	0	0	P	G			
Swans	2	0	3	0	0	0	0	P	N			
General Waterfowl	2	0	4	0	0	0	0	P	W	700	2200	
Hunting Mig. Birds - Other	2	0	5	0	0	0	0	P	X	20	70	
CONTROL TOTALS	9	9	2	0	0	0	0	R	Z			

Region _____ Station Big Timber NWR Date Prepared 1985

Name _____

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Fish and Wildlife Service
Division of Wildlife Refuges

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PUBLIC USE REPORT

TR Code			Organization Number							Name				Report Period Yr		Mo	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
	0	1	0						0	0							

OUTPUT TYPE	LINE CODE									NO. VISITS	ACTIVITY HOURS	NON-STD TOT. RCDS
	18	19	20	21	22	23	24	25	26	27-35	36-45	46-55
RECREATION-WILDLIFE CONSUMPTIVE (c't												
Hunting Resident Game												
Upland Game Birds	2	1	1	0	0	0	0	P	L			
Big Game				(Species Code)								
Deer - Gun	2	1	2	8	5	4	0	P	H	45	180	
Deer - Bow	2	1	3	8	5	4	0	P	J	100	390	
	2	1	4					P	K			
	2	1	4					P	K			
	2	1	4					P	K			
	2	1	4					P	K			
Small Game	2	1	5	0	0	0	0	P	Z	135	330	
Other Game	2	1	6	0	0	0	0	P	U			
Trapping	2	1	7	0	0	0	0	U	G			
Fishing												
Warmwater	2	2	1	0	0	0	0	U	W	7710	20,615	
Coldwater	2	2	2	0	0	0	0	U	C			
Saltwater	2	2	3	0	0	0	0	U	S			
Clams, Crabs, Oysters, Frogs	2	2	4	0	0	0	0	U	Y	100	200	
Other Consumptive Wildl. Rec.	2	3	0	0	0	0	0	U	M			
RECREATION-WILDLIFE NON-CONSUMPTIVE												
Camping	3	0	0	0	0	0	0	U	H			
Picnicking	3	1	0	0	0	0	0	U	B			
CONTROL TOTALS	9	9	2	0	0	0	0	R	Z			

Region _____ Station Big Timber NWR Date Prepared 1985

Name _____

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Fish and Wildlife Service
Division of Wildlife Refuges

8

PUBLIC USE REPORT

TR Code			Organization Number							Name			Report Period Yr	Mo	
2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
3	0	1	0					0	0						

OUTPUT TYPE	LINE CODE									NO. VISITS	OUTPUT UNITS	NON-STD TOT. RPUs
	18	19	20	21	22	23	24	25	26	27-35	36-45	46-55
RECREATION-WILDLIFE NON-CONSUMPTIVE											Act.Hr.	
Wildlife/Wildlands Observation												
Foot	3	2	1	0	0	0	0	U	E	95	170	
Land Vehicle	3	2	2	0	0	0	0	U	N			
Boat	3	2	3	0	0	0	0	U	L	235	380	
Other	3	2	4	0	0	0	0	U	P			
Photography	3	3	0	0	0	0	0	U	T	22	52	
Field Trials	3	4	0	0	0	0	0	U	X			
RECREATION - NON-WILDLIFE												
Camping	4	0	0	0	0	0	0	R	C			
Picnicking	4	1	0	0	0	0	0	R	P			
Swimming	4	2	0	0	0	0	0	R	S			
Boating	4	3	0	0	0	0	0	R	B			
Waterskiing	4	4	0	0	0	0	0	R	W			
Off Road Vehicling	4	5	0	0	0	0	0	R	V			
Other	4	6	0	0	0	0	0	R	M			
TOTAL VISITS TO REFUGE	0	9	0	0	0	0	0	P	V	9307		
FISH & WILDLIFE INFORMATION											Per.Sers.	
Public Inquiries	5	0	1	0	0	0	0	F	P		75	
News Releases	5	0	2	0	0	0	0	F	N		2	
Personal Appearances	5	0	3	0	0	0	0	F	A			
Professional Services	5	0	4	0	0	0	0	F	S			
Exhibits	5	0	5	0	0	0	0	F	E			
CONTROL TOTALS	9	9	2	0	0	0	0	R	Z			

Region_____ Station Big Timber NWR Date Prepared 1985

Name_____

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Keithsburg National Wildlife Refuge
Keithsburg, Illinois

Annual Narrative Report
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C. LAND ACQUISITION

1. Fee Title

Efforts continued by Realty on acquiring the railroad grade that forms the south boundary of the refuge. At the close of the year, a potential donation of the property was developing.

F. HABITAT MANAGEMENT

1. General

A minimum of habitat manipulation occurred this year. Water levels were lowered after the spring migration one foot from 533 MSL to 532 MSL to stimulate moist soil plant production. In October, levels were raised again to 533. Moist soil plant response was good and the waterfowl responded likewise, especially during the late fall.

Upland management consisted of burning (see F.9.).

In summary, rarely have we received so much for so little. Is there a message in there somewhere for all of us?

9. Fire Management

No wild or otherwise unplanned fires occurred this year. In the 1985 Prescribed Burning Plan, 79 acres were proposed and approved to be burned. Six acres of the approved 79 were burned. Weather conditions, wet fields and accessibility to the unit contributed to the limited success. Keithsburg Division is 45 road miles (one way) and one hour from the office. Following is a table and map of the burn units:

Burn Unit	Acres Approved	Acres Burned
1	29	0
2	20	6
3	30	0

G. WILDLIFE

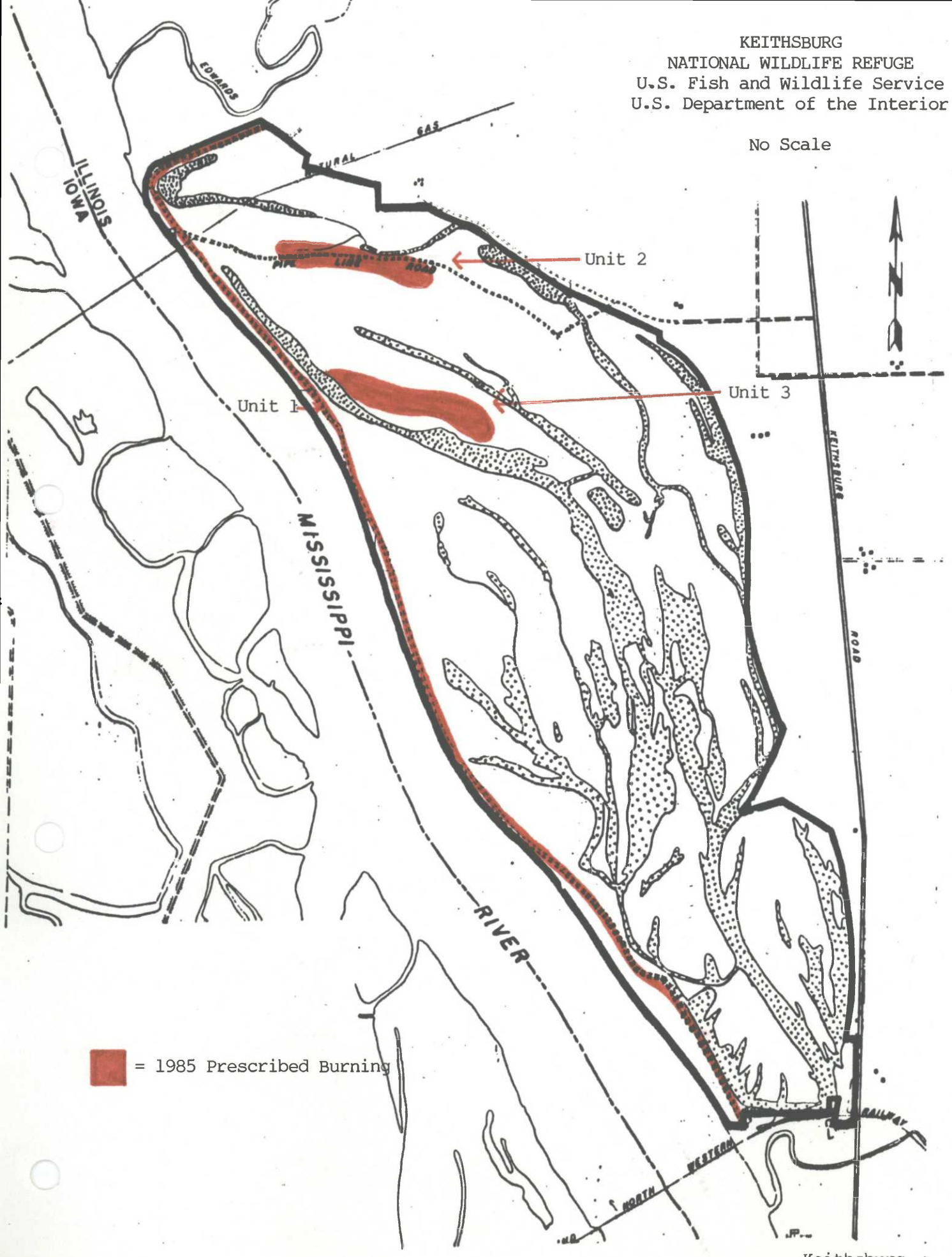
2. Endangered and/or Threatened Species

Bald eagles continue to use the refuge during their spring and fall migrations. A peak population of 29 was recorded during the fall migration.

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

2

No Scale



3. Waterfowl

Waterfowl usage this spring was average but this fall was above (see F.1.). The table on the following page gives average monthly populations. Compare these totals to Louisa's during late fall. Not a bad response for the effort.

Production was estimated at 600 wood ducks and 0 mallards.

15. Animal Control

One trapping permit was issued for Keithsburg (Zone 4). The successful bidder was Mr. Bill Ivins of Mediapolis, Iowa.

	Bid	Days Trapped	Muskrat	Raccoon	Skunk	Beaver
Zone 4	$257	11/13 - 12/2 (20)	314	19	0	1

Trapping is utilized to control muskrat burrowing activity on the river levee, wood duck predators and remove nuisance beaver.

H. PUBLIC USE

1. General

Public use of Keithsburg in 93% sport fishing. Why such a lopsided statistic? Location, purpose and accessibility are basically why. The office is 45 road miles away. As a result, staff/visitor contact is not as frequent as we would like. We aren't handy to schools and conservation groups in the Keithsburg area. As stated before, undisturbed resting and feeding for migrating waterfowl means the refuge is closed from early September through December to all public activity. And finally, access is limited to boat or foot travel. The interior roads are narrow, one way and seasonal with few turn outs. Because of this, group tours by vehicle are not practical. The only facilities provided are two parking lots and a boat ramp.

8. Hunting

The only hunting activity permitted is for squirrel. The season opens with the Illinois squirrel season and closes with the refuge closing at the beginning of the early teal season. This year only six days were allowed to pursue squirrels from September 1 through September 6.

9. Fishing

As mentioned earlier, fishing is the most popular activity. During January and February ice fishing attracts many. During the open

KEITHSBURG NATIONAL WILDLIFE REFUGE
Average Monthly Waterfowl Population

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
American Coot			338	210		100	100			4,350	575	
Swans												
Geese: White-Fronted										1		
Snow Blue											38	
Canada			43	10						350	240	
Ducks: Mallard		2	2950	202		150	400	400	175	4,600	15,000	200
Black			22	8						20	270	4
Gadwall			10							312	45	
Pintail			30	25					13	750	170	
Green-winged Teal			8	50					30	850	150	
BW/Cinn Teal			30			20		400	325	365	30	
Am. Widgeon			117	33					32	1,650	400	
Shoveler			67	37						107	10	
Wood Duck			12	400	300	600	1200	1800	1500	150	80	
Redhead												
Ring-necked			27	17						63	78	
Canvasback			13									
Lesser Scaup			125	83						225	525	
Bufflehead & Goldeneyes				3							32	113
Ruddy											38	
Total Ducks		2	3411	858	300	770	1600	2600	2075	9,092	16,798	317
Grand Total		2	3792	1078	300	870	1700	2600	2075	13,793	17,651	317

Fish and Wildlife Service
Division of Wildlife Refuges

PUBLIC USE REPORT

5

TR Code			Organization Number							Name			Report Period Yr	Mo	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	0	1	0						0	0						

OUTPUT TYPE	LINE CODE									NO. VISITS	ACTIVITY HOURS	NON-STD TOT. RCDS
	18	19	20	21	22	23	24	25	26	27-35	36-45	46-55
RECREATION-WILDLIFE CONSUMPTIVE(c't												
Hunting Resident Game												
Upland Game Birds	2	1	1	0	0	0	0	P	L			
Big Game				(Species Code)								
Deer - Gun	2	1	2					P	H			
Deer - Bow	2	1	3					P	J			
	2	1	4					P	K			
	2	1	4					P	K			
	2	1	4					P	K			
	2	1	4					P	K			
Small Game	2	1	5	0	0	0	0	P	Z	20	50	
Other Game	2	1	6	0	0	0	0	P	U			
Trapping	2	1	7	0	0	0	0	U	G	20	100	
Fishing												
Warmwater	2	2	1	0	0	0	0	U	W	3381	9548	
Coldwater	2	2	2	0	0	0	0	U	C			
Saltwater	2	2	3	0	0	0	0	U	S			
Clams,Crabs,Oysters,Frogs	2	2	4	0	0	0	0	U	Y	50	100	
Other Consumptive Wildl. Rec.	2	3	0	0	0	0	0	U	M			
RECREATION-WILDLIFE NON-CONSUMPTIVE												
Camping	3	0	0	0	0	0	0	U	H			
Picnicking	3	1	0	0	0	0	0	U	B			
CONTROL TOTALS	9	9	2	0	0	0	0	R	Z			

Region _____ Station Keithsburg NWR Date Prepared 1985

Name _____

Form 3-239b
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Fish and Wildlife Service
Division of Wildlife Refuges

6

PUBLIC USE REPORT

TR Code			Organization Number							Name			Report Period Yr	Mo	
1 2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
3	0	1	0					0	0						

OUTPUT TYPE	LINE CODE									NO. VISITS	OUTPUT UNITS	NON-STD TOT. RPUs
	18	19	20	21	22	23	24	25	26	27-35	36-45	46-55
RECREATION-WILDLIFE NON-CONSUMPTIVE											Act.Hr.	
Wildlife/Wildlands Observation												
Foot	3	2	1	0	0	0	0	U	E	72	120	
Land Vehicle	3	2	2	0	0	0	0	U	N			
Boat	3	2	3	0	0	0	0	U	L	50	90	
Other	3	2	4	0	0	0	0	U	P			
Photography	3	3	0	0	0	0	0	U	T	24	49	
Field Trials	3	4	0	0	0	0	0	U	X			
RECREATION - NON-WILDLIFE												
Camping	4	0	0	0	0	0	0	R	C			
Picnicking	4	1	0	0	0	0	0	R	P			
Swimming	4	2	0	0	0	0	0	R	S			
Boating	4	3	0	0	0	0	0	R	B			
Waterskiing	4	4	0	0	0	0	0	R	W			
Off Road Vehicling	4	5	0	0	0	0	0	R	V			
Other	4	6	0	0	0	0	0	R	M			
TOTAL VISITS TO REFUGE	0	9	0	0	0	0	0	P	V	3617		
FISH & WILDLIFE INFORMATION											Per Sers.	
Public Inquiries	5	0	1	0	0	0	0	F	P		49	
News Releases	5	0	2	0	0	0	0	F	N		2	
Personal Appearances	5	0	3	0	0	0	0	F	A			
Professional Services	5	0	4	0	0	0	0	F	S			
Exhibits	5	0	5	0	0	0	0	F	E			
CONTROL TOTALS	9	9	2	0	0	0	0	R	Z			

Region _____ Station Keithsburg NWR Date Prepared 1985

Name _____

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water months most fishing is by boat. This year the parking lot adjacent to the boat ramp was enlarged. Take is mainly large mouth bass, black crappie and bluegill.

I. EQUIPMENT AND FACILITIES

2. Rehabilitation

The parking area at the public access was enlarged to accommodate an additional 15 - 20 vehicles/trailers. The work was completed under contract with Maynard Construction, Aledo, Illinois, doing the heavy equipment work and Cessford Construction, Burlington, Iowa, providing the fill dirt and road stone. YCC personnel installed delineation posts and parking barriers. Many favorable comments from the using public were received concerning the project. Total cost was $3,000 utilizing small ARMM funds.

CLARENCE CANNON NATIONAL WILDLIFE REFUGE

Annada, Missouri

ANNUAL NARRATIVE REPORT

Calendar Year 1985

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

CLARENCE CANNON NATIONAL WILDLIFE REFUGE

Annada, Missouri

ANNUAL NARRATIVE REPORT

Calendar Year 1985

Ross Adams — 2-4-86
Refuge Manager — Date

Robert H. Shelton — 2/7/86
Project Leader — Date

John W. Ellis — 3/25/86
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 3,763 acre refuge has ten manageable moist soil units totalling 1,248 surface acres, 237 acres of green tree reservoirs, four semi-permanent waterbodies totalling 72 acres, 1,251 acres of recently tilled cropland and 928 acres of other lands including forests, brush, grass, water management facilities and administrative lands. The refuge is surrounded by a levee providing protection from Mississippi River floodwaters in most years.

The refuge was purchased fee title in 1965 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 for providing for the needs of waterfowl and other wildlife while de-emphasizing the cropland management program.

Staff of the Clarence Cannon Refuge also administer the Delair Division, the Gardner Division, and the Bear Creek Unit.



Personnel

1. N. Ross Adams, Refuge Manager, GS-11, PFT, EOD 1/23/84
2. Bradley W. McKinney, Ass't. Refuge Manager, GS-7, PFT, EOD 8/19/85
3. Carolyn A. Watts, Secretary, GS-4, PPT, GS-4, EOD 4/19/81
4. John D. Allan, Maintenance Mechanic, WG-9, PFT, EOD 2/20/67
5. Keith A. Kirby, Tractor Operator, WG-5, PFT, EOD 7/23/84

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A. HIGHLIGHTS

Development of the new 465 acre MSU 7 was completed (Section I.1.).

Low areas in Bryants Creek levee were raised by refuge staff (Section I.2.).

The west dike of MSU 3 was breached to add 70 acres to this unit (Section I.2.).

Swan Lake inlet structure was completed (Section I.1.).

Water control was established again at Swan Lakes junction on Delair (Section I.2.).

Assistant Manager McKinney started work at Cannon in August (Section E.1.).

Assistant Manager Willis transferred to Lake Ilo National Wildlife Refuge (Section E.1.).

Maintenance Mechanic Allan and Secretary Watts received awards (Section E.1.).

Refuge equipment was upgraded by acquiring a surplus grader and repairing the D-8 dozer (Section I.3., 4.).

B. CLIMATIC CONDITIONS

Throughout most of January, all surface water on Cannon and all but the ditches on Delair Division were frozen. The wettest February in 20 years brought the river up to a threatening level, but also created ample open water and, consequently, a surge of waterfowl use within the moist soil units.

The river cooperated in March by suddenly dropping, remaining unusually low through May. A low river and normal precipitation provided the opportunity to gravity flow off the refuge in preparation for the farming program and natural vegetative regrowth. Thousands of dollars were saved in pumping costs.

After allowing time for planting and germination, Mother Nature showered us with 15" of rain throughout the summer months (150% of the 50-year average). Optimum growing conditions provided the means for a "bumper crop" farming program. Corn averaged 150 bushels per acre and beans averaged 35 bushels per acre.

Fall pumping began on September 22, but a brief rise in the river permitted eight days of flooding via gravity flow generating a bonus savings in pumping costs.

An early cold snap on December 2 pushed the vast majority of birds south by freezing over all but a few pools of moving water.

TABLE B.1. Weather Data for Clarence Cannon NWR, CY 1985

Month	Total Precip.	Superlatives	50 Yr. Avg.	No. Days Precip.	Temp. Extremes Max.	Temp. Extremes Min.
Jan.	.74		1.78	4	44°F	-22°F
Feb.	4.73	- wettest in 20 yrs.	1.80	6	64°F	-12°F
Mar.	5.12		3.04	6	86°F	22°F
Apr.	3.39		3.62	9	86°F	27°F
May	3.24		3.81	6	92°F	42°F
June	5.32		4.01	13	94°F	54°F
July	4.41	- 150% of 50 yr. summer prec. avg.	3.61	9	96°F	60°F
Aug.	5.22		3.46	12	92°F	54°F
Sep.	.75		3.37	7	96°F	36°F
Oct.	2.54		2.95	8	80°F	30°F
Nov.	7.98	- 2nd wettest in refuge history	2.42	11	71°F	20°F
Dec.	4.50		2.12	5	54°F	-12°F
Total	47.94	- 2nd wettest in refuge history	35.99	96		

C. LAND ACQUISITION

1. Fee Title

Project Leader Stratton arranged a meeting with Commissioners of Clark County, Missouri, landowners adjacent to the proposed Gregory Landing purchase and other interested parties. Stratton explained the objectives and interest of the Fish and Wildlife Service in buying a parcel for waterfowl management. Maureen Murphy, Ascertainment Biologist from the Regional Office, explained the acquisition process and the status of the Gregory Landing proposal. The thirty people in attendance were all receptive to the proposal and some expressed interest in selling their land to the Service to expand the proposed acquisition.

3. Other

The refuge acquired management responsibility for the 1,450 acre Bear Creek Unit effective January 1, 1985. The Bear Creek Unit was managed as a public hunting area by the Illinois Department of Conservation. The logistics of managing this area from the Department's office near Alton were difficult so they turned the area over to the Fish and Wildlife Service for management. Lands of the Bear Creek Unit are owned by the U.S. Army Corps of Engineers and administered by the U.S. Fish and Wildlife Service under a cooperative agreement signed in 1963.

See the narrative for the Gardner Division for additional detail.

D. PLANNING

2. Management Plan

The refuge staff completed the Law Enforcement Plan. The document was approved by the Regional Office in July.

E. ADMINISTRATION

1. Personnel

Assistant Manager Willis transferred to Lake Ilo National Wildlife Refuge in July. Brad McKinney moved up from Crab Orchard National Wildlife Refuge to assume the responsibilities as assistant manager.

Maintenance Mechanic Allan received a length of service certificate and a pin in recognition of 20 years of dedicated and proficient federal service.



Maintenance Mechanic Allan receiving a special achievement award from Manager Adams. 11/85, BM



Secretary Watts receiving a special achievement award from Manager Adams. 11/85, BM

Secretary Watts and Maintenance Mechanic Allan received a special achievement award and $250 each for the extra efforts put forth during the absence of Manager Adams and Assistant Willis for training in March through May.

Refuge staff remained at four permanent full-time and one permanent part-time employees. Full time equivalent allocation for Clarence Cannon Refuge was 4.6.

2. Youth Programs

The Youth Conservation Corps (YCC) program was utilized from June 3 through July 26 with much success. Four enrollees and one contracted supervisor spent the eight weeks completing such projects as: lawn care, painting and repairing a storage building, reorganizing headquarters storage area, painting the pumphouse trashguard, and removal of woody species from moist soil units.

The crew of five also completed a waterfowl nest survey over 327 acres of selected moist soil units. The team was successful in finding and cataloging nine waterfowl nests providing managers with valuable production data.

3. Other Manpower

The refuge was fortunate in having the services of Cooperative Education Student John Seng during the months of July and August. During the absence of an assistant refuge manager, John was invaluable in performing such duties as: maintaining wood duck nest structures; conducting wildlife surveys; performing water level maintenance; and taking vegetative transects of moist soil units, green tree reservors, and ditches.

5. Funding

Refuge funding over the last five fiscal years is summarized below:

FY	O&M	ARMMS		1520	8260
1985	$153,000	$33,000	Small Projects	$7,500	$2,561
1984	$167,656	$56,000	Large Project	$5,000	$9,950
1983	$167,423			$1,800	$3,100
1982	$151,273				$4,125
1981	$133,461				



YCC crew transforming the "pink building" to refuge brown. 6/85, KW

6. Safety

The only accident this year occurred when the tractor operator, while operating a D-4 dozer, reportedly injured his back.

Refuge staff, including YCC, were certified in Red Cross First Aid and CPR in June.

Safety projects completed during the year:

1) Installed fire alarm system in headquarters buildings.
2) Constructed walkway ramps and screen coverings for several stoplog water control structures.
3) Installed a vent system in the shop using small ARMMS.
4) Red safety signs were posted at Gardner Division to warn visitors about hunting activities.

F. HABITAT MANAGEMENT

2. Wetlands

In the past year the 12 manageable moist soil units on Clarence Cannon has expanded from 859 acres to 1,296 surface acres; a 51% increase.

Water is supplied to managed units via a ditch system, Crissafulli pump, and a stationary 20,000 gallon per minute pump that pulls water from a diversion channel located adjacent to the southern boundary of the refuge. Though it certainly cannot be depended on, timely precipitation can greatly affect operations by lowering pumping requirements. Variance in elevation throughout the refuge is less than four feet.

A sudden six foot drop in the Mississippi River on January 4th marked the beginning of gravity flow off the refuge. Mississippi River flood waters threatened the refuge in late February, but then dropped and remained unusually low, thus allowing management to hold water on Cannon to a minimum by gravity flowing off during low river stages. Spring pumping was circumvented at a savings of nearly $4,000 in fuel alone.

Good weather also permitted the completion of the MSU 7 development on schedule creating a 465 acre impoundment, which generated 122,527 waterfowl use days.

Twenty-five percent of the water control structures were sumped in the spring to provide a silt cache basin according to plan.

In July, the east half of MSU 5 and western third of MSU 2 were disced and planted to Japanese millet to control cottonwood and cocklebur seedlings, respectively.

The west dike of MSU 3 was breached to allow expansion of the MSU by 70 acres.

Fall pumping began September 26, but an unusual rise in the river permitted gravity flow during most of October and helped to keep pumping costs to a minimum. Units were filled to an average depth of 4-14 inches according to plan.

The main ditch was allowed to drain on November 26.

3. Forests

The refuge manages three green tree reservoirs totalling 237 acres. In July, a survey of pin oaks in Crane Pond green tree reservoir revealed that 68% of these trees were suffering from damage thought to be a result of prolonged inundation. Strategies to alleviate this problem include an extensive ditch clean out project in 1986.

Stephen's Landing green tree reservoir had an old timber bridge replaced with two 18" culverts to increase water flow through the green tree reservoirs.



Pin oak trees in Crane Pond Green Tree Reservoir showing damage believed to have resulted from excessive periods of flooding. 5/85, KW

4. Croplands

Nine hundred acres of crops were planted in 1985 on a 1/3:2/3 crop share basis. Intermittent spring rains resulted in the last corn being planted on June 22. Adequate precipitation throughout the growing season resulted in corn yields ranging from 100 to 150 bushels per acre.

Less than 1/3 of the 123 acres of corn left in the field as the refuge share was consumed by waterfowl in the fall. Canada and snow geese utilized nearly all of the 124 acres of an excellent stand of wheat.

Fifty-six acres of Japanese millet planted in MSU 4 as part of the refuge share produced a modest seed crop; however, blackbirds consumed most of the millet in September and October well before waterfowl numbers peaked.

9. Fire Management

The levee and a portion of the warm season grasslands were burned as planned to control invasion of woody species.

10. Pest Control

The east 1/2 of MSU 5 and the west 1/3 of MSU 2 were seeded to Japanese millet to control cottonwood and cocklebur seedlings, respectively. Control of undesirable species was relatively successful; however, millet seed production was similar to that planted in MSU 4 (See F.4.).

The following pesticides were used in the farming program on Cannon in 1985:

	Pesticide	Crop	Active Ingredient Per Acre	Acres	Target Pests
1.	Chlorpyrifos (Lorsban)	Corn	1.5 lbs.	473	Cutworms
2.	Atrazine	Corn	2.3 lbs.	Same ground as #1	Barnyard grass, foxtail, velvetleaf
3.	Pendimethalin (Prowl)	Beans	1.2 lbs.	277	Annual grasses, pigweed, smartweed
4.	Trifluralin (Treflan)	Beans	1 lbs.	Same ground as #3	Cocklebur, foxtail, pigweed, panicum
5.	Bentazon	Beans	.2 lbs.	242 (part of ground in #3)	Cocklebur, smartweed, velvetleaf
6.	Acifluorfen (Blazer)	Beans	.25 lbs.	Same ground as #5.	Cocklebur, velvetleaf, smartweed, foxtail

Use of insecticides will not be permitted on refuge lands after the 1985 farming season.

G. WILDLIFE

1. Wildlife Diversity

Approximately 200 acres of previously tilled agriculture units were converted to moist soil units during 1985. This management strategy of returning previously tilled acreage to a more natural state, implemented in 1984, is expected to increase species diversity in future years.

Moist soil units are being managed so that varying water depths are present throughout the year, promoting use by marsh, wading, and shorebirds.

2. Endangered and/or Threatened Species

Clarence Cannon hosts a number of bald eagles between October and March, with populations fluctuating in close relation to waterfowl numbers. The eagle population peaked at 16 birds on November 27th. Bald eagle observations were recorded as to location and activity of each bird. Compiling this data over several years will enhance our efforts in preserving and maintaining preferred habitat on the refuge.

The northern harrier, listed as endangered in the State of Missouri, is a common visitor on the refuge, with an average daily population of three to four birds between September and February.

3. Waterfowl

On the average, more than 75 percent of the total waterfowl use days occur on Clarence Cannon during peak migration periods, October through December and February through April. Habitat management activities are geared toward producing optimum conditions during these peak months. A summary of waterfowl use days in 1985 is presented in Table G.3-1.

Waterfowl maintenance objectives set forth in the Refuge Management Plan include 3,000,000 duck use days and 400,000 goose use days.

With duck use days exceeding the five-year average by 5½ times in February and 6½ times in March, 1985 was well on its way to becoming a banner year for waterfowl use. Approximately 85% of all duck use was generated on moist soil and marsh units. The remainder came from agricultural units and green tree reservoirs.

Goose use continues to climb. A new refuge record of 713,090 use days surpassed the previous high, set in 1984, of 652,599 use days.

Table G.3-1 Monthly Waterfowl Use Days for Clarence Cannon NWR, CY 1985

Month	Geese	Ducks	Total
Jan.	28,055	155	28,210
Feb.	20,837	97,700	118,537
Mar.	225,359	1,027,075	1,252,434
Apr.	46,869	253,560	300,429
May	55	3,574	3,629
June	0	3,568	3,568
July	0	4,443	4,443
Aug.	0	10,442	10,442
Sept.	140	6,377	6,517
Oct.	17,891	151,263	169,154
Nov.	184,300	849,871	1,034,171
Dec.	189,584	241,595	431,179
Total	713,090	2,649,623	3,362,713
Objective	400,000	3,000,000	

An average year for waterfowl production, 92 mallards, 160 wood ducks, 15 green-wing teal, and 11 hooded merganser were logged in 1985.

4. Marsh and Water Birds

Use days for marsh and water birds remained high for the second year due to increased surface water in spring and summer. Eleven such species were recorded using, to the greatest extent, Supply Pond, MSU 1, and MSU 3. These units were allowed to hold water throughout most of the summer.

5. Shorebirds, Gulls, Terns, and Allied Species

Taking advantage of the evaporating pools and open mudflats in several of the moist soil units were 20 species recorded throughout the spring and summer months. It is believed that continuing to provide habitat for these migratory species will significantly increase wildlife diversity in future years.

6. Raptors

Somewhat north of their range, five Mississippi Kites were spotted on the refuge late in spring. Much more common visitors include the red-tailed hawk, northern harrier, American kestrel, and the

great horned owl. Several short-eared owls entertained the staff near the office around quitting time for several weeks late in the year.

7. Other Migratory Birds

Mourning dove habitat is being provided by means of increasing edge effect and preservation of selected brushlands. Management recorded significant gains over the five-year average with respect to dove populations.

8. Game Mammals

The white-tailed deer population remains healthy and large. Two such "healthy and large" bucks, while struggling for dominance, locked antlers and drowned in a drainage ditch. The two were found frozen in the ice 100 yards from the office. The find caused considerable amount of local interest with the local paper even printing a small story and photo. Too much interest, in fact. While managers considered somehow preserving the racks for display purposes someone, after hours, helped themselves to the heads.



The struggle for dominance resulted in death for both these fine specimins when they locked antlers, fell into a drainage ditch and presumably drowned. 12/85, BM

Also found in healthy numbers are beavers and muskrats. Trapping has historically been conducted to alleviate a problem generated by nests and burrows in and through ditches and water control structures. No trapping of these species was deemed necessary in 1985.

17. Disease Prevention and Control

Refuge staff conducted bi-weekly inspections of the refuge in conjunction with waterfowl censuses. No disease outbreaks occurred on Cannon in 1985.

H. PUBLIC USE

1. General

Two hundred and seven people registered at the visitor center. Nearly all visitors were interested in observing waterfowl, deer, and other wildlife using the refuge.

Pat Larson, Tom Kelly and Scott Bates visited the refuge in October to review the public use program and sign management.

7. Other Interpretive Programs

Video playback equipment was installed in the visitor center as a small ARMMS project. Three wildlife-oriented video tapes are on file for visitor viewing.



Contractor putting finishing touch on a cabinet to house the new video equipment. 6/85, KW

17. Law Enforcement

Law enforcement capabilities were enhanced when Assistant Manager McKinney transferred to Cannon. McKinney was a full-time refuge officer at Crab Orchard National Wildlife Refuge and had law enforcement experience with the National Park Service.

Manager Adams completed nine weeks of law enforcement training at the Federal Law Enforcement Training Center at Glynco, Georgia.

Heads from two bucks that had locked antlers and died in a ditch near refuge headquarters (See Section G.8.) were stolen by unknown culprits.

Assistant Manager McKinney participated in law enforcement efforts in Iowa during the opening of waterfowl season.

I. EQUIPMENT AND FACILITIES

1. New Construction

Construction on MSU 7 was completed in time to catch November rains and fill to optimum level. Construction on MSU 7 was done force account and added 465 acres of moist soil management facilities to the refuge.

The east dike in MSU 3 was breached in two places thus expanding this unit by 70 acres.

2. Rehabilitation

Low areas on Bryants Creek Levee east of the pumphouse were brought up to grade. This portion of the levee was nearly topped by spring floods.

Dikes on Upper Rabbit Ears Marsh and Goose Pasture were repaired restoring water control on these units.

Brush was bulldozed from the section of the main ditch east of MSU 2.

The old corn crib and pole building were removed for materials by a private party from Elsberry. Refuge staff were about to bulldoze and bury the buildings after years of effort failed to produce a party interested in removing the buildings on a bid basis. One last effort located the willing party in Elsberry who did an excellent job of cleaning up the sites.

The formerly "pink building" was changed to refuge brown by the YCC crew (See Section E.2.). Damaged door panels were replaced by refuge staff.

New energy efficient overhead doors and an exhaust fan were installed in the refuge shop as small ARMMS projects.

Seventy percent of the water control structures were sumped to provide a silt cache basin.

The dilapidated Stephen's Landing bridge was replaced with two 18" diameter pipes to increase waterflow and provide access to the levee.

Nine hundred tons of badly needed gravel were applied to roads on Cannon as a small ARMMS project.

The entrance road to refuge headquarters was raised and graveled in a cooperative project by the Pike County Highway Department, a refuge neighbor, and refuge staff. This work certainly improved access to the headquarters during times of heavy rains and high creek waters; however, the county road maintenance from Annada to the refuge boundary is extremely poor. The road is seldom graded and the rough condition of the road discourages people from visiting the refuge.



Neighboring farmer assisting in a cooperative effort to raise the entrance road to refuge headquarters and provide added flood protection on private ground. 9/85, NRA

3. Major Maintenance

Extensive repairs on the aging D-8 dozer were completed at a cost of $3,146 from small ARMMS funds.

New tires, batteries, radiator and a starter for the Galion grader cost $3,542 in small ARMMS money. The grader should be in excellent condition and provide many years of efficient service.

4. Equipment Utilization and Replacement

The refuge acquired a Galion grader from the Army Ammunition Depot at Middleton, Iowa to replace the aging and ailing Cat grader.

7. Energy Conservation

New insulated overhead doors were installed in the shop to improve heating efficiency (See Section I.2.).



Repair work on aging D-8 dozer to try and squeeze a couple of more years out of it. 5/85, KW

J. OTHER ITEMS

4. Credits

Manager Adams wrote Sections A, C.1. and 3., D.2., E.1. and 5., F.4., 9., and 10., H.1., 7. and 17., I.1., 2., 3., 4., and 7.

Assistant Manager McKinney wrote Sections B., E.2., 3. and 6., F.1., 2., and 2., G.1., 2., 3., 4., 5., 6., 7., 8., and 17.

Secretary Watts typed, proofread and assembled the report.

DELAIR DIVISION

ANNUAL NARRATIVE REPORT

Calendar Year 1985

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

INTRODUCTION

Delair National Wildlife Refuge, located in Pike County, Illinois three miles south of the Louisiana, Missouri bridge, is situated in the Mississippi floodplain adjacent to pool No. 24. The area, protected from the river by a levee, is 1,737 acres of marsh, water, forest and cropland. The semi-permanent water areas include: Upper Swan Lake-36 acres, Lower Swan Lake-55 acres, Upper Butcher Pond-8 acres, Lower Butcher Pond-31 acres, Hanei Pool-11 acres, and Flake Hole-15 acres.

All lands on Delair are one to ten feet below normal pool stage of the river and, therefore, water is provided to the area via seeps and gravity flow throughout the year.

The area was purchased fee title in 1965 and 1976 with funds from the sale of migratory waterfowl stamps. The primary purpose for acquiring the area was to provide a feeding and resting area for waterfowl during migration.

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A. HIGHLIGHTS

The new water control structure for the Cattail Marsh area was completed by a contractor as a large ARMMS project (Section I.1.).

Water control was restored between Upper and Lower Swan Lakes with replacement of a dike and two 18 inch pipes with screwgates (Section I.1.).

A wood duck nest box program was implemented on Delair (Section G.3.).

B. CLIMATIC CONDITIONS

Weather conditions were similar to Clarence Cannon's.

D. PLANNING

4. Compliance with Environmental and Cultural Resource Mandates

The refuge applied to the U.S. Army Corps of Engineers for a permit for ditch work in Swan Lakes and Upper Butcher Pond to improve drainage capabilities. The work is planned as a 1986 ARMMS project.

F. HABITAT MANAGEMENT

2. Wetlands

Protected by a levee, Delair lies as much as ten feet below the normal pool stage of the Mississippi River. Several seep holes, consequently, provide the refuge with a year-round source of water. Collected by a series of five major, interconnected pools, this water is managed by a system of open ditches and water control structures. The water is eventually carried off the refuge by the privately-owned Sny Drainage Ditch.

The completion of the Swan Lake inlet water control structure in early spring now provides the ability to inundate the Cattail Marsh and improve water control on Lower Swan Lake (see Section I.1.). Maintaining 90% basin coverage of the Swan Lakes and Upper Butcher Pond in the spring allowed for proper drainage of agriculture fields earmarked for farming. Maintaining Hanei Pool and Lower Butcher Pond at 100% basin coverage into the summer months allowed for greater wood duck brood rearing habitat and control of invading woody vegetation on Lower Butcher Pond.

Drawing down Swan Lakes and Upper Butcher Pond to 70% basin coverage in the summer brought about an expected favorable vegetative response as well as providing ample brood habitat. Favorable vegetative regrowth then occurred later in the summer when Hanei Pool and Lower Butcher were allowed to slowly drain.

Water levels were then restored to the pools in late September for fall migration. Backfilling the Cattail Marsh behind the new Swan inlet structure was closely monitored throughout its first season. As a result, several low-lying areas have been identified as needing elevated to more effectively inundate the Cattail Marsh.

Lack of maintenance for several years has caused a build-up of silt and vegetation in the refuge ditch system to the point of adversely affecting proper water management. A work project imple-

menting both machine ditching and ditch blasting to alleviate this problem has been submitted and approved and is expected to go out on bid in the spring of 1986.

4. Croplands

The cooperative farmer planted 283 acres of corn, 173 acres of soybeans and 80 acres of wheat interseeded with Alsike clover on a 2/3:1/3 share basis. The corn crop averaged approximately 85 bushels per acre, substantially less than crops on neighboring farms. Part of the problem was thought to be soil compaction caused by working wet soils.

9. Fire Management

The Sny levee was burned to control encroachment of woody vegetation. Attempts to burn the Cattail Marsh area were only moderately successful because of excessive moisture in the marsh.

10. Pest Control

Good control of purple loosestrife was achieved in the Garner Slough after spraying with Rodeo in August. There appeared to be a 100 percent kill of plants that were sprayed. The area will be monitored closely in 1986 to determine the need for additional treatment. The Garner Slough supports the only known colony of loosestrife on the refuge.



Beautiful flowering purple loosestrife before. . . .
7/85, Mike Anduss



and after treatment with Rodeo. 7/85, Mike Anduss

All corn ground was treated with 1.8 pounds per acre of atrazine and 0.9 pounds per acre of pendimethalin (Prowl) to control foxtail, morning glory, cocklebur, velvetleaf and buttonweed. One hundred and seventeen acres of corn were treated with chlorpyrifos (Lorsban) to kill cutworms. Insecticide use will not be permited on refuge lands after the 1985 farming season.

G. WILDLIFE

1. Wildlife Diversity

With its diverse habitat mixture of marsh, water, timber, brush, and upland grass sites, Delair continues to provide for an abundance of both resident and migratory wildlife. Managing for lower water levels during spring and summer is credited with increasing use by marsh, water, and shorebirds.

2. Endangered and/or Threatened Species

Bald eagle use days dropped significantly in the past year falling far short of the 698 use-days objective level. While the number of wintering bald eagles remains strong regionally, their apparent preference toward nearby lock and dam tailwaters over Delair during 1985 remains unexplained.

3. Waterfowl

Waterfowl censuses were conducted twice weekly during periods of peak migration and once per week during the balance of the year.

The first three and the last three months of the year, the peak migration period, accounted for 99% of the waterfowl use days. A summary of waterfowl use days during 1985 is presented in Table G.3.1.

Table G.3.1. Monthly Waterfowl Use Days, Delair Division, CY 1985

Month	Geese	Ducks	Total
Jan.	56,792	69,192	125,984
Feb.	5,440	135,770	141,210
Mar.	11,044	13,922	24,966
Apr.	--	853	853
May	--	1,519	1,519
June	30	810	840
July	--	796	796
Aug.	--	1,285	1,285
Sep.	215	2,249	2,464
Oct.	41,091	21,418	62,509
Nov.	175,388	216,188	391,576
Dec.	88,502	114,136	202,638
Total	378,502	578,138	956,640
Objective Level----	500,000	2,000,000	

A mid-November visit by six tundra swans tallied 24 use-days for that species.

The continuing decline in available surface water due to siltation and invading woody vegetation is thought to be the primary reason for the decline in waterfowl use over the past six years. Extensive dredging and ditch blasting programmed for 1986 will hopefully reverse this trend.

In an effort to improve wood duck production, 14 predator-proof metal nest boxes and 13 wooden nest boxes (assembled by Pike County Illinois 4-H students) were placed on waters throughout the refuge in January. A post-season inventory of the boxes indicated that 36 young were produced from 3 (11%) of the nests. These results, for the first season, were considered a success and indicate that adequate cavities may have been one of the limiting factors. Problems associated with the nests were minor; one

damaged by a fallen limb and another housing a colony of honey bees. An aggressive program of box maintenance and proper box placement will be continued.

4. Marsh and Water Birds

The great blue heron, king of the marsh and water birds, enjoys the increased shallows and mudflats for the second year of this management strategy. Their numbers peaked in mid-June at 66.

5. Shorebirds, Gulls, Terns, and Allied Species

These species returned in increasing number as well, concentrating on the ample mudflats.

17. Disease Prevention and Control

Five incapacitated geese on a private hunting club south of Delair were collected in February and shipped to the National Wildlife Health Laboratory for necropsy. All five had succumbed to lead poisoning.

In early August, 16 red-eared turtles were found dead, washed up against the Swan Lake inlet water control structure. Six specimens were collected and shipped to the National Wildlife Health Laboratory for analysis. Three red-eared sliders were collected from Cannon (20 miles away) and submitted to the lab as a control sample. Managers suspect chemical poisoning as a result of nearby pesticide application and untimely, heavy rains. The results of the the health lab analysis were inconclusive.

H. PUBLIC USE

1. General

The Delair Division remained closed to public use in 1985.

I. EQUIPMENT AND FACILITIES

1. New Construction

The concrete water control structure for the Cattail Marsh was completed in early 1985. This structure along with ditching planned for 1986 will greatly improve water management capabilities for the Cattail Marsh which should result in improved habitat for waterfowl and other water-oriented wildlife.

2. Rehabilitation

The old access crossing between Swan Lakes was restored. Two 18" culverts with screwgates were installed in the crossing.



New water control structure for the Cattail Marsh area. This structure will greatly facilitate management of the marsh for waterfowl and other wildlife. 2/85, KW

Upper Swan will be pumped dry in 1986 to control carp and to encourage moist soil plant growth and seed production.

The Garner Slough dump site and the remains of the Hanei house were buried.

Nine hundred tons of gravel were spread on roads at Delair as a small ARMMS project.

J. OTHER ITEMS

2. Other Economic Uses

The beekeeper was advised that his permit would not be renewed in 1986. Bees were competing with wood ducks for the few available cavities on the refuge and, therefore, were in conflict with refuge objectives. It was no doubt a matter of coincidence that purple loosestrife, an excellent forage plant for honey bees, suddenly appeared in a wetland adjacent to the storage area for the permittee's 20 colonies of bees.

4. Credits

Manager Adams wrote Sections D.4., F.4., 9. and 10., I.1. and 2., and J.2.

Assistant Manager McKinney wrote Sections F.2., G.1., 2., 3., 4., 5., 17.

Secretary Watts typed, proofread, and assembled the narrative.

GARDNER DIVISION

AND

BEAR CREEK UNIT

ANNUAL NARRATIVE REPORT

Calendar Year 1985

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

INTRODUCTION

The Gardner Division was formally established in 1958 as part of the Mark Twain National Wildlife Refuge under the Fish and Wildlife Coordination Act. The division is General Plan land owned by the U.S. Army Corps of Engineers and is managed under a cooperative agreement signed by the U.S. Fish and Wildlife Service and the Corps in 1963.

The Gardner Division is a group of 32 islands located in Pool 21 of the Mississippi River approximately eight miles north of Quincy, Illinois. The 4,850 acre unit contains about 3,400 acres of mature bottomland hardwoods, 750 acres of croplands, plus 600 acres of lakes and wooded sloughs. The division supports one of the largest remaining blocks of bottomland hardwoods in Illinois and was identified in the Illinois Natural Areas Inventory.

Management responsibility for the 1,450 acre Bear Creek Unit was transferred from the Illinois Department of Conservation to the U.S. Fish and Wildlife Service on January 1, 1985. The unit lies adjacent to the north end of the Gardner Division and contains 1,260 acres of bottomland hardwoods, 132 acres of croplands and 58 acres of lakes. The primary objective for the unit is wood duck production. The unit is open to hunting and other resource-oriented public use activities.

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L. INFORMATION PACKET - - - (inside back cover)

A. HIGHLIGHTS

The 1,450 Bear Creek Unit was added to the Gardner Division effective January 1, 1985.

Two hundred and three archery hunters killed 14 deer on October 26 and 27.

One hundred and forty shotgun hunters killed 59 deer on November 15-17.

B. CLIMATIC CONDITIONS

Weather conditions were similar to Clarence Cannon's. One of the wettest years on record kept the islands flooded during the shotgun deer hunt (see Section H.8.).

C. LAND ACQUISITION

3. Other

The U.S. Fish and Wildlife Service assumed management responsibility for the 1,450 acre Bear Creek Unit on January 1, 1985. The unit was transferred from the Illinois Department of Conservation (IDOC) to the Service because the unit was difficult to manage from the IDOC office near Alton. The unit is a natural extension of the Gardner Division and contains similar habitat and wildlife.

D. PLANNING

The hunting plan for the Gardner Division and Bear Creek Unit was written and submitted through channels for review and approval.

F. HABITAT MANAGEMENT

2. Wetlands

Attempts at water management on Gardner, especially moist soil developments, have met with little success in previous years. Sandy soils on the area cause percolation of water from MSUs. Because of its location and low elevation, the area is subject to total inundation by untimely rises in the river. Because of these factors and problems with accessibility, water management on Gardner Division is virtually non-existent.

4. Croplands

The cooperative farmer on the Gardner Division planted 388 acres of corn, 222 acres of beans and 89 acres of wheat. The farmer on the Bear Creek Unit planted 74 acres of corn and 44 acres of beans. The wheat was left for wildlife whereas the corn and beans were harvested where possible and trucked to market. Money from the refuge share of row crops was deposited in the 8260 account and will be returned to the Mark Twain National Wildlife Refuge for projects on Corps-owned (GP) land.

Growing conditions were excellent and the crops produced well. However, a wet fall and high water delayed harvest operations until freeze-up. Farming access to the Gardner Division is by private barge and the channel was frozen hard enough to stop access in late December. At the end of December, 95 acres of corn and fewer beans remained to be harvested on the Gardner Division.

10. Pest Control

The cooperative farmer on the Gardner Division applied 2.25 pounds of metolachlor (Dual), 2.7 pounds of atrazine, 0.5 pounds of dicamba (Banvel), and 1.2 pounds of chlorpyrofos (Lorsban) per acre on 388 acres of corn to control cocklebur, foxtail, morning glory, velvetleaf, barnyardgrass, cottonwoods and willows, and cutworms. The farmer applied 1.5 pounds of pendimethalin (Prowl), 0.5 pounds of linuron (Lorox), and 1 pound of bentazon (Basagran) per acre on 222 acres of beans to control cocklebur, pigweed, smartweed, foxtail, velvetleaf, and wild mustard. In addition, ninety-two acres of beans were treated with 0.38 pounds per acre of sethoxydim (Poast) to control post-emergent grasses.

The cooperative farmer on the Bear Creek Unit applied 2 pounds of atrazine, 1 pound of chlorpyrifos (Lorsban), 0.25 pounds of dicamba (Banvel), and 0.125 pounds of 2,4-D per acre on 72 acres of corn to control weed species and cutworms as listed above. He applied 3 pounds of ethalfluralin (Sonolan) per acre on 42 acres of beans. Fifteen acres of beans were spot sprayed with 0.25 pounds of acifluorfen (Blazer), 0.5 pounds of bentazon (Basagran) and 1 ounce of 2,4-D-B (Butylac) per acre to control post-emergent weeds.

G. WILDLIFE

1. Wildlife Diversity

Wildlife populations on Gardner must contend with fluctuations of the Mississippi River. River levels inundate the refuge for weeks, even months at a time. As a result, wildlife diversity remains low. In addition, 60 percent of the division is made up of mature bottomland timber. The lack of edge within this timber contributes to lower wildlife diversity.

2. Endangered and/or Threatened Species

Large numbers of wintering bald eagles continue to congregate on the division where closing dams across island chutes maintain open water.

3. Waterfowl

Waterfowl use days are presented in Table G.3-1. While waterfowl

numbers continue to be far less than anticipated, as reflected by the objective levels, use days did increase significantly over more recent years. This increase is due in part to an extremely wet fall allowing inundation of partially harvested corn and bean fields.

Wood duck production was estimated at 625 new birds in 1985. Our objective level is 850 wood ducks per year. More data concerning available cavities and nesting bird and brood counts needs collected throughout the Gardner Division. Evaluation of such data will help determine and manage for optimum wood duck production.

G.3-1. Waterfowl Use days, Gardner Division, CY 1985

Month	Geese	Ducks	Total
Jan.	--	341	341
Feb.	--	2,940	2,940
Mar.	1,240	83,390	84,630
Apr.	30	39,480	39,510
May	--	6,000	6,000
June	--	3,300	3,300
July	--	10,200	10,200
Aug.	--	4,030	4,030
Sep.	--	22,500	22,500
Oct.	--	51,600	51,600
Nov.	3,100	89,280	92,380
Dec.	6,000	8,010	14,010
Total	10,370	321,071	331,441
Objective	5,000	1,750,000	

9. Game Mammals

Seventy-three deer were harvested by permit holders on Gardner Division during the two-day bow and three-day shotgun hunts. Standing corn and foul November weather were the contributing factors in what turned out to be the lowest hunter success ratio in the 11 year refuge hunt history (see H.8.).

A summary of sex and age of the deer killed is as follows:

GARDNER ISLAND 1985 DEER HARVEST

Sex	Age Class	Archery	Shotgun	Total
Male	0.5		23	23
	1.5		10	10
	2.5		2	2
	3.5			
	4.5+			
	Unk.	9	2	11
Female	0.5		10	10
	1.5		5	5
	2.5		1	1
	3.5		2	2
	4.5+		3	3
	Unk.	5	1	6
		14	59	73

	Season	Number of Permits	Hunter Success Ratio
Archery	Oct. 26-27	203	7%
Shotgun	Nov. 15-17	140	42%

10. Other Resident Wildlife

While hunters may not have seen many deer on Gardner Division this year, they did see plenty of turkey. Dozens of turkey sightings ranging from 1 to 10 birds were reported to refuge staff during the October and November deer hunts.

The turkey population is currently (and conservatively) estimated at 40 birds.

17. Disease Prevention and Control

No disease or significant die-offs of any kind were recorded on Gardner.

H. PUBLIC USE

1. General

The Gardner Division was open to fish and wildlife-oriented public use from February 1 through September 30. Squirrel hunting, fishing, wildlife observation, and mushroom hunting remained popular activities in 1985 although use was limited to those with a boat or canoe to gain access to the islands. With the exception of the special deer hunts (Section H.8.), the division was closed from October 1 through January 31 to serve as a sanctuary for waterfowl and bald eagles.

The Bear Creek Unit was managed as a public use area by the Illinois Department of Conservation and public use remained high priority under Fish and Wildlife Service management in 1985. Deer hunting was the most popular activity on the unit. Squirrel hunting, turkey hunting, and duck hunting were also popular along with fishing, pecan gathering and wildlife observation.

8. Hunting

Two hundred and three archery permittees killed 14 deer on the Gardner Division on October 26 and 27. Estimated costs for administering the hunt was $2,600 or $186 per deer killed.

One hundred and forty firearm permittees killed 59 deer on November 15-17 for a 42% success rate. This was the lowest success rate in the history of the firearms hunt on the Gardner Division. Foul weather, high water, and unharvested crops contributed to the poor success rate. The estimated costs for administering the firearms hunt was $1,780 or $30.16 per deer killed.

The river was rising and campers were marooned at the Bear Creek Campground (operated by the U.S. Army Corps of Engineers) by four feet of water across the access road on Friday evening. A nearby ferry removed five loads of hunters along with their cars, boats,

and campers on Saturday, November 16. The river dropped enough by Sunday evening, November 17 that the campers who didn't panic and take the ferry were able to drive out without any problem.

17. Law Enforcement

Deer hunters during the special hunt were monitored closely, but most were on their good behavior and few problems arose. No citations were issued.



Trees cut across access to Long Island Lake believed to have fallen victim to an irate fisherman who had his nets confiscated by Illinois Department of Conservation officers. 10/85, BM

J. OTHER ITEMS

4. Credits

Manager Adams wrote Sections A., C.3., D.2., F.4. and 10, H.1. and 8.

Assistant Manager McKinney wrote Sections B., F.2., G.1.,2.,3., 9., and 10.

Secretary Watts typed, proofread, and assembled the report.

CALHOUN NATIONAL WILDLIFE REFUGE

Brussels, Illinois

Calhoun, Batchtown and Gilbert Lake Divisions

ANNUAL NARRATIVE REPORT

Calendar Year 1985

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

REVIEW AND APPROVALS

CALHOUN NATIONAL WILDLIFE REFUGE

Brussels, Illinois

ANNUAL NARRATIVE REPORT

Calendar Year 1985

George W. Peyton — Refuge Manager — 2/14/86 — Date

Mark Twain NWR — Project Leader Review — 2/18/86 — Date

Regional Office Approval — 3/25/86 — Date

INTRODUCTION

The Calhoun National Wildlife Refuge District is the southernmost subdivision of the Mark Twain Refuge Complex. The Calhoun Refuge District presently includes three separate divisions totaling 7,997 acres: the Calhoun Division; 4,833 acres, the Batchtown Division; 2,428 acres and the Gilbert Lake Division; 736 acres.

The district functions as an important link in the chain of resting, feeding and wintering areas for birds migrating along the Mississippi Flyway. It was established in 1958 with General Plan Lands purchased by the Army Corps of Engineers for a navigation project. Lands excess to the requirements for the project came under U.S. Fish and Wildife Service administration through a cooperative agreement between the Corps of Engineers and the U.S. Fish and Wildlife Service in 1963. April 9, 1979, additional acreage adjacent to the Calhoun Division (56 acres) was purchased for the establishment of new office and maintenance facilities.

The Calhoun Division is located three miles north of the confluence of the Mississippi and Illinois Rivers in Calhoun County, Illinois, approximately 20 air miles north of St. Louis, Missouri. The Gilbert Lake Division is located on the Illinois River in Jersey County, Illinois, 5 miles north of the confluence. The Batchtown Division is located on the Mississippi River 5 miles north of lock and dam #25 in Calhoun County, Illinois.

The Calhoun Division consists of agricultural lands, timbered areas, moist soil units and Swan Lake. The Batchtown Division: timbered islands, narrow sloughs, river channels, small agricultural areas and a moist soil unit. The Gilbert Lake Division consists of a long narrow 250 acre lake bordered by timber, small agricultural areas and a small section of native grasses.

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J. OTHER ITEMS

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K. FEEDBACK

A. HIGHLIGHTS

Eric Smith, Assistant Refuge Manager, transferred to De Soto National Wildlife Refuge and Debra Kimbrell transferred from Mingo National Wildlife Refuge to replace him. (Section E.1).

The volunteer program was very effective with a large increase in the weekend use of the refuge visitor reception area. (Section E.4).

Submergent vegetation (sago pondweed) was found in Swan Lake for the first time since the early 1970's. (Section F.2).

Waterfowl use on Calhoun was the highest it had been since the late 1970's. (Section G.3).

Blacktopping of the office driveway and visitor parking lot was completed. (Section I.1).



Sago pondweed in Swan Lake '85 GC

B. CLIMATIC CONDITIONS

It was another wet year for the Calhoun District with 40.1" of rain and 17.11" of snow. This however, is not new to the district as normal for the area is considered to be 36.64" of rain and 19.80" of snow.

Heavy rains and the spring thaw brought typical fall and spring flooding to the refuge, delaying most habitat manipulation and preventing some from taking place entirely.

Although summer was cooler than in past years, the warm temperatures carried on through September and after a short break, returned later in October with several days in the low 80's.

October 2nd marked the first heavy frost of the season, which is unusually early. Although temperatures for the rest of October and for November were relatively mild, December was considerably cooler than in 1984 with several days dropping to zero and below. Sufficient ice developed on the Illinois River to close the Brussels Ferry in December and caused it to remain closed on into the new year.

1985 Weather Summary for the Calhoun Division
(Weather station located at Calhoun office)

Month	Temperature °F		Precipitation (inches)		
	Max.	Min.	Rainfall	Normal Rain	Snowfall
January	46	-18	0.34	1.85	4.00
February	60	- 6	0.63	2.28	7.11
March	88	26	4.24	3.34	0.00
April	89	30	2.95	3.71	0.00
May	94	62	2.25	4.06	0.00
June	93	47	6.30	4.04	0.00
July	97	55	4.06	3.32	0.00
August	94	56	3.94	2.94	0.00
September	96	37	0.74	3.15	0.00
October	81	30	1.215	2.64	0.00
November	70	23	10.00	2.64	0.00
December	56	- 4	3.43	2.20	6.00
Totals:			40.095	36.64	17.11

C. LAND ACQUISITION

3. Other

Carl Schulze, a refuge neighbor just northeast of the refuge office-visitor building, offered to sell to the refuge 156 acres. Shortly after the Fish and Wildlife Service decided there was not enough justification to purchase this land, a St. Louis realtor purchased it and plans to convert it into a waterfowl hunting club. Several birding clubs in the area are very upset about this situation.

D. PLANNING

3. Public Participation

Refuge personnel met and corresponded with members of the Migratory Waterfowl Hunters, the Batchtown Sportsman's Club and the Great Rivers Chapter of the Illinois Audubon Society, several times concerning management of the refuge.

E. ADMINISTRATION

1. Personnel

Staff changes for the year included the transfer of Assistant Manager Eric Smith to De Soto National Wildlife Refuge on February 17, 1985 and the arrival of Debra L. Kimbrell March 31, 1985 as new Assistant Manager for the Calhoun District.

A five year comparison of onboard strength is as follows:

	Permanent (Number of Employees)			Total
	Full Time	Part Time	Temporary	FTE
FY 1985	3	1 (3 days/wk)		3.6
FY 1984	3	1 (3 days/wk)	1	
FY 1983	3	1 (3 days/wk)	1	
FY 1982	2	1 (3 days/wk)	1	
FY 1981	2	1 (3 days/wk)	1	

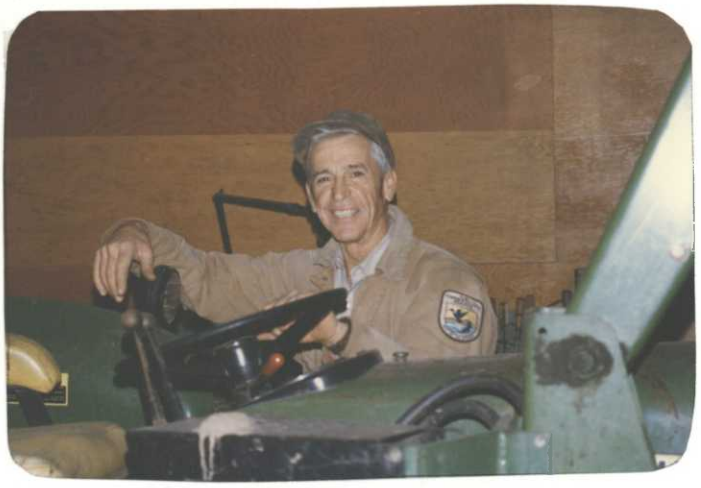
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Personnel

1. George W. Peyton	Refuge Manager	GS-11	PFT	EOD	8-14-77
2. Eric N. Smith	Assistant Refuge Manager	GS- 7	PFT	EOD	9-19-83
				Transferred	2-17-85
3. Debra L. Kimbrell	Assistant Refuge Manager	GS- 7	PFT	EOD	3-31-85
4. Debra D. Kuhn	Secretary	GS- 4	PPT	EOD	7-21-83
5. Eugene A. Simon	Maintenance Mechanic	WG- 9	PFT	EOD	12-29-65

PERSONNEL (Cont.)



3. Debra L. Kimbrell



1 2 3 4



5

Personnel Cont.

1. Barbara Webster, YCC	6-9-85 -- 8-12-85
2. Carmen Hattemar, YCC	6-9-85 -- 8-12-85
3. Joseph Loft, YCC	6-9-85 -- 8-12-85
4. Daniel Brinkman, YCC	6-9-85 -- 8-12-85
5. Helen Wuestenfeld, Volunteer	1965 -- present

2. Youth Programs

Calhoun hosted an eight week youth conservation corps program beginning June 9, 1985 and ending August 12, 1985. Four enrollees were hired, two female and two male, with recruitment through the local high schools. Supervision of the YCC program was a responsibility of the Assistant Refuge Manager.

While flooding and heavy rains throughout the program delayed outdoor work, it presented excellent opportunity to complete indoor tasks and hold sessions on environmental education. The following are listings of environmental topics discussed and video presentations viewed by enrollees:

Discussions

- National Wildlife Refuge System
- Wildlife Management
- YCC Program
- Public lands
- Conservation(general)
- Erosion; control, causes, prevention
- Loss of wetlands
- Flooding
- Migratory birds
- Nest dragging
- Hunting
- Wildlife diseases (avian)
- Plant identification (wetland)
- Water bird identification
- Habitat importance
- Public attitudes
- Soil conservation
- Soil types
- Fish (general)
- Recycling (litter)
- Pollution

Films/Slides/Video

- "Our Nation's Wetlands"
- "Save A Place For Wildlife"
- "Refuge Management"
- "Duck Stamp Program"
- "We Care About Bald Eagles"
- "This Is Your Land"
- "We Care About Oceans"

Environmental education however, was not limited to indoor sessions. Each outdoor project was preceeded with a short discussion on the how and why of the project and its environmental impacts. Additionally, as opportunity arose, an attempt was made to tie the subjects previously discussed during the program in with the ongoing project.

YCC accomplishments for the season included:

- erosion control
- lawn & vegetation maintenance
- painting
- office assistance
- photo survey
- replacement of signs
- cleaning out water control structures
- nest dragging
- facility maintenance
- litter pick-up
- NSSE brood count
- brush clearing
- shelving construction



YCC enrollees cleaning water control structure of debris deposited by active beavers.

Safety was stressed throughout the program. In addition to basic safety techniques enrollees were instructed in the safe and proper use of all equipment to be used and the environmental hazards within their work area. Refuge safety meetings were also attended and films on heat exhaustion vs heat stroke, defensive driving attitudes and fire extinguishers were viewed. Enrollees maintained a good level of safety consciousness which resulted in no major incidents or injuries during the 1985 program.

YCC payroll problems were minor and consisted of an overpayment to one enrollee which was cleared up before the end of the program.

4. Volunteer program

The volunteer program at Calhoun presently has an active staff of 30 volunteers. The majority of these individuals work four hour shifts on weekends greeting visitors, providing visitors with information and showing films at the visitor center. This year the center was open 9 a.m. - 5 p.m., Saturday and Sunday, from October 5th - December 15th in addition to the weekday office hours.

Members of the Great Rivers Chapter of the Illinois Audubon Society and students and staff of Principia College make-up the greater number of volunteers. These individuals provide the necessary work force to present the public with the opportunity to experience the visitor center on weekends and receive pertinent information. The number of registered visitors for 1985 has nearly doubled since last year (675 vs 376) with most of the visitation being on the weekends. Volunteers feel they are providing the public with an otherwise unattainable resource and would like to continue to offer their services in the future. It is planned to open weekends this spring with the beginning of the spring bird migration and carry on into summer as long as there is public and volunteer interest.

The fall and spring/summer periods have been chosen based on migrating bird concentrations, public interest and environmental conditions. The rivers often freeze during the winter months making access to the area difficult since the ferries shut down at that time. Flood conditions in early spring likewise cause difficulties both in access to the refuge and within the refuge. Consequently and understandably, both visitation

Volunteer Program Cont.

and volunteer efforts are at a minimum during these times.

Another group of people, members of the Batchtown Sportsman's Club, have contributed 176 hours this last year in habitat manipulation of the Batchtown moist soil unit. Wildlife response to the unit was good and indications are that club members may be willing to repeat their efforts again in summer 1986.

One particular volunteer deserves special recognition; Helen Wuestenfeld. Helen is a long time birder and Audubon member. She tours the Calhoun and Gilbert Lake Divisions regularly and supplies both the state of Illinois and the refuge with invaluble data on avian wildlife of the area. Helen also is the major force in coordinating the Christmas bird count, bald eagle counts, birding tours and initial volunteer contact. She alone has contributed at least 800 hours of volunteer work this last year.

It is hoped to continue offering the weekend visitation during the fall and spring and expand the volunteer program to include biological data collection and initial environmental education. At present, efforts to coordinate a program whereby Principia College staff have biological field experiences to offer their students and at the same time pertinent resource data on the refuge can be collected is underway.

There has also been substantial interest expressed by staff of educational facilities within a two hour driving radius and members of local clubs (4 - H, scouts, etc.) in an environmental program. Since Calhoun has a staff of two management positions, a regular environmental education program is not practical. However, if sufficient volunteer interest exists and there is adequate support for the program, a very basic environmental education program may be a possibility.

5. Funding

Final O & M -	$ 138,600
(Small ARMM's projects were accomplished with $ 18,200 of these funds. Funds for two Job Order ARMM projects were put in O & M to purchase water control structures, a new typewriter and to accomplish landscaping around the administration building. Salaries accounted for 90% of the O & M budget that was left.)	
In addition to O & M funds the following funds were also available.	
YCC -	7,500
5092 Funds -	1,530
(Funds from excess agricultural crops on Corps Lands)	
Total:	147,630

6. Safety

Safety committee members and refuge staff attended monthly safety meetings involving safety films followed by discussions of the films and pertinent safety topics. Films viewed are listed below.

- "Pro Driving Tactics"
- "The Driving Edge"
- "File It Under Falls, Miss King"
- "A,B,C & D's Of Portable Fire Extinguishers"
- "A Matter Of Distance"
- "A Matter Of Speed"
- "Harry Grant's Drive"
- "Surviving Winter Driving"
- "Talking ATC Safety"
- "Stop Drunk Driving"
- "Stop A Fire Before It Starts"

No lost time accidents occurred this year bringing the total cumulative hours worked since the last lost time accident (7-1-81) to 30,679.

7. Technical Assistance

Refuge Manager worked with Jim Huffstodt, staff writer for Illinois Department of Conservation's "Outdoor Highlights" as he gathered material for an article on the Mark Twain National Wildlife Refuge which was in the September 16th issue of this magazine.

The Refuge Manager met with personnel from the St. Louis Corps of Engineers, the Missouri Department of Conservation, the Quincy office of the Mark Twain and the Refuge Manager from Clarence Cannon National Wildlife Refuge at the Ted Shanks area near Hannibal Missouri. The permit requirements for wetland related work was discussed.

8. Other Items

Refuge personnel completed the following training:

Training	Location	Staff	Date
L.E. Refresher	Crab Orchard NWR	George Peyton	4-1 -- 4-5-85
Heavy Equipment Operator	Crab Orchard NWR	Eugene Simon	4-8 -- 4-11-85

F. HABITAT MANAGEMENT

2. Wetlands

a) Swan Lake

Siltation is still a major concern on Swan Lake. At one time depths of 6 feet were common however, the average depth is presently estimated to be 2 feet or less.

2. Wetlands (Cont.)

a) Swan Lake

The possibility of a study to determine 1) the exact status of the lake and 2) the possibility of returning the lake to a more productive state, is being investigated.

Several tons of silt were removed from the ditch leading to the Swan Lake pump station this last summer, greatly improving water control at the pump station.

Large masses of sago pondweed (Potamogeton pectinatus) and coontail (Ceratophyllum demersum) were once common on Swan Lake. It is unknown whether turbidity or other factors caused the loss of vegetation. This year small masses, primarily of sago pondweed, were observed on Swan Lake near the intersection of Swan Lake and the Illinois River. This is the first observation of the vegetation since its apparent disappearance around 1969 - 1970.

Sagittaria sps., Cyperus sps. and "pigweed"* dominated the emergent vegetation along the shore of the land mass separating Swan Lake and the Illinois River. Much of the Sagittaria had apparently been partially eaten or cut off by some unknown factor.

Investigations of vegetation along a section of the central western shore showed vigorous growths of bulrush species, Cyperus sps., Sagittaria sps., Polygonum sps. and pigweed to exist.

Eighty white pelicans and several hundred ducks and shorebirds of various species were noted to be feeding in a bay along this same section of Swan Lake at the time the vegetation observations were made (late September).

Waterfowl use of Swan Lake was high this year, particularly by blue-snow geese. Eagle use was also high, with 65 bald eagles observed on or near Swan Lake during the Christmas bird count and 145 bald eagles observed during a flight census by the Illinois Natural History Survey.

b) Moist Soil Units

At present within the Calhoun Division 185.2 acres are managed for moist soil plant production. Unfortunately, environmental factors influencing production have not been on the side of management for quite some time. Although the refuge didn't experience the same extent of spring rain as last year, flood waters did not recede sufficiently for any habitat manipulation until mid May for most areas. Additionally, an unusual amount of rain (14.3" vs the normal 10.3" for June, July and August) was received during the summer months putting vegetation growth and management on a yo-yo cycle.

*(Local name for a plant that doesn't key out to be pigweed)

2. Wetlands (Cont.)

b) Moist Soil Units (Cont.)

All drawdowns occurred naturally as water receded during May. No prescribed burns were accomplished due to the lateness of the drawdowns.

MSU #1 (53.2 acres): Mid November the southernmost portion of this unit received exceptional use by waterfowl (primarily mallards and Canada geese) and eagles. This particular area had been planted in soybeans earlier in the year and flooded November 15th as Swan Lake topped the dike during intense rains.

Where the waterfowl are - the eagles are. It was not uncommon to observe 6 - 12 bald eagles at this time, roosting - waiting for "that special" opportunity to arrive.

Production in the eastern portion of the unit was primarily Polygonum coccineum and cocklebur. October 7th the area received water through the Swan Lake pump and ditch system (flooding of this unit is necessary before unit 5 or the Office MSU can receive water). Very little wildlife use was observed in this section.

MSU #2 (35.8 acres): Minimal water control exists on this unit as there are no real drainage capabilities and water must cover such a distance to flood the unit that it is impractical to do so. During the 1985 season, the unit was plowed and received water naturally from rain and flood waters, and drained naturally.

MSU #3 is adjacent to fields planted in soybeans and received high use as a loafing area in November by blue-snow geese and ducks.

MSU #4 (14 acres): This unit has maintained a somewhat flooded state naturally throughout the summer for the last 5 years. Waterfowl use as a resting area has been high and shorebird use moderate during the summer.

MSU #5 (24.7 acres): This unit drained naturally and was flooded October 9th and 10th by way of the Swan Lake pump station and ditch system. Waterfowl use of the area was minimal. Willows dominate the northern half of the unit and must be controlled if competing wild millet and other vegetation is to take hold.

Office MSU (21 acres): Spring use was limited to a small flooded section along the northern edge of the unit. A few waterfowl, herons, and egrets could usually be observed feeding and loafing while the area was holding water. This particular spot functioned as a good viewing area from the visitor center for spring visitors. Use by wildlife however, decreased as the area dried. The unit had lost all water by the end of May and vegetation developed quickly.

2. Wetlands (Cont.)

b) Moist Soil Units (Cont.)

Office MSU (Cont.): In late summer, transects were set up running north and south on the eastern section and showed the following to be primary vegetative species: Polygonum coccineum, Xanthium sp., Bidens sps., Leersia oryzoides, Echinochloa crusgalli, Eupatorium sp., Cassia fasiculata, Populus deltoides Marsh and Acer sp.

During September an area on the eastern side of the unit was mowed in an attempt to control young developing cottonwood trees.

October 29th and 30th the unit was flooded using a crisafulli pump and drawing water from a ditch adjacent to MSU #1. Minimal waterfowl use was observed until rain brought lake and river levels up, flooding areas adjacent to lake and river perimeters. Water levels were such that the tip of a metal refuge sign along the unit boundary was all that could be seen. Waterfowl use increased but not by any significant amount. The primary user being the american coot. Corn fields adjacent to the Office MSU also became flooded and attracted a fair number of mallards to the general area.

Schoolhouse Lake (30 acres): At present, water cannot be held on or drained from the unit, hence no practical water control exists. The unit was allowed to drain and flood naturally.

Primary vegetation on the area is Polygonum coccineum and willows. Some waterfowl use was noted during August and September.

c) The Goose Pasture

The goose pasture was disked and planted in winter wheat the first of September.

3. Forests

In an effort to re-establish bottomland timber on the Batchtown and Calhoun Divisions a purchase order was issued for 330 trees in the 6-8 ft. size range. This order included 14 sweet gum, 12 sugar maple, 7 green ash, 195 pin oak, and 100 sycamore trees. These trees will be picked up and planted in the spring of 1986 when the nursery digs them. A contract was also made with a local landscaper to plant the trees for us when they are ready.

In addition to the 6-8 ft. trees, 25 each (18-24"), walnut and shagbark hickory trees will be picked up and planted by the staff. Twelve hundred 1 year old seedlings of the following species; pin oaks, white pine, Washington hawthorn, gray dogwood, pecan, white oak, bur oak, red oak and bald cypress, have been ordered from Illinois Department of Conservation Division of Forest Resources and Natural Heritage. These trees will be planted in the spring when they are shipped out by the state.

3. Forests (Cont.)

One hundred trees which provide habitat for songbirds were also ordered from the Illinois Department of Conservation. These trees will be planted on some of the higher areas of the refuge.

4. Croplands

Calhoun's eight cooperative farmers were able to cultivate and plant 784 acres. Flooding and rains during the summer reduced the amount of land that could be farmed and heavy rains and flooding in the fall prevented farmers from harvesting their crops.

The cultivated acreage consisted of 303 acres of corn,, 358 acres of soybeans and 123 acres of wheat browse. One hundred and forty two acres of corn and 123 acres of wheat browse were planted and left for wildlife.

Excess crops from Corps lands were deposited in the 5092 Special Account. This is returned to the contributing station for rehabilitation and maintenance. This years deposits amounted to $ 2,617.72 for 450.95 bu. of beans and 244.68 bu. of corn.

5. Grasslands

Native grasses planted around the refuge buildings are doing well and have attracted much attention from the visiting public. Photos of the grasses have been taken and used by various agency members and the general public to represent native grasses once common to the area. The four grass species are: Indian grass (Sorghastrum nutrans), little bluestem (Andropogon scoparius), big bluestem (Andropogon gerardi) and switchgrass (Panicum virgatum).

9. Fire Management

The burn plan was revised and updated. No prescribed burns were accomplished due to the lateness of receding flood waters and no wildfires occurred.

10. Pest Control

The following pesticides/herbicides were used on the Calhoun Division:

Pesticide	# of Acres & Crop	Rates	Control Species
Atrazine	80: corn	1.5lb/Ac.	foxtail, wild sunflower, cocklebur, smartweed, morning glory
Basagran	324: soybeans/corn	1.5pt/Ac. .75lb/Ac.	cocklebur, morning glory
Butyrac 200	159: corn/soybeans	2-5oz/Ac.	cocklebur, morning glory, foxtail

10. Pesticides (Cont.)

Pesticide	# of Acres & Crop	Rates	Control Species
Lasso	383: corn/soybeans	2qt/Ac. 1.5lb/Ac. 2.5lb/Ac.	cocklebur, morning glory, smartweed
Lorox	35: corn/soybeans	.5lb/Ac. 1.25pt/Ac.	cocklebur, smartweed, morning glory
Lorsban	50: corn	7-9lb/Ac.	cutworms, rootworms
Treflan	52: soybeans	1qt/Ac. 1.5lb/Ac.	sunflowers, cocklebur, Johnsongrass, buttonweed, other broadleaf weeds
Weedone	5: corn	2qt/Ac.	willow, maple, cottonwood

Refuge Manager Peyton and maintenance man Simon were re-certified in pesticide use and application during the year.

G. WILDLIFE

1. Wildlife Diversity

At present disking and mowing are the primary management techniques being used to provide diverse habitat for numerous wildlife species. Control burns are also considered however, conditions rarely permit a prescribed burn to occur.

Initial work in establishing experimental areas within the Office MSU and MSU #1 began in 1985. These areas will be used to test and evaluate various management techniques in order to determine the best technique or combination of techniques to use for optimum production of food and cover for wildlife.

2. Endangered and Threatened Species

This was an excellent year for viewing eagles. The Illinois Natural History Survey recorded 145 bald eagles for the Calhoun Division during a flight census January 7, 1985 (78 adult, 67 immature). During the same flight 8 bald eagles were recorded for the Gilbert Lake Division and 3 for the Batchtown Division.

By the end of March most of the eagles had moved on. No observations were made again until the first fall sighting in late September. Numbers increased as fall turned to winter. It was not uncommon in December ('85) and January ('86) to observe 6-12 bald eagles at any given time.

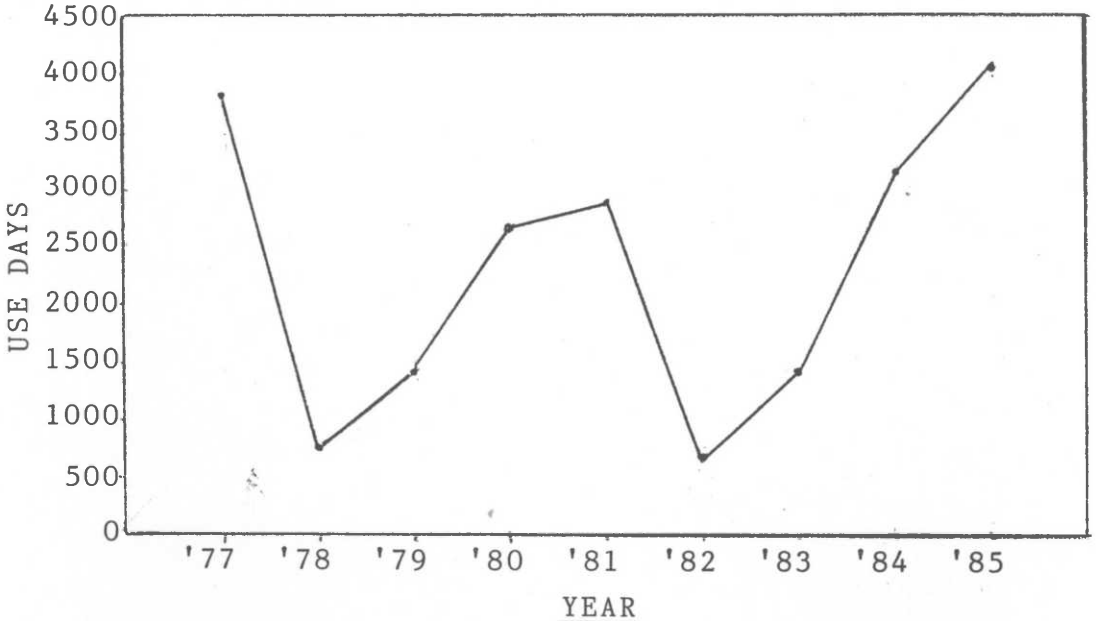
2. Endangered and Threatened Species (Cont.)

One hundred bald eagles were observed during the Christmas bird count which covered a circular area with Meppen at the center and having a radius of 7.5 miles. Sixty-five of the bald eagles were observed on the Calhoun District: 34 adults, 29 immature and 2 unknown, 25 of these were on Swan Lake.

During a second bird count, over 350 bald eagles were observed in an area covering the Calhoun District and surrounding lands. The majority of eagle observations occurred at the dams however a significant number were observed on the Calhoun District itself. A total of 140 eagles were observed on the three Calhoun Divisions:

Calhoun Division	40	adult bald eagles
	13	immature bald eagles
	1	" golden eagle
	54	
Batchtown Division	39	adult bald eagles
	14	immature bald eagles
	9	unidentified eagles
	62	
Gilbert Lake Division	15	adult bald eagles
	9	immature bald eagles
	24	

Although this last census was actually made during early January 1986, it is mentioned here as it gives support to other observations and censuses. The number of eagles recorded for 1985 is well beyond the number recorded for the past several years and without adequate support the report could easily be dismissed.



EAGLE USE, CALHOUN

2. Endangered and Threatened Species (Cont.)

Ospreys were observed during April, September, October and November. The greatest number observed was three on September 14th. No peregrine falcons were observed this year.

Several species known to use the refuge are listed by the state of Illinois as endangered. These species are: Cooper's hawk, northern harrier, long-eared owl, short-eared owl, double-crested cormorant, little blue heron, Wilson's phalarope, black-crowned night heron, american bittern, Forster's tern, least tern, black tern and red-shouldered hawk.

3. Waterfowl

Spring duck numbers have been consistent for the last two years with peaks in February 1984 and March 1985 of 9,600 and 9,465 respectively.

Duck production estimates of 125 mallards and 300 wood ducks are down from 1984 estimates of 300 mallards and 600 wood ducks. Refuge objectives are 200 mallards and 450 wood ducks.

Fall migration first became apparent mid September with numbers increasing to a peak of 57,980 on October 28th - more than double last years fall peak of 25,000 in November. Numbers remained high through November and December with peaks of 43,325 and 12,970 respectively. Total use days for ducks; 3,083,088. According to refuge records this amount of use hasn't occurred since the late 1970's.

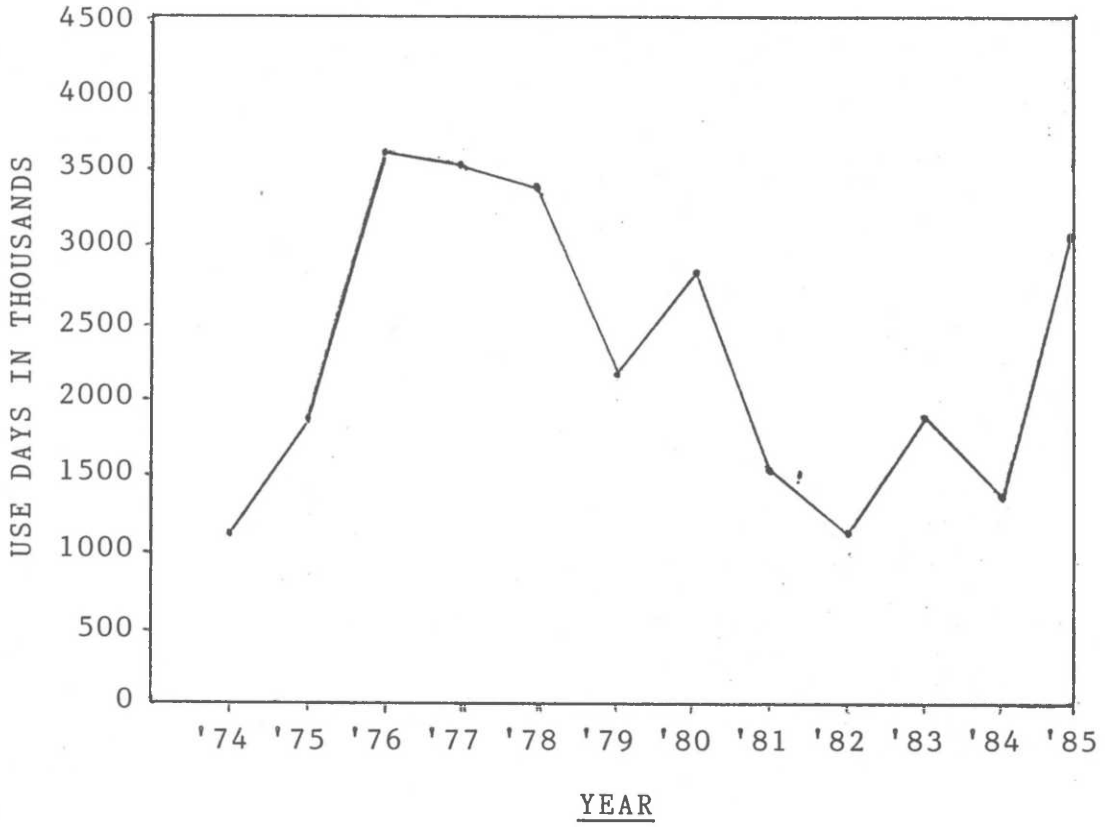
Initially blue-winged teal led the migration contributing 58.40% of the total duck population on Calhoun. Mallards and widgeon numbers quickly increased and peaked with mallards making up 32.77% and widgeons 22.42% of the population in October. Pintails, green-winged teal and scaup followed with 16.38%, 7.93% and 7.76% respectively, of the population.

By late November, the majority of species had moved on, leaving mallards making up 62.76% of the population. By mid December, mallards had dropped to 39%. The remaining population consisted of: goldeneye; 15.44%, scaup; 10.56%, canvasback; 9.75%, widgeon; 5.28% and 13 miscellaneous species; 19.95%.

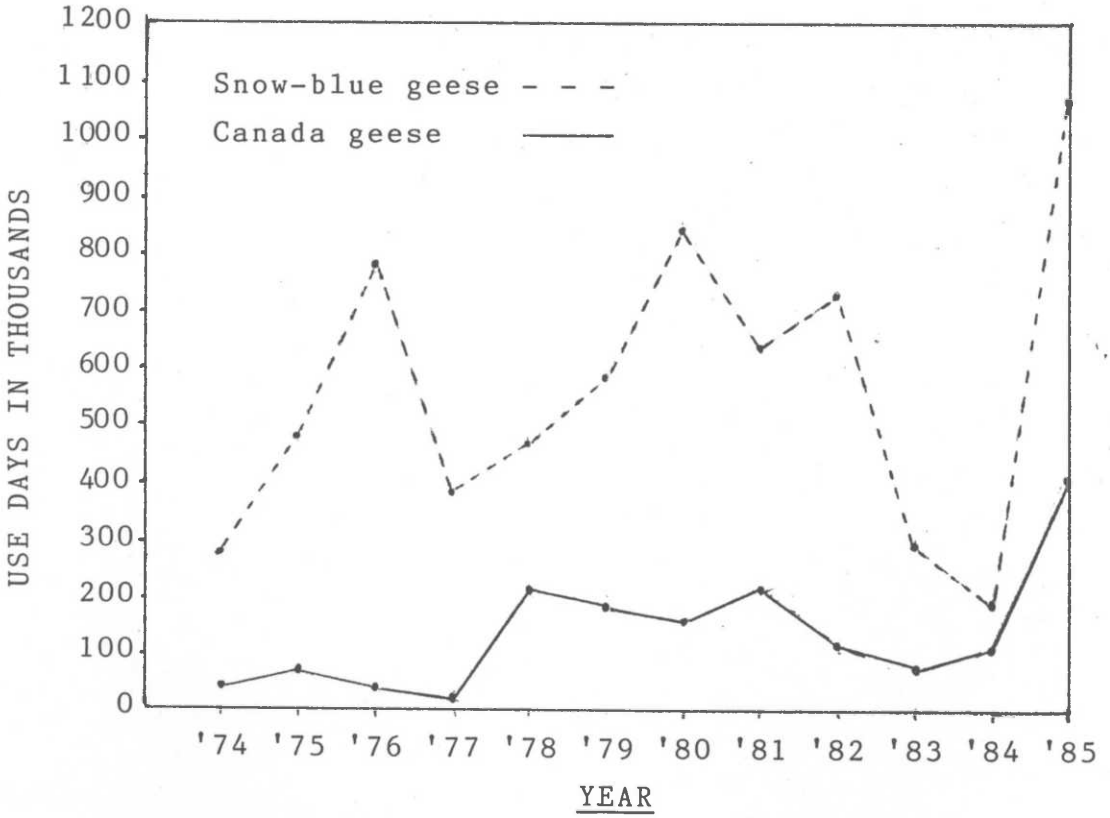
First observations of geese on refuge occurred in early October with 69.48% of those observed being Canada geese (61.1% large, 8.47% small) and 30.51% being blue-snow geese. Goose use overall was relatively steady with several thousand present most of the season. On occasion the geese (primarily blue-snow geese) would temporarily leave the refuge for one or more days and it is thought, spend that time somewhere in Missouri.

Total goose numbers peaked mid December with 18,000 blue-snow geese (85.11%), 3,150 Canada geese (14.89%; 3,000 large, 150 small) and 2 greater white-fronted geese. Canada goose numbers however, peaked in

DUCK USE, CALHOUN



GOOSE USE, CALHOUN



3. Waterfowl (Cont.)

November with 5,000 birds. While the blue-snow geese remained fairly constant, Canada geese shifted often between Calhoun, Gilbert Lake and other areas.

Goose use on Calhoun during 1985 exceeded that recorded for the past ten years with a total of 1,465,863 use days. A considerable increase from the 1984 total of 294,665 use days.

Habitat use by waterfowl on Calhoun was concentrated in a few specific locations. Swan Lake had the greatest concentration of all species pretty much throughout the season. As flooding occurred however, waterfowl began using other areas. MSU #1 received high Canada goose and mallard use during high water periods. Units 3 and 4 received high goose and moderate duck use during high water periods. Schoolhouse Lake received high duck use during August and September and Yorkinut; high duck and goose use. All of these areas receiving good waterfowl use are adjacent to corn, soybean or wheat fields. Use of the refuge units appeared to be primarily as a resting place.

4. Marsh and Water Birds

Double-crested cormorant, great blue heron, common egret, pied-billed grebe, green-backed heron and black-crowned night heron are a few of the more common species observed quite regularly during spring, summer and/or fall months. The little blue heron and yellow-crowned night heron are also found in lesser numbers.

Although white pelicans are not unusual on Calhoun, the number of white pelicans visiting the refuge in 1985 was. Over 90 white pelicans were observed on Swan Lake in September. Several hundred ducks, numerous shorebirds, terns and grebes were also observed feeding in an area near the pelicans.

The white visitors remained in the area until early November. It was suggested by birders following the pelicans that they had left their more traditional visiting grounds north of the refuge as the habitat had been drained.

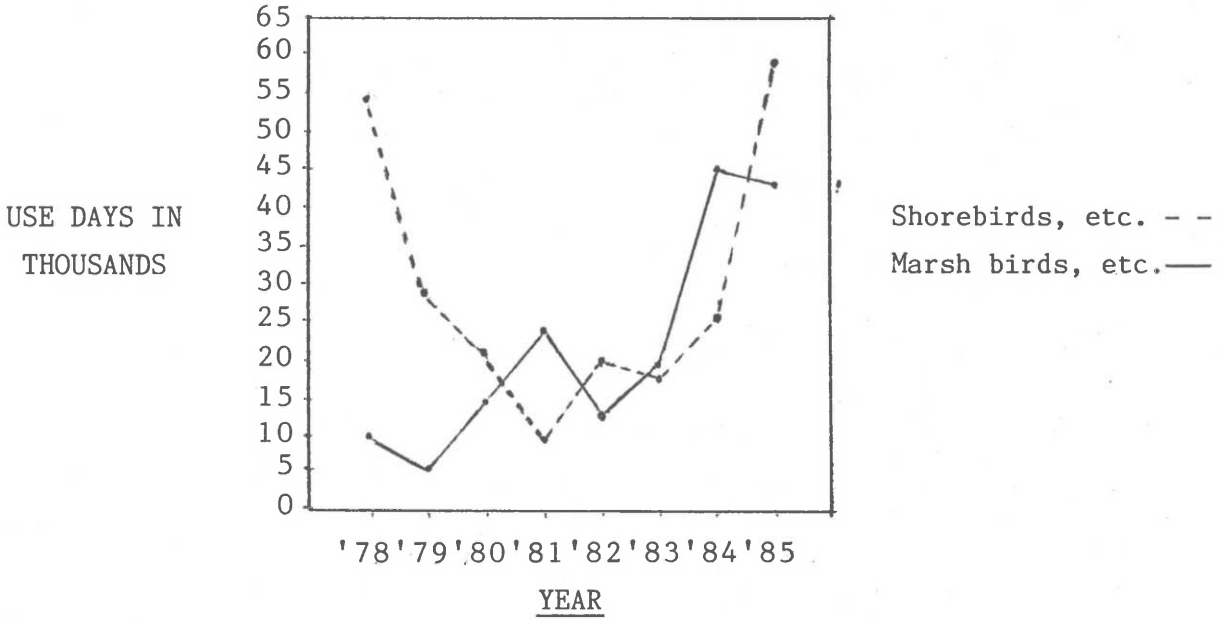
Refuge use by members of this group was good during 1985. While vast groups of these birds were not observed as in 1984, use days totaled 42,750, close to last years high of 45,000.

5. Shorebirds, Gulls, Terns, and Allied Species

Total use days for members of this group are estimated to be 57,260 for 1985. Although use overall for the group indicates an increase over past years, shorebird numbers were considerably lower. Very little habitat existed for shorebirds throughout the year as flooding kept water levels too deep and vegetation seemed to instantly overtake any existing or newly developed mudflats.

5. Shorebirds, Gulls, Terns, and Allied Species (Cont.)

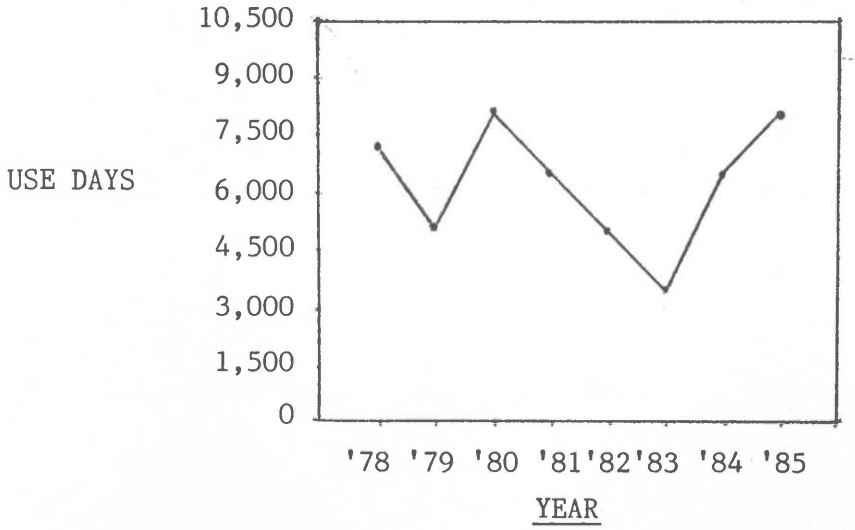
Several species made an appearance on refuge this year which are uncommon or rare to the area. The most unusual being; Forster's tern, Bonaparte's gull and stilt sandpiper. Others worth mention; short-billed dowitcher, semi-palmated sandpiper, least tern, Caspian tern and black tern.



6. Raptors

In addition to those species noted in the endangered species section, the following raptors were observed on the Calhoun Division; sharp-shinned hawk, red-tailed hawk, broad-winged hawk, rough-legged hawk, golden eagle and great horned owl.

Once raptor migrations were underway their presence became very apparent. Raptor observations were greater than ever this year. Total use days for members of this group is estimated to be 8,000.





White-tailed deer in Goose pasture '85 DLK



White pelicans on Swan Lake - without the 400mm lens
(yes they are really there) '85 DLK

7. Other Migratory Birds

A first for the refuge was the sighting of a blue grosbeak on May 22nd and again on July 20th.

8. Game Mammals

Of those species listed as game mammals by the state of Illinois, the following are known to use refuge habitat: white-tailed deer, cottontail rabbit, fox and grey squirrels, beaver, muskrat, coyote, red fox, mink and oppossum.

10. Other Resident Wildlife

Native grasses planted around refuge buildings in 1981 sheltered numerous bob-white quail and at least 8 ring-necked pheasants. It's surprising the pheasants made it through the year as their early morning activities took place in or alongside the refuge entrance road.

11. Fisheries Resources

Early in the year a fish survey of Swan Lake was begun by a fisheries biologist however, a formal report has not yet been completed.

H. PUBLIC USE

1. General

The present staffing and budgeting can't accommodate the high objectives originally set in the refuge's master plan. However, some accomplishments have been made. Video equipment was received and installed this year. At present a sole tape on the Duck Stamp Program is the only presentation on hand to offer to the public. It is hoped that additional tapes of the Calhoun District and other subjects will be available soon.

Aside from insufficient staff and budgeting, the Calhoun District must overcome the fact that it is relatively an unknown among the public. Although a formal survey has not been conducted it is apparent to refuge staff and others that very few first time visitors knew the refuge existed. When asked how they happened to visit the refuge, the answer was, more often than not, "We were just out driving and saw your sign". Many of these people had lived in the surrounding counties most of their lives and still weren't aware of the presence of a U.S. Fish and Wildlife Refuge. After their initial visit to the refuge visitors often return repeatedly, bringing family and friends.

Upon learning of Calhoun's existence, staff of educational facilities and club members have shown a strong interest in visiting the refuge and using the refuge to supplement or present environmental education programs.

1. General (Cont.)

Some of these individuals are a two hour drive from the refuge.

It is hoped that through the assistance of volunteers and educational facilities working with the refuge that knowledge of the Calhoun District and it's purposes, will be expanded. However, if the refuge is to adequately meet refuge objectives and provide the public with information on the goals and purposes of the U.S. Fish and Wildlife Service and the Calhoun District in particular, additional staffing and funding is necessary.

2. Outdoor Classrooms - Students

Although the Calhoun District doesn't have a formal environmental education program at present, the refuge does work with teachers assisting in the development of environmental education presentations and programs at the request of the educational staff. The refuge then provides a background for the instruction.

This year 3 school groups totaling 61 students and 5 staff were involved in environmental education presentations at Calhoun.

3. Outdoor Classrooms - Teachers

July 18th, 23 elementary school teachers received a presentation by refuge staff as part of their environmental education course work at Southern Illinois University.

6. Interpretive Exhibits/Demonstrations

An estimated 1152 visitors spent approximately 1,313 hours at the Calhoun visitor center this year. Slide programs and films presented to the visiting public during 1985 were as follows:

- "Our Nation's Wetlands"
- "Duck Stamp Program"
- "Refuge Management"
- "Calhoun District"
- "We Care About Oceans"
- "We Care About Eagles"
- "Save A Place For Wildlife"
- "This Is Your Land"

September 28th refuge staff represented the U.S. Fish and Wildlife Service at the annual National Hunting and Fishing Day event. Over 2,000 people were estimated to have toured the various activities being held at Nilo Farms, Brighton, Illinois.

9. Fishing

Both sportfishing and commercial fishing are popular activities on the Calhoun Division. An estimated 1,455 visits and 5,460 hours were recorded for sportfishing alone this year. The maximum of 50 permits were again issued for commercial fishing. The reported catch for commercial fishing follows.

9. Fishing (Cont.)

	1985	1984	1983	1982
Carp	50,270	55,547	61,262	74,406
Buffalo	39,689	58,740	58,863	58,485
Catfish	7,773	6,757	6,638	5,431
Perch (Drum)	3,847	4,898	6,910	7,857
Spoonbill	2,117	4,938	5,165	7,159
Bowfin	111	118	757	195
Totals:	103,807	131,001	139,595	153,533

11. Wildlife Observation

Wildlife observation is a primary attraction at Calhoun Refuge, equalled only by fishing interests. It is estimated that at least 766 visits totaling over 600 hours involved wildlife observation at Calhoun in 1985.

The office observation deck offers an especially good view point from which to observe wildlife, particularly during spring and summer months.

12. Other Wildlife Oriented Recreation

In addition to mushroom gathering, photography is an increasing activity at Calhoun. Individuals have also come to the refuge seeking the environmental atmosphere it has to offer, as a background for their writing.

17. Law Enforcement

The sole event of the year occurred on October 28th when the batteries to the Swan Lake pump station were "removed" by unknown individual(s).

Enforcement was limited to occasional patrol and no citations were issued.

I. EQUIPMENT AND FACILITIES

1. New Construction

Blacktopping was completed on the road into the visitor parking lot and on the parking lot itself by "B & J" Construction Company of Godfrey, Illinois. They came back in August to put a sealer on the parking lot.



Blacktopping in progress '85 DLK

Video equipment cabinet was constructed for visitors to view video tapes.

2. Rehabilitation

New metal doors were installed on the office-visitor center and shop building. Repairs were also made to the face of the visitor center itself.



'85 GWP

3. Major Maintenance

The gear heads on the water control pumps on Swan Lake and Gilbert Lake were pulled off and overhauled.

4. Equipment Utilization and Replacement

The following pieces of equipment were purchased during the year:

- Honda three wheeled cycle
- John Deere riding lawn mower
- Cabinet to lock up refuge valuables
- Video tape player and monitor
- Photocopier
- Typewriter

7. Energy Conservation

New ceiling fans were purchased to be placed in the large refuge office and the visitor reception area.

J. OTHER ITEMS

1. Cooperative Programs

Refuge Manager Peyton had several meetings with Mark Twain personnel from Quincy, Illinois Department of Conservation personnel, and Corps of Engineers personnel to discuss the management of Corps lands.

3. Items of Interest

A Refuge Revenue Sharing Check for $ 5,889 was presented to the Calhoun County Treasurer by the Refuge Manager.

4. Credits

All sections of this narrative report except sections A, D, E 5 and 7, F 3 and 4, I, and J, were written by Assistant Refuge Manager Kimbrell. Sections A, D, E 5 and 7, F 3 and 4, I, and J, were written by Refuge Manager Peyton. Since the Refuge Secretary was on maternity leave, Kimbrell also did the typing.

MARK TWAIN NATIONAL WILDLIFE REFUGE

Calhoun District

Batchtown Division

ANNUAL NARRATIVE REPORT

Calendar Year 1985

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

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K. FEEDBACK

A. HIGHLIGHTS

Control of 25 acres of willows and cottonwoods with Rodeo looked to be successful. (Section F.2.).

F. HABITAT MANAGEMENT

2. Wetlands

Three pools; the Upper, Middle and Lower, exist on the Batchtown Division. Water levels on the Upper and Lower Pools are not manageable as they are not protected from the Mississippi River by dikes or levees. Both Upper and Lower Pools held water year round.

An amendment to the 1985 plan was made May 5, 1985 and Middle Pool was not drained or burned. It was hoped that by holding water in the pool it would be possible to mount a sprayer in a boat and spray willows growing in and around the pool edge. It was later determined however, that the combined weight of herbicide, sprayer and manpower would be too great for the shallow waters of the pool and that age old stands of willows could best be reached by aerial application of the herbicide.

The Batchtown MSU was mowed, disked and planted with Japanese millet, buckwheat and milo by a volunteer crew from the Batchtown Sportsman's Club. Vegetation response was good and pumping commenced September 24th-28th and was repeated October 22nd - 28th. A total of 195 hours, 176 gallons of fuel and 320,844 gallons of water were recorded. Total acreage flooded was 38.59.

Initially the unit received fairly high use by blue-winged teal followed later by mallard, pintail and canada geese. Below are staff efforts to capture some of that use in a photo.



Waterfowl using Batchtown MSU '85 GWP

2. Wetlands (Cont.)

At the time of this writing, indications are that high interest exists among Club members in repeating 1985 efforts during the 1986 year.

The desilting basin shown below was constructed in 1983. At the time of construction the ditch was 6 ft. deep and as you can see in the photo, has been completely filled in..



3. Forests

See the section under Forests in Calhoun Division.

4. Croplands

Eleven cooperative farmers farmed 181 acres. The yield of many of these crops was low or could not be harvested because of a wet cropping season.

The following crops were left in the fields for wildlife; 23 acres of corn, 5 acres of millet and 20 acres of wheat browse.

Proceeds from surplus crops grown on Corps lands were deposited in the 5092 account. These deposits from 667.89 bu. of corn and 88.88 bu. of soybeans totaled $ 2,050.73.

10. Pest Control

Pesticide/herbicide use on croplands was as follows:

Pesticide	# of Acres & Crop	Rates	Control Species
Atrazine	72.5: corn	21b/Ac. 2.51b/Ac 2qt/Ac.	foxtail, cocklebur, wild sunflower, smartweed, morning glory

10. Pest Control (Cont.)

Pesticide	# of Acres & Crop	Rates	Control Species
Basagran	11: soybeans	1.5pt/Ac.	cocklebur, morning glory
Lasso	12: soybeans	1qt/Ac.	cocklebur, morning glory, smartweed
Lorox	13.5: soybeans	11b/Ac. 1.5pt/Ac.	cocklebur, smartweed, morning glory
Lorsban	25: corn	6-71b/Ac.	cutworms, rootworms
Treflan	17.5: soybeans	1qt/Ac. 1.5qt/Ac.	sunflowers, cocklebur, Johnsongrass, buttonweed, other broadleaf weeds

On August 8th W.L.S. Flying Service applied 15 gallons of rodeo to specific areas of Batchtown totaling 25 acres. A post spray inspection two weeks later showed cottonwood and willow kill to be fairly good. As best as could be determined at that time, kill of vegetation other than cottonwood and willow appeared to be insignificant. Below are photos showing a close up of the habitat profile before spraying and a post spray photo showing the contrast between the killed vegetation and the untouched vegetation surrounding the area.



Vegetation from top to bottom are: willows and cottonwoods, buttonbush and smartweed.

10. Pest Control (Cont.)



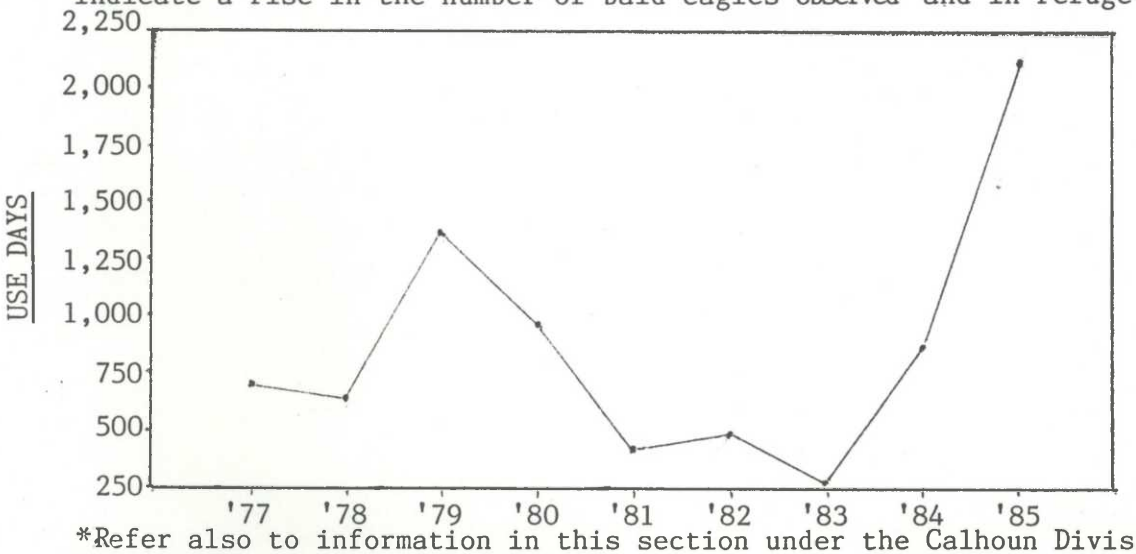
Post spray photo

Plans for 1986 include a second herbicide application to those areas not treated in 1985.

G. WILDLIFE

2. Endangered and Threatened Species

Estimated bald eagle use days totaled 2,118 for 1985. Refuge records indicate a rise in the number of bald eagles observed and in refuge use.



*Refer also to information in this section under the Calhoun Division.

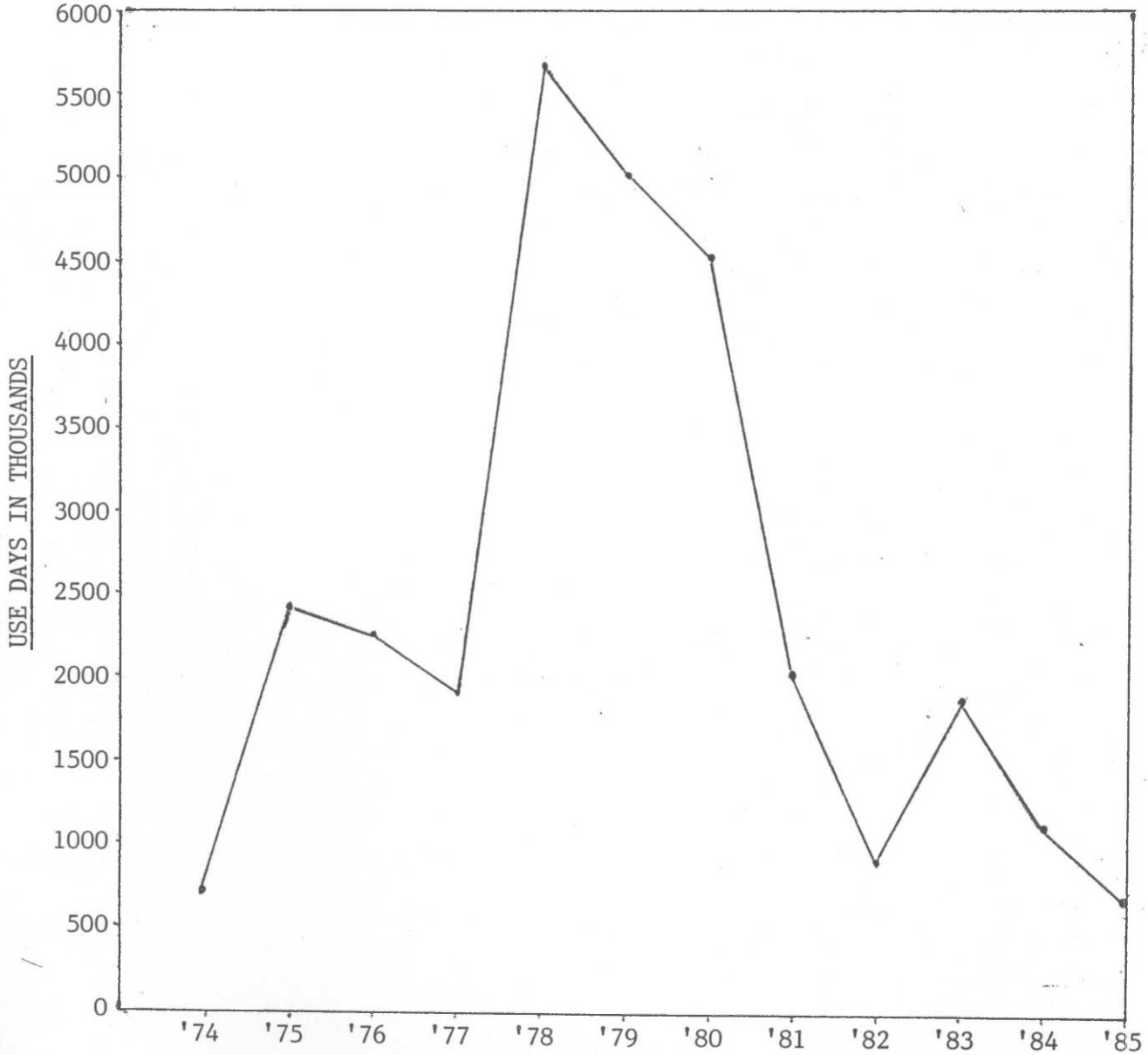
BALD EAGLE USE

3. Waterfowl

Ducks are known to use the backwater sloughs and river channels of Middle and Upper Pools more than any other areas. Use days for 1985 totaled 632,605 with a peak population of 7,865 in October.

Duck production on Batchtown was good with estimates of mallard production exceeding refuge objectives; 350 vs 250 and wood duck production nearing objectives; 400 vs 500.

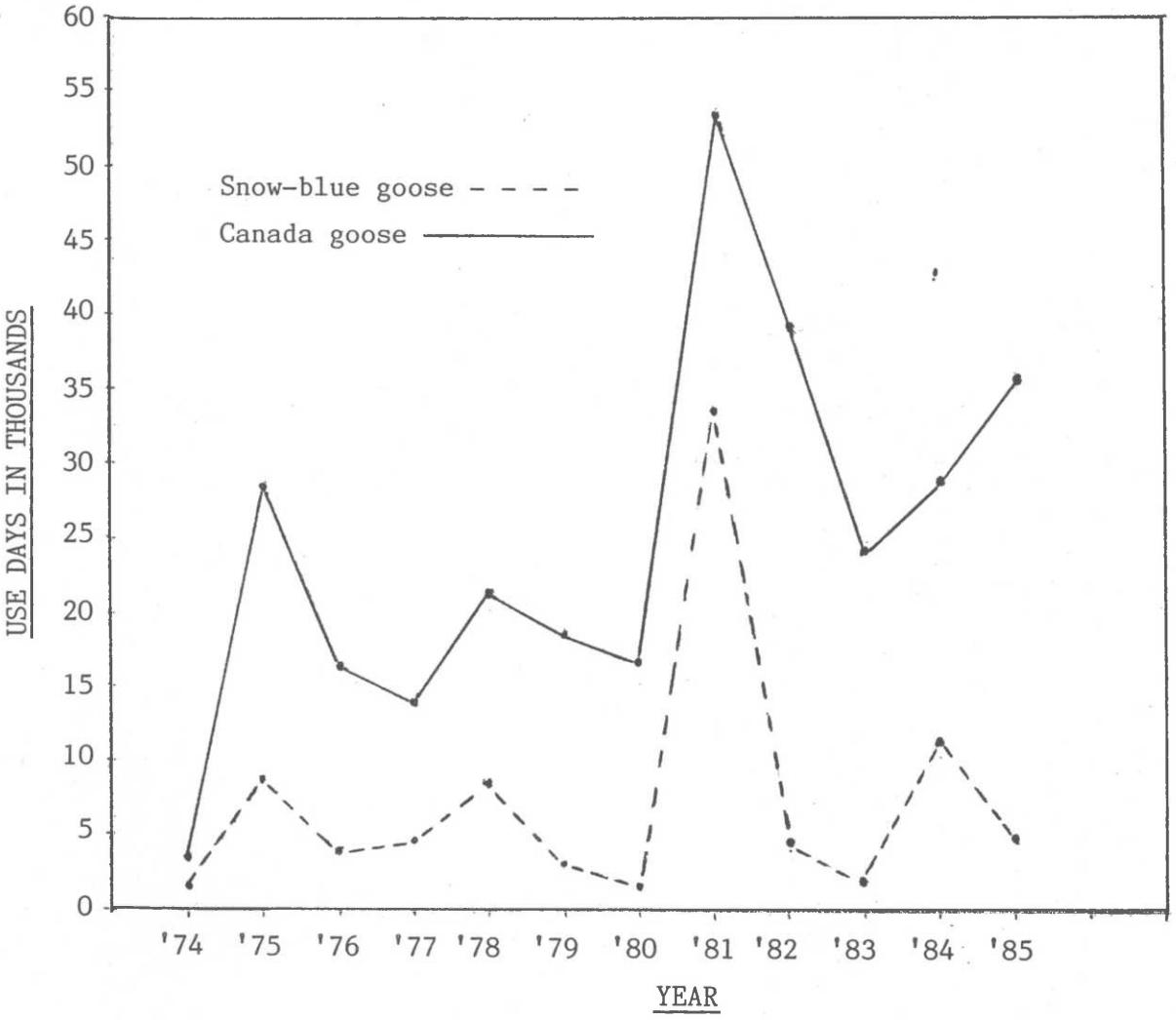
Canada geese favored the Upper Pool area and had a peak population of approximately 425. The blue-snow goose population peaked at 80 during October. Total use days were 35,683 and 4,883 respectively.



DUCK USE

3. Waterfowl (Cont.)

GOOSE USE, BATCHTOWN



4. Marsh and Water Birds

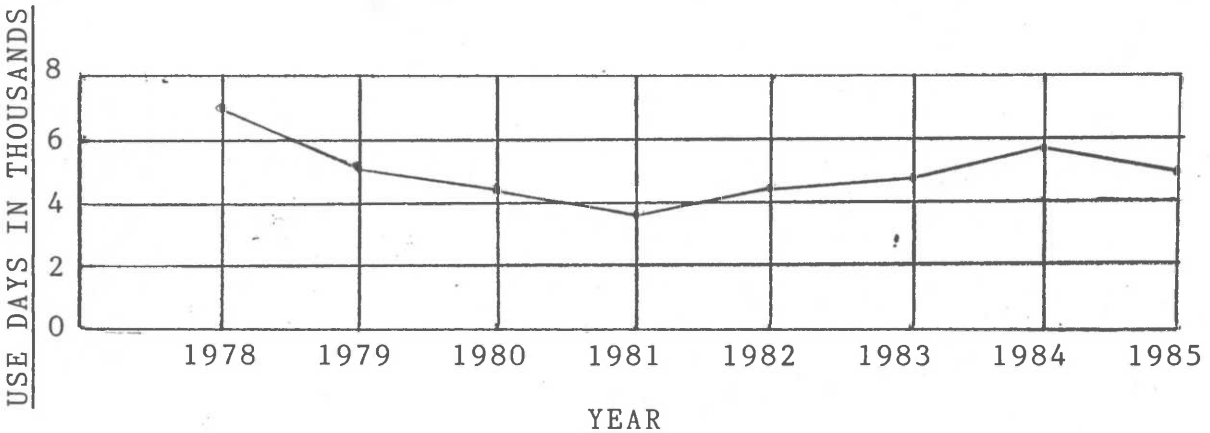
Great blue herons, common egrets and black-crowned night herons are fairly numerous on the Batchtown Division and make-up the majority of use by this group. Total use days for 1985 were estimated as 30,035.

5. Shorebirds, Gulls, Terns and Allied Species

As with the Calhoun Division, habitat for members of this group was slim. Estimated use days totaled 41,790.

6. Raptors

Red-tailed hawks and northern harriers accounted for the majority of the use days for this group with the total estimated as 5,000.



RAPTOR USE, BATCHTOWN

7. Other Migratory Birds

December 21st an addition to the refuge bird list was made with the observation of a hermit thrush during the Christmas bird count.

8. Game Mammals

The species Castor canadensis was "displeased" with the way Middle Pool was managed and put their own crews to work. The crews were ambitious and to the dismay of refuge staff, their work resulted in the construction of several dams throughout the Prairie Pond area.

H. PUBLIC USE

9. Fishing

The Batchtown Division was open to sportfishing year round with the exception of the time period of October 15th - December 15th. Visitation and hours spent fishing were estimated to be 1,405 and 5,240 respectively.

11. Wildlife Observation

Good opportunity for wildlife observation exists at Batchtown. However, access to most areas is by foot or boat which does limit those visitors without a boat or unable to travel long distances by foot.

Visitation and activity hours for this catagory was estimated as 1050 and 542 respectively.

12. Other Wildlife Oriented Recreation

See this section under Calhoun Division.

17. Law Enforcement

See this section under Calhoun Division.

I. EQUIPMENT AND FACILITIES

2. Rehabilitaion

Several loads of rock were hauled and spread on refuge roads and parking lots. The dike on the east side of MSU #1 was rebuilt where it had washed out.

Six water control structures were purchased to be put in the road leading to the north end of Middle Pool so there will be better water management of the Middle Pool area.

MARK TWAIN NATIONAL WILDLIFE REFUGE

Calhoun District

Gilbert Lake Division

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7. Technical Assistance . . . . . NTR
8. Other . . . . . NTR

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3. Forests . . . . . NTR
4. Croplands 1
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6. Other Habitats . . . . . NTR
7. Grazing . . . . . NTR
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9. Fire Management . . . . . NTR
10. Pest Control 1

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K. FEEDBACK

F. HABITAT MANAGEMENT

2. Wetlands

When river levels reach approximately 428 ft. m.s.l. or higher, Gilbert Lake becomes almost entirely inundated with water. Unfortunately, these levels are reached quite frequently.

Persistant flooding, pump failure and beaver activity prevented the early draining of Gilbert Lake and subsequent burning of specific areas as planned. Flooding occurred naturally in fall with rising river levels.

4. Croplands

There were 98 acres of cultivated land on Gilbert Lake which were farmed by two cooperative farmers. This acreage was made up of 12 acres of corn, 58 acres of soybeans, 7 acres of millet and 21 acres of wheat browse. Four acres of corn, 7 acres of millet and 21 acres of wheat browse were grown to provide food for wildlife. Both the standing corn and the wheat browse received heavy use by geese.

8. Haying

Fourteen acres of a mixture of ladino clover and alfalfa and twelve acres of alfalfa were mowed and baled by a cooperative farmer. Eleven acres of alfalfa, orchard grass and brome grass mixture were planted in 1984 to prevent erosion. A cooperative farmer was also allowed to mow and bale this mixture. After the middle of September any growth that was produced was left as browse for geese. These areas were both used as resting areas for blue-snow and Canada geese.

10. Pest Control

Scheduled herbicide spraying of willows with Rodeo could not be accomplished. 1986 plans include the 1985 scheduled spraying .

Pesticide/herbicide use on croplands was as follows:

Pesticide	#of Acres & Crop	Rates	Control Species
Atrazine	14: corn	1.5qt/Ac.	foxtail, wild sunflower cocklebur, smartweed, morning-glory
Butyrac 200	11: soybeans	2oz/Ac.	cocklebur, foxtail, morning-glory
Lasso	59: corn/soybeans	1-2qt/Ac.	cocklebur, smartweed, morning-glory

10. Pest Control (Cont.)

Pesticide	# of Acres & Crop	Rates	Control Species
Lorox	17: soybeans	1lb/Ac.	cocklebur, smartweed, morning-glory
Lorsban	12: corn	7lb/Ac.	cutworms, rootworms
Sencor	28: soybeans	1lb/Ac.	cocklebur & other broadleaf weeds

G. WILDLIFE

1. Wildlife Diversity

See the Calhoun Division.

2. Endangered and Threatened Species

Numerous bald eagles were observed using the Gilbert Lake area. Estimated use days for the species totaled 8,122. (Also see this section under Calhoun Division.)

3. Waterfowl

Waterfowl use was good with numerous ducks and geese using the lake in the fall and several thousand ducks and geese using the wet area adjacent to harvested soybean fields, south and southeast of the native grass planting. Use days were estimated as; 406,239 for ducks, 133,960 for blue-snow geese and 86,830 for Canada geese. Records indicate an increase in use by blue-snow geese and ducks over 1984; 74,870 and 176,679 respectively, and a slight decrease by Canada geese; 95,215 ('84).

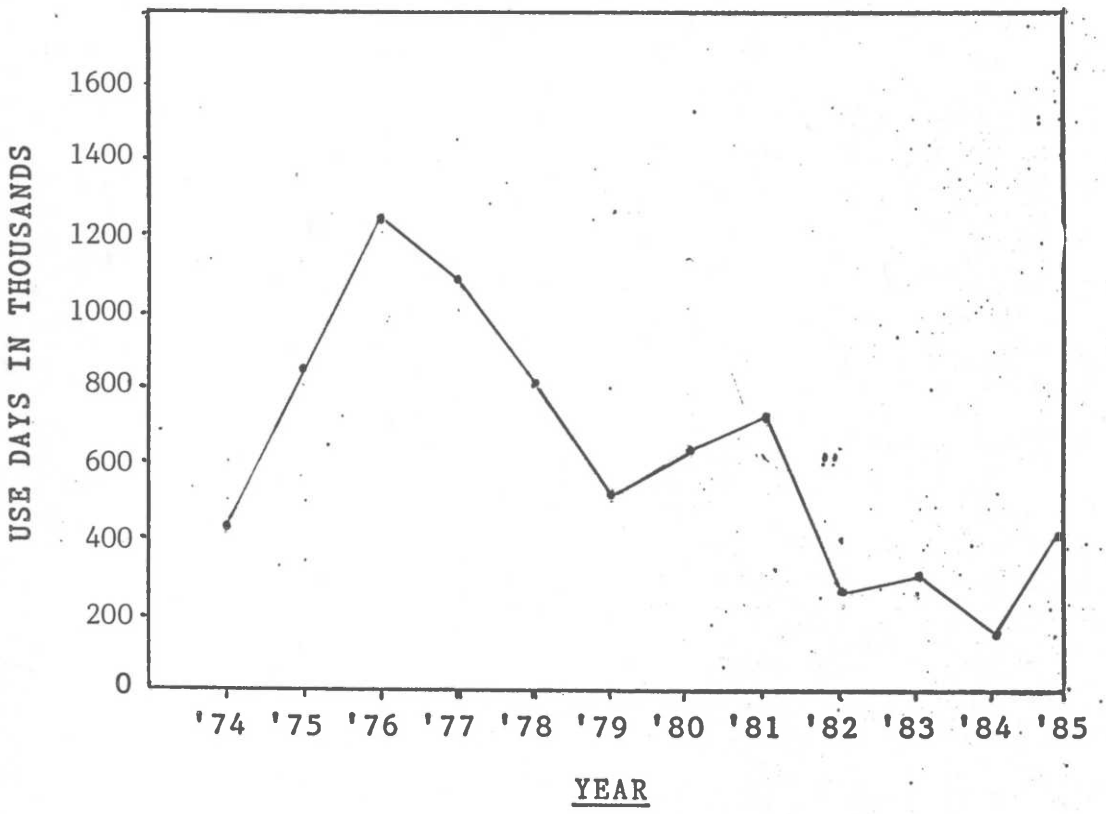
Waterfowl production estimates greatly exceeded refuge objectives. Estimated production of wood ducks was 225 and mallards, 125. Refuge objectives for each species is 60.

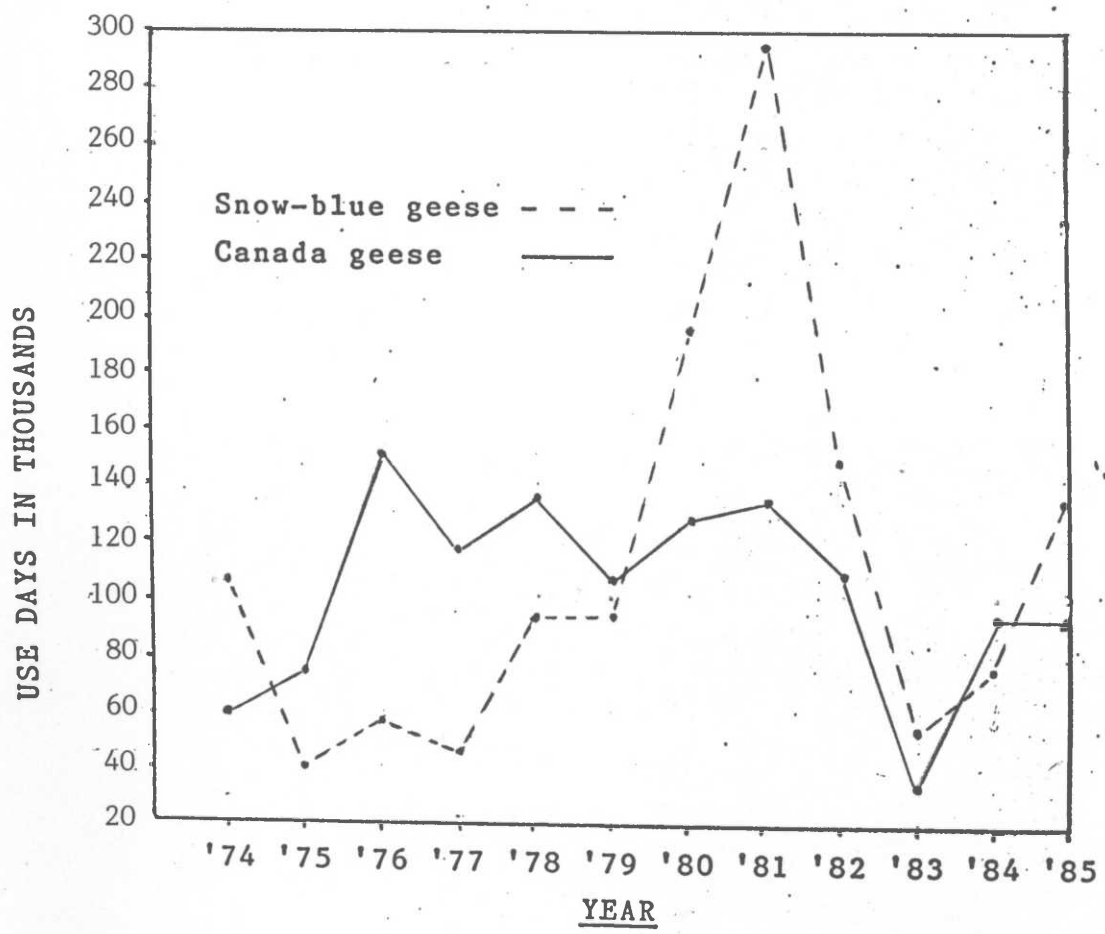
4. Marsh and Water Birds

The eastern section of Gilbert Lake shelters numerous yellow-crowned night herons, black-crowned night herons and great blue herons. The western end of the lake attracts many great blue herons, common egrets, double-crested cormorants and pied-billed grebes.

Use days for this group are estimated as 35,351.

DUCK USE, GILBERT LAKE





5. Shorebirds, Gulls, Terns and Allied Species

As with all Calhoun Divisions, habitat for most members of this group was slim during 1985. Total use days were estimated to be 24,405.

6. Raptors

Red-tailed hawks, northern harriers, kestrels, turkey vultures, golden eagles and great horned owls were observed in the Gilbert Lake area this year. Use days for members of this group are estimated to be 3,000.

8. Game Mammals

See Calhoun Division.

H. PUBLIC USE

11. Wildlife Observation

Gilbert Lake provides excellent opportunity for wildlife observation. There are several areas from which the public may observe wildlife. Visitors can pull off Illinois State Highway 100 to an overlook, drive down to the eastern maintenance road entrance or park and walk to the western end of the maintenance road. Approximately 3 miles of maintenance road exists for visitors on foot. For those who have a canoe or light boat, the lake itself has even more to offer.

Gilbert Lake is also a favorite spot of school groups visiting the refuge in conjunction with environmental education programs.

Forty species were observed on Gilbert Lake during the 1985 Christmas bird count.

17. Law Enforcement

See Calhoun Division.

I. EQUIPMENT AND FACILITIES

3. Major Maintenance

The electric motor and pump head were removed from the Gilbert Lake pump station and rebuilt.