

REELFOOT NATIONAL WILDLIFE REFUGE
UNION CITY, TENNESSEE

ANNUAL NARRATIVE REPORT
CALENDAR YEAR 1990

U.S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
NATIONAL WILDLIFE REFUGE SYSTEM

REVIEW AND APPROVALS

REELFOOT NATIONAL WILDLIFE REFUGE

Union City, Tennessee

ANNUAL NARRATIVE REPORT

Calendar Year 1990

Randy Cook 2-28-91
Refuge Manager Date

Tran H. McDaniel 3-20-91
Associate Manager Review Date

Harold W Benson 3/25/91
Regional Office Approval Date

INTRODUCTION

The lure and beauty of Reelfoot Lake is fascinating not only because of the eagles, ducks, and Canada geese that come to winter, or its superb hunting and fishing, but because of its unique origin. Reelfoot Lake was formed by a series of violent earthquakes from December 1811 to February 1812. The lake was named for Chief Reelfoot, a Chickasaw warrior, born with a club foot. According to legend, the chief incurred the wrath of the Indian gods when he kidnapped a Choctaw princess and took her as his bride. Reelfoot, his princess, and the tribe were eternally entombed at the bottom of Reelfoot Lake when the gods created a depression into which the waters of the Mississippi flowed.

Reelfoot National Wildlife Refuge is located on Reelfoot Lake in the northwest corner of Tennessee and southwest corner of Kentucky. The refuge was established in 1941 under the terms of a 75-year cooperative agreement with the State of Tennessee. Later, land purchases extended the refuge into Kentucky and increased the refuge to its present 10,354 acres. The refuge lies in the floodplain of the Mississippi River and is a major stopover point and wintering area for waterfowl of the Mississippi Flyway.

The refuge has managed the excellent natural habitats and enhanced the production of waterfowl foods through the introduction of a cooperative farming program. The upper Long Point Unit supports approximately 1,100 acres of agricultural cropland and moist-soil habitat for waterfowl. The Grassy Island Unit and portions of the Long Point Unit consist of forested wetlands, marsh, and open water. Forest management and water level management maintain these important waterfowl habitats.

The refuge is visited annually by numerous tourists to catch a glimpse of wildlife. Tourists can take a leisurely walk or ride down a wildlife drive and observe stately cypress trees and knees that line the shoreline of the lake.



The 1990 Annual Narrative is dedicated to "Mr. Clarence" McCollum, Laborer and Robert "Jack" Clemmons, Maintenance Worker, who retired on November 30, 1990 with a total of 82 years of combined service to Reelfoot NWR.

Clarence McCollum began his service with the refuge on January 1, 1943, as a part-time U.S. Deputy Game Warden. He worked seasonally until 1979 when he was converted to a permanent part-time Laborer. Mr. Clarence was also a cooperative farmer during the early years of the refuge.

Robert Clemmons started his career as a temporary Tractor Operator in 1955. Robert worked seasonally until 1960, when he was converted to a permanent maintenanceman.

These dedicated employees are responsible for many of the physical improvements and outstanding protection given to the wildlife resources during their tenure. They will be sorely missed, but the refuge staff wish them the best and many enjoyable years of retirement.

A. HIGHLIGHTS

Rainfall was 13.64 inches above annual norm (B).

\$1 million Federal appropriation for land acquisition approved for silt retention basin project (C.1).

Refuge received first FmHA Conservation Easements (C.2).

Fire Management Plan updated to incorporate prescribed burning (D.2).

Federal lawsuit against USFWS and Tennessee Wildlife Resources Agency dismissed (D.4).

Refuge received new project leader in August and lost two maintenance positions to retirement in November (E.1).

Volunteer received certificate (E.4).

Refuge staff received ATV safety training (E.6).

Hazardous and contaminated chemicals removed from refuge (F.10).

Near record numbers of waterfowl used refuge in January (G.3).

Refuge banded record 526 wood ducks during July and August (G.16).

Fire pumper and ATV acquired (I.4).

B. CLIMATIC CONDITIONS

The 1990 weather conditions at Reelfoot NWR were characterized by a relatively mild winter, warm spring, and warm, dry summer. Total rainfall during the year in the Reelfoot area was 61.64 inches. This was 6.61 inches above that of last year and 13.64 inches above the average annual rainfall. December was the wettest month (11.55 inches) while August was the driest (1.28 inches). One inch of snow fell during the month of March.

1990 Weather Conditions

<u>Month</u>	<u>Monthly Maximum °F (avg.)</u>	<u>Monthly Minimum °F (avg.)</u>	<u>Rain (in.)</u>	<u>Snow (in.)</u>
January	66 (53)	16 (33)	4.80	-
February	71 (57)	22 (36)	11.23	-
March	79 (60)	23 (42)	3.95	1.0
April	84 (67)	27 (43)	5.41	-
May	84 (74)	39 (54)	5.56	-
June	95 (87)	49 (64)	1.46	-
July	98 (90)	54 (66)	2.11	-
August	98 (87)	53 (63)	1.28	-
September	98 (85)	38 (60)	3.40	-
October	85 (71)	29 (42)	7.87	-
November	79 (67)	24 (40)	3.02	-
December	65 (54)	8 (30)	<u>11.55</u>	<u>-</u>
			61.64	1.0

C. LAND ACQUISITION

1. Fee Title

No land acquisition occurred during 1990. A major acquisition proposal, however, was initially funded through the efforts of U.S. Senator Jim Sasser and U.S. Congressman John Tanner during November 1990.

The proposed acquisition and construction of a 2,600-acre sediment retention basin on Reelfoot Creek was identified in numerous documents including the following: Reelfoot Joint Venture Project, North American Waterfowl Management Plan, Lower Mississippi Valley Joint Venture, Reelfoot and Lake Isom Expansion draft proposal, and Corps of Engineers Reelfoot Lake Reconnaissance Study of 1987. The need for silt control was initially addressed in the 1941 Lease Agreement between the U.S. Fish and Wildlife Service (Service) and State of Tennessee.



U.S. Senator Jim Sasser discusses the proposed sediment retention basin with Associate Manager Travis McDaniel during a press conference at the Refuge VCS on November 27, 1990. GP

In-house review of an environmental assessment and land protection plan for the Reelfoot and Lake Isom Refuge Expansion Proposal occurred during May and October. The proposal, when implemented will provide an additional 10,500 acres of land to the Service and state wildlife agencies in Tennessee and Kentucky.

2. Easements

Reelfoot National Wildlife Refuge (NWR) received its first conservation easement from the Farmers Home Administration on March 26. The 116.45-acre easement tract, located in Dyer County, south of Dyersburg, Tennessee, was conveyed to the Service effective November 27, 1989.

Following meetings with the Dyer County Farmers Home Administration representative, the easement was posted on

September 4-5. The refuge staff also met with Mr. Allen Hines, the former operator and potential buyer of the property, to discuss trespass problems and construction and maintenance needs.

The easement was identified for FY 91 Wetland Restoration and Enhancement Project funding during September. An estimated \$6,000 was requested to repair/replace existing levees and construct a cross-levee with water control structures during 1991 to enhance management for waterfowl and other wildlife.

The refuge maintenance staff filled two, large "blowouts" in the existing levees surrounding the easement on November 20-21. This was necessary to prevent unwanted floodwaters from adjacent Pond Creek and upland drainage ditches entering the area during the winter period. An excellent stand of smartweed, panic grass, and wild millet were available to waterfowl during the 1990-91 winter period.

A second conservation easement was transferred to Reelfoot Refuge for administration and management during September. Due to lack of information on the location of the 46.10-acre tract, the inspection and posting of the easement was not planned until early 1991.

D. PLANNING

2. Management Plan

The Fire Management Plan was updated during July 1990. The plan was revised to include guidance provided by the Refuge Manual and incorporate a prescribed burning plan to control woody and herbaceous plants and enhance habitat diversity in moist-soil units.

The Annual Water Management Program Plan for Reelfoot Lake was completed and approved in January for calendar year 1990. The plan incorporated proposals addressed in the Reelfoot Lake Final Environmental Impact Statement (EIS). The plan differed slightly from past years, due to a need to complete several prerequisites prior to interim or full implementation of the Service's preferred alternative.

4. Compliance with Environmental and Cultural Mandates

The Reelfoot Lake Water Level Management EIS was prepared by regional office and refuge staff in response to a federal lawsuit brought against the Service and the Tennessee Wildlife Resources Agency (TWRA) in July 1985 by local landowners and businessmen at Reelfoot Lake. The lawsuit opposed the efforts of TWRA, and Service concurrence, to drawdown the waters of Reelfoot Lake for fisheries management.

With the completion of the final EIS in July 1989 and the Regional Director's Record of Decision, released during September 1989, it appeared the way had been cleared, in a legal sense, to begin accomplishing several other prerequisites required to initiate the Service's preferred alternative. This preferred alternative consists of an integrated water level management program that combined a dynamic water level fluctuation, with at least a 2-foot seasonal fluctuation within a 4-foot elevation range, and 4-8 feet drawdowns at 5-10 year intervals. The purpose of the new management program was to return Reelfoot Lake from a stable system to a more natural lake, permitting the widest range of options to enhance and preserve the major habitats occurring at Reelfoot Lake.

A local group of landowners and City of Samburg, Tennessee officials, however, opposed the Service's preferred alternative and questioned the adequacy of the Service's EIS, as it related to navigation and riparian landowner rights. Their lawsuit against the Service and TWRA was filed in U.S. District Court in November 1989.

When the refuge staff initially opened the Reelfoot Lake water control structure to release floodwater in February 1990, the plaintiffs requested the court for a Temporary Restraining Order (TRO) to halt the release of water until the lake reached a level 1.4 feet higher than that currently operated. Judge James Todd, following a hearing on February 7, 1990, ruled in favor of the Service and TWRA and allowed the current water management program to continue. A hearing date was set for February 27, but postponed until the judge could study the issue further.

The plaintiffs filed another TRO request with the Federal court on October 31. The purpose of the TRO was to block the announced November 15 closure of waters in the Grassy Island Unit and October 15 closure in the Long Point Unit of Reelfoot Refuge for waterfowl sanctuary, a Service management practice since 1955. The plaintiffs argued the measure would prevent navigation to riparian landowners. Again, the court ruled in favor of the Service and the units were closed as scheduled.

On December 4, Judge Todd issued a long awaited ruling on the lawsuit by dismissing the entire lawsuit, finding the Service's EIS not arbitrary and capricious, but written in accordance with the requirements of the National Environmental Policy Act (NEPA).

The Service owes the favorable resolution of this lawsuit to John Harrington, Solicitor's Office, Atlanta, Georgia and Robert Williams, Jr., Assistant U.S. Attorney, Memphis, Tennessee. Their dedication and good legal guidance to the refuge staff, much of it on very short notice, was greatly appreciated.

E. ADMINISTRATION

1. Personnel



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PERSONNEL

1. Randy Cook, Refuge Manager, GS-12, EOD 07/29/90..... PFT
2. Glenn H. Stanley, Refuge Manager, GS-11 PFT
3. Bryan D. Schultz, Refuge Manager, GS-7 PFT
4. Sue H. Pope, Office Assistant, GS-6 PFT
5. Guy E. Hogg, Maintenance Worker, WG-8 PFT
6. Preston Knight, Jr., Tractor Operator, WG-7 PFT



7. Jody K. Knox, Biological Aid, GS-3TPT

(Number of Employees)

	Permanent		Temporary	Total FTE
	Full-Time	Part-Time		
FY 1990	7	1	1	8
FY 1989	7	1	1	8
FY 1988	7	1	1	8
FY 1987	7	1	0	8
FY 1986	7	1	0	8

Five major personnel actions took place during the year. During January through August, Assistant Manager Glenn Stanley was temporarily promoted to Acting Refuge Manager, GS-11. In August, the Refuge Manager slot was filled by Randy Cook, Deputy Project Leader of Savannah Coastal Refuges. Maintenance Worker Robert C. Clemmons and Laborer Clarence McCollum retired effective November 30. Jody Knox, a wildlife student at University of Tennessee, Martin was hired under temporary appointment as a Biological Aid to observe neck-collared geese and assist in banding efforts.



Manager Randy Cook presented Clarence McCollum and Robert Clemmons with retirement plaques and pen sets upon their retirement. 11/90 GHS

Under normal circumstances, the existing staff would probably be adequate to meet the needs of existing facilities and legislative responsibilities. However, additional personnel will be required as Reelfoot enters into the construction phase of the proposed silt retention basin project. Seasonal positions for law enforcement and public use are needed from October through May of each year.

2. Youth Programs

Since 1982, the refuge has participated in the Youth Conservation Corps (YCC) Program. This year, between June 4 and July 27, two high school students, Melanie Shepherd and David LaMastus, participated in wood duck banding and nest box construction, Kiosk building, shop driveway rehab, residence painting, litter collection, and grounds, vehicle, and buildings maintenance. The enrollees were selected by drawing from a list of 9 candidates solicited from three local high schools.



Melanie Shephard and David LaMastus receive YCC
Certificate of Completion. 7/90 GHS

3. Other Manpower Programs

Charlotte Brimm, who volunteered many hours of her time, also continued her position as the station's custodian.

4. Volunteer Program

Since the refuge initiated the volunteer program in 1986, a portion of the public use and research demands have been met by volunteers.

Through the cooperation of Dr. Phil Lively of the University of Tennessee at Martin (UTM) Biology Department, the refuge received four students to operate the Visitor Contact Station (VCS) on weekends during January through March. The students receive two hours of credit while assisting the refuge by welcoming and acquainting visitors with refuge resources and facilities and presenting film programs in the VCS auditorium. Five volunteers donated a total of 132 hours to the refuge public use program in 1990.

Two local volunteers donated 82 hours in administrative assistance and resource support. Charlotte Brimm was honored with a certificate this year for reaching the 150-hour mark of volunteer time. The refuge is grateful for her help.



Charlotte Brimm receives a certificate for
volunteer service from Volunteer Coordinator
Bryan Schultz. 11/90 GHS

5. Funding

<u>Sub-Activity</u>	<u>FY-87</u>	<u>FY-88</u>	<u>FY-89</u>	<u>FY-90</u>	<u>FY-91</u>
1260	250,000	254,000	278,400	-	-
1261	-	-	-	198,400	202,900
1262	-	-	-	88,300	92,400
8610	7,900	-	-	-	-
ARMM	51,500	-	-	-	-
Equipment Replacement	19,000	-	-	-	-
1260 (Special)	16,000	-	-	-	-
1210 (YCC)	2,500	2,400	-	-	-
RPRP (EIS)	-	35,000	3,800	-	-
CONTAM	-	21,000	8,400	4,900	-
Computer	-	-	5,500	-	-
PRESUP 9120	-	-	-	1,000	2,000
DRUG ENF	-	-	-	5,000	1,500
PARTNERS	-	-	-	3,000	-
FMHA (1120)	-	-	-	-	6,000
SM MAINT	-	-	-	-	19,700
VOLUNTEER	-	-	-	-	500
COOKIE CUTTER	-	-	-	-	11,000
VCS WALL REPAIR	-	-	-	-	20,000
Total	<u>346,900</u>	<u>317,900</u>	<u>290,600</u>	<u>300,600</u>	<u>356,000</u>

The FY-90 funding adequately met refuge operations and maintenance needs for salaries, utilities, materials, and services during the year.

All funds for the administration of Lake Isom NWR are derived from Reelfoot Refuge O & M funds.

6. Safety

The refuge staff is very safety conscious. Unfortunately, one lost time accident occurred during 1990. Medical attention was required for a pulled bicep muscle.

All vehicles and heavy equipment are equipped with five-pound fire extinguishers. Additional ten and twenty-pound extinguishers are also installed in refuge structures at appropriate locations.

A fire extinguisher inspection schedule is also maintained during the year. The schedule requires delegated refuge employees to inspect and, if necessary, replace all extinguishers in buildings and vehicles the first of every other month.

Regional Safety Manager Kenneth Cooper visited the refuge on March 28 to inspect the refuge through verification of the previous year's self-inspection and the current year's Safety Program Audit. The station received a "very good" rating.

The refuge staff received the Service-approved SVIA-ATV training during July in preparation for operation of the newly acquired Polaris 4-wheeler. TWRA instructors Carl Wirwa and Ed Hanson taught the 1-day course at the refuge.

The refuge Safety Committee completed the 1990 Safety Self Inspection Questionnaire during September. Safety hazards and deficiencies were identified and corrected by year's end, where appropriate.

On October 11, Manager Schultz attended an 8-hour defensive driving course administered by the Memphis Area Safety Council.

Monthly safety meetings were conducted for the entire refuge staff during 1990. Appropriate films discussing health (i.e. hearing, hands, spine), and safety (i.e. chain saws, heavy equipment, office, tornadoes, earthquakes, and fire) were shown and discussed. Tailgate sessions were also conducted at the shop or worksite when working with new employees, YCC, volunteers, etc. or when operating or maintaining new or unfamiliar equipment.

8. Other

On January 17, Acting Manager Stanley met with Associate Manager Jim Matthews and John Davis, Savannah NWR, in Memphis, TN for a Compatibility Interview of Reelfoot and Lake Isom Refuges.

Office Assistant Pope attended Federal Financial Systems Training at Jackson, MS during February 26 - March 2.

Associate Manager Travis McDaniel made his initial visit to Reelfoot and Lake Isom NWR's on March 7 and 8. The staff provided an orientation and tour of the refuges and discussed litigation of current water management practices.

Manager Stanley discussed the 1990 hunting program for Reelfoot and Lake Isom with Associate Manager McDaniel on March 21. The following day, Managers Stanley and Schultz, including other managers, were in attendance for the annual hunt coordination meeting with TWRA in Jackson, TN.

Managers Stanley and Schultz and Maintenancemen Clemmons, Hogg, and Knight attended Heavy Equipment Operation and Safety Training the week of April 9 at the refuge.

Office Assistant Pope received a promotion to GS-6, effective June 3.

Managers Stanley and Schultz attended the Waterfowl Baiting Workshop presented by Dan Searcy, ARD, Law Enforcement, at Memphis State University on July 10.

On August 20 and 21, Refuge Managers Cook and Stanley attended a Drug Free Workplace Workshop at Wheeler NWR.

Assistant Managers Stanley and Schultz received promotions to GS-11 and GS-7, effective August 12 and 26, respectively.

Assistant Manager Schultz attended a Regional Public Use Workshop at Aurora, KY on September 11-13.

Manager Cook attended a dedication ceremony November 15 for TWRA's Lauderdale Waterfowl Refuge located in Lauderdale County, TN.

Manager Schultz attended the Regional Orientation in Atlanta, GA during the week of November 26.

F. HABITAT MANAGEMENT

2. Wetlands

Reelfoot Lake and its environs represent the largest and most significant wetland in northwest Tennessee and southwest Kentucky. Under the terms of a 75-year lease between the State of Tennessee and U.S. Department of the Interior, Reelfoot NWR has the sole responsibility of operating the spillway gates which regulate water levels within the 25,000-acre wetland.

During 1990, the year opened with the Reelfoot Lake pool level at approximately 281.34 feet mean sea level (m.s.l.), 0.86-foot below the normal pool of 282.2 feet m.s.l., with all twenty small stop-log gates and the large radial gate closed. The lake level jumped to 282.34 feet m.s.l. on February 2, requiring the opening of all small stop-log gates by February 14 to release heavy floodwaters following over four inches of rainfall. An additional 4.4 inches of rain on February 15 required opening the large radial gate as well. The lake peaked at approximately 283.59 feet m.s.l. on February 17 and 18. The lake remained above pool during February, March, April, May, and until June 19, when it dropped to 282.18 feet m.s.l., continuing to drop during the summer period due to reduced rainfall and evaporation. Reelfoot Lake reached its low mark of 280.95 feet m.s.l. on September 18 (1.25 feet below normal pool).

The lake began its normal rise following seasonal rainfall during October - December, again reaching normal pool by December 17. The twenty stop-log gates were opened by December 18 and the radial gate opened as Reelfoot Lake rose to 282.92 feet m.s.l. on December 21. The lake peaked at 283.98 feet m.s.l. the last day of the year.

The three, managed moist-soil units were benefited by the wet conditions during February - June. It created ideal growing conditions for sagittaria, three square, hard stem bulrush, smartweed, spike rush, and wild millet. The three units provided approximately 150 acres of flooded moist-soil vegetation during the winter and spring periods. Waterfowl populations in the three units and adjacent corn and winter wheat fields were estimated to be 30,000 to 120,000 Canada geese and 25,000 to 90,000 mallards during January, the period of highest use.

Prescribed burning was also introduced experimentally into the moist-soil program in 1990. Fifteen acres were burned on November 2 to control young woody vegetation (willow, cottonwood, and red maple) which were encroaching in the Lattus Area Moist-Soil Unit. The effort appears to be successful in controlling woody vegetation and improving waterfowl access. But, additional burns in 1991 and post-burning evaluations will determine the future application of this management tool.

Sesbania and cocklebur, annual pest species in portions of all units during late summer, were controlled in the east unit (J.B. Slough) and west unit (Lattus Area) by an application of 2,4-D during August.



Results of 2,4-D treatment on sesbania and
cocklebur in moist-soil unit. 9/90 GHS



Results of spot treatment with Garlon on
willows was also very effective. 9/90 GHS

The chemical, Garlon, was experimentally used to spot-treat willows in all managed moist-soil units during 1990. Historically, mechanical methods including mowing and disking had been used, but destroyed or disturbed beneficial vegetation. The new method was a great success and will continue to be used.

3. Forests

Forest management on the refuge's 1,850 acres of commercial forest during 1990 consisted of mowing selected fire breaks to improve fire management and provide timber management access. No timber sales were conducted.

District Forester Clyde Stewart and TWRA Forester Ken Arney inspected two forest regeneration sites (one opened by thinning and the other opened and planted) on the Long Point Unit to determine number and size of oak saplings in the 50-acre site. Good results were observed in the planted site, which also received timber stand improvement (spot treatment with Garlon to reduce competing trees) in 1988.

Assistant Manager Schultz assisted District Forester Stewart in accomplishing Timber Stand Improvement on a 15 acre block of timber within the Long Point Unit on May 22-24. Hackberry, maple, ash, and sweet gum were injected with Tordon to release the preferred oak saplings.

In November, Joe Kurz, Georgia Chief of Game Management, and four foresters with the Georgia Department of Conservation, toured the refuge and inspected TSI projects with District Forester Stewart.

The refuge participated in the Southern States Forest Management Chief's Tour in December. The annual meeting and tour was hosted by Tennessee in 1990. The group requested a tour of timber management programs at Reelfoot and Hatchie NWR's. The tour group was composed of approximately 40 foresters and biologists from throughout the southeast region.

4. Croplands

Five cooperators, farming 1,147 acres, produced 256 acres of corn, 51 acres of millet, and 840 acres of soybeans for the refuge and themselves, respectively. Corn planting was delayed until mid-May by wet soil conditions caused by above normal rainfall and high lake levels. Soybean planting was on schedule, but lack of rainfall during July and August created drought conditions during the critical growing season of all crops. Corn production was in the 40-80 bushel range and soybean yields averaged 25-35 bushels per acre in 1990. All crops produced below average yields.

In accordance with crop manipulation policy, developed in cooperation with the TWRA in 1986, seventy percent of the corn crop was knocked down or mowed in November prior to the opening of the waterfowl seasons in early December in Kentucky and Tennessee.

Approximately 80 acres of corn and 135 acres of soybeans were planted in a no-till system during 1990. Unfortunately, the drought conditions following planting appeared to have a greater adverse effect on the no-till than conventionally tilled crops because weeds that survived the herbicide treatment under no-till were successful in competing with the crops for available moisture.

The refuge wheat seed program produced above average yields in 1990. A refuge cooperator harvested 1,268 bushels for the refuge program in June. The wheat was used to aerial seed 250 acres of winter wheat for goose browse during mid-September and for waterfowl banding purposes.

Overall, agricultural crops grown during 1990 provided an adequate food supply for wintering waterfowl and other wildlife.

8. Haying

Permittee David Bailey, Jr. cut and baled 51 rolls of hay at four designated sites on the Long Point Unit during August. The permitted activity reduced refuge mowing costs and generated \$153.00 in general revenue funds.

10. Pest Control

Chemicals used for pest control are incorporated into the annual cooperative farming agreements. Herbicides are applied as a pre- or post-emergent spray to primarily control Johnsongrass, cocklebur, pigweed, and sesbania.

The herbicide 2,4-D was used to control cocklebur and sesbania in approximately 50 acres of moist-soil vegetation.

The refuge finally relieved its accountability for hazardous or contaminated chemicals stored in refuge buildings for the past 15+ years. American Resource Recovery, Memphis, Tennessee removed for disposal, 12 gallons of Diquat aquatic herbicide, two 40-pound bags of mixed Amine and 2,4-D granulate herbicide, three 5-gallon cans of wood preservative containing arsenic, and a 35-gallon drum of 2,4,5-T. The refuge staff and Mark Wilson, Contaminant Specialist, Cookeville Fish and Wildlife Enhancement Office, have worked hard to get this problem resolved. Special Contaminant Cleanup funding was used to contract this expensive disposal process.



The long awaited disposal of hazardous refuge chemicals was finally accomplished. 9/90 GHS

G. Wildlife

2. Endangered and/or Threatened Species

One of the largest wintering bald eagle populations in the eastern United States occurs on Reelfoot NWR and the adjoining state managed portions of Reelfoot Lake. Peak populations of 200+ bald eagles migrate to this area from the Great Lakes Region each winter.

The refuge eagle management program emphasizes habitat protection, aerial surveys, and site use information. Nests are zoned as closed areas and are observed closely through the nesting season. Color-marked eagles are reported to the endangered species coordinator for the TWRA. The winter survey route includes Reelfoot Lake, Lake Isom, and the Mississippi River from Tiptonville, Tennessee to Columbus, Kentucky. The Reelfoot survey area is part of a larger survey conducted by state and federal agencies and coordinated by the Kentucky-Tennessee Eagle Management Team. The peak 1990 population occurred in January with 170 eagles sighted (Table 1). Peaks usually occur in late January or February (Table 2).

Table 1. 1990 Eagle Survey

Survey Date	Reelfoot Lake*	Mississippi River	Adult	Immature	Golden Eagle	Total
01-10-90	105	65	102	68	0	170
02-07-90	71	43	85	29	0	114
03-13-90	18	10	18	10	0	28
12-11-90	60	42	70	32	0	102

* Includes both Reelfoot Lake and Lake Isom

Table 2. Peak Bald Eagle Populations During Aerial Surveys of the Reelfoot Lake Area, 1980 - 1990

Survey Date	Mississippi River*			Reelfoot Lake/Lake Isom			Total
	Adult	Imm.	Subtotal	Adult	Imm.	Subtotal	
02-12-80	46	28	74	51	61	112	186
01-09-81	36	8	44	95	65	160	204
02-19-82	61	11	72	67	24	91	163
02-16-83	10	2	12	104	48	152	164
02-14-84	50	11	61	90	61	151	212
02-13-85	125	56	181	12	16	28	209
02-13-86	37	6	43	65	83	148	191
02-05-87	36	21	57	139	101	240	297
02-09-88	55	11	66	78	52	130	196
01-13-89	38	3	41	55	69	124	165
01-10-90	56	9	65	46	59	105	170

* To allow comparison, data include birds sighted from Tiptonville, Tennessee to Columbus, Kentucky. The 1986 survey did not include the portion of the river from Hickman to Columbus, Kentucky.

Since 1980, all eagle survey observations have been recorded on topographic maps for future site specific information. The site specific data continue to substantiate the importance of the Mississippi River corridor, especially during periods of extreme cold, when Reelfoot Lake freezes. The site data are now on a data base computer system operated by the Tennessee Department of Conservation. This information should be useful in preserving significant perching areas and planning "river bank" development or non-development in the future.

Three active nests were documented during 1990 on Reelfoot Lake, only one of which was located on Reelfoot NWR. The refuge's Long Point nest became active sometime prior to February 7 and remained so until March 29 when it was determined the adults had abandoned the nest. The cause for abandonment is unknown. The other two nests on the state portion of Reelfoot Lake yielded a total of seven eaglets, three of which were fitted with leg bands.

On the evening of June 28, Assistant Manager Schultz and Wildlife Management Biologist Don Orr met with Brainerd Palmer-Ball concerning least tern nesting in the Kentucky Bend area northwest of Reelfoot. Mr. Palmer-Ball, a non-game biologist for Kentucky Nature Preserves Commission, was requesting monetary assistance to prevent tillage of a 10-acre plot of farmland. Don Orr worked several days to secure funding to no avail. On-site inspection revealed only six nests were still intact. At least two had already been destroyed. Mr. Palmer-Ball planned to collect the remainder of the eggs and transport them to Louisville, KY for incubation. The nests were located within a mile of the Mississippi River levee on sandy soil. Heavy rains had flooded wetlands nearby, providing ideal nesting habitat for the terns.

3. Waterfowl

Reelfoot Lake is one of the most important wintering, migrating, and production areas for waterfowl in the southeast. Goose use-days on the refuge increased during the year compared to 1989 (Figure 1), continuing to remain above the refuge's goose objective.

Canada geese peaked at about 160,000 in early January. The refuge lost nearly 100,000 birds by the end of the month. Only 50 birds were left by February 20 due to mild weather. Two broods were reported during the summer. Approximately 200 geese were using the refuge by the end of September and the population rose to 10,000 by November 30. The lack of cold weather in December caused few additional geese to migrate to Reelfoot. Only about 30,000 geese were present by year's end.

Duck use-days in 1990 decreased slightly over that of the previous year (Figure 1). Ducks (98% mallards) peaked at 305,000 during the first week of January and, like the geese, dwindled rapidly through February. Fall migrant duck populations accumulated rapidly in October and rose to 143,000 birds by December.

Year comparisons of peak populations indicate most diving ducks (except ring-necked duck and hooded merganser) were lower than the 10-year (1978-1988) average (Table 3). The continuing decline in diving duck use can be attributed to the heavy siltation and rapid eutrophication of the lake, especially within refuge boundaries. Divers generally use state managed portions of Reelfoot Lake during early fall and late winter periods. Dabbler species declining in peak abundance include blue-winged teal, pintail, wood duck, and black ducks. Species whose peak abundances increased compared to the previous 10-year average include mallard, gadwall, widgeon, green-winged teal, and shoveler.

Reelfoot Refuge continues to function as a major wood duck producer for northwest Tennessee and southwest Kentucky. Wood ducks began returning to Reelfoot in early March to begin nesting activity. All refuge nest boxes (103) were refurbished by the refuge staff prior to arrival of the birds. Inspection of refuge nest boxes in February indicated 78 percent use of all boxes during the previous year. This figure is up slightly from last year and nest success was very high. This year, the refuge staff plans to replace old boxes and continue extending some of the pipes to which the boxes are attached to prevent future flooding. Brood-rearing was in full swing by May, with a large number of broods observed. High water conditions during the spring period created excellent foraging conditions in bottomland timber. Gray rat snake predation and woodpecker damage continue to plague the nest box program.

The 1990-91 waterfowl hunting seasons yielded varied results in the immediate areas surrounding the refuge. The early wood duck season occurred during September 8-12. Regulations required steel shot only in the Reelfoot Zone and the legal taking of only two wood ducks per day.

The Tennessee duck season (Reelfoot Zone) consisted of a 30-day season open from December 8, 1990 - January 6, 1991. In addition to the steel shot regulations, shooting hours closed at 3:00 PM each day on Reelfoot Lake proper. Shooting opened at sunrise in accordance with federal regulations.

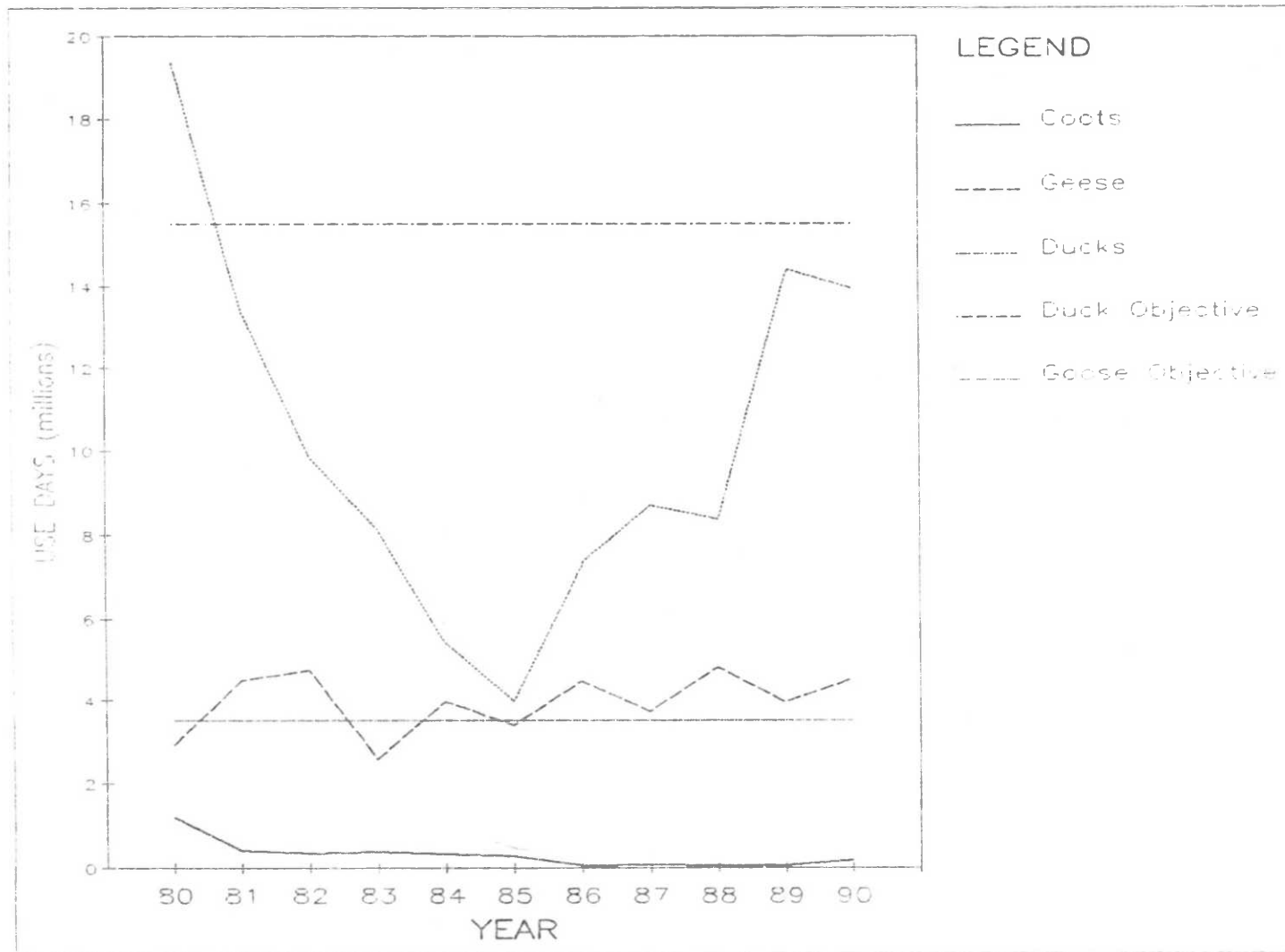


Figure 1. Waterfowl use days, Reelfoot and Lake Isom combined, 1980-90.

Table 3. Peak duck populations at Reelfoot NWR and Lake Isom NWR* for 1990-91 compared to the 1979-80 to 1988-89 average.

Species	Peak Population 1990-91	Average for 1979-89
Mallard	130,500	174,900
Black Duck	5,000	6,013
Gadwall	48,600	25,558
Northern Pintail	50	262
Green-winged Teal	1,250	686
Blue-winged Teal	560	689
American Wigeon	44,600	35,915
Northern Shoveler	3,610	875
Wood Duck	4,000	5,265
Redhead	0	17
Ring-necked Duck	18,900	3,311
Canvasback	0	19
Lesser Scaup	0	309
Bufflehead	0	29
Ruddy Duck	5	1,964
Common Goldeneye	0	15
Hooded Merganser	40	36
Common Merganser	6	19
Red-breasted Merganser	0	3

* Populations combined to allow comparison with 1979-89.

WOOD DUCK BOX PROGRAM INFORMATION

REFUGE: Reelfoot

NESTING YEAR: 1990

	<u>Number</u>	<u>Percent</u>
Total usable boxes	<u>103</u>	
Estimated boxes used by wood ducks	<u>80</u>	<u>78</u>
Estimated boxes used by other ducks	<u>0</u>	<u>0</u>
Estimated boxes used by other wildlife	<u>4</u>	<u>4</u>
Estimated wood duck broods produced	<u>80</u>	
Estimated total wood ducks hatched	<u>880</u>	
Estimated wood ducks surviving to flight stage*	<u>440</u>	<u>50</u>

Plans for next year (indicated number):

 X more boxes
 fewer boxes
 no change

Remarks: Estimates of box use made from checks of boxes during February, 1991.

* If survival rate is other than 50%, please explain rationale in remarks section.

The Tennessee Canada goose season in the Reelfoot Zone remained open from December 8, 1990 to February 15, 1991. The goose quota was 3 birds/day, not to exceed 11,500, in the Tennessee Reelfoot Quota Zone. The Kentucky goose season in the Reelfoot area opened on December 1, 1990 and closed on February 4, 1991. An estimated 900 geese were killed in the Reelfoot Quota Zone during the 1990-91 season compared to an estimated 3,275 during the previous season. Estimates from Kentucky Department of Fish and Wildlife Resources indicate a similar trend during the 1990-91 season compared to last year.

4. Marsh and water birds

Only recently have migrant populations of double-crested cormorants begun to increase. Approximately 3,000 cormorants were seen just south of the Long Point Unit on October 31. This is the largest group seen on Reelfoot in many years. Although no nests have been documented in the recent past at Reelfoot Lake, it is hoped a nesting population will soon become established.

Several least bittern nests were reported by refuge staff while maintaining boat trails during July. Dr. David Pitts, an ornithology professor at University of Tennessee-Martin, continues to monitor purple gallinules, common moorhens, and coots at Reelfoot Lake.

5. Shorebirds, Gulls, Terns, and Allied Species



Moist-soil units attract a wide variety of shorebirds. 4/90 GHS

The moist-soil units and other wetlands provided excellent shorebird and wading bird habitats during the spring. Hundreds of shorebirds, particularly greater and lesser yellowlegs, solitary, pectoral, least, and semipalmated sandpipers frequented the units as well as the waders, great and little blue herons, and great egrets. Mudflats quickly dried up as the summer progressed and shorebird use-days decreased.

7. Other Migratory Birds

Since 1985, the refuge has kept records of eastern bluebird populations in its revised quarterly reporting of wildlife. The monitoring of this species of special concern, showed no significant decreases during past years. Bluebird populations appear closely related to the severity or mildness of the winter.

8. Game Mammals

The raccoon, the Tennessee state mammal, is a much sought after furbearer in the Reelfoot area. Coon hunting and trapping, as a sport and source of income, continue to take the harvestable surplus. The west Tennessee area, including Reelfoot Lake, supports the highest raccoon population in the state due to the availability of good habitat. The refuge raccoon population is approaching previous proportions, after experiencing a disease outbreak during the late winter of 1986.

The annual quota gun deer hunt (Section H.8) yielded a sex ratio favoring females, and age classes skewed toward 1.5-year bucks and 2.5-year does (Table 4).

The deer inspected at the check stations indicated the herd to be generally healthy with good body weights, body fat, and good antler development (Table 5).

Following the hunt, deer were observed throughout the winter period, especially when high water pushed them out of the bottoms to higher ground.

Table 4. Reelfoot NWR Deer Hunts, 1984-90

Year	Type of Hunt	Harvested Age Class											Total		
		Buck					Doe								
		1/2	1	1/2	2	1/2	3	1/2+*	1/2	1	1/2	2		1/2	3
1984	Gun	10	14	6	6	7	4	10	6	63					
1985	Gun	9	21	7	4	7	4	13	2	67					
1986	Archery **	(N/A - 5)					(N/A - 7)					12			
	Gun	6	10	6	2	4	3	1	5	37					
1987	Archery	(N/A - 7)					(N/A - 6)					13			
	Gun	23	28	13	6	20	12	20	17	139					
1988	Archery	(N/A - 3)					(N/A - 10)					13			
	Gun	11	24	7	1	21	9	7	9	89					
1989	Archery	(N/A - 4)					(N/A 9)					13			
	Gun	3	14	11	1	10	10	8	6	63					
1990	Archery	(N/A - 6)					(N/A - 7)					13			
	Gun	7	13	3	1	8	7	14	5	58					

* Includes greater than 3 1/2 year age classes

** Age not determined on deer taken during Archery-Either Sex Hunt

Table 5. Average Whole Weights and Antler Size by Age Class for Gun Hunt at Reelfoot NWR, 1990

Age	Average Whole Weights		Average Antler Dimensions		
	Buck (lbs.)	Doe (lbs.)	Points	Dia. (inches)	Length (inches)
1/2	78	61	-	-	-
1 1/2	124	95	4.0	11/16	9
2 1/2	166	110	7.0	16/16	15
3 1/2	145*	132*	8.0*	14/16*	14*
5 1/2	NS	NS	NS	NS	NS
6 1/2	NS	NS	NS	NS	NS

* = Single Sample

NS = No Sample

10. Other Resident Wildlife

Habitat conditions contributed to good reproductive seasons for turkeys on and near the refuge. The potentially adverse effects of the wet spring on survival of young was not apparent. The Long Point flock is slowly increasing and turkeys are often observed near the refuge corn fields. The turkey population is estimated between 75-100 birds.

In cooperation with the TWRA, the refuge flock serves as a source of transplant birds for reintroduction to other less populated areas of Tennessee. Fifteen birds were trapped in 1990.



Sometimes hundreds of turkey vultures can be observed at their favorite refuge roost.

8/90 GHS

The refuge supports a growing populations of coyote and beaver. Increased sightings of coyote confirm the reports of a large population. Coyotes can also be heard on many nights. Beaver sign, including girdled trees and lodges, is abundant on Reelfoot Lake.

11. Fisheries Resources

In an ongoing effort to suppress aquatic vegetation, the TWRA released 12,400 white amur (Ctenopharyngedon idella) into Reelfoot Lake on July 24.

14. Scientific Collections

At the request of the Memphis State University Biology Department (MSUBD), the refuge has permitted graduate students to collect tissue, kidney, liver, and reproductive tracts from raccoons brought to the refuge check stations since 1984. Most hunters are cooperative in voluntarily permitting the samples to be taken from harvested raccoons. Information obtained from the raccoons sampled is being used in a west Tennessee study funded by the TWRA through the Federal Aid to Wildlife Restoration program.

In a similar study, the refuge cooperated with the MSUBD in permitting the collection of data during the refuge deer hunts from 1984 through 1990. Several graduate students, led by Dr. Michael Kennedy, gathered body and antler measurements, weights, and collected internal organs from deer for parasite and food analyses. The refuge staff appreciates the assistance at the check stations and hope this cooperative effort will continue.

UTM and Bethel College students participated in both the raccoon and deer check stations as part of their curriculum coordinated by Dr. David Pitts and John Nelson, respectively.

15. Animal Control

On July 26, the refuge was notified by local farmer, Doyle Wayne George, that a Canada goose depredation problem was occurring in his soybean field at Lake No. 9, Kentucky, approximately two miles west of the refuge. The following morning Acting Manager Stanley and David Lingo, Animal Damage Control, U.S. Department of Agriculture, met the farmer and inspected the damaged soybeans and observed the 100 or more Canada geese on the lake. Mr. Lingo provided Mr. George with two propane guns and pyrotechnics to haze the geese away for two or more weeks until the soybeans reached a less desirable stage of growth.

For the ninth straight year, the refuge cooperated in the gypsy moth detection program sponsored by the U.S. Forest Service, Forest Insect and Disease Management Division. The program entailed placing pheromone traps in areas of high public use. Three traps were placed on the refuge and checked periodically through the summer months for adult males. Fortunately, the results were negative again this year.

16. Marking and Banding

The refuge banding quotas include 200 wood ducks and 400 anytime Canada geese. Refuge personnel banded the last of 238 Canada geese during March. Mild weather hindered operations, especially during February.

The refuge and YCC staff banded a record 526 wood ducks between July and August for which the Refuge received special recognition.

Bio-Tech Jody Knox was successful in observing and reporting 577 neck-collared geese on and adjacent to the refuge. This is the first year the refuge has been given a monetary allocation to hire such personnel. Jody, a student from UTM, was employed between December 3, 1989 and March 16, 1990.



The 1990 Refuge Goose Banding Team. 1/90 GHS



Refuge staff received Regional recognition for obtaining the 1990 pre-season wood duck banding quota. 2/91 GHS

H. PUBLIC USE

1. General

An estimated 68,700 visits were made to Reelfoot NWR during 1990. This is less than a one percent decrease from the number of visits reported in 1989.

Effective March 1, 1986, the State of Tennessee requires all persons, between the ages of 16 and 64 years who fish, hunt, trap, or boat on Reelfoot lake and surrounding state and federal lands in Tennessee, to purchase a Reelfoot Preservation Permit. The TWRA administers the program with assistance of Reelfoot NWR and the Reelfoot Lake State Park, which occupy public lands in the Reelfoot Lake area. During 1990, the refuge participated in the program by checking visitor compliance. Through posted notices and an informed local public, no violations were encountered.

Assistant Manager Schultz attended the regional public use workshop at Kenlake State Park, Aurora, Kentucky on September 11-13. The workshop covered a wide variety of topics.

5. Interpretive Tour Routes

The Grassy Island Auto Tour Route has been open to vehicle traffic year-round since 1985. The route affords the visitor opportunities to observe and photograph refuge inhabitants including bald eagles, white-tailed deer, wild turkey, wood ducks, wading birds, and songbirds.

The 2.5-mile auto tour route also serves as a walking trail for some visitors during the spring and fall periods. The refuge staff recommends the route to all visitors who visit the refuge Visitor Contact Station (VCS). Although the auto tour route is lacking interpretive markers, visitor use was estimated at 17,000 visits during 1990, a slight increase from the previous year.

6. Interpretive Exhibits/Demonstrations

The refuge VCS, in its eighth year of existence, has caused a greater public awareness of Reelfoot NWR, its goals, purposes, and public use opportunities. The visual displays and exhibits, constructed by Joe Hurt Studios with Service design input, has met with great public acclaim. The exhibits focus on the human and natural history of Reelfoot Lake and the refuge. The wildlife exhibits include an impressive display of waterfowl, wading birds, birds of prey, songbirds, mammals, and reptiles commonly found in the varied habitats at Reelfoot Lake.

The VCS auditorium, with seating capacity for 40 adults, has also been a great asset to the refuge interpretive program. Refuge films including "America's Wetlands", "Wildlife, Wetlands, and You - The Duck Stamp Story", and "America's National Wildlife Refuge System" have been shown to numerous groups during the year. A VCR system also provides public viewing of the videos "Waterfowl for the Future" and "Wetlands in Crisis". The auditorium also serves as a meeting room for refuge and interagency groups.

Media coverage of the VCS has made a noticeable impact on visitor use. The Reelfoot Lake State Park personnel have also been of great assistance by recommending the VCS to park visitors. The VCS is normally open Monday - Friday from 8:00 A.M. to 4:00 P.M., but due to public interest, the VCS is opened on weekends during the winter months. This schedule coincides with a period of high visitor use to observe eagles and waterfowl. An estimated 4,000 visitors from at least 35 states and 6 foreign countries toured the VCS during 1990.

An information kiosk, with three visual displays, and a leaflet dispenser is located near the VCS/Headquarters facility. The kiosk is very informative to refuge visitors, especially when the VCS is closed on weekends. A similar kiosk was erected on the Long Point Unit during July at a major public use area.



YCC'ers assemble Kiosk for Long Point Unit.
7/90 GHS

A refuge informational booth was constructed and manned by the refuge staff, at the invitation of the Dyer County Fair, during the fair in Dyersburg, Tennessee on September 3-8. The booth featured pictures of management practices and public use facilities and activities, mounted waterfowl and river otter, and refuge brochures and pamphlets. An estimated 300 people visited the booth each evening. Fair officials were grateful for refuge participation and awarded the booth first place in the public service category of commercial exhibits.

The refuge was pleased with the public interest in purchasing Duck Stamps at the VCS during 1990. A total of 20 stamps were sold to waterfowl hunters, wildlife observers, and collectors.

7. Other Interpretive Programs

At the request of local organizations, groups, and television and radio media, the refuge staff presented several off-refuge programs during 1990.

Assistant Manager Glenn Stanley participated in a panel discussion concerning Reelfoot Lake during Earth Day activities at UTM on April 24. TWRA Biologist, Tim Broadbent, UTM Professors Wintfred Smith and Wesley Hensen, and Manager Stanley addressed biological issues. Approximately 50 individuals attended.

At the request of Coach Barry Duncan, Union City High School, Assistant Manager Stanley conducted the Wildlife Management and Muzzleloading Firearms sections of the Tennessee Hunter Safety Program at the VCS on June 15 and 29. A total of 35 youth participated in the two hour programs as part of their 13-hours of training required for certification. Manager Stanley also taught at several other locations during the spring and fall periods at the request of TWRA personnel.

At the invitation of Dr. Phil Lavelly, UTM, Assistant Manager Bryan Schultz presented a refuge program on November 7 to the Natural Resources Management class taught by Dr. Lavelly. The film "Our National Wildlife Refuge System" was shown and refuge programs, career opportunities, and the Service volunteer program were presented and discussed.

8. Hunting

For the second year the refuge hosted a spring turkey season on April 6-8. A total of 35 hunters (20 at Grassy Island and 15 at Long Point) were selected during a public drawing on March 2. Permit applications (similar to the refuge gun deer hunts) were accepted during the entire month of February. A

total of 290 applications were received. Cool, damp weather on April 6 and 7 caused gobbling to cease, but conditions were excellent the last day (April 8) and several turkeys were heard. An estimated 22 hunters participated and expended 300 activity hours. Hunter success was approximately 17 percent with four male turkeys checked at the refuge office during the three-day period. Gobblers harvested during the refuge hunt weighted between 14-21 pounds, beards were 9 1/2 - 10 inches, and spurs were 9/16 - 1 inches long, indicative of 2-3 year old birds.



Young hunter harvests first turkey. 4/90 GHS

An 11-day archery deer season was conducted on all refuge lands during October 16-26. The refuge bag limit was two deer in Kentucky and four deer in Tennessee, in compliance with state bag limits. A total of 500 hunter trips were reported with an estimated 1,937 activity hours expended. Although hunter visits were 33 percent less than the previous year, hunter success was higher with 2.6 percent compared to 1.7 percent in 1989. The same number of deer were killed (13). All deer were checked at three state designated check stations.

The gun deer hunts attracted 1,270 applications for 486 either-sex permits to participate in the six, 1-day hunts on October 27-28, November 3-4, and November 10-11. A total of 339 hunters participated with a 69 percent turnout rate. The hunters expended 2,824 activity hours to harvest 58 deer, or an 18

percent success rate. This was less than the previous harvest of 63 deer in 1989. Adverse weather conditions during both the archery and gun hunts was believed to be the primary factor for this years decrease.

Similar to the refuge deer hunts, temperatures were above normal during most of the raccoon hunt. A total of 255 raccoons were harvested during 559 hunting trips during the eight nights (September 26-29 and October 3-6). Hunter participation was above last year, but below past years. There appears to be a general decline in raccoon hunters in the west Tennessee, Kentucky area, especially young hunters. This may be partly due to depressed fur prices for the last several years.

The refuge squirrel season opened with the Tennessee state season on August 25 and closed on October 15. A total of 535 hunter days and 1,490 activity hours were expended. The squirrel population in west Tennessee experienced peak numbers due to abundant mast and mild winters since 1988. The TWRA increased the statewide daily bag limit from 6 to 10 in 1989, due to the high population. An estimated 800 squirrels were harvested during the 52-day season.

9. Fishing

Reelfoot Lake has a national reputation as an excellent sport and commercial fishing area. The local economy is largely dependent upon fishing related tourism and commercial fishing. The refuge, therefore, receives its share of sport fishing use during the refuge season, which runs from March 15-October 15 on the Long Point Unit and February 1-November 15 on the Grassy Island Unit.

The 1990 sport fishing season was similar to the 1989 season with 27,000 fishing trips. The fishery resource is managed by TWRA at Reelfoot Lake and the Service's most significant role is setting and enforcing fishing seasons on the refuge.

11. Wildlife Observation

The opportunities for wildlife observation in the Reelfoot Lake area are unsurpassed in variety and availability. The large populations of wintering bald eagles, waterfowl, songbirds, wading birds, turkey, and deer have generated great interest in this activity. Wildlife observation surpassed sport fishing and other uses for the number one refuge use during 1990 with an estimated 36,000 visits.

The increasing public awareness of the large wintering population of bald eagles at Reelfoot has created tremendous interest in recent years. In response to this interest, the Reelfoot Lake

State Park conducts daily eagle tours from December 1 through mid-March. The refuge also responds to numerous information requests about the bald eagle, and cooperates with the State Park in promoting their tours. Approximately 10,000 visitors participated in the tours during 1990.

Observation of waterfowl, especially Canada geese, is a popular activity at the Long Point Unit during December-February. The auto tour route on the Grassy Island Unit received high visitation throughout the year where observation of deer, wild turkey, songbirds, and waterfowl were easily accessible. The boardwalk/observation platform at the end of the auto tour route offers a spectacular view of the lake.

Many serious birdwatchers and groups visited the refuge during the spring months. This included several members of the Tennessee Ornithological Society and Audubon Society.

17. Law Enforcement

Visitor compliance to the Reelfoot Preservation Permit requirement that all Tennessee hunters and fishermen between the ages of 16 and 64 possess the permit on the refuge was enforced this year. Refuge personnel checked many hunters and some fishermen during the year and encountered no violations. Refuge law enforcement personnel stepped up efforts to enforce waterfowl hunting regulations during the fall wood duck season. Working with TWRA personnel, Officers Cook, Stanley, and Hogg found no violations during the 1990 season.

Officers Stanley and Hogg attended the annual Law Enforcement Refresher at Quincy, Fl during the week of March 26.

Added funding for drug enforcement permitted aerial surveys to be conducted on July 16 and August 17 to detect marijuana cultivation on Reelfoot NWR. Refuge Officers Glenn Stanley, Guy Hogg, and pilot Richard Battles observed no drug related activities on the refuge.

A firearms requalification session for all Refuge Officers in Tennessee was held at the Tennessee NWR range September 27. A refresher session in Pressure Point Control Tactics was also provided.

Refuge Officer Glenn Stanley attended a waterfowl law enforcement workshop sponsored by TWRA at Reelfoot Lake on October 17 and 18. Although part of TWRA Officer in-service training, the refuge staff were invited to participate due to their assistance in planning the workshop.

I. EQUIPMENT AND FACILITIES

1. New Construction

The refuge maintenance staff, with the aid of the YCC crew, completed construction of an informational kiosk at the Long Point Unit parking lot in July. This structure will improve refuge interpretation on this end of the refuge.

2. Rehabilitation

The maintenance staff rehabilitated dikework at the Pond Creek FmHA easement on November 20 and 21.

3. Major Maintenance

The YCC crew, with the help of the maintenance staff, completed resealing the maintenance shop parking lot in July.

The refuge maintenance staff painted the Long Point residence and several outbuildings on August 1 and 2. Portions of the maintenance shop and oilhouse were painted on August 20 and 21. Our newly acquired fire pumper was useful in cleaning spiderwebs and dirt dauber nests from the 30-foot-high overhangs and the 150-200 p.s.i. generated by the pump did an excellent job of removing old paint.



Long Point residence after application of exterior stain. 8/90 GHS

Todd Rainwater, Architect, Division of Engineering, Atlanta, visited the Refuge on October 16 to inspect the VCS and oilhouse. Portions of these buildings have sustained heavy weather damage. The refuge received his recommendations and plans to take action to repair these facilities during 1991.

The Reelfoot Lake spillway required periodic maintenance the entire year. Chains controlling the stop-logs were replaced and debris was removed from the gates when needed. Gates were manipulated as required to maintain the desired water level.

The "Cookie Cutter" was launched on June 13 to maintain approved boat access channels on state and federal portions of Reelfoot Lake. All 31 miles of existing channels were opened by August 2 (Figure 2).



Cookie Cutter trails provide vital boat access to Reelfoot Lake users. 7/90 GHS

Facilities maintenance required continuous attention to the office, shop, and roadsides including mowing, weed spraying, tree pruning, removal of fallen trees and limbs, litter removal, and grading refuge roads and ditches.

REELFOOT NATIONAL WILDLIFE REFUGE

UNITED STATES
DEPARTMENT OF THE INTERIOR

LAKE & OBION COUNTIES TENNESSEE, FULTON COUNTY KENTUCKY

UNITED STATES
FISH AND WILDLIFE SERVICE

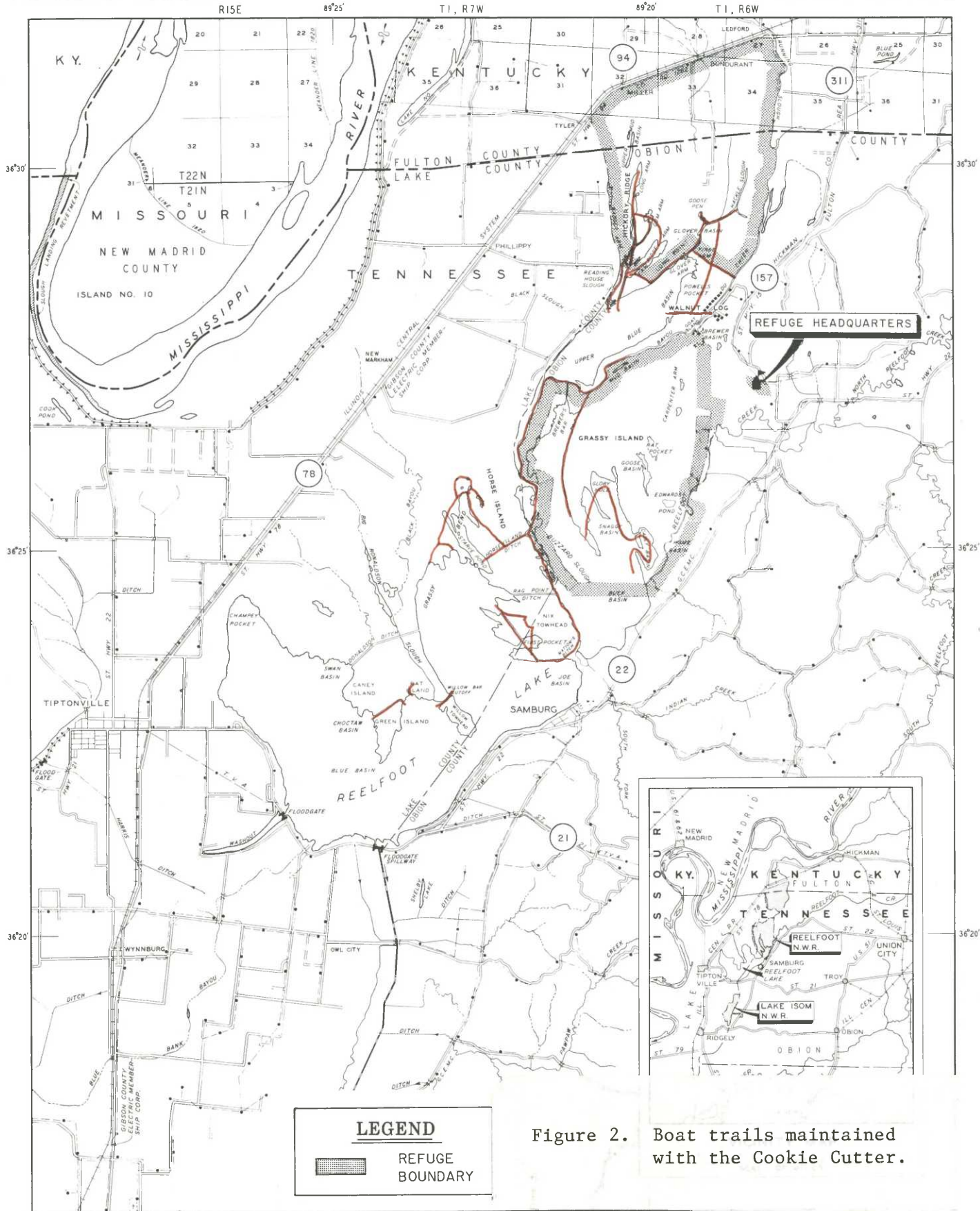


Figure 2. Boat trails maintained with the Cookie Cutter.

COMPILED IN THE BRANCH OF ENGINEERING

ATLANTA, GEORGIA
REVISED: 7/86

Scale 0 2640 5280 10560 21120 FEET
0 1/2 1 2 3 4 MILES

MEAN
DECLINATION
1959

4R TENN 359 403

4. Equipment Utilization and Replacement

Vehicle and other equipment maintenance projects were varied. Vehicles and tractors were periodically serviced, washed, and winterized. A John Deere 4640 fuel tank leak was welded. The Jeep CJ-7 received repairs to the ignition, exhaust, window, and odometer. Boats and trailers, outboard motors, lawn mowers, and saws were also maintained as required. The Hustler mower was sent to Memphis Ford Tractor for annual maintenance.

The Cookie Cutter received annual maintenance in January in addition to front end repairs. It was launched on June 13, and the next day, a shaft was broken, putting the machine out of commission for some time. Only after a second shaft broke, was the refuge boat trail maintenance completed on July 18. State boat trail maintenance was finished on August 2. Following regional approval for \$10,520.00, the front-end and hydraulic motors were sent to Lantana Boatyards, Florida on October 26 for modifications. A shorter front-end, the result of a shaftless design, will be installed in early 1991.

Needed major equipment purchases included a trailer mounted fire pumper, Polaris 250 CC Trail Boss 4X4 ATV, a gas-powered paint sprayer, a grinder/sander, and a push type mower.



New refuge fire pumper provided needed suppression and prescription capability.
8/90 GHS



Polaris 4-wheeler was useful in enforcement and other management tasks. 7/90 GHS

5. Communications Systems

A base station obtained from Alligator River NWR was tested and installed on June 20. Lightning struck the radio tower on July 29 moderately damaging the base station. Following repairs, the radio was reinstalled on August 14 and refuge staff grounded the tower to help prevent damage from future lightning strikes.

6. Computer Systems

The refuge received and installed an "Ottawa" Document Control Register Program, which may be helpful in keeping track of the budget.

7. Energy Conservation

The refuge staff made a concerted effort to become more energy efficient during 1990. Thermostats were turned down at night and on weekends during the winter and up during the summer. Lights were also turned off when not in use.

8. Other

Managers Stanley and Schultz and Tractor Operator Knight attended the Water Control Structures Inspection and Maintenance Workshop held April 30 in Memphis.

Tractor operator Preston Knight, Jr. and Maintenance man Guy Hogg took the cookie cutter trail machine to Big Lake NWR on August 8 and 9 where they performed some desperately needed boat trail maintenance.

To comply with new fuel storage tank regulations, the refuge requested UST Testing Division of Nashville, TN to pressure test an underground gasoline storage tank at the Long Point Unit. Results from the December 7 test indicated that the 1,000 gallon tank, installed in 1965, was not leaking and therefore safe for continued use.

J. OTHER ITEMS

1. Cooperative Programs

- a. On January 30, Manager Stanley met with Biologist Don Orr and landowner Finnis Jordan and sons to inspect a 1,400 acre tract of farmed wetlands near Halls, TN adjacent to the South Fork, Forked Deer River. Mr. Jordan had requested Service involvement assisting him in obtaining a Section 404 Permit and possibly entering into a "Partners" project. The area has a history of high use. Negotiations subsided when the landowner requested the Service obtain a Section 404 permit for his farm operation and indicated a lack of interest in limiting waterfowl hunting opportunities on his property.
- b. Assistant Manager Stanley devoted a considerable amount of time to the Partners for Waterfowl Tomorrow Program - Mud Lake Project. The project involved personnel from the USFWS, Corps of Engineers, and TWRA. The primary landowners met with agency representatives twice prior to a public meeting on March 20 at Tiptonville City Hall. Of the 18 individuals in attendance, all but one opposed the project on the basis of prolonged flooding and wave erosion.
- c. The refuge hosted the annual Tennessee Ornithological Society Christmas Bird Count for the Reelfoot Lake area again this year on December 18. Five groups of thirteen observers, led by Ed Wilbanks, reported 91 bird species by days end. The count started at 6:30 AM and lasted until 5:00 PM.
- d. Reelfoot NWR is a team member of the Kentucky-Tennessee Eagle Management Team. This is an organization of state and federal agencies and private groups whose primary purpose is to

monitor winter eagle populations and nesting efforts in the two-state area, and inform and educate the public about eagles. The team coordinates monthly eagle surveys, in which the refuge participates. Assistant Managers Stanley and Schultz attended the first of the biennial meetings on April 17. Refuges and other agencies presented highlights of eagle nesting efforts and winter survey results. The eagle banding team schedules their efforts to coincide with hatching dates of known nesting pairs during this first meeting of the year.

4. Credits

Assistant Refuge Manager Glenn Stanley prepared Sections A. Highlights, C. Land Acquisition, D. Planning, F. Habitat Management, and H. Public Use for the Reelfoot and Lake Isom reports.

Assistant Manager Bryan Schultz prepared Sections B. Climatic Conditions, E. Administration, G. Wildlife, I. Equipment and Facilities, and J. Other Items for the Reelfoot and Lake Isom reports.

Refuge Manager Cook proofread the reports and prepared Section K. Feedback for the Reelfoot Report.

Office Assistant Sue Pope prepared the Introductions in the Reelfoot and Lake Isom reports and typed and proofread the entire narrative.

K. FEEDBACK

On December 4, 1990, U. S. District Judge James D. Todd sifted through a one hundred and fifty year quagmire of rhetoric and found a few ounces of reality. Judge Todd's decision that the EIS for Reelfoot Lake water level management adequately addressed navigational servitude and the riparian rights of adjacent tract owners and that forcing the Service to comply with politically generated state laws would diminish the ability of the refuge to function in accordance with congressional mandates should stave off the deluge of Congressional Inquiries, Freedom of Information Requests, Requests for Temporary Restraining Orders, Court Hearings, General Accounting Office Audits, and general complaints which have plagued this office during the last five years.

I would like to specifically express my gratitude to Mr. John Harrington, with the Solicitor's Office in Atlanta, GA for his tireless efforts in presenting and defending the Service's rights necessary to protect/manage the resources of Reelfoot NWR. Maybe now we can put the legal challenges behind us and concentrate our efforts at restoring/enhancing the wetland and migratory resources of this refuge.

LAKE ISOM NATIONAL WILDLIFE REFUGE

Union City, Tennessee

ANNUAL NARRATIVE REPORT

Calendar Year 1990

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

INTRODUCTION

Lake Isom National Wildlife Refuge was established by Presidential Proclamation in 1938 and is composed of 1,850 acres in northwest Tennessee. This acreage consists of croplands, open water, and woodlands. The refuge is owned in fee title and is administered under Reelfoot NWR which is located fifteen miles to the north.

Lake Isom NWR was established as a wintering area for migratory waterfowl of the Mississippi Flyway. Large numbers of geese, ducks, and bald eagles use the refuge during the winter. Numerous wood ducks also nest at Lake Isom during spring and summer. A wide variety of songbirds, mammals, reptiles, and amphibians also thrive on this small, but important refuge.

The 700-acre lake at Lake Isom NWR offers great fishing opportunities. The lake is used primarily by local fishermen who are quite familiar with its waters. Bass, bream, and crappie are the principle species taken during the spring and summer sport fishing season.

Other opportunities are available for small game hunting, birdwatching, photography, and other wildlife-oriented recreation.

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A. HIGHLIGHTS

New bald eagle nest built, adults abandoned late in season (G.1).
Lake Isom residence received facelift (I).

F. HABITAT MANAGEMENT

2. Wetlands

Lake Isom and its associated wetlands encompass approximately 1,200 acres of open water, shrub and wooded swamp, and seasonally flooded moist-soil areas and croplands.

Flood waters exceeded the permanent Lake Isom pool of 281.0 feet mean sea level (m.s.l.) during February and dropped to a low of 279.0 feet m.s.l. and below during June through September. The low water conditions created opportunities to disk invading willows and plan experimental prescribed burns within the moist-soil areas. During July, 14 acres were disked leaving two, 20-foot strips, one to be disked, one to be disked and burned, prior to a hard frost. But, when environmental conditions were suitable for burning, the unit was flooded by winter rains. Therefore, the prescribed burn was postponed until the 1991 burn year or later. Lake Isom continued to rise during December and exceeded the 281.0 feet m.s.l. elevation at year's end.



Experimental treatment plots in Moist-soil
Unit #8. 7/90 GHS

4. Croplands

Three cooperative farmers cultivated 503 acres with 75 acres of corn, 48 acres of milo, and 11 acres of Japanese millet as the refuge share. The remaining 369 acres, used to produce corn and soybeans, were the cooperative farmers' share.

Wet ground conditions delayed planting of corn until early June. Drought conditions immediately following corn planting reduced the refuge yield to 40-60 bushels per acre. Milo yields were higher, but only an estimated 50 acres of corn received significant waterfowl use. This corn was flooded by high lake levels during the winter period.

As similar years (1985-1989), low waterfowl use was observed on the northern portion of Lake Isom Refuge. This is believed to be partially related to the limited manipulation of crops policy adhered to since 1986. Prior to 1986, the refuge manipulated 70 percent of the corn crop anywhere on the refuge prior to the waterfowl hunting season. Beginning in 1986, the refuge was restricted by Service law enforcement personnel to manipulating corn no less than 200 yards from the refuge boundary to prevent a "baiting" situation for several goose hunters who utilize the numerous pit blinds along the very edge of the entire refuge. This limited the planting of corn to wetter, less productive fields and hindered crop rotation practices to control Johnsongrass and cocklebur. The distance was further increased during the 1989-90 season as the Special Agent in Charge considered a distance of one-mile to be the appropriate distance from the refuge boundary for no manipulation of crops. As a result, due to the narrow configuration of the refuge, none of the corn or milo was manipulated during 1989 or 1990. Historically, only limited use of refuge corn and milo occurs unless these crops are manipulated or flooded. Construction of three permanent field impoundments on the north portion of the refuge is planned during 1991. This will hopefully attract waterfowl to that portion of the refuge and avoid the alleged baiting issue associated with the manipulation of crops.

Approximately fifty acres of wheat were aerially sown at refuge expense over standing soybeans during September for winter goose browse. Seed wheat was produced at Reelfoot NWR.

G. WILDLIFE

Lake Isom and Reelfoot Lake are in close proximity, making daily migrations of waterfowl and bald eagles between refuges a common occurrence. Goose movements are quite visible during late evening and early morning from the Long Point Unit of Reelfoot Refuge to Lake Isom and vice versa.

Lake Isom is an incredibly important refuge when its role as a migratory bird refuge is analyzed. Lake Isom supports more waterfowl and eagles than many refuges that are much larger and implement more intensive management. Lake Isom is the most southern refuge used by the Mississippi Valley Population of Canada geese with normal peaks at 50,000+ birds. This alone is an important attribute when the MVP Goose Management Plan goals are considered. Wood duck production is consistently high and general duck peaks of 30,000 to 40,000 birds are still common even with the low flyway populations experienced during the past 10 years.

2. Endangered and/or Threatened Species

A new nest, rebuilt in 1989 after lightning struck the previous one, appeared to be getting some new nest material in January. It is located approximately 200 yards from the old site. Birds were first spotted on the nest on February 7. Eagles tended the nest into the spring when on April 11, similar to the Long Point nest, the Lake Isom nest was found abandoned. No explanations were found for the abandonment.

3. Waterfowl

Waterfowl populations at Lake Isom fluctuate considerably depending upon weather conditions and food resources. Generally, the corn crop at Reelfoot is depleted by February and the waterfowl migrate to Lake Isom for feeding. Canada geese fluctuated between 1,000 and 4,000 birds through February. The population declined drastically in early March to 150 geese on March 13 after which they left for the season. Numbers began increasing again in November and by mid-December rose to 1,700 individuals.

Duck numbers peaked at only 2,000 in late January, fell sharply and fluctuated up to 400 in late February. Like the geese, ducks essentially abandoned Lake Isom in March. Duck numbers built quickly in the fall and raised to a peak of 25,662 by the end of November. Numbers fell somewhat in December as rains began flooding more and more of the local areas.

Wood duck boxes were refurbished during February. Some support pipes were extended and nest boxes were repaired as necessary. Rat snakes and woodpeckers continue to reduce nesting success at Lake Isom.

WOOD DUCK BOX PROGRAM INFORMATION

REFUGE: Lake Isom

NESTING YEAR: 1990

	<u>Number</u>	<u>Percent</u>
Total usable boxes	<u>88</u>	
Estimated boxes used by wood ducks	<u>55</u>	<u>63</u>
Estimated boxes used by other ducks	<u>1</u>	<u>1</u>
Estimated boxes used by other wildlife	<u>17</u>	<u>20</u>
Estimated wood duck broods produced	<u>38</u>	
Estimated total wood ducks hatched	<u>418</u>	
Estimated wood ducks surviving to flight stage*	<u>209</u>	<u>50</u>

Plans for next year (indicated number):

 X more boxes

 fewer boxes

 no change

Remarks: Estimates of box use made from checks of boxes, during February, 1991.

* If survival rate is other than 50%, please explain rationale in remarks section.

11. Fisheries Resources

On July 13, Dr. Ken Thompson, Lock Haven University, PA requested and received a special-use permit to collect specimens of bantam and spotted sunfish, pirate perch, and flier for an ongoing research project in west Tennessee and Kentucky.

H. PUBLIC USE

An estimated 6,200 visits were made to Lake Isom NWR during 1990, a 16 percent increase from 1989. Eagle nesting activities did not effect public use programs in 1990 as past years.

Wildlife observation was the number one form of public use during 1990 with an estimated 4,100 visits and 7,600 activity hours expended. Sport fishing, which normally rivals wildlife observation for the number one use, attracted an estimated 1,750 fishing days and 3,800 activity hours during the year.

The refuge squirrel season opened with the Tennessee state season on August 25 and closed on October 15, concurrent with the Reelfoot NWR season. Hunter participation was average in 1990, compared to past seasons, due to a high squirrel population. An estimated 295 visits (793 activity hours) were reported during the 52-day season.

The Lake Isom NWR raccoon season, also concurrent with the Reelfoot Refuge season, and divided into two 4-night seasons, was held September 26-29 and October 3-6. A total of 60 hunt-nights (224 activity hours) were recorded compared to 164 in 1989. The decline in hunters was possibly the result of a like decline in raccoons harvested, as only 20 raccoons were harvested during the 1990 season.

I. EQUIPMENT AND FACILITIES

The Isom residence received a new dehumidifier and antenna booster.

Some boundary signs were replaced on the south end of the refuge during April.

The YCC crew and Assistant Manager Schultz painted the Lake Isom residence and garage June 4-15. The loose material was removed from around the windows/panes and the windows were recaulked.



The Lake Isom residence and garage received a much needed paint job. 6/90 GHS

The refuge maintenance staff repaired a serious erosion problem adjacent to a culvert on the West Boundary Road on August 15. The job was completed with the placement of rip-rap to help prevent future such occurrences.

REMINDERS: Bring everything that you will need since no provisions are sold on the refuge. Visitors should bring rain gear, comfortable boots, warm clothing during winter months, and some type of insect repellent is recommended during warm weather. Firearms are not permitted and observe all posted signs. If additional information is needed before you arrive at the refuge, please write to Refuge Manager, Route 2, Highway 157, Union City, Tennessee 38261, or call (901) 538-2481.



DON'T LITTER, HELP KEEP OUR WILD AREAS CLEAN

NOTES

DEPARTMENT OF THE INTERIOR
U. S. Fish and Wildlife Service

Calendar of Wildlife Events



Reelfoot and Lake Isom
National Wildlife Refuges

CALENDAR OF WILDLIFE EVENTS

This calendar is meant to provide visitors with a general guide to seasonal wildlife events. (Weather may cause variations of one to two weeks.)

JANUARY. . Waterfowl concentrations best observed on the Long Point Unit and at Lake Isom. Bald eagle population at its peak.

FEBRUARY. . Wintering duck populations declining, but Canada geese still wintering in large numbers. Bald eagle numbers high and observable. Cold weather fishing for crappie begins.

MARCH . . . Large numbers of shovelers and blue-winged teal arrive on northward migration. Resident wood ducks return and start nesting activity. Bald eagles begin northward migration by the 15th. Nesting osprey return from South America. Shorebirds moving through area with best viewing on the Long Point Unit. Crappie and bass fishing excellent with bluegill just beginning to bite. Refuge open to sport fishing on the 15th.

APRIL Last bald eagles depart by the 15th. Shorebirds and ducks abundant in refuge marsh areas and puddle holes. Excellent warbler viewing on the Grassy Island Unit by mid-month. Frequent sightings of wild turkey at Grassy Island also. Amphibians and reptiles becoming more active. Fishing for all sport species good to excellent. Early spring wildflowers blooming.

MAY. Songbird watching still excellent, especially warblers. Opportunity to observe deer and wild turkey excellent in the morning and evening. Excellent frog listening opportunities, especially spring peepers, cricket, and tree frogs. Mississippi kites observed in vicinity of Grassy Island. Fishing for bluegill at its peak.

JUNE Deer fawns observed with mothers. Great blue herons, common egrets, yellow-crowned night herons observed fishing shallow water. Cormorants and anhingas present. Emergent and floating aquatics blooming. Top-water bass fishing at its peak.

JULY Summertime blues - mosquitoes and deerflies inhibit all but the hardy souls.

AUGUST. . . Weather very hot and humid, wildlife observation best early and late. Refuge squirrel season begins on the 4th Saturday.

SEPTEMBER. Migrant ducks begin arriving. Canada geese and bald eagles arrive late in the month. Marsh hawks observed near headquarters complex. Fall fishing for "stripes", crappie, and bass beginning.

OCTOBER. . Large numbers of gadwall and American wigeon arriving. Eagle population continues to build. Refuge raccoon hunt held. Refuge squirrel season ends on the 15th. Refuge waters closed to sport fishing on the 15th.

NOVEMBER. Grassy Island walking trail open, and excellent wildlife observation-deer, turkey, waterfowl, and songbirds. Bald eagles plentiful by Thanksgiving.

DECEMBER. Excellent opportunity to observe ducks, geese, and eagles on the Long Point Unit - Kentucky Highway 1282. The local Audubon Society affiliate conducts the annual Christmas Bird Count.

VISITOR INFORMATION

Headquarters for Reelfoot and Lake Isom National Wildlife Refuges is located one mile north of Highway 22 on Highway 157. To reach headquarters, turn north off Highway 22 about 6 miles north of Samburg, Tennessee or 15 miles west of Union City, Tennessee. The office/visitor contact station is open to the public from 8:00 AM till 4:00 PM, Monday through Friday. Due to seasonal accessibility and wildlife concentrations, Grassy Island and Long Point are the most popular areas for refuge visitors.

Both areas are readily accessible via gravel roads. The Grassy Island road is one mile north of the headquarters on the Walnut Log Community road. Access to the Long Point Unit is provided by a system of gravel roads south of Kentucky Highway 1282. All roads are subject to seasonal closure and limited restrictions. During the winter months, the Grassy Island road is closed to vehicular travel and becomes a designated walking trail. Wildlife observation can become spectacular during a leisurely walk on the trail.

Public ramps for launching boats are located at Grassy Island and Lake Isom. Visitors are reminded that boat-motors are limited to TEN HORSEPOWER. There is unlimited access to refuge waters from public and private launching facilities on the south and west shorelines.

THERE ARE NO OVERNIGHT OR EATING ACCOMMODATIONS ON THE REFUGE. Only daylight use is permitted on the refuge. Recreational camping is not permitted on the refuge, but there are campgrounds and motel accommodations in the area. The Reelfoot Lake State Park campgrounds and Air Park Inn coupled with privately-owned campgrounds and motels provides more than ample facilities. All are accessible from Highways 21, 22, and 78. Several fine restaurants are located in the immediate area. Overnight and eating accommodations are also available in Union City and Dyersburg, Tennessee.

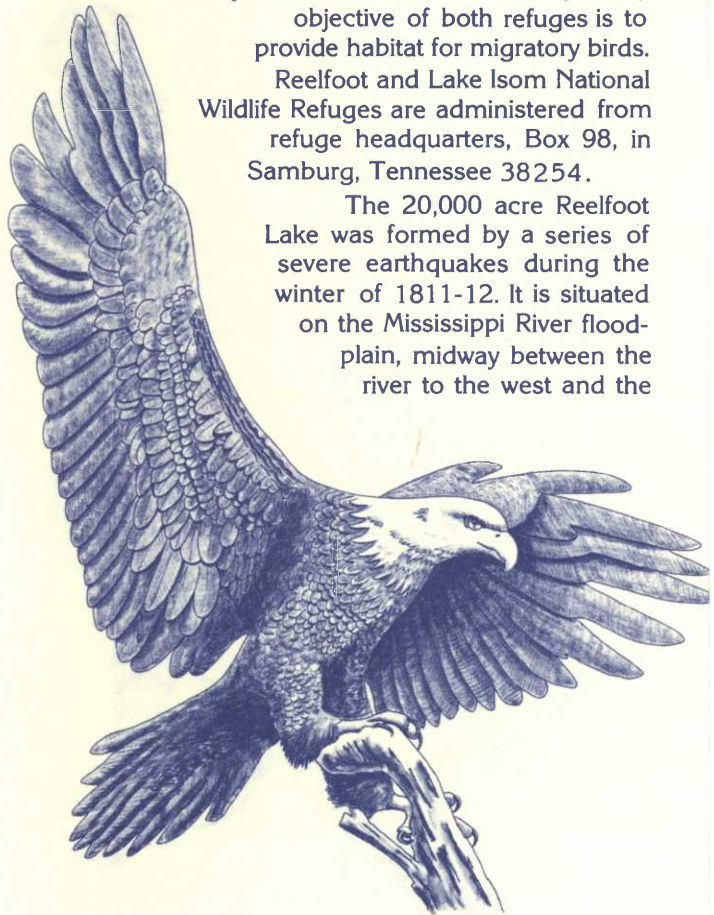
Birds of the Reelfoot and Lake Isom National Wildlife Refuges

Reelfoot National Wildlife Refuge is located on and around the upper portion of historic Reelfoot Lake in the extreme northwest corner of Tennessee. The refuge was established in 1941 on lands leased from the State of Tennessee. Subsequent land purchases extended the refuge into Kentucky, and it now consists of 9,872 acres. The Reelfoot area is a major stopover point and wintering area for waterfowl of the Mississippi Flyway. A smaller area, Lake Isom National Wildlife Refuge, comprising 1,850 acres and lying five miles south of Reelfoot was established by Presidential

proclamation in 1938. The primary objective of both refuges is to provide habitat for migratory birds.

Reelfoot and Lake Isom National Wildlife Refuges are administered from refuge headquarters, Box 98, in Samburg, Tennessee 38254.

The 20,000 acre Reelfoot Lake was formed by a series of severe earthquakes during the winter of 1811-12. It is situated on the Mississippi River floodplain, midway between the river to the west and the



United States Department of the Interior
Fish and Wildlife Service

RF-42575-2 - February 1987

Notes

Location _____

Date _____ Species _____

Time _____

Observers _____

Weather _____

towering Chickasaw Bluff to the east. Most privately-owned wetlands and woodlands, which formerly surrounded the lake, have been drained and cleared for conversion to valuable farmland. However, the wooded bluff remains, and stands of majestic bald cypress are still present in and around the lake. The swamp forest bordering the lake is almost impenetrable, giving way to thick mats of aquatic vegetation on the lake's surface and vast stretches of head-high grasses extending into much of the shallow water. This varied habitat provides home and sanctuary for large numbers of birds — as well as numerous other wildlife species.

The refuges and adjacent areas are of year-round interest to birders, from the casual observer to the serious ornithologist. Spring, especially during April and May, is the best period for observing transient species, with special emphasis on shorebirds and warblers. Summer is a time for viewing marsh and wading birds, and serious birders will find it rewarding to work the lake by paddle boat in the early morning and late evening hours.

With the arrival of fall and winter also comes the multitude of waterfowl which use Reelfoot each year: mallards, gadwall, American wigeon, and Canada geese predominate. However, large concentrations of ruddy ducks and coots are also present, and virtually all species common to the Mississippi Flyway may be seen at Reelfoot during the course of the winter. The refuges normally have peak waterfowl populations of approximately 40,000 Canada geese and 250,000 ducks. While parts of the refuges are closed to public entry during the peak waterfowl use period, excellent birding opportunity is still available.

In recent years Reelfoot Lake has attained much prominence from its wintering bald eagles. The best period for seeing these stately birds is from mid-December through mid-March.

The following list of 238 species is based on observations of refuge personnel and on reports by many bird students who have studied the area during the past 65 years. The list is not limited to the refuges, but includes observations from adjacent lands and waters. Another 17 species, rare or accidental, are included. Those denoted by an * nest on the refuge. Season and abundance symbols are defined as follows:

Sp	— March-May	a	— abundant
S	— June-August	c	— common
F	— September-November	u	— uncommon
W	— December-February	o	— occasional
		r	— rare

	Sp	S	F	W
— Horned Grebe	u		u	u
— *Pied-billed Grebe	c	u	c	c
— Common Loon	o		o	o
— Herring Gull	u		u	c
— Ring-billed Gull	c		c	a
— Franklin's Gull	o		o	r
— Bonaparte's Gull	o		u	c
— Caspian Tern	o		o	
— Forster's Tern	o		o	
— Common Tern	r	o	o	
— Least Tern	u	c	u	
— Black Tern	u	u	u	
— Anhinga	r	r	r	
— Doubled-crested Cormorant	u	u	u	o
— White Pelican	r		r	r
— Common Merganser	u		u	u
— Red-breasted Merganser	o		o	r
— *Hooded Merganser	c	o	c	c
— *Mallard	a	c	a	a
— Black Duck	c		c	c
— Gadwall	c		c	c
— American Wigeon	c		a	c
— Green-winged Teal	c		c	c
— Blue-winged Teal	c	o	c	o
— Northern Shoveler	c		c	u
— Pintail	c		c	c
— *Wood Duck	c	c	c	u
— Redhead	u		u	c
— Canvasback	u		u	u
— Lesser Scaup	c		c	c
— Ring-necked Duck	a		c	c
— Common Golden-eye	u		u	c
— Bufflehead	o		u	c
— Oldsquaw	r		r	r
— White-winged Scoter	r		r	r
— Ruddy Duck	c		c	c
— Snow Goose	o		u	u
— White-fronted Goose			r	r
— Canada Goose	c	o	a	a
— Whistling Swan			r	r
— Wood Stork		r	r	
— American Bittern	u	u	u	r
— *Least Bittern	c	c	c	
— *Great Blue Heron	c	c	c	c
— *Great Egret	u	c	u	o
— *Snowy Egret	o	o	o	
— *Little Blue Heron	c	c	c	
— Cattle Egret	u	u	o	
— *Green Heron	c	c	c	
— *Black-crowned Night Heron	u	u	u	r
— Yellow-crowned Night Heron	u	u	u	r

Sp S F W

— King Rail	u	u	u	
— Virginia Rail	u		u	
— Sora	u	c	u	
— *Purple Gallinule	u	u	u	
— *Common Gallinule	u	u	u	
— *American Coot	c	u	a	a
— *American Woodcock	u	r	u	r
— Common Snipe	c		u	u
— Short-billed Dowitcher	o		o	
— Stilt Sandpiper	u		u	
— Pectoral Sandpiper	c	o	c	
— Least Sandpiper	c	u	c	o
— Semipalmated Sandpiper	c	o	c	
— Greater Yellowlegs	c	u	c	
— Lesser Yellowlegs	c	o	c	r
— Solitary Sandpiper	c	o	c	
— Willet	r			
— Upland Sandpiper	o		o	
— Spotted Sandpiper	c	o	c	
— Black-bellied Plover	o		o	
— American Golden Plover	o		o	
— *Killdeer	c	c	c	c
— Semipalmated Plover	c		c	
— *Bobwhite	c	c	c	c
— *Turkey	u	u	o	u
— *Rock Dove	c	c	c	c
— *Mourning Dove	c	c	c	c
— *Turkey Vulture	c	c	c	u
— *Black Vulture	c	c	c	u
— *Mississippi Kite	o	o		
— Marsh Hawk	c		c	c
— Sharp-shinned Hawk	o		o	o
— *Cooper's Hawk	u	u	u	u
— *Red-tailed Hawk	c	c	c	c
— Red-shouldered Hawk	u	u	u	u
— Broad-winged Hawk	u	u	u	
— Rough-legged Hawk				r
— Golden Eagle	o		o	u
— Bald Eagle	u		u	c
— Peregrine Falcon	r		r	r
— American Kestrel	c	u	c	c
— *Osprey	o	o	o	r
— *Barn Owl	o	o	o	o
— Short-eared Owl				r
— *Barred Owl	c	c	c	c
— *Screech Owl	u	u	u	u
— *Great Horned Owl	u	u	u	u
— *Yellow-billed Cuckoo	c	c	c	
— Black-billed Cuckoo	o	u	o	
— *Belted Kingfisher	c	c	c	c
— *Hairy Woodpecker	u	u	u	u

Sp S F W

— *Downy Woodpecker	c	c	c	c
— Yellow-bellied Sapsucker	c		c	c
— *Pileated Woodpecker	c	c	c	c
— *Red-headed Woodpecker	c	c	c	c
— *Red-bellied Woodpecker	c	c	c	c
— *Common Flicker	c	c	c	c
— *Chuck-will's-widow	u	c	c	
— *Whip-poor-will	u	r	u	
— *Common Nighthawk	c	c	c	
— *Chimney Swift	c	c	c	
— *Ruby-throated Hummingbird	c	c	c	
— *Eastern Kingbird	c	c	c	
— *Great Crested Flycatcher	c	c	c	
— *Eastern Phoebe	u	o	u	u
— Olive-sided Flycatcher	r		r	
— *Eastern Wood Pewee	c	c	c	
— Yellow-bellied Flycatcher	r		r	
— *Acadian Flycatcher	c	c	c	
— Least Flycatcher	r		r	
— *Horned Lark	c	c	c	c
— *Blue Jay	c	c	c	c
— *Common Crow	c	c	c	c
— *Fish Crow	u	c	u	u
— *Starling	c	c	c	a
— Bobolink	u		r	
— *Brown-headed Cowbird	c	c	a	a
— *Red-winged Blackbird	a	a	a	a
— *Eastern Meadowlark	c	c	c	c
— *Orchard Oriole	c	c	c	
— *Northern Oriole	u	u	u	
— Rusty Blackbird	u		u	u
— Brewer's Blackbird			o	o
— *Common Grackle	c	c	a	a
— Purple Finch	o		o	u
— *American Goldfinch	c	c	c	c
— Pine Siskin	o			r
— Lapland Longspur				r
— Vesper Sparrow	u		u	r
— Savannah Sparrow	c		c	c
— Grasshopper Sparrow	u		u	r
— Le Conte's Sparrow	u		u	r
— Lark Sparrow	r		r	
— Harris' Sparrow				r
— White-crowned Sparrow	u		c	c
— White-throated Sparrow	c		c	c
— Tree Sparrow	u		u	u
— *Chipping Sparrow	u	u	u	r
— *Field Sparrow	c	c	c	c
— Dark-eyed Junco	c		c	c
— Song Sparrow	c	o	c	c
— Swamp Sparrow	c		c	c

Sp S F W

— Lincoln's Sparrow	u		u	o
— Fox Sparrow	u		u	u
— Rufous-sided Towhee	c	u	c	c
— *Cardinal	c	c	c	c
— Rose-breasted Grosbeak	u		u	
— Blue Grosbeak	o			
— *Indigo Bunting	c	c	c	
— Dickcissel	c	c	c	
— Scarlet Tanager	u	o	u	
— *Summer Tanager	c	c	c	
— *Purple Martin	c	c	c	
— *Cliff Swallow	u	u	u	
— *Barn Swallow	c	c	c	
— Tree Swallow	c	c	a	r
— *Bank Swallow	c	c	c	
— *Rough-winged Swallow	c	c	c	
— Cedar Waxwing	u		u	u
— *Loggerhead Shrike	c	c	c	c
— *Red-eyed Vireo	c	c	c	
— Philadelphia Vireo	r		r	
— *Warbling Vireo	c	u	c	
— *Yellow-throated Vireo	c	c	c	
— Solitary Vireo	r		r	
— *White-eyed Vireo	c	c	c	
— *Black-and-white Warbler	c	o	c	
— *Prothonotary Warbler	c	c	c	
— *Swainson's Warbler	u	o	u	
— Worm-eating Warbler	o		o	
— Blue-winged Warbler	u		u	
— Golden-winged Warbler	u		u	
— Nashville Warbler	u		u	
— Orange-crowned Warbler	r		r	
— Tennessee Warbler	c		c	
— *Northern Parula Warbler	c	u	c	
— Cape May Warbler	o		o	
— Yellow Warbler	u	u	u	
— Yellow-rumped Warbler	c		c	c
— Magnolia Warbler	c		c	
— *Cerulean Warbler	c	u	c	
— Chestnut-sided Warbler	c		c	
— Bay-breasted Warbler	c		c	
— Blackpoll Warbler	c		c	
— Blackburnian Warbler	u		u	
— *Yellow-throated Warbler	c	c	c	
— Black-throated Green Warbler	c		c	
— Pine Warbler	u		u	
— *Prairie Warbler	u	o	u	
— Palm Warbler	c		c	
— Ovenbird	u		u	
— Northern Waterthrush	u		o	
— *Louisiana Waterthrush	u	u	u	

Sp S F W

— *Kentucky Warbler	c	u	c	
— Connecticut Warbler	r		r	
— *Common Yellow-throat	c	c	c	
— *Yellow-breasted Chat	c	c	c	
— *Hooded Warbler	c	u	c	
— Wilson's Warbler	u		u	
— Canada Warbler	u		u	
— *American Redstart	c	u	c	
— *House Sparrow	a	a	a	a
— Water Pipit	u		u	u
— *Mockingbird	c	c	c	c
— *Catbird	c	c	c	
— *Brown Thrasher	c	c	c	u
— *Carolina Wren	c	c	c	c
— *Bewick's Wren	u	u	u	u
— House Wren	u		u	o
— Winter Wren	u		u	c
— Short-billed Marsh Wren	u		u	
— Long-billed Marsh Wren	u		u	r
— Brown Creeper	u		u	u
— *White-breasted Nuthatch	u	u	u	u
— Red-breasted Nuthatch				o
— *Tufted Titmouse	c	c	c	c
— *Carolina Chickadee	c	c	c	c
— Golden-crowned Kinglet	c		c	c
— Ruby-crowned Kinglet	c		c	c
— *Blue-gray Gnatcatcher	c	c	c	
— *Wood Thrush	c	c	c	
— Veery	u		u	
— Gray-cheeked Thrush	c		c	
— Swainson's Thrush	c		c	
— Hermit Thrush	u		u	u
— *American Robin	c	c	c	c
— *Eastern Bluebird	c	c	c	c

These 17 additional species are of such accidental or rare occurrence on the refuge that they have been recorded only one or two times:

- | | |
|-----------------|---------------------------|
| Western Grebe | Western Kingbird |
| Eared Grebe | Scissor-tailed Flycatcher |
| European Wigeon | Vermilion Flycatcher |
| Cinnamon Teal | Western Meadowlark |
| Greater Scaup | Laughing Gull |
| Black Scoter | |
| Surf Scoter | |
| Glossy Ibis | |
| Black Rail | |
| Ruddy Turnstone | |
| Merlin | |
| Long-eared Owl | |



Reelfoot & Lake Isom National Wildlife Refuges

Fishing Regulations

GENERAL PROVISIONS

The Reelfoot and Lake Isom National Wildlife Refuges are two of over 400 national wildlife refuges. The primary objective of a national wildlife refuge is to provide habitat for the conservation and protection of all fish and wildlife species. Sport fishing is permitted at a level compatible with the environment, provides wholesome recreational opportunities, and permits the use of a valuable renewable resource.

The regulations listed below supplement the general provisions which govern fishing on wildlife refuge areas as set forth in Title 50, Code of Federal Regulations, Part 33. Sport fishing will also be in accordance with applicable State regulations.

Reelfoot Preservation Permits are required for fishing on Reelfoot Refuge.

GENERAL SPORT FISHING REGULATIONS

Sport fishing on the Lake Isom National Wildlife Refuge is permitted on 750 acres of the refuge.

Sport fishing on the Reelfoot National Wildlife Refuge is permitted on 9,092 acres of the refuge. The areas open are delineated on the reverse map and by Public Fishing Signs present on the refuge.

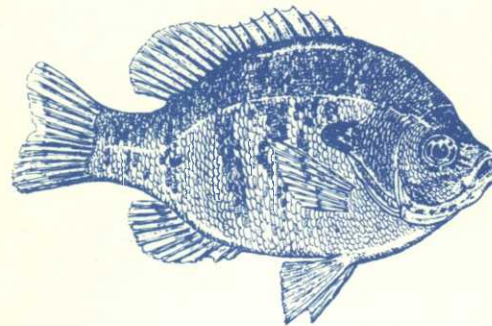
1. Seasons:

The sport fishing season on Lake Isom extends from March 15 through October 15.

The fishing season on the Long Point Unit of Reelfoot National Wildlife Refuge (north of Upper Blue Basin) extends from March 15 through October 15.

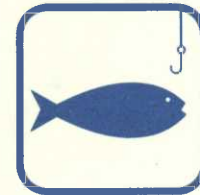
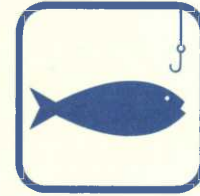
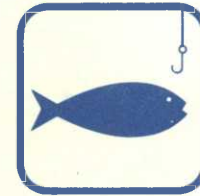
The fishing season on the Grassy Island Unit of Reelfoot National Wildlife Refuge (south of Upper Blue Basin) extends from the day after closing of the winter waterfowl hunting season until the day preceding opening of the fall waterfowl hunting season.

2. Fishing with bows and arrows is prohibited.
3. Fishing during daylight hours only.
4. Boats having motors above 10-horsepower may not be operated on the refuge.
5. The area is subject to closure in the event of nesting bald eagles.



DEPARTMENT OF THE INTERIOR
U.S. Fish and Wildlife Service
RF-42575-7 - July 1986

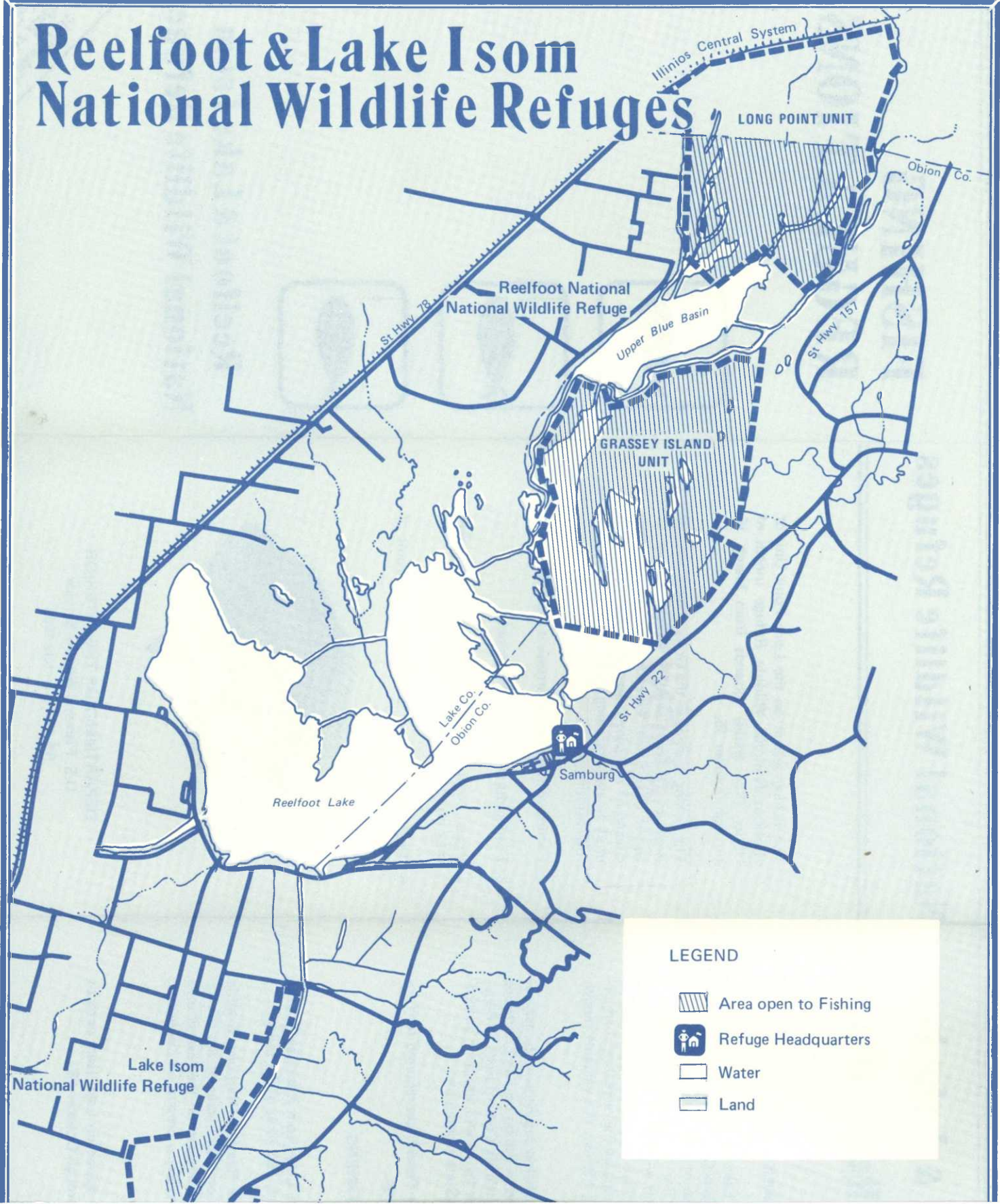
FISHING REGULATIONS



Reelfoot & Lake Isom National Wildlife Refuges

Take Pride
in Your Refuge!
Report Violations

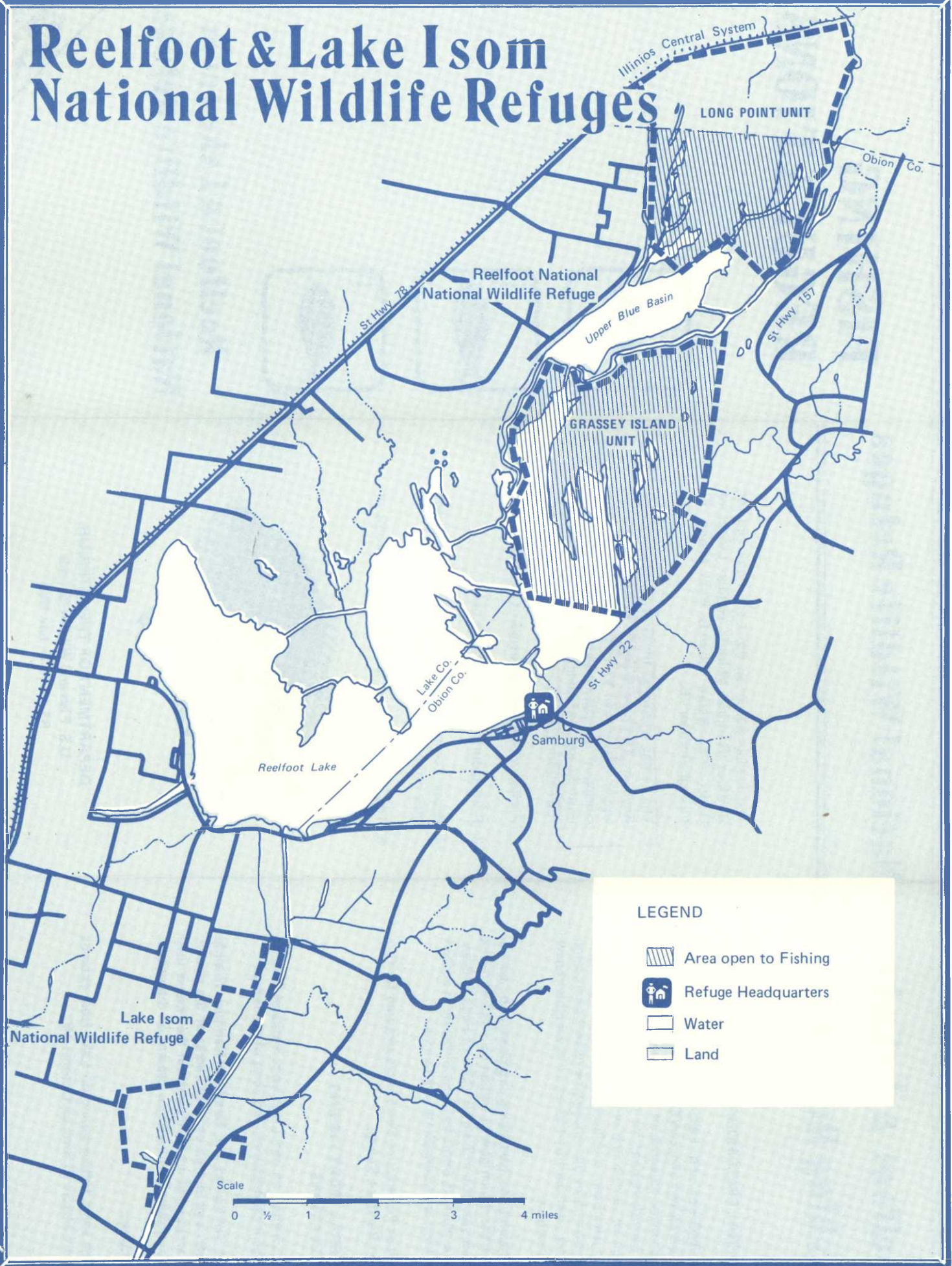
Reelfoot & Lake Isom National Wildlife Refuges



AMENDMENT TO FISHING REGULATIONS REELFOOT NATIONAL WILDLIFE REFUGE

The fishing season on the Grassy Island Unit of Reelfoot National Wildlife Refuge (south of Upper Blue Basin) extends from February 1 to November 15.

Reelfoot & Lake Isom National Wildlife Refuges

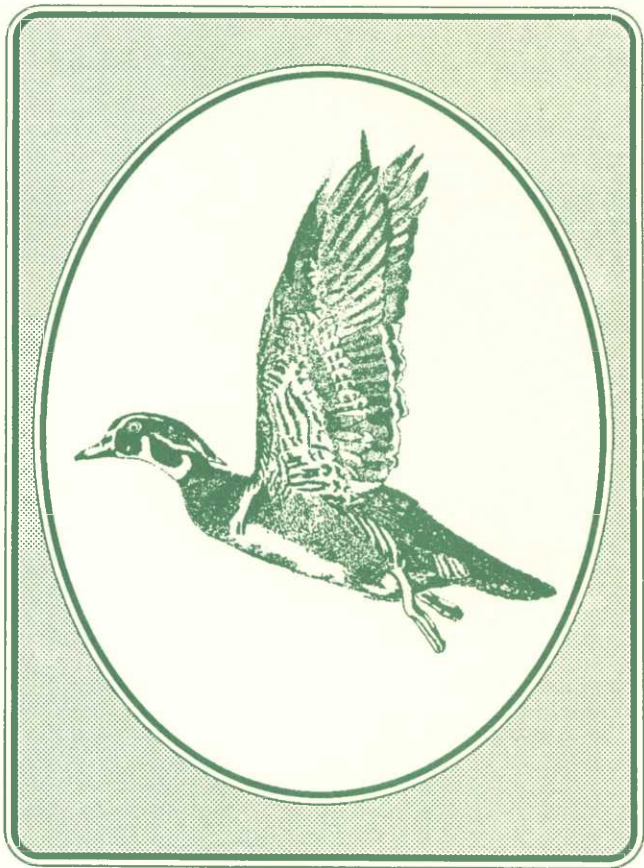


LEGEND

-  Area open to Fishing
-  Refuge Headquarters
-  Water
-  Land

Scale
0 1/2 1 2 3 4 miles

Reelfoot
(and)
Lake Isom



National Wildlife
Refuges

REELFOOT

National Wildlife Refuge

Lake Origin

The lure and beauty of Reelfoot Lake is fascinating not only because of the eagles, ducks, and Canada geese that come to winter, or its superb hunting and fishing, but because of its unique origin. During the winter of 1811, time in the central Mississippi River valley momentarily stopped as the valley suddenly began to shake and violently move about. The once peaceful woodlands rolled like ocean waves and landslides covered many rivers and streams. A great depression was formed in northwest Tennessee and waters filled the sunken area. Thus, Reelfoot Lake as presently known, was formed as a result of the most violent earthquake recorded in North America. Numerous shocks were recorded from December, 1811 to February, 1812 and after shocks were recorded for several decades. Minor shocks are recorded occasionally at the present and geologists state the probability of a major earthquake occurring in the next 50-100 years is increasing.

The lake was named for a Chickasaw warrior born with a deformed foot causing him to "reel" as he walked. According to legend, the chief incurred the wrath of the Indian gods when he kidnapped a Choctaw princess and took her as his bride. Reelfoot, his princess, and tribe were eternally entombed at the bottom of Reelfoot Lake when the gods created a depression into which the waters of the Mississippi River flowed.

The formation of Reelfoot Lake created a valuable wetland area which became a haven for many wildlife species attracting hunters and outdoorsmen such as Davy Crockett and Jim Bowie. The rich natural resources (wildlife, fisheries, and fertile soil) associated with Reelfoot Lake has repeatedly been a source of controversy among local special interests attempting to utilize these resources.

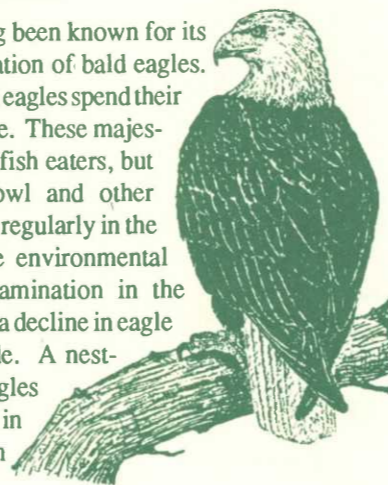
Refuge History And Management

Reelfoot National Wildlife Refuge is located on the northern portion of Reelfoot Lake in the northwest corner of Tennessee and southwest corner of Kentucky. The refuge was established in 1941 under the term of a lease and cooperative agreement with the State of Tennessee. Additional land purchases extended the refuge into Kentucky to its present 10,428 acres. Due to the proximity to the Mississippi River and being located in its former floodplain, the refuge is a major stopover point and wintering area for waterfowl of the Mississippi Flyway.

Refuge management consists of protection and enhancement of the excellent wetland habitats, production of waterfowl foods via managed croplands and manipulation of native vegetation in shallow wetlands, forest management, providing interpretative, educational, and recreational opportunities for the public, and protection of the refuge's resources. Refuge personnel also manage the water levels of Reelfoot Lake.

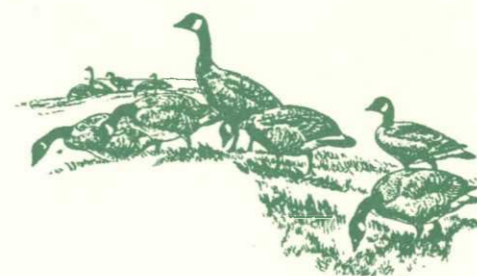
Bald Eagles

Reelfoot Lake has long been known for its large wintering population of bald eagles. Normally 100-200 bald eagles spend their winter at Reelfoot Lake. These majestic birds are primarily fish eaters, but also prey on waterfowl and other wildlife. Eagles nested regularly in the area until 1963. The environmental effects of DDT contamination in the 1950's and 60's caused a decline in eagle populations nationwide. A nesting population of eagles became reestablished in 1988 as a result of an eagle hacking release program and natural nesting.



Waterfowl

The refuge and surrounding lake are one of the major wintering, migrating and production areas for waterfowl in the southeast. Ducks, primarily mallards, gadwall, American widgeon and ringneck ducks, begin arriving in October. In recent years, the mallard population peaked at 100,000 - 150,000 in mid-winter. Historical peaks were at least double these levels. The Canada goose, an abundant winter visitor, normally reaches population levels of 50,000 - 100,000 during January. The wood duck, a summer resident, nests in large numbers at Reelfoot Lake during the spring and summer period.



LAKE ISOM National Wildlife Refuge

Lake Isom Refuge was established by Executive Order in 1938 and lies three miles south of Reelfoot Lake. The refuge's 1,846 acres of open water, forested wetlands and croplands resemble the larger Reelfoot Refuge. Its wildlife resources and management are also similar.

The refuge is open to the public from March 15 - October 15 for fishing and wildlife observation. Hunting is also permitted within specific seasons. A public boat launch is available for lake access and refuge roads provide access to upland portions of the refuge.

Reelfoot National Wildlife Refuge
Rt. 2, Hwy. 157
Union City, TN 38261

WILDLIFE

You May See



Raccoons

The observant refuge visitor is likely to see this curious, sociable animal on the refuge. Raccoons are omnivorous, meaning they will eat any kind of food available, including insects, aquatic animals, fruits and nuts.

Bald Eagle

Our national symbol, the bald eagle, requires four or five years to reach adult plumage with the characteristic white head. Bald eagles, rare in the eastern U.S., feed mainly on fish and are most likely to be seen at Reelfoot during December, January, February and March.

Wild Turkey

You are most likely to observe the wild turkey in the open woodlands surrounding Reelfoot Lake. Wild turkeys forage mostly on the ground for seeds, nuts, acorns, and insects. At night the wild turkeys roost in trees.

Wood Duck

Unlike most other ducks, the "woodie" is a tree nesting duck. It prefers a hole in a hollow tree, much like a woodpecker. Unfortunately, natural tree cavities are scarce and the refuge supplements these with artificial nest boxes to help ensure a healthy population.

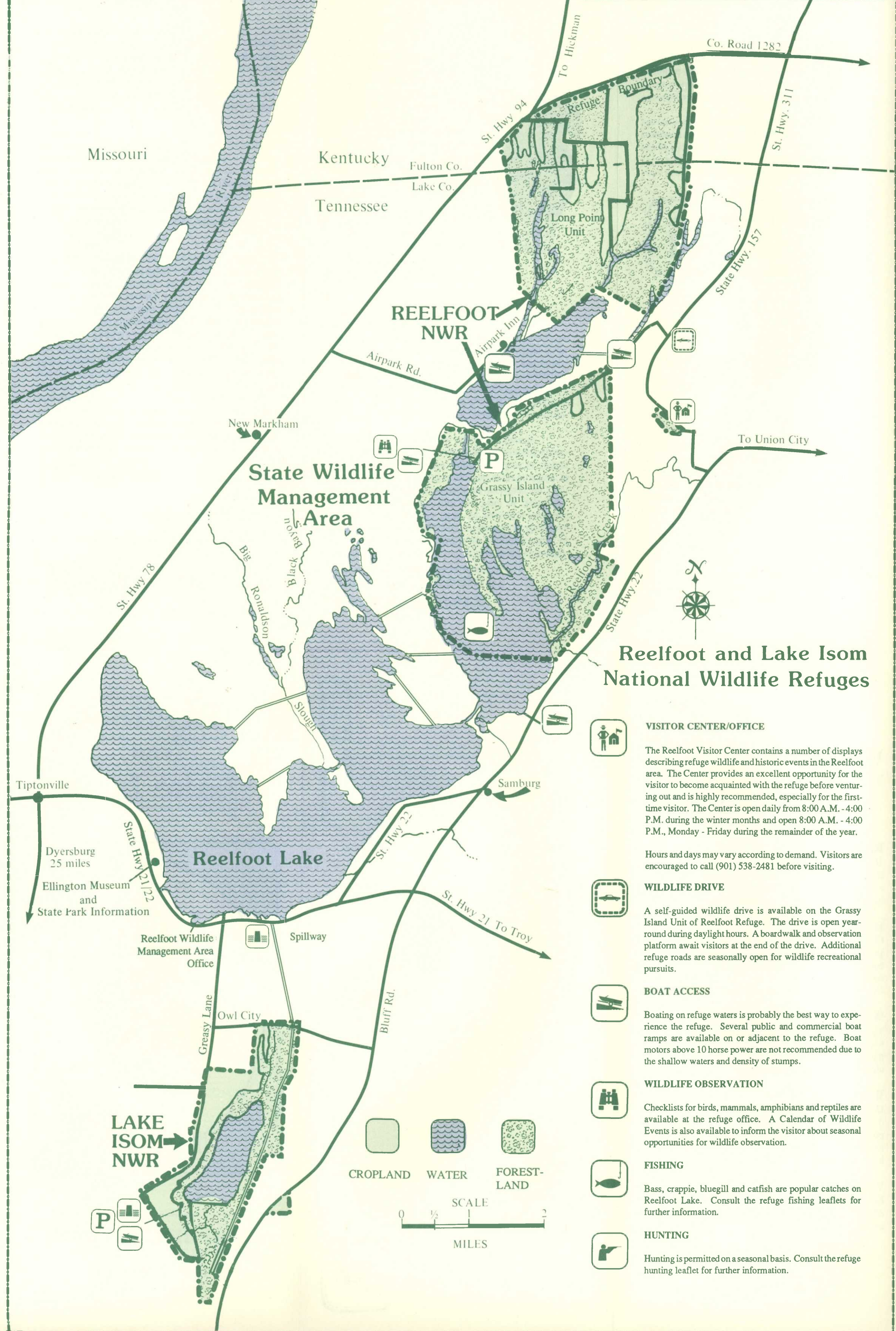
White-tailed Deer

Reelfoot National Wildlife Refuge supports a healthy herd of white-tailed deer. Deer feed primarily on acorns, leaves and twigs.

*Take Pride in Your Refuge!
It's a Special Place*



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INT 423



Reelfoot and Lake Isom National Wildlife Refuges

VISITOR CENTER/OFFICE

The Reelfoot Visitor Center contains a number of displays describing refuge wildlife and historic events in the Reelfoot area. The Center provides an excellent opportunity for the visitor to become acquainted with the refuge before venturing out and is highly recommended, especially for the first-time visitor. The Center is open daily from 8:00 A.M. - 4:00 P.M. during the winter months and open 8:00 A.M. - 4:00 P.M., Monday - Friday during the remainder of the year.

Hours and days may vary according to demand. Visitors are encouraged to call (901) 538-2481 before visiting.

WILDLIFE DRIVE

A self-guided wildlife drive is available on the Grassy Island Unit of Reelfoot Refuge. The drive is open year-round during daylight hours. A boardwalk and observation platform await visitors at the end of the drive. Additional refuge roads are seasonally open for wildlife recreational pursuits.

BOAT ACCESS

Boating on refuge waters is probably the best way to experience the refuge. Several public and commercial boat ramps are available on or adjacent to the refuge. Boat motors above 10 horse power are not recommended due to the shallow waters and density of stumps.

WILDLIFE OBSERVATION

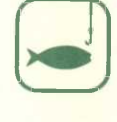
Checklists for birds, mammals, amphibians and reptiles are available at the refuge office. A Calendar of Wildlife Events is also available to inform the visitor about seasonal opportunities for wildlife observation.

FISHING

Bass, crappie, bluegill and catfish are popular catches on Reelfoot Lake. Consult the refuge fishing leaflets for further information.

HUNTING

Hunting is permitted on a seasonal basis. Consult the refuge hunting leaflet for further information.



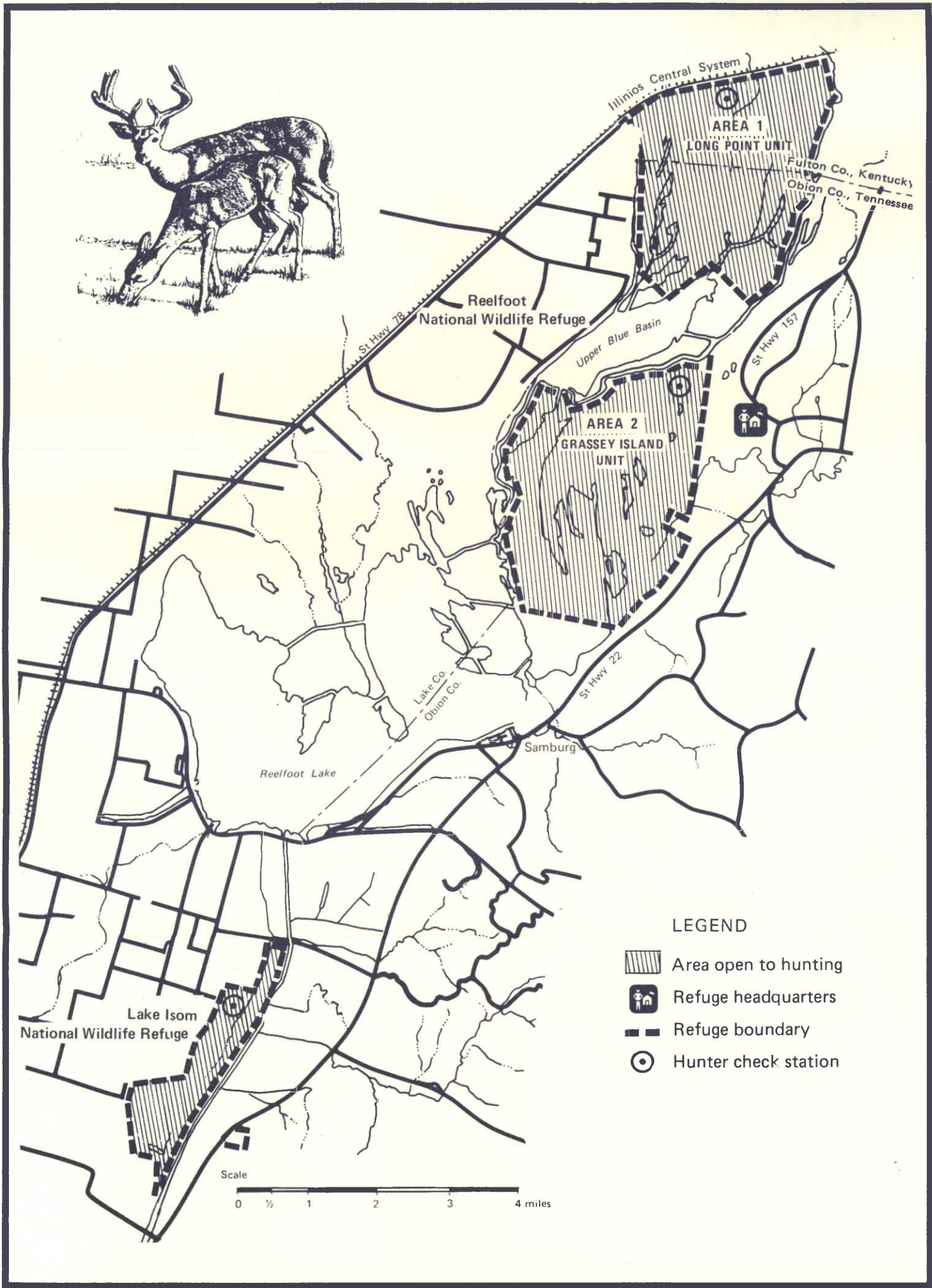
REELFOOT & LAKE ISOM

*National Wildlife
Refuges*



HUNTING REGULATIONS

Take Pride
in Your Refuge!
Report Violations



REELFOOT & LAKE ISOM NATIONAL WILDLIFE REFUGES



GENERAL PROVISIONS

The Reelfoot and Lake Isom National Wildlife Refuges are two of over 400 national wildlife refuges. The primary objective of a national wildlife refuge is to provide habitat for the conservation and protection of all wildlife species. The harvest of surplus animals is one tool used to manage wildlife populations at a level compatible with the environment, to provide wholesome recreational opportunities, and to permit utilization of a valuable renewable resource.

The regulations listed below supplement the general regulations which govern hunting on wildlife refuge areas as set forth in Title 50, Code of Federal Regulations. **Hunting will also be in accordance with applicable State regulations.** Reelfoot Preservation Permits are required by Tennessee license holders for hunting on Reelfoot Refuge.

GENERAL HUNTING REGULATIONS

Areas open to hunting are designated on the reverse map and by posted Public Hunting signs on the refuge.

Camping and open fires are prohibited.

Motor vehicles are allowed only on designated graveled roads.

Dogs are allowed only for hunting squirrels and raccoons.

Hunting from horseback is not permitted.

The use of all-terrain vehicles (3 or 4-wheelers or other ATV's) is not permitted.

SPECIFIC HUNTING REGULATIONS

Public hunting is permitted on approximately 12,350 acres of the Reelfoot and Lake Isom National Wildlife Refuges.

SQUIRREL

All areas - from fourth Saturday in August through October 15.

Bag limit - State regulations.

RACCOON

All areas - four consecutive nights beginning on the last Wednesday in September and four consecutive nights beginning on the first Wednesday in October.

Hunting hours - sunset to midnight.

Hunters required to check-in and check-out and present all bagged raccoons for inspection and tagging.

Bag limit - None

DEER (Reelfoot Refuge Only)

(Archery only) October 16 through the Friday preceding the first gun deer hunt.

Bag Limit - State regulations

Deer must be checked at a designated State check station.

(Gun) Last weekend in October, first and second weekends in November (Saturdays and Sundays).

Permit required (see application procedures below).

Bag Limit - one (1) deer of either sex

Deer must be checked at refuge check station.

Hunting from a tree in which a metal object has been driven to support the hunter is prohibited.

TURKEY (Reelfoot Refuge Only)

First Friday through Sunday in April.

Permit required (see application procedures below).

Bag Limit - one (1) bearded turkey

Turkey must be checked at refuge check station.

How to Obtain a Refuge Deer or Turkey Permit

To apply for a permit, submit one stamped, self-addressed U.S. Postal Service post card to the Refuge Manager at the address given below. Applications for deer permits must be postmarked during August and turkey permit applications postmarked during February. Applicants will be notified of the drawing results.

A party of up to two hunters may apply on the same post card (print both names). No more than one card will be accepted for each person or party; the submission of more than one card will disqualify the applicant(s).

Applicants MUST specify on the post card their choice of hunting area: Long Point or Grassy Island. Hunters chosen for Grassy Island will be required to meet the license requirements for Tennessee only. Hunters chosen for Long Point will be required to meet the license requirements for either Tennessee or Kentucky.

For further information, contact:

Refuge Manager
Reelfoot National Wildlife Refuge
Route 2, Highway 157
Union City, Tennessee 38261
Phone: (901) 538-2481

DEPARTMENT OF THE INTERIOR
U.S. Fish and Wildlife Service
RF-42575-6 - August 1989

MAMMALS

Reelfoot and Lake Isom



National
Wildlife
Refuges

Reelfoot National Wildlife Refuge, established in 1941, is located on and around the upper portion of Reelfoot Lake in northwest Tennessee and southwest Kentucky. The 10,428-acre refuge offers a diversity of habitats which supports a rich variation of plant and animal species.

Lake Isom National Wildlife Refuge, comprising 1,846 acres and lying five miles south of Reelfoot, was established by Executive Order in 1934. This refuge is a miniature version of Reelfoot Refuge and offers the same habitat diversity.

Mammals are one of the most diverse and fascinating groups of wildlife in North America. Generally, these animals are nocturnal, secretive, and make few sounds audible to the human ear. A person is more likely to find signs indicating the animal is present. Some of the most common indicators are burrows, droppings, food caches, and tracks.

Nine orders of the class Mammalia are present in North America with seven orders represented in the Reelfoot area. This checklist identifies 53 species that can or may be found in the area. Identification is based on observations by the refuge staff, mammalogists from several universities, and range maps as outlined in Burt and Grossenheider's "A Field Guide to the Mammals of North America" - third edition.

The fish and wildlife species on all national wildlife refuges are protected and must not be harmed to ensure preservation of populations now and for the future.

POUCHED MAMMALS (Order Marsupialia)

Opossum (*Didelphis marsupialis*)



Opossum

INSECT-EATERS (Order Insectivora)

Southeastern Shrew (*Sorex longirostris*)
Least Shrew (*Cryptotis parva*)
Shorttail Shrew (*Blarina brevicauda*)
Eastern Mole (*Scalopus aquaticus*)



Shorttail Shrew

BATS (Order Chiroptera)

Little Brown Bat (*Myotis lucifugus*)
Mississippi Bat (*Myotis austroriparius*)
Gray Bat (*Myotis grisescens*)
Keen Bat (*Myotis keeni*)
Indiana Bat (*Myotis sodalis*)
Small-footed Bat (*Myotis subulatus*)
Silver-haired Bat (*Lasionycteris noctivagans*)
Eastern Pipistrel (*Pipistrellus subflavus*)
Big Brown Bat (*Eptesicus fuscus*)
Red Bat (*Lasiurus borealis*)
Hoary Bat (*Lasiurus cinereus*)
Evening Bat (*Nycticeius humeralis*)
Eastern Big-eared Bat (*Plecotus rafinesquei*)

FLESH-EATERS (Order Carnivora)

Raccoon (*Procyon lotor*)
Longtail Weasel (*Mustela frenata*)
Mink (*Mustela vison*)
River Otter (*Lutra canadensis*)

Spotted Skunk (*Spilogale putorius*)
Striped Skunk (*Mephitis mephitis*)
Coyote (*Canis latrans*)
Red Fox (*Vulpes fulva*)
Gray Fox (*Urocyon cinereoargenteus*)
Bobcat (*Lynx rufus*)



Gray Fox

GNAWING MAMMALS (Order Rodentia)



Beaver

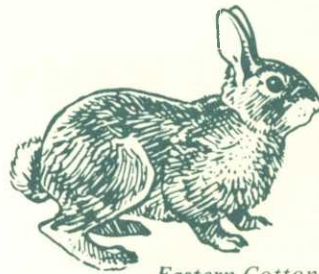
Woodchuck (*Marmota monax*)
Eastern Chipmunk (*Tamias striatus*)
Eastern Gray Squirrel (*Sciurus carolinensis*)
Eastern Fox Squirrel (*Sciurus niger*)
Southern Flying Squirrel (*Glaucomys volans*)
Beaver (*Castor canadensis*)
Eastern Harvest Mouse (*Reithrodontomys humulis*)
Western Harvest Mouse (*Reithrodontomys megalotis*)
Deer Mouse (*Peromyscus maniculatus*)
White-footed Mouse (*Peromyscus leucopus*)
Cotton Mouse (*Peromyscus gossypinus*)
Golden Mouse (*Peromyscus leucopus*)

Eastern Woodrat (*Neotoma floridana*)
 Rice Rat (*Oryzomys palustris*)
 Hispid Cotton Rat (*Sigmodon hispidus*)
 Southern Bog Lemming (*Synaptomys cooperi*)
 Prairie Vole (*Microtus ochrogasger*)
 Pine Vole (*Pitymys pinetorus*)
 Muskrat (*Ondatra zibethica*)
 Norway Rat (*Rattus norvegicus*)
 House Mouse (*Mus musculus*)
 Meadow Jumping Mouse (*Zapus hudsonius*)

RABBITS

(Order Lagomorpha)

Eastern Cottontail (*Sylvilagus floridanus*)
 Swamp Rabbit (*Sylvilagus aquaticus*)



Eastern Cottontail

EVEN-TOED HOOFED MAMMALS

(Order Artiodactyla)

White-tail Deer (*Odocoileus virginianus*)



White-tail Deer

For Further Information Contact:

Refuge Manager

Reelfoot National Wildlife Refuge

Route 2, Hwy 157

Union City, Tennessee 38261

Notes

Location _____

Date _____ Time _____

Species _____

Observers _____

Weather _____

**AMPHIBIANS
AND
REPTILES**

**Reelfoot
and
Lake Isom**



**National
Wildlife
Refuges**

Reelfoot National Wildlife Refuge and Lake Isom National Wildlife Refuges encompass approximately 12,274 acres. This acreage includes a diversity of aquatic and terrestrial habitat types which support many species of amphibians and reptiles. The primary objective of a national wildlife refuge is to provide habitat for the protection and perpetuation of all fish and wildlife species. Therefore, all species are protected and must not be harmed to ensure enjoyment now and for future generations.

The Reelfoot area is particularly rich in these secretive animals because the range of many species - from north, south, east and west - tend to converge here. Orders, genera, species and common names follow Conant's "A Field Guide to Reptiles and Amphibians of Eastern and Central North America" - second edition.

AMPHIBIANS

(Class Amphibia)

The first vertebrates to face life on land, with the oldest fossil salamanders and frogs traced back 150 million years, their ancestors evolved from fishes nearly 350 million years ago. Amphibians solved locomotion and air breathing problems but remained vulnerable to dehydration. Therefore, they could not remove themselves completely from an aquatic environment.

SALAMANDERS

(Order Caudata)



Tiger Salamander

This diverse group of amphibians have adapted to aquatic and terrestrial environments, but moisture is necessary for their survival. They are secretive, typically nocturnal, voiceless, carnivorous and possess the unique ability to regenerate appendages lost or damaged.

Mudpuppy (*Necturus maculosus*)
Three-toed Amphiuma (*Amphiuma tridactylum*)
Lesser Siren (*Siren intermedia*)

Mole Salamander (*Ambystoma talpoideum*)
Marbled Salamander (*Ambystoma opacum*)
Small-mouthed Salamander (*Ambystoma texanum*)
Spotted Salamander (*Ambystoma maculatum*)
Tiger Salamander (*Ambystoma tigrinum*)
Newt (*Notophthalmus viridescens*)
Dusky Salamander (*Desmognathus fuscus*)
Zigzag Salamander (*Plethodon dorsalis*)
Slimy Salamander (*Plethodon glutinosus*)
Red Salamander (*Pseudotriton ruber*)
Two-lined Salamander (*Eurycea bislineata*)
Long-tailed Salamander (*Eurycea longicauda*)

TOADS AND FROGS

(Order Anura)



Bullfrog

The most widely distributed amphibians, with 2,700 species known. Most species return to water to breed, producing totally aquatic tadpoles. These tadpoles become land-dwelling adults by means of a transformation known as metamorphosis. Frogs have smooth skin that is moist to the touch, while toads are rough, warty, and dry to the touch.

Spadefoot Toad (*Scaphiopus holbrooki*)
American Toad (*Bufo americanus*)
Fowler's Toad (*Bufo woodhousei*)
Cricket Frog (*Acris crepitans*)
Spring Peeper (*Hyla crucifer*)
Green Treefrog (*Hyla cinerea*)
Gray Treefrog (*Hyla versicolor*)
Bird-voiced Treefrog (*Hyla avivoca*)
Upland Chorus Frog (*Pseudacris triseriata*)
Eastern Narrow-mouthed Toad (*Gastrophryne carolinensis*)

Bullfrog (*Rana catesbeiana*)
Greenfrog (*Rana clamitans*)
South Leopard Frog (*Rana utricularia*)
Pickerel Frog (*Rana palustris*)
Crawfish Frog (*Rana areolata*)

REPTILES

(Class Reptilia)

Reptiles emerged from aquatic habitats to terrestrial environments approximately 300 million years ago. A protective dry scaly skin, tough-shelled eggs, and improved lungs enabled them to occupy niches not available to amphibians. Reptiles are ectothermic or "cold-blooded" and regulate body temperature behaviorally by means of outside heat sources.

TURTLES

(Order Testudines)



Eastern Box Turtle

These reptiles occupy every environment - aquatic, oceanic, terrestrial. Their bodies are enclosed in a protective shell into which they can withdraw. They are gregarious baskers, a common sight being several sunning on a single log.

Common Snapping Turtle (*Chelydra serpentina*)
Alligator Snapping Turtle (*Macrolemys temmincki*)
Stinkpot Turtle (*Sternotherus odoratus*)
Mud Turtle (*Kinosternon subrubrum*)
Eastern Box Turtle (*Terrapene carolina*)
Mississippi Map Turtle (*Graptemys kohni*)
False Map Turtle (*Graptemys pseudogeographica*)
Red-eared Turtle (*Chrysemys scripta*)

Slider (*Chrysemys concinna*)
Missouri Slider (*Chrysemys floridana*)
Southern Painted Turtle (*Chrysemys picta*)
Smooth Softshell Turtle (*Trionyx muticus*)
Spiny Softshell Turtle (*Trionyx spiniferus*)

LIZARDS

(Order Squamata, Suborder Lacertilia)

With over 3,000 known species, lizards are the largest living group of reptiles. They have the greatest diversity in size, shape, color, and behavior among reptiles. Lizards are predominantly egg layers, but some species give birth to living young. Most species have four legs, but some are legless, an adaptation for burrowing.

Fence Lizard (*Sceloporus undulatus*)
Six-lined Racerunner (*Cnemidophorus sexlineatus*)
Ground Skink (*Leiopisma laterale*)
Five-lined Skink (*Eumeces fasciatus*)
Broad-head Skink (*Eumeces laticeps*)
Slender Glass Lizard (*Ophisaurus attenuatus*)

SNAKES

(Order Squamata, Suborder Serpentes)

There are 115 species of snakes in North America, of which 17 are venomous. They occupy a variety of habitats - trees, land, underground, and water. Most species in our range emerge from hibernation in the early spring and remain active till fall. Snakes are generally disliked and misunderstood, but are very beneficial to man.



Eastern Garter Snake

Midwest Worm Snake (*Carphophis amoenus*)
 Western Mud Snake (*Farancia abacura*)
 Southern Black Racer (*Coluber constrictor*)
 Rough Green Snake (*Opheodrys aestivus*)
 Gray Rat Snake (*Elaphe obsoleta*)
 Speckled King Snake (*Lampeopeltis getusus*)
 Red Milk Snake (*Lampropeltis triangulum*)
 Prairie King Snake (*Lampropeltis calligaster*)
 Northern Scarlet Snake (*Cemophora coccinea*)
 Southeastern Crowned Snake (*Tantilla coronata*)
 Copperhead Snake (*Agkistrodon contortrix*)
 Western Cottonmouth Snake (*Agkistrodon piscivorus*)
 Canebrake Rattlesnake (*Crotalus horridus*)
 Green Water Snake (*Natrix cyclopion*)
 Diamondback Water Snake (*Natrix rhombifera*)
 Yellow-bellied Water Snake (*Natrix erythrogaster*)
 Midland Water Snake (*Natrix sipedon*)
 Broad-banded Water Snake (*Natrix fasciata*)
 Midland Brown Snake (*Storeria dekayi*)
 Northern Red-bellied Snake (*Storeria occipitomaculata*)
 Eastern Garter Snake (*Thamnophis sirtalis*)
 Eastern Ribbon Snake (*Thamnophis sauritus*)
 Western Ribbon Snake (*Thamnophis proximus*)
 Smooth Earth Snake (*Virginia valeriae*)
 Eastern Hognose Snake (*Heterodon platyrhinos*)
 Mississippi Ringneck Snake (*Diadophis punctatus*)

Notes

Location _____

Date _____ Time _____

Species _____

Observers _____

Weather _____

For Further Information Contact:

Refuge Manager

Reelfoot National Wildlife Refuge

Route 2, Hwy 157

Union City, Tennessee 38261