REVIEW AND APPROVALS

YAZOO NATIONAL WILDLIFE REFUGE COMPLEX

Hollandale, Mississippi

ANNUAL NARRATIVE REPORT

Calendar Year 1987

Tom M. Williams 3/9/88
Refuge Manager Date

Jam O. Drake, Jr 3-30-88
Refuge Supervisor Date

Ronald W Benson 4/1/88
Regional Office Approval Date

INTRODUCTION

Yazoo National Wildlife Refuge is located in the heart of Mississippi's Delta region about 30 miles south of Greenville, MS, and about five air miles east of the Mississippi River in Washington County. Land acquisition began under authority of the Migratory Bird Treaty Act and Migratory Hunting Stamp Act in 1936 with the initial purchase of 2,166 acres. In March, 1937, an additional 639 acres were purchased with plans to acquire about 20,000 acres. Problems with a local drainage district resulted in a delay of official activation and assignment of a Manager until late in 1956. The Service was given permission to purchase additional land in 1960 under the provision of Section 5928 of the Mississippi Code of 1942, recompiled, by Governor Ross R. Barnett. Varied acreages were purchased from individuals and clubs until a total of 12,471 acres was reached on July 30, 1969.

In the early 1900's, the natural habitat supplemented by agricultural crops provided excellent waterfowl hunting in and around the refuge area. People came from as far away as New England to partake in the sport. Records indicate that the area abounded in ducks, geese, and swans throughout the wintering season.

Initially, Yazoo was established as a link in the chain of refuges throughout the Mississippi flyway, with special emphasis on wintering habitat for ducks and geese. Through the years that followed and as land acquisition progressed, emphasis was added to include similar benefits for reproduction of mourning doves, wood ducks, giant Canada geese and colonial birds along with the management of endangered and resident species. Turkey management began in 1970 with the introduction of a nucleus flock.

Yazoo's 12,471 acres of undulating Delta soils range from heavy gumbo (clay) to silt loam and limited sand ridges (hot spots). All of the open acreage is classed as prime agricultural land. Elevations range from 90 feet in the main drainages to 113 feet in the agricultural areas.

Area temperatures range from 92°F. normal maximum to 40°F. normal minimum. Extremes for a 10 year period, 1961-1970, were a high 106°F. and a low -3°F. Average annual rainfall measures 52.55 inches.

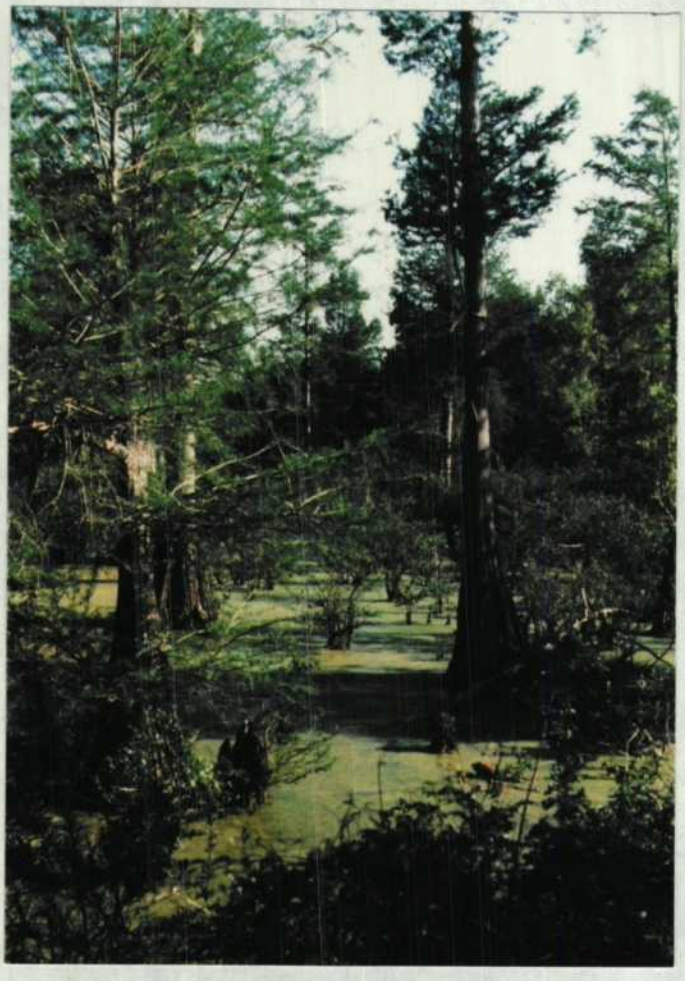

Fig. 1. Swan Lake Swamp. 05/87 TMW

G. WILDLIFE

H. PUBLIC USE

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I. EQUIPMENT AND FACILITIES

J. OTHER ITEMS

A. HIGHLIGHTS

FmHA lands were reviewed for the development of waterfowl areas and for the preservation of wetlands. (Section C.2.)

Clearing for the Steele Bayou 66-A project was completed. (Section C.2.)

Three Pope and Young deer were documented, and possibly four more were harvested during archery hunts. (Section H.8.)

Highest participation ever was recorded for the raccoon and archery hunts. (Section H.8.)

The front office was remodeled. (Section I.1.)

Two new water wells drilled. (Section I.1.)

B. CLIMATIC CONDITIONS

As usual, this year's weather conditions differed from the previous year. Last year, only 2.61 inches of rain fell in February; this year, there was 11.18 inches. Water backed into wheat fields and water control structures were manipulated to prevent damage to crops.

Record-breaking temperatures occurred the last two days in March and the first week in April when overnight lows plunged into the 20's. One inch of snow fell on April 2--another record. Record highs for the month occurred two weeks later with temperatures soaring to the mid and upper 90's.

We would have appreciated temperatures in the 90's if we had known what we were getting later! A heat wave struck most of the country the last week of July. Temperatures soared past 100°F., with heat indices reaching 115°F.! July was also the beginning of a four-month dry spell.

For the first time in three years, October was a dry month (Fig. 2.), the fifth driest on record. Only .70 inches of rain fell on the refuge. Cotton and soybean farmers benefitted as they were able to harvest their crops. Hunters enjoyed the dry conditions as the mosquito population was much lower than it had been in previous years.

The drought ended on November 16 when five inches of rainfall were recorded. Some crops had already withered and died.

Fig. 2. The four-month drought ended in November but not until after lakes had dried up. This picture shows "Big Lake" dry as a bone. 10/87 ALB

Table 1. presents a summary of weather observations for 1987.

Table 1. Monthly Precipitation and Maximum Temperatures for Yazoo NWR, 1987.

Month	Precipitation (inches) 1987	Normal	Temperatures °F.* Maximum	Minimum
January	3.26	5.09	72	23
February	11.18	4.78	73	27
March	5.77	5.67	80	29
April	2.10	5.48	93	31
May	9.50	5.09	92	58
June	4.40	3.72	93	60
July	3.34	4.05	98	59
August	2.13	2.37	101	65
September	.60	3.54	94	51
October	.70	2.46	86	32
November	9.25	4.82	84	30
December	6.18	4.96	74	26
Annual Total or extremes	58.41	53.03	101	23

*Temperature data and normal precipitation obtained from the Mid-South Agricultural Weather Service Center in Stoneville, MS, 25 miles north of the refuge.

C. LAND ACQUISITION

1. Fee Title

Efforts were made to identify tracts of land adjacent to the refuge that would help eliminate administrative problems. Three tracts were identified. Only one land owner is a willing seller at the present time.

2. Easements

The Corps of Engineers (COE) began the Steele Bayou 66A drainage project (Fig. 3.) in April. This segment of the project will extend from the north end of 55A to the mouth of Black Bayou, some 5.7 miles on the refuge. This project became even more controversial when a landowner just north of the refuge threatened a lawsuit if the COE damaged his property. This individual initiated two public meetings with the COE by enlisting several outdoor writers and organizing opposition. Many questions were raised as to the value of the project. Under today's cost estimates,

the project could not be justified. The Black Bayou part of the dredging is scheduled to pass through Leroy Percy State Park just northeast of the refuge. Park personnel are now opposed to the project after observing the destruction to bottomland hardwoods on Yazoo NWR. How these actions will eventually affect the refuge remains to be seen. Hopefully, mitigation scheduled to take place on the refuge will be completed. This mitigation will result in Swan Lake being divided by levees into four compartments where water levels can be manipulated. The project will allow pesticide-herbicide-,and silt-laden waters to bypass the refuge.

The primary concern for the refuge is that the water we now have not be drained while waterfowl are present. We are in the process of working out project details that would address our concerns.

Fig. 3. Steele Bayou 66A project clearing.
11/87 TMW

D. PLANNING

5. Research and Investigations

Yazoo NR87 - "Pesticide Contaminants on Yazoo National Wildlife Refuge with Respect to Wood Duck Recruitment and Residues in Fish" (43680-1).

This study, conducted under the auspices of the Mississippi Cooperative Fish and Wildlife Research Unit at Mississippi State University, was funded in 1986. The investigation was prompted by the discovery of high levels of pesticides (DDT and derivatives) in fish and in duck eggs (1983) and heron eggs (1984) suggesting recent exposure.

The objectives and progress notes are as follows:

Objective 1 -- To identify through analysis of contaminant residues in fish, those streams, drainages, or basins near Yazoo NWR that have retained levels of DDT and DDE sufficiently high to be of concern.

Reports and data sheets from past and recent studies of contaminant residues done at Yazoo NWR have been reviewed as a basis for fish and soil sediment sampling. A total of 16 fish samples were collected from Goose Lake, Deer Lake Slough, Deer Lake, and Gin Slough (Fig. 4.). Three wood duck eggs from each of 10 recently initiated nests were pooled for residue analyses to detect levels with the potential to impede reproduction.

Objective 2 -- To sample soil sediments from DDT-DDE contaminated streams, drainages, or other wetland areas near and on Yazoo NWR to quantify the importance of sediment as point sources of persistent local contamination.

A Zero-Contamination soil sampler with expendable plastic liners was utilized to collect soil samples at specified locations along all drainages flowing into the refuge. The samples were submitted to the Mississippi State Pesticide Laboratory for analysis.

Objective 3 -- To test DDT retention over a 50 month period in the major soils associated with Yazoo NWR.

The Environmental Protection Agency is aware of no recent use of DDT, and states that its use is not permitted for field experimentation. Application is being made for a limited experimental use permit for this study. Use is allowed on 1 acre or less, but no DDT is available.

Objective 4 -- To quantify predation and related dump nesting, nest box density, population density, and other variables to current trends in egg hatchability and wood duck recruitment on Yazoo NWR.

Wood duck nest boxes (418) were checked (Fig. 5.) throughout the nesting season to quantify levels of predation, to identify the major causes of predation, and to collect data to measure nesting success. A total of 10 checks were conducted at approximately two-week intervals beginning in mid-March. Preliminary tabulation suggest that 221 wood duck nests and four hooded merganser nests successfully hatched. Based on evidence at the boxes, nest predation losses were due to raccoons, snakes, and bobcats. Sixty-six piles of hen feathers were found adjacent to nest boxes. These hens were believed lost mostly as a result of bobcat predation. A total of 2,537 eggs hatched in the 225 nests for a hatching rate of 11.2 young per nest. Analyses of these data are continuing.

To help separate nest box density and box location as factors impacting recruitment, 300 nest boxes were moved (Fig. 6.) to fit a study design with eight treatments. Treatments were:

TABLE 2.

T-1 WOODED SITES, DENSE SPACING <15',2 BOXES/POLE (50)
T-2 WOODED SITES, DENSE SPACING <15',1 BOX/POLE (25)
T-3 WOODED SITES, SPARSE SPACING >100 YDS. 2 BOXES/POLE (50)
T-4 WOODED SITES, SPARSE SPACING >100 YDS. 1 BOX/POLE (25)
T-5 OPEN SITES, DENSE SPACING <15', 2 BOXES/POLE (50)
T-6 OPEN SITES, DENSE SPACING <15', 1 BOX/POLE (25)
T-7 OPEN SITES, SPARSE SPACING >100 YDS. 2 BOXES/POLE (50)
T-8 OPEN SITES, SPARSE SPACING >100 YDS. 1 BOX/POLE (25)

Numbers in parentheses are numbers of boxes per treatment.

Tabulations of the data and subsequent analysis are incomplete, but the indicated high levels of bobcat predation suggest a need for corrective measures. Options include bobcat control and relocation of boxes to flooded sites. The hatchability of wood duck eggs

taken from nests at Yazoo NWR were compared to rates in eggs from a pesticide-free area. Eggs were tested from both areas by artificial incubation.

Objective 5 -- To evaluate, under penned conditions, minimum heights, materials, and three types of pole predator guards for excluding large raccoons from nest boxes.

A Master of Science Degree candidate has been recruited to address this objective. Work commenced this fall, and progress will be reported in the next semi-annual report. Contacts were made with some refuges to obtain color slides of different predator guards currently in use on wood duck nest boxes.

Objective 6 -- To evaluate the effects of unshaded Tom-Tubbs plastic nesting structures on the hatchability of wood duck eggs.

Efforts to address this objective involved collaboration with the U.S. Army Corps of Engineers Biologist, Mr. Danny Hartley. Study sites on the Tenn-Tom Waterway (Columbus Pool) and at the Blackjack study area on the Mississippi State University Campus were used. Treatments involved (1) boxes that were capped for shade, (2) boxes that were painted gray or white, (boxes that were ventilated with bored holes, and boxes with north and south facing openings). Preliminary results suggest that temperatures in the sawdust nesting media of unshaded and partially shaded boxes exceeded safe incubation temperatures (100°F.) each month April through July. Moreover, ambient temperatures inside the boxes pegged the recording thermometers at 137°F. and are believed to far exceed the tolerances of an incubating wood duck hen. Preliminary recommendations are against use of the Tom-Tubbs plastic boxes in other than total shade.

Fig. 4. The Youth Conservation Corps helps a graduate student sample fish for pesticide analysis.
07/87 ALB

Fig. 5. Graduate student Jackie Henne checked each of 418 wood duck boxes every two weeks during the nesting season. The boxes shown are treatment T-2: wooded site, dense spacing (<15'), 1 box/pole.
04/87 ALB

Fig. 6. Dr. Ed Hill and student Jackie Henne make repairs to a wood duck nest box before relocating it.
03/87 ALB

E. ADMINISTRATION

1. Personnel

3 4 6 9 5
11 7
1 16 13 12 10

Fig. 7.

1. Timothy M. Wilkins, Complex Manager, GS-12, PFT, EOD 12/28/80.
2. Jim C. Johnson, Primary Assistant (Complex), GS-11, PFT, transferred to Lower Suwannee NWR 08/17/87.
3. David R. Linden, Primary Assistant (Complex), GS-11, PFT, EOD 10/26/87.
4. Harold W. Beierman, Jr., Assistant Manager (Hillside), GS-9, PFT, EOD 03/30/86.
5. David M. Ellis, Assistant Manager (Panther Swamp), GS-9, PFT, EOD 12/21/86.
6. Anita L. Bowman, Assistant Manager (Yazoo), GS-7, PFT, EOD 06/10/84.
7. Charla I. Yelverton, Secretary (Complex), GS-5, PFT, EOD 03-24-82.
8. Claude W. Carnathan, L.E. Officer (Complex), GS-7, PFT, EOD 02/15/87.
9. Lucian A. Newton, Bio. Tech. (Panther Swamp), GS-7, PFT, EOD 01/12/81.

10. Valeria J. Rollins, Bio. Tech. (Hillside), GS-5, PFT, EOD 03/23/80.
11. Hubert W. Clegg, Eng. Equipment Operator (Complex), WG-10, PFT, EOD 01/10/60.
12. Donald F. Purvis, Maintenance Worker (Hillside), WG-8, PFT, EOD 11/08/87.
13. Michael W. Yelverton, Maintenance Worker (Yazoo), WG-6, TFT, EOD 08/17/87.
14. Richard C. Shoops, Eng. Equipment Operator (Hillside), WG-10, EOD 01/19/77, resigned 01/03/87.
15. Melvin Horne, Maintenance Worker (Yazoo), WG-8, PFT, EOD 07/08/84 - Resigned 06/05/87.
16. Lamar C. Dorris, Jr., Bio. Aid (Yazoo), GS-3, INT, EOD 09/01/85.
17. Lewis W. Henry, Jr., Bio. Aid (Hillside), GS-3, INT, EOD 07/20/86.
18. Lewis L. Pearson, Bio. Aid (Yazoo), GS-1, INT, EOD 07/20/86.

Table 3. Staffing Pattern For Yazoo NWR, 1983-1987.

	Permanent		Temporary	Total FTE Allotted
	Full-Time	Part-Time		
FY-87	11	0	4	13
FY-86	12	0	4	13
FY-85	11	0	3	17
FY-84	12	0	3	15
FY-83	14	1	1	15

Claude Carnathan, Maintenance Mechanic at Hillside NWR, was officially reassigned as the Complex Law Enforcement Officer on February 15.

Don Purvis and Mike Yelverton entered on duty August 17 on temporary, not-to-exceed one year appointments. These appointments were much needed with only one maintenance/equipment operator on the entire complex.

Maintenance Worker Donald Purvis received a full-time appointment on November 8.

Jim Johnson's last day as Primary Assistant was August 14. His reporting date as Refuge Manager at Lower Suwannee NWR was August 17. There was a farewell party in his honor on August 13 (Fig.8.).

David R. Linden was selected for the Primary Assistant's job for the complex. He reported to work on October 26.

Fig. 8. A farewell party was given for Jim Johnson by the refuge complex staff. 08/87 ALB

2. Youth Programs

Preparations for the YCC program began in March when applications were sent to local high schools. This year, funding was limited, and a youth leader was not hired (for the first time in seven years). Five enrollees were hired--five less than last year. Without a youth leader, staff personnel would have had a difficult time, because of other work responsibilities, supervising ten enrollees for the eight week camp.

7 2 1 6

5 4 8

Fig. 9.

1. Tommy W. Brasier (YCC)
2. Torrey W. Fratesi (YCC)
3. Joe L. Galey (YCC)
4. Frank R. Moore (YCC)
5. Kevin R. Stokes (YCC)
6. Willie Jones (WISCAA)
7. Lamar C. Dorris (Int.)
8. Lewis Pearson (Int.)

The enrollees began work on June 8. The following projects were accomplished with supervision from staff personnel: boundary sign maintenance; boneyard relocation (Fig. 10.); beaver dam removal; water management; removal of barbed wire and old hog fence; wood duck box construction (50); conibear trap box construction (21); assistance with 3-wheeler bridge construction at Panther Swamp NWR; installation of "bumper guards" at the gas pumps; TSI in reforested areas; fish sampling; water control structure walkway construction (3); vegetation removal from the cannon net site, swim-in trap site, and around buildings, Indian mounds and goose mounds; and area beautification at refuge headquarters. The YCC program ended on August 7. Many projects were accomplished which would not have been completed without the enrollees' help. Their attitude and dedication to refuge work was quite admirable.

Fig. 10. Moving the boneyard to the Warner Shed area was a task for staff and YCC enrollees this summer. 06/87 ALB

3. Other Manpower Programs

Two youth employees with Washington-Issaquena-Sharkey Community Actions Agency (WISCAA) began work on July 6. One of the workers asked for a transfer because he was very allergic to insect bites and stings.

In this program, the youth worked three days a week and WISCAA paid the salaries. The WISCAA worker worked with the YCC crew and helped with projects listed in Section E.2.

4. Volunteer Programs

Public interest in the refuge attracted various volunteers who participated with construction, administration, check station, and duck banding activities (Fig. 10.). Seven volunteers donated 190 hours of work during the year.

Fig. 11. Joe Tobia, one of several volunteers, assisted with duck trapping and deer check stations.
09/87 ALB

5. Funding

Numerous projects, including activity on FmHA lands, competed for funding this year. Many were completed with initial funding. End-of-year funds were received for the purchase of some much-needed replacement vehicles. Funding for the Yazoo refuges was as follows:

Table 4.

Year	Total	RPRP	1260	ARMM	6810	6860	1971	1210
1985	526.95	-	441.8	44.2	2.0	-	17.0	21.95
1986	566.7	81.0	378.3	55.0	9.0	-	17.0	26.40
1987	647.2	30.4 (Contam)	430.2	62.1	9.4	12.0	88.1	15.0

Funding for our computer and add-on vehicles is included in 1260 monies. The $30,400 listed under RPRP(Contam) was provided for pesticide studies.

6. Safety

Assistant Manager Bowman was appointed Safety Committee Chairman for the year. Clegg, Carnathan, and Newton served on the safety committee. A committee meeting was held in January and safety programs for the year were suggested. Then individual staff members were each given responsibility for a program. The following is a list of the safety programs: 3-wheeler safety, heavy equipment safety, discussion on environmental hazards, safety on electrical tools, wiring and welding, lawnmower safety, operation of fire extinguishers, maintaining pickup trucks, boating safety, and home safety tips. In August Law Enforcement Officer Carnathan conducted for staff members the state's standard hunter safety course. After passing the exam, everyone received certificates and patches.

In June, John Pope, Public Relations Safety Officer for the Mississippi Highway Patrol, gave a defensive driving course to the staff and YCC'ers (Fig. 11.). Those present received certificates.

Melvin Horne suffered from an allergic reaction on February 25 after tearing down rock wool insulation from the office ceiling. Medical treatment was administered, and he was off duty for two days.

Horne also missed six working days after the index finger on his right hand was injured. He was operating the tree planter when the plow was raised hitting a support bar and smashing his finger. The equipment was modified so that this accident could not recur.

One week before the YCC program ended, an enrollee stepped on a nail while assisting with rebuilding the platform at the Pryor Impoundment. He received a tetanus shot and antibiotics.

Fig. 12. John Pope, Public Relations Safety Officer, conducted a defensive driving course.
06/87 ALB

Four steel pipes filled with cement were placed in front of our gas tanks as a safety measure (Fig. 13.).

Fig. 13. Posts were placed in front of the gas tanks as a safety measure. 12/87 TMW

Various actions were conducted to promote a safer environment for refuge staff members and the general public. These included: building safety posts in front of gas tanks, recharging fire extinguishers, re-stocking first-aid kits and snake bite kits, checking all electrical equipment for faulty parts, and providing protective gear for such equipment.

7. Technical Assistance

The Farmers Home Administration (FmHA) entered into a memorandum of understanding with the U.S. Fish and Wildlife Service concerning FmHA inventory lands. Yazoo Refuge staff spent many hours assisting the Vicksburg Ecological staff during review of this property. Many areas were identified for wetland easements where farming would be excluded when the land was sold back to the private sector. Four of the areas received some form of management activity ranging from levees pulled with a levee plow (Fig. 14.) to the installation of a water control structure. These areas hold considerable potential as wintering waterfowl habitat if they are developed, managed, and protected.

Fig. 14. Rice levee plow pulling levees to impound water on the Mary Coleman FmHA tract. 10/87 TMW

8. Other Items

Sam Drake, Refuge Supervisor, arrived on March 17 for the annual inspection. Unfortunately heavy rains fell that day hindering the field review.

Dave Ellis, Assistant Manager at Panther Swamp, was one of those chosen to attend the Basic Academy in Blair, Nebraska. He left on April 21 and returned on May 19.

The annual Project Leader's Meeting was held in Savannah, Georgia, March 30 - April 3. Manager Wilkins and Primary Assistant Johnson attended this meeting.

Assistant Manager Bowman attended a Wetland Workshop in Carbondale, Illinois, May 26-30.

Wilkins, C. Yelverton, Ellis, Newton, Carnathan, and Rollins attended a special Fish and Wildlife orientation on the new retirement plan (FERS) on June 19 at Vicksburg, MS. Charles Hasty from personnel in Atlanta conducted the meeting.

In June, Manager Wilkins attended a Farmers Home Administration (FmHA) training course in Jackson, MS.

Manager Wilkins filled in at the Regional Office July 6-10, 1987, for Refuge Supervisor Sam Drake while Mr. Drake was absent.

Assistant Manager Bowman attended a training course entitled "Introduction to Supervision" in Vicksburg, MS, on June 1-5, 1987.

F. HABITAT MANAGEMENT

1. General

Overall habitat conditions were deemed fair for the year. Some moist-soil areas produced a good stand of desirable vegetation, but others produced only cocklebur or coffeeweed. Agricultural crops ranged from good to poor, and mast crops produced fair to poor yields.

A pesticide review team including Bill Grabill, Chuck Danner, and Don Schultz of the Regional Office and Steve Forsythe, Ecological Services at Vicksburg, MS, arrived on May 12 to identify problem areas on the refuge and to see if further action can be taken to eliminate or alleviate pesticide problems.

2. Wetlands

Unlike last year when there was no water in impoundments for us to manipulate, we were busy the first part of this year releasing water where flooding could be detrimental to some habitat types.

Drawdowns in moist-soil impoundments began the second week in May. Water levels were dropped slowly to get the best yields of desirable moist-soil vegetation.

In June, a good stand of Eleocharis obtusa was observed at the Pryor Impoundment (Fig. 15.), as well as Polygonum spp. and some Panicum spp. After the L-shaped lowlift pump was installed and water was pumped from Silver Lake Bayou, the 55-acre impoundment was attractive to waterfowl. Now that we have a way to flood the impoundment, we will be able to better manage this moist soil unit.

Dewatering efforts in Lizzard Lake were difficult. Rainfall raised water levels in Steele Bayou during May and June enough to back water into drainage ditches. Thus water control structures could not be manipulated. When the lake was finally dewatered in July, Japanese millet was flown on but failed to grow because of the lack of rainfall. Reseeding was done on August 24, but this crop failed also. When no water supply is available, one can only do so much to manage a moist-soil unit.

Fig. 15. A good stand of Eleocharis obtusa came up naturally in the Pryor Impoundment. 07/87 ALB

One of the co-op farmers supplied equipment and personnel to spray two moist-soil units with 2,4-D. Approximately 70 acres of coffeeweed and cocklebur were treated in the Pryor and Warner Impoundments. The herbicide was effective at the Pryor Impoundment, but for some reason, cocklebur was not affected at the Warner Impoundment. The unaffected cocklebur was then bushhogged.

Channelizing of Steele Bayou Project 66A through Swan Lake bed could be detrimental. If cross dikes and water control structures are not constructed, water will be drained from the 4,000 acres of swampland. This would have a major effect on species utilizing that area, mainly waterfowl. At year's end the Corps of Engineers was constantly being reminded of the agreement to construct the structures necessary to keep water in Swan Lake. (See Section C-2 on Steele Bayou Project 66A).

3. Forests

Reforestation efforts continued this year mainly with water and cherrybark oak seedlings purchased from a nursery in Louisiana. Approximately 157 acres were reforested with 50,000 seedlings during March and April. Although April was a very dry month receiving only 2.10 inches of rain, May brought 9.50 inches which kept the seedlings from dying.

Several individuals from both private and governmental organizations have inquired about the successful reforestation program at this refuge (Figs. 16. and 17.). Howard Pointevint and Ronnie Haynes from the Regional Office and wetlands personnel from Slidell, Louisiana, visited in July to review the program.

We hope that reforestation efforts on Yazoo refuge will encourage others to begin or continue reforestation programs.

A map of all reforested areas was updated, including number of acres planted, those replanted, dates, and species planted. Total acreages to date is 1,034.

Tordon was injected into sycamore, sweetgum, honey locust and green ash trees in areas where these less desirable species were competing with oak species. Approximately 65 acres were treated.

A Corps of Engineers timber contractor removed several thousand board feet of timber from the right-of-way of Steele Bayou Project 66A. Wood cutting permits were given to those who wanted the "left over" wood for firewood.

Fig. 16. Reforestation continues to be a successful program. This picture shows a stand of oaks at the 3-4 year-old stage. 05/87 TMW

Fig. 17. These oaks (mostly Nuttall) are 20 years old. This is called success! 05/87 TMW

4. Croplands

The 1987 crop year was an improvement over 1986. Yields and prices were higher. Low yields and prices received for the 1986 crop brought about the loss of two long-time cooperative farmers. One new farmer was recruited to farm part of the re-leased cropland while the remainder was divided between two current cooperative farmers.

All cooperative farmers operated under the 75-25% sharecropping system with farmers supplying labor, equipment, seed, fertilizer, and chemicals. They also harvest bait (corn & milo) for trapping purposes.

Crop acreages during 1987 were: rice, 194 acres; corn, 337 acres; millet, 125 acres; soybeans, 2351 acres; milo, 315 acres; and wheat, 591 acres. Approximately 170 acres were double-cropped with wheat/soybeans.

Part of the corn grown this year was a variety not planted on Yazoo in the past. After inspecting the corn crop, the variety in question had failed to produce as expected. Stalks grew well, but very few ears developed. Most ears that developed were either "nubbins" or failed to fill out.

The co-op farmer was contacted, who in turn contacted the seed producer. The company sent an agronomist to inspect the fields. The outcome was that the weather was to blame! Other varieties did well. Needless to say, we will not plant this variety again.

Several refuges, the Mississippi Department of Conservation, and the Louisiana Department of Wildlife requested either wheat or corn. No wheat was available. Corn was given to Noxubee (200+ bushels) and Felsenthal (30+ bushels). Because of the short corn crop on Yazoo, no corn could be spared for State trapping efforts. Only 750 bushels of shelled corn, 85 bushels of ear corn and 200 bushels of milo were harvested for trapping purposes.

Milo yields (Fig. 18.) averaged 70 bushels/acre while the rice crop averaged 130 bushels/acre. Wheat yields were estimated at 34 bushels/acre and soybeans at 25 bushels/acre. An early April freeze damaged this year's wheat crop.

Fig. 18. Milo produced well this year. 07/87 ALB

5. Grasslands

Grassland habitat on Yazoo consists of ecotone strips, archeological sites and erosion control areas.

Farming practices prior to 1980 involved disking to the woods line. In many cases, farmers disked under overhanging branches. Ecotone strips, i.e., transition zones from open fields to open woods, were established in 1981 in an effort to diversify habitat.

Since establishment of these strips, various wildlife species have responded positively. Small birds, turkeys, deer, rabbits, rats, predators (owls, hawks, bobcats, coyotes) and other wildlife use these areas for feeding, nesting, cover, hunting and as travel corridors.

In October, approximately 100 acres of ecotone strips and archeological sites were planted in rye grass, bahia grass, winter peas, and crimson clover (Fig. 19.).

The refuge maintains three archeological sites totalling 104 acres. By request of the Regional Office, these areas have been maintained in a grass state using haying contracts.

Fig. 19. Crimson clover was planted on one of our archeological sites. 05/87 ALB

Several erosion-prone areas in agricultural fields have been maintained in grass. This practice, along with the utilization of overfall pipes, has reduced the loss of topsoil.

8. Haying

About 44 acres of hay were cut and baled from archeological sites in July. Seventy-three acres were available for haying as opposed to 153 last year. Eighty acres on Swan Island was removed from the haying acreage and planted to hardwoods.

9. Fire Management

A wildfire burned about three acres on Yazoo NWR when a farm worker was careless while burning empty seed sacks. The hardwood regeneration stand which burned was probably not seriously damaged, but only time will tell.

10. Pest Control

Animal pest control activities consisted of removing beaver and nutria, mostly by shooting. The purpose of lowering population levels of these species is to reduce damage to levees, water control structures, and trees. Roughly 40 beaver and 200 nutria were removed.

Cooperative farmers battled weeds and crop-destroying insects with various chemicals. Some of the more prevalent weed species in descending order are Johnson grass, cocklebur, and morning glory. Since there are 4,000 acres of cropland, pesticide use is considerable, but no problems have been encountered with misuse of pesticides. Only approved chemicals are used, and they are applied according to permitted procedure. The refuge's DDT contamination is believed to be from past agricultural practices.

11. Water Rights

The State of Mississippi issues permits for use of surface or ground water. The right to draw or divert water is based on past usage. The refuge maintains permits on 16 pumping sites: nine wells and seven surface water pumps. No water rights problems were encountered during the year.

G. WILDLIFE DIVERSITY

1. Wildlife Diversity

The varied pattern of habitat types enhances diversity on the refuge. However, there is always room for improvement. We are working to create a better balance and intermixture of agricultural lands (currently 4,000 acres) and natural habitat. Over the years 1,320 acres have been converted from agricultural fields to forestland or grassland. Hardwood plantations in various stages of growth lend diversity to the present array of habitats. Water and cherrybark oaks were planted on 157 more acres this year.

2. Endangered and/or Threatened Species

Endangered or threatened species occurring on the refuge are the bald eagle, the American alligator, and the peregrine falcon. Eagles were seen in January and December when large numbers of waterfowl were present. It is not unusual to see bald eagles occasionally in the winter. At Lake Washington, less than a mile from the refuge, two eagles were spotted on the eagle survey in January. Catfish ponds adjacent to the refuge, with their attendant bird life, are also places where eagles are attracted and can easily be seen.

Alligators in Mississippi are classified as "Threatened due to Similarity of Appearance". We still continue to run an alligator survey during the summer. On July 9, seven alligators were observed, five of which were in Deer Lake. Usually the majority are sighted in Alligator Pond with very few in Deer Lake. The reason for the apparent shift is unknown. Management is not directed toward alligators and the refuge population is not large, but as visitors will tell you, some of the alligators are! Being free to age and grow in peace and security, several have attained "ooh and ahh" proportions and, if no longer very significant as an endangered species, do provide visitors some stimulating scenery.

The peregrine falcon is rarely seen on the refuge and, in fact, has not been reported this year.

3. Waterfowl

Being in the mainstream of the Mississippi Flyway, the refuge is a stopover area for thousands of ducks and geese. Wood ducks, hooded mergansers, and a small flock of Canada geese nest here.

The refuge grows grain crops, soybeans, and green browse on roughly 1/3 of its acreage. A percentage of each crop is left unharvested in selected areas for the benefit of waterfowl (Figs. 20. and 21.). There is no waterfowl hunting on the refuge and certain areas are closed to public use to avoid disturbance. Use days for ducks and geese for the past five years are shown in the following table.

Table 5.

Duck and Canada Goose Use Days for Yazoo NWR (1983-1987).

Year	Ducks	Canada Geese
1987	4,354,897	99,135
1986	4,936,264	150,585
1985	4,023,888	107,580
1984	3,778,224	230,136
1983	4,385,172	130,920

Fig. 20. Mallards used cornfields extensively.
01/88 TMW

Fig. 21. Sometimes the magic works. 01/88 TMW

The resident Canada goose flock, which was started in 1969, is estimated to have about 30 mated pairs. These are all free-flying Giant Canadas. Goose nesting islands established in bygone years are utilized for nesting. Several small broods were observed this year. We have even received reports of goose nests on nearby catfish ponds. Despite the gradual decrease in birds over the years, judging by the wintering population and the persistence of a nucleus flock, the program does seem to have a degree of success. The birds have become established and have raised young which either nest or winter here. These in turn attract other geese to the area.

White-fronted geese, ranked second in number, used the same habitat as the Canadas. Mixed flocks of Canadas, white-fronts, and snows were commonly seen in the winter wheat fields. Snow geese were seen occasionally in the 200-acre rice field on the north end of the refuge where roughly 50 acres of rice was left uncut. A pumping station was rehabilitated to flood this field for rice production and wintering waterfowl.

The mallard is the principal duck species using the refuge, followed by the wood duck. The annual peak occurred in January, as usual, and consisted of 83,000 ducks. Over 70% of these were mallards and nearly 5% were wood ducks. Wigeon, gadwall, and ring-necked ducks made up the bulk of the remainder. (Being a resident species, the wood duck

tallies higher on an annual basis than the winter-only species, other than mallards.)

Ducks were slow to arrive in the fall because of dry conditions. Several months with little rainfall left many impoundments which normally contain water all year completely dry. Eventually rains did come, but not enough to make up the deficit.

A contract was re-issued to drill an irrigation well at the Fleming Impoundment, but the well had not been drilled by the end of the year. The Fleming Impoundment was planted to soybeans and millet and will be managed as a moist-soil unit in the future. This fall there was little water to flood it and hence low duck use.

The wood duck nest box program received a lot of attention with the research being conducted here. Previous to research by Mississippi State University, the refuge staff checked boxes every two weeks of the nesting season. Researchers are continuing on the same schedule.

This year 418 boxes were available. With the small amount of timbered habitat, no doubt this program has increased nesting sites over the years in a manifold way. However, a number of problems associated with the placement of nesting sites have been revealed which should be dealt with. Dump-nesting, for instance, may be correlated with boxes in highly visible locations.

The following table presents nest box data collected over the past six years.

Table 6. WOOD DUCK NEST BOX DATA 1982-1987.

	1987	1986	1985	1984	1983	1982
Boxes available	418	387	363	423	511	418
Boxes used	280	283	321	356	388	295
Percent boxes used	67	73	88	84	76	71
Boxes used once	152	168	175	259	192	219
Boxes used twice	100	93	126	82	134	69
Boxes used three times	27	22	20	13	54	7
Boxes used four times	1	0	0	2	8	0
Total number nesting attempts	437	420	487	464	622	378
Total number successful nests	195	121	114	215		
Percent successful nests	44.6	28.8	23.4	46.3		
Total eggs laid	8078	6100	9820	8578	11519	5652
Total eggs hatched	2516	1646	1441	1491	3208	3642
Percent hatchability (from total no. eggs laid)	31.1	27.0	14.7	17.4	27.8	64.4
Eggs bird-pecked	313	726	874	**1134	*	
Eggs missing	417	688	588	557		
Eggs predatorized by raccoons	448	78	517	427	*	
Eggs predatorized by snakes	201	32	101	12	*	
Eggs left in nest after final check	0	34	0	0	1162	
Dead young	181	43	53	103	83	40

* 1340 eggs predatorized by raccoons, birds, and snakes in 1983.
** Eggs bird pecked and whole eggs removed along with bird-pecked eggs.

Table 7.

ANNUAL NARRATIVE REPORT FORM
WOOD DUCK BOX PROGRAM INFORMATION

REFUGE: Yazoo

NESTING YEAR: 1987

	NUMBER	PERCENT
Total usable boxes	418	
Estimated boxes used by wood ducks	280	67%
Estimated boxes used by other ducks	5	<1%
Estimated boxes used by other wildlife	0	0%
Estimated wood duck broods produced	195	
Estimated total wood ducks hatched	2516	
Estimated wood ducks surviving to flight stage*	1258	50%

Plans for next year (indicated number):

_____ more boxes

_____ fewer boxes

X no change

Remarks: Thirty boxes will be moved from land to water to determine effect on predation.

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

The number of boxes available was increased from 387 to 418, but the number of boxes used by wood ducks was roughly the same as last year at 280. The number of nesting attempts increased by only 17, while there was a large increase in the success rate. This year's success rate was considerably higher than the past two years. The higher rate may be attributed to the addition of boxes in certain new areas and the elimination of boxes in crowded areas where there was a lot of dump nesting. The hatchability of nests was "enhanced" by removing excess eggs. This may have helped decrease abandonment and probably increased overall hatchability of the clutch.

Eggs were removed by the checker for a variety of reasons. The majority of the eggs were removed because of dump nesting. Others were removed because of abandonment due to predation. One reason why so many more eggs were removed this year is that the checker candled the eggs and could determine when a nest had been abandoned. In the case of a dump nest, she could tell the viability and state of development.

In 1985, a similar number was removed but for other reasons. More boxes were used by ducks and more eggs were laid, but predation was higher, especially by woodpeckers. The successful nest rate and hatchability were at a record low. The following year (1986), poles supporting the boxes were freshly greased and predation by snakes and raccoons dropped dramatically. This year the grease was more solidified and was much less of a deterrent. Predation rates climbed back up, except for woodpecker predation, which decreased dramatically. A few leg-hold traps were set around boxes at Alligator Pond for mammalian predators. Two raccoons and one opossum were caught.

In the "dead young" category there was a considerable leap in the figures. This can be explained in part by a liberal definition of "dead young" on the part of this year's checker, graduate student Jackie Henne. "Dead young" sounds self-explanatory, but Jackie's definition included young which weren't dead yet, but whose hen parent was deceased. (Indeed, a lot of predation on hens was discovered. Sixty-six feather piles were found in the vicinity of wood duck boxes. The situation is still being investigated by researchers.)

Perhaps the nest box data is not atypical for a large nest box program, but the number eggs laid, 8078, represents a lot of biomass. We are sitting in the middle of a wood duck factory, and we seem to be overstocked with raw materials. We have plenty of brood habitat in a 4,000 acre shrub-swamp and in other bodies of water. There seems to

be an abundance of returning adults to vie for the most successful boxes. Even though we continue to improve nesting sites and to seek solutions to the problems of dump nesting and predation, and it will still be a long time before the lack of quality sites ceases to be a limiting factor in wood duck production.

4. Marsh and Water Birds

A variety of herons and egrets were present throughout the warm months, as usual. In addition to the normal complement of such birds which forage in the ponds and sloughs, Alligator Pond has supported a rookery for years. The dominant species has been the cattle egret with significant percentages of little blue herons and green-backed herons. Anhingas, snowy egrets, and great egrets also used the site. Last year the population dropped from previous years, and thus the site may have been abandoned. Birds were seen flying into Swan Lake this year where they may have re-located a rookery. Due to difficult access, such use was not definitely determined.

5. Shorebirds, Gulls, Terns and Allied Species

The low-lying agricultural fields of the Delta are often ideal foraging areas for migrating shorebirds. A variety of species uses the refuge, mostly sandpipers, snipe, killdeer, woodcock, and passing ring-billed gulls. Migrating white pelicans are occasionally seen. Shorebird use is definitely an example of the use of man-created habitat by wildlife. Most of these birds would not be tempted to land in a forest, which is the original vegetative type. Maybe they would have used a sandbar in the bayou, but the Corps of Engineers has taken care of that.

6. Raptors

With our many fields and forest borders, raptor use is moderately high. Red-tailed hawks, harriers, and kestrels are common as are barred owls, screech owls, and great horned owls. Both Krider's and Harlan's forms of the red-tailed hawk were seen regularly this year. Abundant prey and diversity of habitat attract a wide variety of raptors such as the Mississippi kite, the merlin, the sharp-shinned hawk, and occasionally the golden eagle. Notably absent is the vulture, which virtually does not occur on the refuge, or in many other parts of the Delta.

7. Other Migratory Birds

The Christmas Bird Count, held on January 3, covered the entire refuge and surrounding area and tallied 101 species.

In February, a vermilion flycatcher was sighted on the refuge for the second consecutive year. According to Peterson, a few wander eastward in winter along the Gulf coast from Louisiana to Florida; hence, their occurrence here is not abnormal. It still would seem to be a notable sighting.

8. Game Mammals

Every year, there are those who believe that there will be no more deer left after the hunting season. Last year, 193 deer were harvested, plus 40-50 due to crippling losses, poached deer and other kills (Fig. 22.). This figure was the highest in seven years. With this year's data showing 190 deer harvested, we can assure people that this refuge can support the 250-deer kill rate per year. Tables 8,9, and 10 show data on the deer harvest.

Fig. 22. Occasionally animals and vehicles collide. Someone would have enjoyed bagging this one with its 19 1/2 inch inside spread and 5 1/4 inch base circumference. 08/87 TMW

Because of additional "trophy buck" hunters yearly, the percentage of buck harvest continues to increase. This year the ratio of bucks to does was 60:40. This is of some concern, especially if the total deer herd becomes unbalanced.

Table 8. Hunter Success Rates and Deer Kill By Age & Sex Classes, Yazoo NWR 1980-1986.

		Hunter Success (%)																			
	Number	All	Gun	1/2		1 1/2		2 1/2		3 1/2		4 1/2		5 1/2		5 1/2+		Unknowns		Deer Harvested		
Year	Hunters	Hunts	Hunts	B	D	B	D	B	D	B	D	B	D	B	D	B	D	B	D	Buck	Doe	Total
1987	4713	4	15	13	15	62	16	18	22	10	12	3	4	0	1	0	0	7	7	113	77	190
1986	2815	7	20	22	23	39	22	14	12	9	19	4	0	0	3	0	6	15	5	103	90	193
1985	1643	7	11	11	19	20	15	8	9	8	10	0	4	1	2	0	3			48	62	110
1984	1677	10	16	17	9	33	14	20	10	22	15	3	11	1	7	0	4			96	70	166
1983	1108	13	27	14	25	26	14	10	10	6	14	0	4	1	7	0	0			57	74	131
1982	894	9	12	7	9	21	10	5	8	4	5	0	2	0	5	0	0			37	39	76
1981	1447	8	12	26	24	16	15	8	14	3	12	0	7	0	5	0	3			55	80	135
1980	1295	7	9	14	11	15	8	19	9	6	5	0	2	0	1	2	0			58	36	94

Table 9. Average Deer Field Dressed Weights (Pounds), by Age & Sex Classes for Yazoo NWR.

	BUCKS							DOES							
Year	1/2	1 1/2	2 1/2	3 1/2	4 1/2	5 1/2	Avg.	1/2	1 1/2	2 1/2	3 1/2	4 1/2	5 1/2	5 1/2+	Avg.
1987	48	109	138	180	175	---	130	42	82	99	102	96	140	---	94
1986	50	111	140	179	189	---	134	46	94	103	105	---	103	101	92
1985	41	114	146	176	---	184	132	39	85	104	99	99	112	112	93
1984	47	114	139	177	152	192	137	39	96	102	99	110	106	99	93
1983	42	111	160	181	---	---	124	41	89	105	110	114	130	119	101
1982	45	112	169	164	---	---	123	38	87	101	108	108	112	116	96
1981	57	110	149	150	---	---	117	53	91	106	103	115	117	98	98
1980	41	112	129	157	---	---	108	38	87	92	123	101	106	110	95

Only 14.7% of the six-month age class was harvested, which is the lowest number in the last eight years. But there was an 11% increase of 1 1/2 year olds harvested this year. The average weights and antler points of 1 1/2 year old age class showed no considerable changes from previous years.

Although there was poor mast production this year, the squirrel population seemed to be stable. The raccoon population seems to increase yearly. The raccoon hunts, with the exception of opening night in 1987, generate little interest and those who do hunt kill very few. Because of their predation upon wood duck eggs, other methods of decreasing the raccoon population need to be initiated.

The rabbit population was stable this year. Harvest numbers are presented in Section H.8.

Opossums, beavers, coyotes, bobcats, and nutria were occasionally taken during other refuge hunts. The numbers taken during the 1987 hunts were low, due to little hunter effort toward harvest rather than low population levels.

Table 10.

Number of 1 1/2 Year-old Deer by Antler Points, Yazoo NWR.

	Antler							Total	Average
Year	2	3	4	5	6	7	8	Sample	Points
1987	30	4	7	5	8	3	5	62	3.77
1986	19	2	3	3	10	1	0	38	3.63
1985	6	1	6	1	3	2	1	20	4.20
1984	15	4	6	2	3	1	2	33	3.55
1983	8	4	5	1	5	0	1	24	3.79
1982	10	2	3	2	4	1	0	22	3.59
1981	13	0	1	1	1	2	0	18	3.06
1980	8	2	2	3	1	1	0	17	3.41

Table 11.

Number of Days of Hunting by Type of Hunt, Yazoo NWR.

Type Hunt	1980	1981	1982	1983	1984	1985	1986	1987
Archery	15	53	40	49	42	49	64	64
Youth Gun	0	3	3	3	3	3	3	3
Muzzleloader	11	8	**1	**2	6	5	5	5
General Gun	*3	(0)	(0)	(0)	1	1	1	1

* Bucks only
** Remainder of season closed due to flooding.
(0)Season closed due to flooding.

10. Other Resident Wildlife

Throughout the month of June, turkey poults were observed with a group of hens. Usually 8-12 poults were seen in a group. Because of the groups of poults seen in June and July, we can surmise that 1987 was a good hatch year for turkeys. For the last three years, the reproductive rate of this species seems to have increased. A population of 150 turkeys is estimated.

Efforts to trap turkeys for restocking at D'Arbonne NWR in Louisiana continued. In 1986, the turkeys failed to take bait. This year, for two weeks in February, thirty hens were observed on a net site daily feeding on the corn. Every time a staff member would sit in the blind, it would rain. Trapping turkeys in the rain is not advised because their feathers get soaked and easily pull out. This would cause additional stress on the birds; hence, we did not trap any turkeys.

16. Marking and Banding

The cannon net site at Deer Lake, our major trapping area, stays baited throughout the year. Mallard banding (Fig. 23.) extends from the close of the hunting season in January until March, when most of this species has migrated north. On April 1, wood duck trapping begins and extends through September. From 1980 to 1985 the pre-season mallard reward banding began in October and went through December. Although this program ended in 1986, we still bait the Deer Lake trapping site throughout the fall to entice Canada geese, which we are allowed to trap any time during the year. Because of the priority on banding specific waterfowl species, many hours of staff time are spent baiting and observing sites, setting up equipment,

sitting in blinds, and banding and aging the ducks or geese. When the quota is reached or exceeded, memories of working odd hours with cold feet and hands usually diminishes.

Fig. 23. The banding program is always high priority every winter. Over 2,000 ducks were banded in 1987. 02/87 ALB

A new 100'x50' net was purchased and placed at the Deer Lake cannon net site. Most of the postseason trapping success came by cannon netting ducks, although we do use rockets and swim-in traps in other areas.

For the first year a 40'x20' entanglement net, which may be used over water, was picked up from research biologist Charles Shaffer in Arkansas. It was first placed at Gin Slough. We had 100 ring-necked ducks on bait at that site. Three times, different staff members tried for a good catch and, to our disappointment, each time the rockets dragged the net only five feet into the water. One other time, the net was placed at the Cope Impoundment where 25 ringnecks were on bait. When detonated, the same thing occurred. The charges were ignited but did not carry the net any distance. Only seven ringnecks were caught. (We have since modified the rocket placement and corrected the problem.)

Efforts to trap Canada geese were extensive although to no avail. The geese were on bait for 1 1/2 weeks, but because of rain, trapping efforts were delayed. When water had receded and a net was set on the site, temperatures rose into the 60's and the geese left the area. During that time the majority of the geese migrated north. Weather conditions certainly can hinder trapping efforts!

Efforts to band wood ducks began in April. Small 8'x4' panel traps were placed in impoundments where wood ducks had been observed, and all net sites were baited. On three occasions in April, only four wood ducks at a time were seen from a blind--not enough to expend charges. Soybeans were put out on the trapping site. The woodies never fed on them, so we continued baiting with corn. Only a handful of woodies were seen on the sites during the month of May.

The most successful method to trap woodies here in April and May has been by trap boxes (Fig. 24). Every year, trap boxes are placed at Q-139 (Manager's residence). In April, 20 hens were banded and 13 others captured were retraps.

The majority of wood ducks were trapped in August and September. Even then, the ducks fed on the corn only a short time either in early morning or in late afternoon before flying. Among those banded, ~~49~~ 45% had hatched this year.

The breakdown of banding activities on Yazoo NWR in 1987 is as follows:

Table 12. Banding Results on Yazoo NWR in 1987.

	AHY-M	SY-M	AHY-F	SY-F	Total
Mallard	651	317	378	376	1622
Black duck	2	0	2	0	4
Mal x Black	1	0	0	0	1
Wigeon	90	53	52	30	255
Ring-n. duck	5	0	2	0	7
Wood duck	18	34	54	26	132
(pre-season)					2021

Fig. 24. These trap boxes, using "Victor rat traps", were used to capture female woodies during the nesting season for banding purposes.
04/87 ALB

H. PUBLIC USE

1. General

Hunting and related scouting efforts accounted for most of the public use in 1987. Wildlife observation and outdoor classroom activities continue to increase as more individuals become aware of the wildlife opportunities on this refuge.

There was little demand for non-wildlife oriented activities such as swimming, camping, waterskiing, and picnicking. The few requests for such activities were referred to nearby State Park personnel.

John Kerrins, an auditor from the Inspector General's office interviewed Manager Wilkins concerning the amount of public use the complex receives annually and our hunt permit system. This information was sought in order to investigate the possibilities of revenue for the refuge.

A public use review team arrived with Sam Drake on March 17 to examine various aspects of public use on the refuges. Those on the team were: Frank Podriznik, Robin Will, and Richard Madison.

News releases for all the refuges were sent out to area newspapers for the "Take Pride in America" week May 18 - May 22.

7. Other Interpretive Programs

Public relations can be very important in gaining support from various groups for the National Wildlife Refuge System. No one person has been assigned the responsibility of conducting the public use program on the Complex. As time allows, different staff members give presentations about the refuge and wildlife conservation when requested.

A group of writers visited the refuge on December 18 concerning the Steele Bayou Drainage Project. Wilkins gave a slide program and tour. Included in the group were George Reiger, Field and Stream, John H. Viser, III., Berry B. Brooks Foundation, Memphis, Tennessee; Jim Philips, Associated Press writer, Maryland; John Husar, Chicago Tribune; and Charles Potter, Jr., North American Wildlife Foundation, Illinois.

Manager Wilkins spoke to 150 high school students at Greenville Christian School on Career Day, February 4. He explained various careers in the wildlife field and ways in which interested individuals can obtain a job in wildlife management.

Wilkins also gave a slide program about Yazoo NWR to a Lion's Club in Indianola, MS. Thirty-six club members and guests were present.

Assistant Manager Bowman gave two slide programs: One to the Hollandale Garden Club (20 attendees) and one to the Town and Country Garden Club, Glen Allan, MS (15 attendees).

Bowman also conducted refuge tours to the sixth grade and seventh grade classes at Greenville Christian School. Besides the tour, 58 sixth graders enjoyed viewing the film, "America's Wetlands" (Fig. 25.). Since the 50 seventh graders were studying angiosperms and gymnosperms, Bowman explained similarities and differences between the two plant groups and showed examples on the refuge.

Fig. 25. Sixth graders watch the "America's film as a part of a refuge tour. 11/87 ALB

8. Hunting

Limited permit hunts were held for deer and turkey. Deer hunts consisted of archery, youth, muzzleloader, and regular gun hunts. All deer hunts were for either sex deer. Small game was hunted on an unlimited permit basis.

Hunting is the premiere visitor activity - especially the archery deer hunt. The archery seasons consisted of 15 days in January and 49 days in October and November.

Archery hunting is easier on Yazoo NWR than in some other areas due to the relatively small wooded areas and the interspersion of agricultural fields. Even though their success rate is the lowest of all types of deer hunting bow hunters still took 45% of the harvest during 88% of the season.

Interest and participation in the refuge deer hunts increased this year as in previous years. A major magazine article that caught deer hunters' attention in the state of Mississippi and beyond was printed in the August, 1987, edition of Mississippi Game & Fish (See Attachment 1.).

The title of the article read, "Bow Killed Behemoth of the Yazoo Refuge" with the subtitle, "From the wilds of Mississippi's Yazoo National Wildlife Refuge has come the largest Pope & Young typical buck ever killed in the state". The article was printed just in time for archery hunters to get their gear ready for the "big one".

Because of the publicity of the new record (the deer was taken October, 1986) which scored 159 6/8, 450 hunters were present on opening day of the fall archery hunt! Participation slacked off a bit when they realized not everyone can kill a "Pope and Young" deer with the first arrow he ever shot from a bow! Even so, there were three times as many visits as last year on the hunt.

Several deer were taken which made the Pope and Young record books, meaning that the antlers of a bow-killed deer scored at least 125 points according to their system of scoring. (It is similar to the Boone and Crockett system for deer taken with a gun in which the minimum score is 170.) Three of these deer were taken by the same hunter (Fig. 26.). Four other racks appeared to be in the same size class, but measurements have not been documented.

In the minds of the local people, those who can manage a deer herd for trophy bucks need not be able to manage any other species! Demand for deer hunting has exceeded the ability of the refuge to supply hunting opportunities, thus the limited-permit gun hunts.

The youth hunt was relatively less successful than last year's. Participation was the same, but poor weather conditions held the harvest down to 13, compared to 62 in 1986.

The five-day muzzleloader hunt was comparable to last year's with 506 hunters harvesting 79 deer (Fig. 27.).

Fig. 26. This is one of three Pope and Young deer taken by Bobby Woods this season. 10/87 ALB

Fig. 27. Another hunter finds success with a muzzleloader. 12/87 ALB

Sixty permits were allowed for the general gun hunt. Fifty-two out of 60 drawn showed up for the hunt. Eleven deer were harvested, but the success rate was 1 deer/4.7 hunters compared with 1/6.4 (muzzleloader) and 1/11.9 (youth hunt). These figures attest to the higher efficiency of modern weapons and experienced hunters.

The high ratio of bucks to does harvested (60/40) in spite of all either-sex hunting, supports the idea that many hunters here are after a trophy buck and will pass up does. Of course, with exclusively either-sex hunting for the past seven years, the herd was probably not too unbalanced before the season. We will be watching this situation concerning the impact of trophy hunting on herd balance.

The raccoon/opossum hunt was held January 28-31. Participation dropped from about 150 on the first night to about 25 the second night. The success rate was not high (1 raccoon/1.6 hunters), and the first night was crowded. Mississippi state law does not require a hunter to have a dog, consequently many of the hunters were out just shining the trees. This was not a problem since it did reduce the raccoon population and with a four-day hunt, intensive law enforcement was possible.

In contrast with the fall rabbit hunt, the February 14-28 rabbit hunt was well attended. Although many people do not use dogs, they are allowed. Participation tripled since last year, and the harvest (1,500) more than doubled. The first year of this hunt (1983), the refuge was severely overpopulated with rabbits. The hunt was successful, but not enough to prevent a population crash. Rabbit numbers are still on the upswing since the low point in 1984. Rabbit hunting has improved steadily since then.

The turkey hunt was held each Friday and Saturday in April. Approximately 25 hunters were permitted to hunt each week. Ten turkeys were taken in 677 hunter hours by 103 hunters (Fig 28.). Last year the same number of hunters bagged 17 turkeys; however, this is probably not a reflection on the turkey population.

The 42-day squirrel season began October 10. The harvest was only moderate due to a slack population and dry weather. Even so, an estimated 2,500 squirrels were harvested (Fig. 29.). The concurrent rabbit hunt did not receive much interest, which is normally the case. The fall rabbit harvest was nominal.

Fig. 28. Successful turkey hunters are where you find them. This young lady is one of this year's ten out of a field of 103. 04/87 ALB

Fig. 29. Fox squirrels are known for their color variations, but chocolate seems especially unusual. 10/87 TMW

The refuge was open to dove hunting October 27 to November 20. No one participated in the hunt and for the third consecutive year no doves were taken. No fields were prepared, which may be what people are looking for in this area.

11. Wildlife Observation

The Washington County (South) Christmas Bird Count is an annual event. The count circle encompasses the entire refuge and also includes part of Lake Washington and Leroy Percy State Park. Two or more parties cover the refuge itself. Ed Alexander, a birding enthusiast from Greenville, was once again in charge of the activity. The count was held on Saturday, January 3. In all, twenty-two birders participated. (For further details see Section G.7.).

Numerous visits were made by the general public for the purpose of observing or photographing wildlife. The most popular subjects are deer and waterfowl. There have been many requests to enter the closed area to make photos or videotape of these subjects. Requests are usually granted, outside the deer season.

15. Off-Road Vehicling

Off-road use by ATV's is allowed for hunters to retrieve dead deer. Hunters must receive permission from a refuge staff member to retrieve each deer. They are not allowed to use ATV's for scouting or for access to their hunting area. The system has worked well on Yazoo. There is not enough traffic in a given spot to create a trail of any kind. The hunters who use ATV's appreciate the help, and no one seems to regard the practice as a nuisance. Considering an average of less than 200 deer retrieved per year on a 12,000 acre refuge, one can imagine that the impact of ATV tires is very small. Fortunately there is also good road access to much of the refuge, making ATV trails unnecessary.

The U.S. Army Corps of Engineers funded the construction of a new bridge (Fig. 30.) at Bear Garden. Widening of Steele Bayou for the USACOE 66A Steele Bayou Project made the old bridge too short. A new bridge was partially completed under the responsibility of Washington County when the Corps decided that it still wasn't long enough. Much of the work had to be torn out to add another span (funded by the Corps). Construction was completed by early summer.

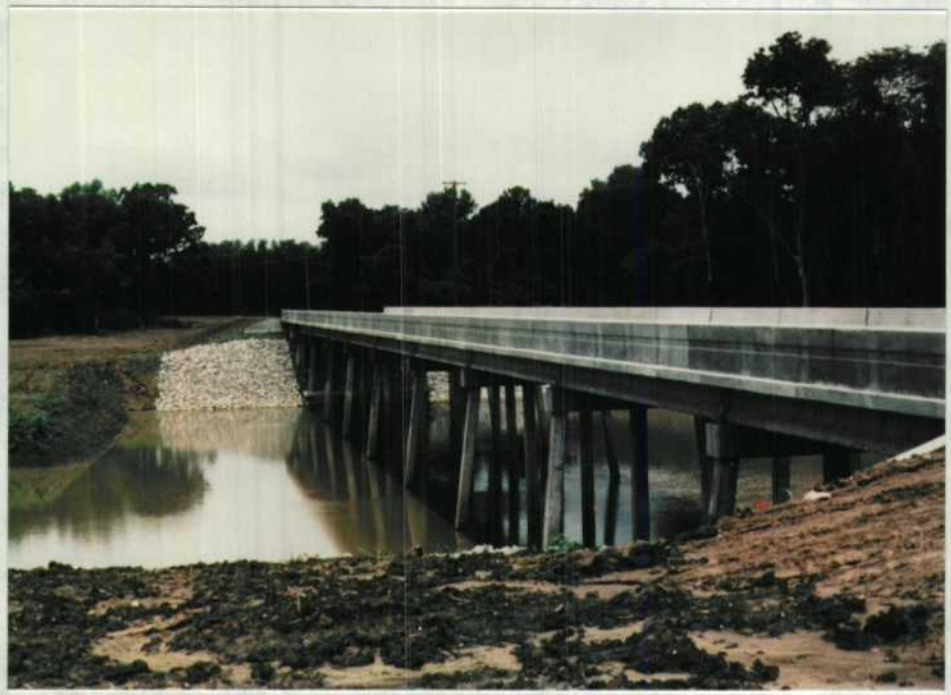


Fig. 30. A new bridge was constructed at Bear Garden to accommodate the widening of Steele Bayou by the U.S. Army Corps of Engineers.
06/87 ALB

An "L" shaped pipe was installed in Silver Lake Bayou on the north end to facilitate irrigation of approximately 200 acres of cropland. The previous irrigation well that served this field began pumping sand, indicating a cave-in. The new pipe is 25 feet deep as opposed to the 100-foot well. A rice crop was irrigated by this system, using the co-op farmer's power unit (Fig. 31.).

Fig. 31. A pump set in Silver Lake Bayou replaced a 100-foot irrigation well. 05/87 ALB

A similar pumping facility was constructed to flood the Pryor Impoundment, which can now be managed for moist-soil plants or crops.

Several walkways were constructed to improve access to water control structures. The Cope Impoundment (Fig. 32), the Pryor Impoundment, the Silver Lake Impoundment, and an unnamed field impoundment on the south side now have accessible risers or control gates.

The capacity of the Pryor Impoundment was improved by replacing the 9-foot stoplog riser with a 12-foot riser (Fig. 33).

Fig. 32. A new 18-foot walkway leads to the screw gate control at the Cope Impoundment. 06/87 ALB

Fig. 33. A 12-foot riser replaced a 9-foot riser at the Pryor Impoundment to increase flooding capability. 06/87 TMW

A 36-inch steel pipe and a screw gate were installed in the Silver Lake Impoundment Levee, replacing two 12-inch pipes (Fig. 34).

Fig. 34. Replacement of two deteriorated 12-inch pipes by a 36-inch and construction of a walkway were accomplished at the Silver Lake Impoundment.
11/87 TMW

A layer of crushed limestone was added to the surface of the parking and driving areas at the headquarters/shop compound (Fig. 35.). The former clay/gravel surface was messy when wet and dusty when dry. The limestone surface is clean, packs firmly, and improves the appearance of the compound.

A 36-inch pipe replaced a smaller, shorter culvert in order to widen the access road to the Pryor Impoundment.

Fig. 35. Crushed limestone was spread at the headquarters compound to make a cleaner, more attractive surface. 07/87 TMW

3. Major Maintenance

A cargo rack and deck was built for the truck/tractor using I-beam and checker-plate on hand.

Engine bearings and seals were replaced in the Payloader front-end loader.

The transmission was replaced in the 1980 Chevy pickup.

The rear housing of the Case tractor cracked near the three-point hitch arm attachment. The repairs (which cost $722.53) took 2-3 months because of a part backordered from England. The Case dealer, who was doing the repairs, finally loaned us a tractor to use in the meantime.

Gravel from the abandoned Bear Garden Bridge Road was used to build up numerous small sections of refuge roads and parking areas.

4. Equipment Utilization and Replacement

Two International tractors were acquired on excess property from Vicksburg on February 2. One was cannibalized to repair the other, which was sent to Panther Swamp NWR to use for mowing.

Ron Gary from Lacassine NWR picked up our lowboy trailer on March 4. The lowboy remained with Lacassine until April 30.

Tennessee NWR borrowed our levee plow on April 5 and had not returned it by the end of the year.

Two platform scales were acquired from excess property. They will be used at deer check stations on the complex.

A John Deere chisel plow was transferred to White River NWR in May.

A pumper unit for fire fighting was transferred to Mississippi Sandhill Crane NWR in June.

A pile driver was acquired on excess property from the Corps of Engineers, Vicksburg, MS, June 18.

A new Mita-655 copier was acquired on August 17 to replace a Savin excessed to the State on August 5. The new copier's efficiency and features will facilitate office work greatly.

The new IBM computer system came in by bits and pieces. Diskettes arrived from Atlanta on August 27, and the computer arrived on September 25. A printer was leased from Computerland in Greenville in October until our own printer arrived in November. The system was extremely useful in administering permitted hunts, and the word-processing program has been a boon to writing this narrative.

5. Communications Systems

The refuge was without functional radio equipment for seven weeks after lightning damaged the base radio. The local radio shop is very slow at making repairs, but they're the only game in town.

"Deskon" radios were repaired on October 1 after being damaged by lightning.

A new General Electric base radio was acquired on November 10 and has been installed at headquarters. Panther Swamp NWR received the old one after it was repaired.

J. OTHER ITEMS

1. Cooperative Programs

A revenue-sharing check was delivered in June to Washington County. The $34,912 check was less than expected.

A special use permit was issued to Clarence Ott for 550 bee hives. His bees were checked for mites but none were found.

2. Items of Interest

Manager Wilkins and Assistant Manager Johnson met with Second District Congressman Espy's aides and Senator Cochran's aides on April 13 and April 24, respectively, to discuss topics of public concern on the refuge complex. Hopefully refuge personnel and congressional staffs can work with each other on public inquiries about refuge operations.

Claude Carnathan spent two weeks at Mississippi Sandhill Crane (MSC) NWR during May. He was on special duty in return for L.E. assistance that was provided the Complex last winter by MSC.

3. Credits

This narrative was completed with the help of the following:

Anita L. Bowman	-	A.; B.; E.2 and 6.; F.1,2,3 and 5.; G.8,10 and 16.; H.1 and 7.; J.1 and 2.
Claude W. Carnathan	-	H.17.
David R. Linden	-	D.; F.8,9,10 and 11.; G.1,2,3,4,5,6 and 7.; H.8,11 and 15.; I.1,2,3,4 and 5.
Timothy M. Wilkins	-	C.; E.3,4,5 and 7.; F.4.; K.
Charla I. Yelverton	-	E.1 and 8.; J.3.; and L.

Typing and organizing accomplished by Charla Yelverton. Editing and proofreading performed by the Yazoo staff.

K. FEEDBACK

Yazoo Refuge, due to the increased emphasis on other units in the complex, has not received the attention it enjoyed before complexing. Although administrative duties are more efficient, field activities are not. This is due primarily to the reduction of four FTE's when complexed. The mission of the Yazoo Complex has increased significantly since complexing. A few of the active programs include land acquisition, 10,000+ acres of farmland management, reforestation efforts, forest management, moist-soil development, major Corps of Engineer projects, public use programs (primarily consumptive), Farmers Home Administration initiatives and other development activities such as road construction, facilities maintenance, equipment maintenance, etc. After hours we have time to observe ducks and geese and participate in trapping efforts.

It seems that an important natural resource such as National Wildlife Refuges, with a high degree of management on most, would at least receive funding and personnel to maintain standards set by the Federal Government! It is ironic that many refuge equipment needs are filled with substandard surplus property from other federal agencies. Many times this equipment is functional with repairs and certainly is an improvement over nothing! It does leave a question in some minds as to the importance of refuges.

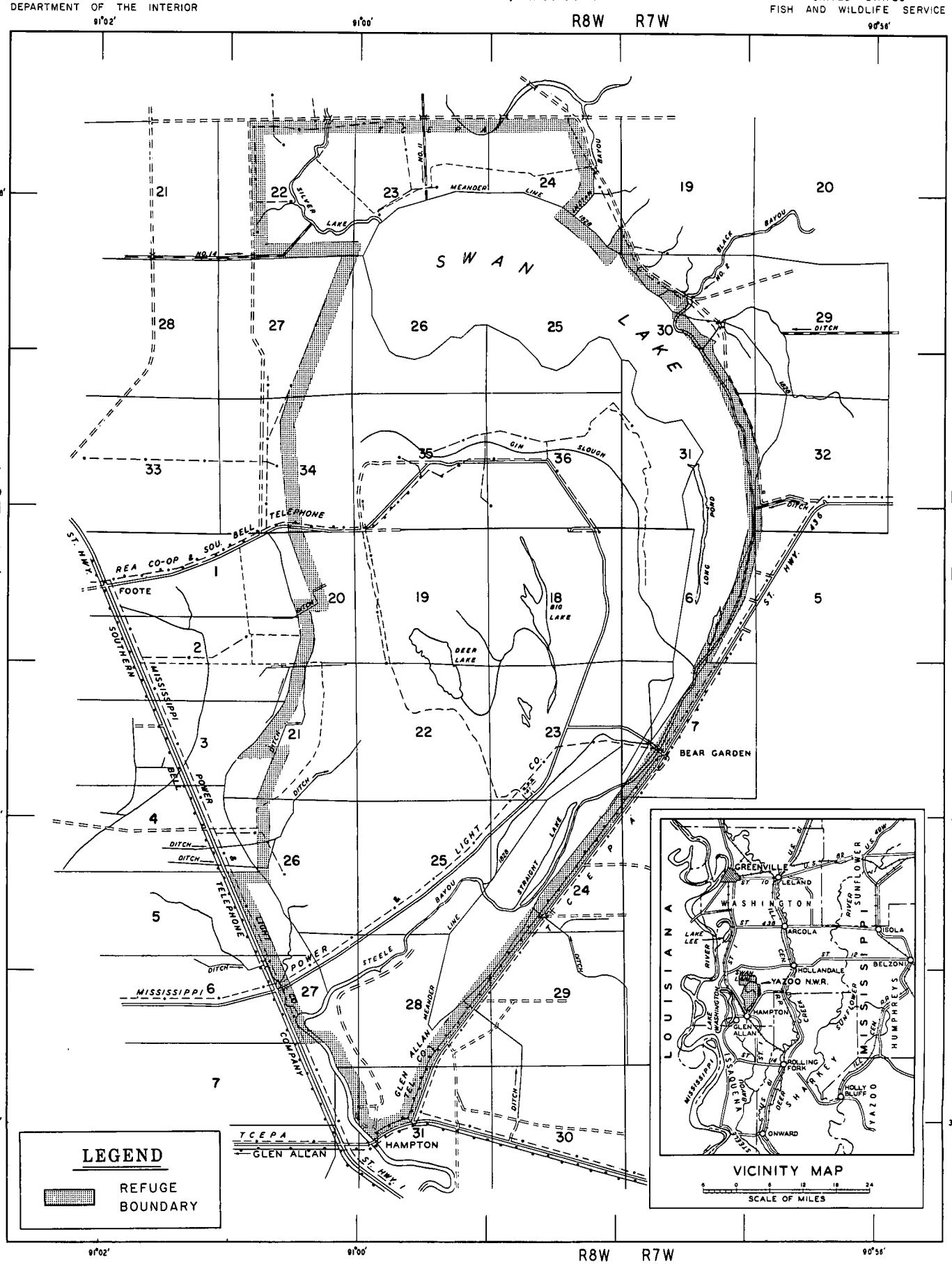
Thank God for dedicated employees who give much more of themselves than required, many times at the expense of their families. During this time when federal employees are not held in very high esteem, Fish and Wildlife Employees should hold to the fact that those extra efforts are having a positive impact on our natural resources and may well be measured only by future generations.

YAZOO NATIONAL WILDLIFE REFUGE

WASHINGTON COUNTY, MISSISSIPPI

UNITED STATES
DEPARTMENT OF THE INTERIOR

UNITED STATES
FISH AND WILDLIFE SERVICE



COMPILED IN THE BRANCH OF ENGINEERING
FROM SURVEYS OF: B.L.M., WAR DEPT., F.&W.S., AND
AERIAL PHOTOGRAPHS.

ATLANTA, GEORGIA FEBRUARY, 1959

CHOCTAW MERIDIAN

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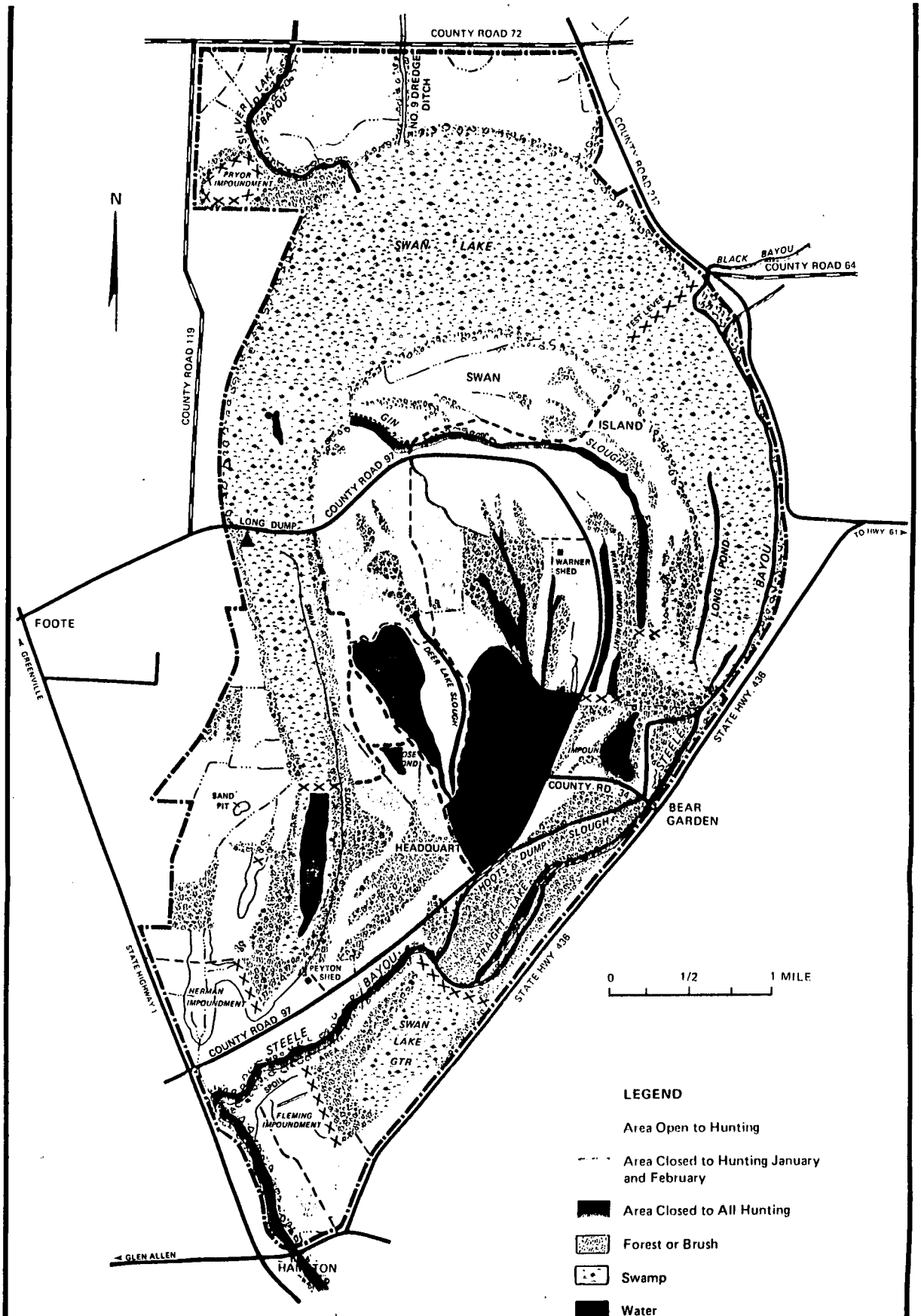

Yazoo National Wildlife Refuge

Signs Protect Visitors and Resources

Millions of people visit National Wildlife Refuges every year. Millions! The impact of humanity descending upon refuges, if not regulated in part, can degrade these wildlands. Signs grant or restrict certain activities to provide optimum freedom for visitors while also protecting refuge elements from undue human abuse. Please respect the following signs:

AUGUST 1987 $1.95

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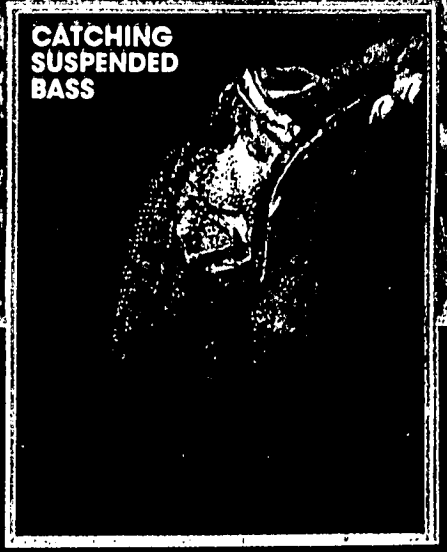

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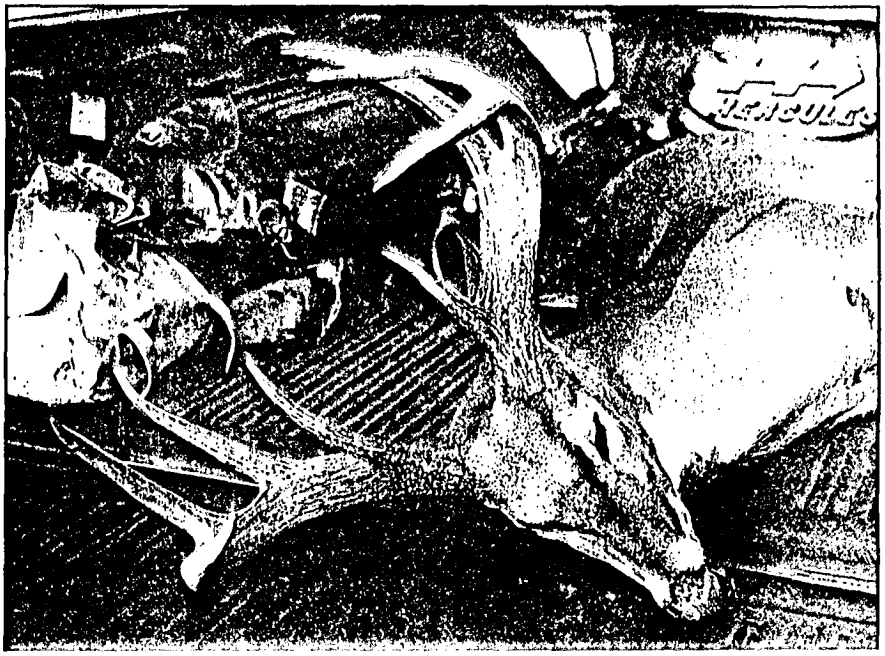
CHARLEY DICKEY COOKS FISH!



COURTESY JIM McCAFFERTY

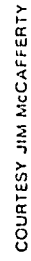
Steve Nichols' buck is a trophy by any standard. With an official score of 159 6/8, the whitetail, arrowed in the Yazoo National Wildlife Refuge, is Mississippi's top typical entry in Pope & Young and one of the largest bow-kills ever recorded in the Southeast.

COURTESY JIM McCAFFERTY

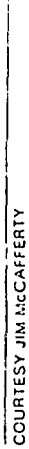
Bow-Killed Behemoth Of The Yazoo Refuge

From the wilds of Mississippi's Yazoo National Wildlife Refuge has come the largest Pope & Young typical buck ever killed in the state.

by Jim McCafferty



COURTESY JIM McCAFFERTY



COURTESY JIM McCAFFERTY

Steve Nichols is a relative newcomer to the sport of bowhunting whitetails. He has only participated seriously in Mississippi's archery season for two years, and until the 1986 bow season, had never killed a deer with an arrow.

But the deer he killed during the fall of 1986 was well worth the wait. Even if Steve never gets another whitetail with archery tackle again, no one will be able to say he hasn't had a good bowhunting career. That's because the deer this Leland resident bagged last fall was truly a buck of a lifetime. Not only did the deer make the Pope & Young Club record book (the official bowhunting trophy records, for which the qualifying score is 125 points), its 8-point typical rack (25 1/2-inch beams with a 20 6/8-inch inside spread) scored 159 6/8 Pope & Young points. That score makes it what most authorities believe to be the highest-scoring set of whitetail antlers ever harvested in the Magnolia State with bow and arrow. And when compared to the listing in the latest edition (1981) of Pope & Young's *Bowhunting Big Game Records of North America,* the rack ranks as the third-best taken by an archer in the Southeastern states.

Besides having a record-class rack, the deer, which was killed on Washington County's Yazoo National Wildlife Refuge (NWR), was no slouch in the weight department, either. It tipped the scales at a whopping 249 pounds.

But that's just part of the story. The circumstances under which the deer was taken were almost as exciting as the buck's antlers and weight.

Nichols, a soil agronomist with Pettiet Agricultural Services, had knocked off work early on the afternoon of Friday, October 17, to drive the 30 miles or so down to the Yazoo NWR, near Glen Allan. He had left his portable tree stand in one of the spots in the woods where he had been hunting during the first week of the 1986 bow season. "That was the day before squirrel season," he explains. "I wanted to get my tree stand out of the woods so nobody would get it. We've had some thefts down there at times." He also hoped to have enough daylight left after he got to his stand to hunt for an hour or so.

But the stand was not all he had left in the Yazoo woods. During one of his previous bowhunts on the refuge, Nichols had absentmindedly left his hunting shirt hanging on a tree limb near another of his favorite stands. He decided to retrieve the shirt before going to the other part of the woods to get his stand.

Luckily, he also decided to carry his bow along for what he expected to be no more than a short hike through the woods. That was a decision he will never regret.

Nichols located his shirt with no problem. That mission accomplished, he began the walk back to his vehicle. By then it was almost 5:30 p.m., but he still figured he had time to pick up his stand, and, maybe, to hunt for a few minutes. But this stage of the plan was rudely interrupted.

"I was almost back out to where I had parked on the blacktop, right on the edge of the road," he says. "I was just basically walking out of the woods, to go where I wanted to go hunt, when I just sort of stumbled on it --- jumped it up."

The cover was exceedingly thick, Nichols recalls, a fact he thinks probably lulled the deer into a false sense of security. "It didn't run very far; I guess it just didn't sense the danger."

At this point, Nichols had no inkling that the deer was of trophy proportions. "When he

...*Continued*

jumped up and ran off, I didn't even realize how big a buck it was or anything. I didn't even know it was a buck. I just knew it was a deer."

The crashing sounds of the flushing deer ceased almost as quickly as they had begun. "I knew it had stopped," Nichols remembers, "and I just eased up real slow until I made out the white on the front of his chest. He was facing right at me. That's when I drew back and aimed."

The whitetail was less than 25 yards away. Nichols, still unsure of the size, or even the sex, of his target, eased his 65-pound-pull Browning bow into position. (The NWR bow season is either-sex.)

"When I drew back and started looking at it and everything, I got to thinking, 'Well, that looks like a buck,' but I had no idea it was even a 4-point or anything like that. I thought I saw some horns on its head, but it wasn't until he busted out of that thicket, after I shot him, you know, that I said, 'Good grief!' "

The deer fled the thicket as soon as the arrow struck. Realizing he had a trophy, Steve calmed himself as best he could and settled down to wait, hoping to give the animal time to die before he began trailing. After pausing as long as he thought reasonable, considering the failing-light conditions, he began what was to be one of the most exasperating experiences of his 28-year-old life.

Nichols tracked the deer about 750 yards to the edge of a bean field. "I looked up and I could see him standing out there; he was about a hundred yards ahead of me. I just sat down in the beans, and I watched him walk off in a thicket. The weeds were over his head. He was just easing along. I let him go in there for about 15 minutes and I thought he was dead, so instead of trailing him, I just cut straight through to the big old patch of weeds I saw him go in - - I thought I would find blood or find the deer."

But Nichols found nothing. Not knowing what else to do, he recalls, "I just started walking around in circles, trying to find blood, because I didn't see the deer anywhere. All of a sudden, I about stepped on him!"

The buck leaped to his feet and galloped off, still very much alive.

Now Steve was beginning to get concerned. "I thought, well, you know, maybe I didn't hit him good. He ran off a pretty good ways from me, and I could still see him out there, so I just sat down again."

Just as daylight began to dim into dark, Nichols saw the buck get up and go into another thicket. This time, the hunter was more careful. "Instead of cutting straight across, I followed the blood into that thicket . . . (but) I couldn't find where he came out the other side."

Despite his best efforts, Nichols could not locate his buck of a lifetime. "I drove myself to a state of frenzy because I couldn't find it," he says. Reluctantly, he returned to Leland.

But he hadn't given up. The next day he returned with three friends to continue the search. In the daylight, the blood trail was easy to follow. Nichols and his partners found the buck about 250 yards from where he had abandoned his quest the night before. In all, the buck had traveled approximately 1,000 yards from where Nichols shot it.

About the only words Nichols could manage when he finally got a close-up look at his prize were, "All right!"

Now, Steve Nichols' story could leave you with a variety of feelings, not the least of which is envy. If you also find yourself prone to think this guy just got lucky, well, that's understandable, too. After all, it was his first bow-killed deer, and, in his on words, he did "stumble" onto his record buck.

But there was more than just luck at work here. If you'll review the facts of this case, you'll find that there are some valuable lessons to be learned from Nichols' story.

Lesson No. 1: Big bucks are far more likely to come from areas of high soil fertility than from poor land. The Yazoo NWR, where Nichols was hunting, lies in the lower Delta, just a couple of miles from the Mississippi River, amidst some of the richest land imaginable. Fertile soil, as any game biologist worth his weight in buckshot will tell you, is one of the most important ingredients for producing trophy bucks.

That's because nutrition is the most important factor in producing record-book antler growth. Heredity, of course, plays a part. Yet genetics are rarely a limiting factor in Mississippi when it comes to producing bragging-sized whitetails.

But the deer must get plenty to eat if those antlers are going to grow to wall-hanging sizes. Nature has made a strong, healthy body the first priority for every whitetail buck.

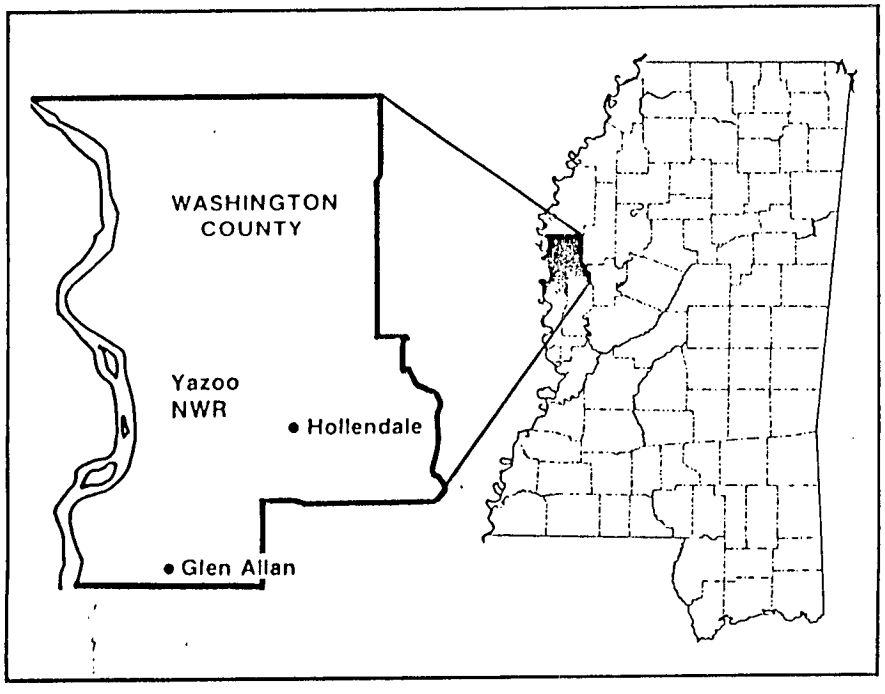
"When I drew back and started looking at it and everything, I got to thinking, 'Well, that looks like a buck,' but I had no idea it was even a 4-point or anything like that."

Antler growth comes only after the needs of muscle and bone have been met. That's why you rarely see a good rack on a scrawny deer - - even if they have the genes for antlers like a caribou, they simply can't grow them unless their body is getting all the nourishment it needs. On the other hand, if all nutritional requirements are met and the buck develops a healthy body (Steve Nichols' deer, remember, weighed 249 pounds), antler growth, for most bucks, is just a matter of time.

But good soil alone will not put the meet on those whitetail bones. Like any other animal, they need a good supply of food, for it's the food that transforms the fertility of the soil into something the deer can use.

Every deer hunter knows how valuable hardwood mast, acorns in particular, is to the welfare of deer during the cold, stressful months of winter. There are acorns aplenty in the bottomland hardwood forests of the 7,800-acre Yazoo NWR. But what many people don't realize is that a good annual crop of oak nuts can't ensure healthy deer. Acorns are high in fat-building food value to help whitetails maintain their body heat during the frigid weeks of the late hunting season, but the protein they depend on for healthy body growth comes, for the most part, from plants. Wild shoots and browse (greenbrier, for instance) are good, and, as any farmer can tell you, deer particularly relish soybean plants. Again, all of these are abundant in the farm country surrounding Yazoo. (For example, Nichols tracked his buck into a bean field.)

But all the rich soil and bountiful food supplies in the world cannot produce a trophy animal unless another factor enters into the picture: age. Experts say that 4 1/2 to 5 1/2 years of healthy growth is essential to the growing of a high-quality rack atop the head of most bucks. (Steve Nichols' deer was only



3 1/2 years old, but it was a rare exception. That buck's young age also testifies strongly to the healthy environment for whitetails at Yazoo NWR.)

That's where Lesson No. 2 comes into play: Before there can be quality deer hunting, the deer must have either a high degree of protection or outstandingly good cover in which to hide. Otherwise, few bucks will survive past the first 2 1/2 years. Those factors are extremely rare on most public land; that's why most of Mississippi's record-book deer tend to come from hunting clubs or other property with limited hunting access.

Yazoo NWR, though, has both cover and protection. For starters, federal authorities quite properly view their role at Yazoo to be one of providing a refuge for wildlife (primarily waterfowl) rather than providing recreation for the public. Deer hunting is allowed, but it is with the removal of surplus animals as the primary goal. With that in mind, whitetail hunting on the refuge is limited to an archery season (which usually ends with the opening of gun season in the rest of the state), a short muzzleloader season usually lasting no more than five days, a single weekend youth hunt, and a one-day general gun hunt. As on state wildlife management areas (WMAs), all hunters are required to obtain permits at a check-in station before entering the woods. Bowhunters need only to show up to obtain their permits, but permission to hunt during the muzzleloader and general gun days is awarded by a drawing. Hopeful hunters must sign up for the lottery well in advance of the scheduled hunting days, and only a relative handful will make the draw.

If all that protection was not enough to allow bucks to live to a ripe old age, they have still more in the form of thickets and other natural cover. Steve Nichols, at 25 yards, couldn't tell whether he was shooting a doe or a record whitetail buck. Now that's cover!

There's one last thing to think about in the light of Nichols' buck. How many times have we all left our bows or guns in the truck while we made a short foray into the woods during hunting season to position a deer stand or to retrieve a lost glove or some other similar errand, only to jump game along the way? Steve Nichols could have easily done the same, but he didn't. That's the third and final lesson: Be prepared. Not just when tending to your woodland errands, but when on the stand or still-hunting, too. Pay attention; listen; look. All the time. The minute you drop your guard, that big buck you've waited all morning for will drop you with a sucker punch. Don't let him by so easily.

So maybe Nichols' Pope & Young book buck wasn't such an accident after all. The requisites for mammoth whitetails were all there: fertile soil, abundant food production, protection and cover. He chose the place, he was ready, he made the shot and he bagged a well-deserved trophy.

For Steve Nichols, there may be many more to come. □

PANTHER SWAMP NATIONAL WILDLIFE REFUGE

Yazoo City, Mississippi

ANNUAL NARRATIVE REPORT

Calendar Year 1987

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

INTRODUCTION

Panther Swamp National Wildlife Refuge is located in west central Mississippi within the Mississippi/Yazoo River alluvial plain. The refuge was established in 1978 with the initial purchase of the 12,022 acre Curran tract from The Nature Conservancy. The refuge is four miles east of Holly Bluff, Mississippi, and about four miles southwest of Yazoo City, Mississippi.

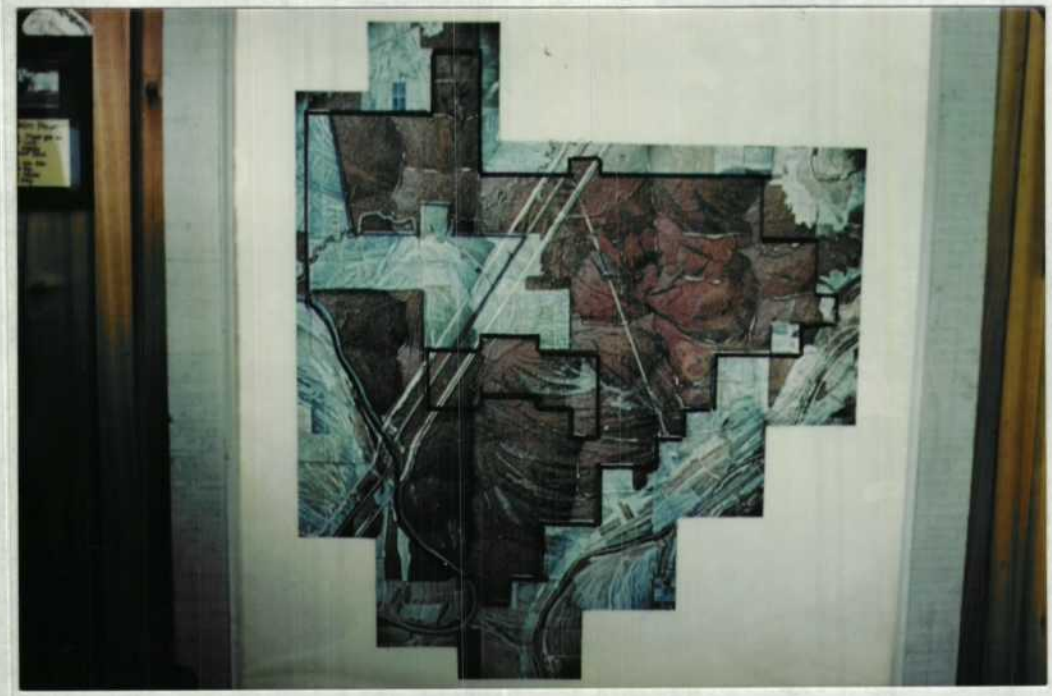


Fig. 1. Panther Swamp National Wildlife Refuge
02/85 JTF

The refuge occupies approximately 26,500 acres in the Yazoo Backwater Area along the Will M. Whittington Auxiliary channel in Yazoo County between Lake George and the Yazoo River. Refuge habitat types are dominated by bottomland hardwood forest interspersed with sloughs, intermittent drains and shallow depressions characterized by cypress, tupelo gum, buttonbush, water elm, swamp privet, and willow. The major forest species include cottonwood, willow, and sycamore along stream banks; sweetgum, green ash, sugarberry, American elm, and Nuttall oak on the intermediate flats; willow oak and water oak on the ridges, and overcup oak and bitter pecan on the low lying flats. A breakdown of land types includes 4,381 acres of wetlands, 4212 acres of croplands, 403 acres of grasslands, 16,889 acres of hardwood forests and 152 acres of administrative areas.

Refuge wetlands are known for large numbers of wintering waterfowl. Mallard, wood duck, wigeon, pintail, green-winged teal, and gadwall are the most common species of migratory waterfowl present. Many species of songbirds, raptors, marsh and shorebirds are also present on the refuge.

The principal mammalian species on the refuge are white-tailed deer, fox and gray squirrel, swamp and cottontail rabbit, Eastern red fox, gray fox, flying squirrel, coyote, beaver, nutria, spotted and striped skunk, mink, otter, weasel, raccoon, opossum, and bobcat. Some small mammals present are common mole, short-tailed and east shrew, eastern chipmunk, various bats, cotton rat, eastern wood rat, cotton mouse and harvest mouse.

The American alligator exists on the refuge along with other reptilian species. The refuge is noted for its many cottonmouths.

Sloughs, streams, beaver impoundments and the other refuge wetlands provide a limited amount of fish habitat except during high water periods when concentrations of fish may be high in flooded areas. Species of fish present include those common to the Mississippi or Yazoo Rivers.

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J. OTHER ITEMS

A. HIGHLIGHTS

Nature Conservancy acquired 3,500 acre Lower Twist agricultural unit. (Section C.3.)

Regional Director Pulliam toured the refuge and met with Congressman Mike Espy in October. (Section D.3.)

Severe drought for second year in a row impacted refuge farm programs. (Section F.4.)

First limited permit deer hunt November 21 & 22 a success. (Section H.8.)

Moist soil development continued in Little Twist agricultural unit. (Section I.1.).

Board Road access easement finalized; major improvements accomplished in time for hunting seasons. (Section I. 1.)

B. CLIMATIC CONDITIONS

The year began dry with mild temperatures through January and February. March then dumped 8.10 inches of rain, flooding most of the refuge for several days. Five inches of this was recorded in a one hour period on March 17! A record dry April followed and with temperature extremes ranging from 70°F. on the 1st to a low of 25°F. on the 2nd and then into the 90's at mid-month. Drought conditions set in after heavy May and June rains. Only 4.4 inches of rain fell from July through October. Refuge crops suffered accordingly. Even after 9.7 inches of November rain, most refuge wetlands were not filled to desirable levels. Mild fall temperatures persisted through December when 6.40 inches of rain finally restored most of our waterfowl habitat.

C. LAND ACQUISITION

1. Fee Title

In July, an offer of $550./acre to purchase an 80 acre wooded tract was refused by Mr. Lynn Coleman. This tract, located on the northeast corner of the refuge, is needed to help secure an access easement across other land leased by Mr. Coleman. Negotiations are continuing.

Talks were initiated during the year with landowners of two important inholdings. In October Regional Office Realty staff met with Mr. Thomas Stricklin and Mr. Charles Perry. Mr. Stricklin owns a 640-acre wooded tract located along the East Levee near Little Twist field. Mr. Perry owns a 20-acre parcel located on the west side of the refuge along Panther Creek and adjacent to the new Lower Twist tract. Both tracts are used primarily for private hunting camps. Appraisals were near completion at the end of the year.

2. Easements

A perpetual public access easement to the Board Road was purchased in October from Mr. Charles Pritchard. Approximately 3/4 of a mile of an abandoned oil well road crosses Mr. Pritchard's land between the River Road and the refuge's Board Road. The refuge had been trying to secure this easement for several years. It will help alleviate the problem of limited hunter access and dispersal.

3. Other

In August, The Nature Conservancy (TNC) purchased the critically important 3,540-acre Lower Twist agricultural unit (Fig. 2.) from the Federal Land Bank. Under a Memorandum of Agreement the refuge immediately took over management of this tract. Because of internal disagreement concerning the purchasing of "marginal farmland" the FWS had dragged its feet on this acquisition for several years. In March, Regional Director Pulliam was briefed on this tract and expressed strong interest in acquiring it. In April a TNC representative visited the refuge and viewed this property. He also immediately recognized the importance of this land. These two actions seemed to get the ball rolling and just in time. The property was very nearly sold to a farming corporation before TNC stepped in. This property has significant waterfowl management potential, will help alleviate critical public access problems on the west side of the refuge and will consolidate ten miles of refuge boundary into three miles.

Fig. 2. The 3,540-acre Lower Twist agricultural unit purchased by The Nature Conservancy has significant waterfowl management potential. Dry fall conditions allowed us to plug three ditches, re-establishing 120 acres of wetland. Major work is planned for 1988. 08/88 DME

D. PLANNING

3. Public Participation

On October 9 Regional Director Pulliam, Supervisor Sam Drake, and refuge staff met with first term Congressman Mike Espy and five local constituents. The meeting was requested by the Congressman after the Fish and Wildlife Service's responses to several Congressional inquiries failed to satisfy a small but vocal group of local hunters. Surprisingly, most of the issues raised were relatively minor. The Fish and Wildlife Service agreed to extend two ATV trails and to open the Southern Natural Gas pipeline to ATV use during the spring turkey season. The structure of the refuge deer hunts (see Section H.8.) was also an issue that was raised and continues to be a major public relations problem for the refuge. The Fish and Wildlife Service plans to conduct a public meeting in 1988 prior to setting regulations for the 1988-1989 hunting seasons.

On the more positive side, the Congressman took an interest in development needs for the refuge. A list of proposed projects and equipment and facility needs was forwarded to the Congressman's office.

4. Compliance with Environmental Mandates

A letter of permission was received from the Corps of Engineers to construct two 10-acre field impoundments adjacent to the Auxiliary Channel in the Little Twist agricultural unit.

5. Research and Investigations

In July a Fish and Wildlife Service contaminants investigation team took fish samples from Lake George. No results from this investigation had been received by the end of the year.

On July 7 representatives from the U.S. Forest Service and U.S. Army Corps of Engineers examined hardwood regeneration test plots on the refuge.

In December Dr. Ed Hill and Darin Lee a graduate student from Mississippi State University, selected study sites to be used to determine the occurrence of suitable wood duck nesting cavities. The sites are primarily in tupelo gum habitat. Field work will begin early in 1988.

Panther Swamp NR87-"Direct Seeding Nuttall Acorns"(43581-1)

Dr. Robert Johnson, Project Leader, Southern Hardwoods Laboratory, Stoneville, MS, continued his research through 1986. The basic objectives of the study were to determine planting periods and planting rates for adequate germination of seedlings from Nuttall acorns. The study consisted of planting once a month throughout the year to determine if extended planting periods could be used and still maintain adequate germination. Most of the data collected to date shows that Nuttall acorns can be direct seeded 12 months a year at various depths. One unexpected but encouraging preliminary finding was that a portion of the acorns planted during the high stress summer months will actually remain dormant but viable and germinate the following spring. Discovery of this characteristic has many management implications in enhancing reforestation efforts being made by the refuge complex. The study is ongoing and further results will be reported in future publications.

E. ADMINISTRATION

2. Youth Programs

Panther Swamp hosted its first YCC camp this year. Three enrollees were hired: two from Yazoo City and one from Thornton. It was a successful program with a variety of work accomplished. Projects included beaver dam removal; construction of a kiosk (Fig.3.), water control structure walkways, and an ATV bridge; signing the new waterfowl hunting area boundary; duck trap modifications; and clearing fallen trees from ATV trails. YCC enrollees from Yazoo NWR assisted with the ATV bridge construction.

Fig. 3. Panther's first YCC crew Scotty Thorton, Jimmy Monson, and Wayne Jackson show off one of their projects, a kiosk constructed at Gumbo Acres office. 08/87 DME

6. Safety

In October, Maintenance Worker Don Purvis received medical attention after receiving more than one hundred yellow jacket stings while working with the Caterpillar 112 roadgrader on the Board Road. This was the worst of three different nests Don encountered within one week.

No other reportable accidents occurred during the year.

For the February Complex safety meeting Biological Technician Newton reviewed the station safety plan. Assistant Manager Ellis discussed safe operation of pick-up trucks in October.

8. Other Items

A $500.00 imprest fund was established at the refuge in May.

Assistant Manager Dave Ellis attended the Basic Refuge Manager Academy in Blair, Nebraska, from April 22 to May 20.

F. HABITAT MANAGEMENT

1. General

Since the refuge was established in 1978, the primary emphasis on habitat management has been on the critical need to remove "beaver water" from the 17,000 acres of valuable bottomland hardwood habitat during the hot summer months. Poor drainage due to extensive beaver activity and Corps of Engineers water control structures has killed or severely damaged timber in many areas on the refuge and threatens considerably more.

In the past two years, with the assignment of permanent staff to the refuge and greater emphasis on active management to enhance the refuge for waterfowl, other habitat management programs have begun to gain momentum. After several years of preparation, active timber management has finally begun. Several water control structures have been built, creating both small and large field impoundments and greentree reservoirs. Several more are planned. Steps have been taken to improve the cooperative farming program to provide more benefits to wildlife. Altogether, a more complete and balanced habitat management program is beginning to take shape.

2. Wetlands

Work to open beaver dams began as early as April in a few critical areas but most work was accomplished in June and July. Fifty-two primary or secondary dams were opened, most more than once. Unlike the past few years when the D-4 bulldozer was used extensively, most of this work was accomplished by hand or explosives. The D-4 was used on

only a few stubborn dams. Biological Aid Henry Lewis opened most dams by hand in conjunction with beaver trapping efforts (see Section G.15). YCC enrollees also assisted and refuge staff used Kinepac explosives on nineteen dams too large to work by hand.

This work is intended only to lower water levels to within natural slough boundaries where more tolerant tree species occur. For the second year in a row though, drought conditions through late summer caused most areas to dry out completely. By the end of September even major brakes and sloughs were completely dry. Fall rains were slow in coming, and it took a five-inch rain Christmas week for most refuge wetlands to fill again.

An early partial drawdown of the Open Ridge Brake moist-soil unit in Little Twist field began February 17. Early results were encouraging with dense stands of wild millet and, to a lesser extent, smartweed developing (Fig.4.). By late summer, however, pest plants coffeeweed (Sesbania) and cocklebur had heavily infested these areas.

Fig. 4. An early partial drawdown of the Open Ridge Brake moist-soil unit had initially good results with dense stands of wild millet and smartweed developing. Unfortunately, pest plants became a serious problem by late summer.

06/87 DME

Six field impoundments, ranging in size from five to twenty acres, were constructed in Little Twist Field during the summer. Although small in size these impoundments will provide much-needed diversity in the Little Twist agricultural unit. Milo and soybeans had been planted in most of these areas prior to construction and were left unharvested. Weed control by the co-op farmer was unsatisfactory and will require more attention next year.

Japanese millet was planted in two of the new impoundments, portions of Open Ridge Brake moist-soil unit and in the wetland at Gumbo Acres. Because of the late summer drought, though, these areas failed to produce.

Most impoundments did not fill to desired levels until the last week of December and with low duck numbers on the entire refuge, they were only receiving light use.

In August a water control structure was constructed near the mouth of Deep Bayou, creating a greentree reservoir of approximately 350 acres. It filled with runoff in November when most other refuge wetlands were still well below desirable levels. At pool level the structure holds Deep Bayou (above the pipeline) to slightly more than bank level, fills Cable Stand Slough to capacity and partially fills Cocklebur Slough. After rainfall, when additional head is created, considerably more area is flooded.

An attempt was made in November to pump water out of the landside ditch into Open Ridge Brake moist-soil unit using the John Deere 4440 tractor and Crissafulli pump. It was discontinued after three days because of equipment problems and other limitations.

3. Forest

Approximately 33 acres of agricultural land in the Gumbo Acres field were direct seeded with willow and water oak acorns in early June. The drought probably reduced the success of these plantings. Only one of three sites showed any success by the end of the year. A second growing season will give a better indication of the success of these plantings.

In July, Primary Assistant Jim Johnson, assisted by Biological Aid Lamar Dorris and a forestry crew from White River NWR, marked for sale approximately 500 acres of timber in Compartments 5 and 22. This sale will be bid in 1988.

Anderson-River Oak Industries, Inc. of Yazoo City completed a timber sale in Compartment #1 (Fig. 5.) that was begun in 1986. Two small regeneration areas, approximately 12 acres each, were cut. Anderson-River Oak, Inc. was also issued a timber sale contract to selectively remove 2,384 tons of cull mixed hardwoods (poles and sawlogs) in Compartment 1. This 326 acre sale was completed during August and September.

Fig. 5. One of eleven small regeneration cuts in Compartment #1. 01/87 TMW

4. Croplands

Eight hundred and sixty-two acres were planted under two cooperative farming contracts in 1987: seven hundred and ninety-six acres in Little Twist and 66 acres at Gumbo Acres.

With the planned construction of several field impoundments in Little Twist, an effort was made this year to insure greater benefits for waterfowl from the farming program. Portions of six impoundments were planted with either milo or Japanese millet, with remaining areas planted to soybeans or left for natural production.

The crops planted on Little Twist were as follows:

Soybeans	585 acres
Milo	166 acres
Millet	45 acres
	796 acres

The refuge share was 124 acres of soybeans, 30 acres of milo and 45 acres of millet. The severe late season drought affected all crops in some way. Soybean harvests yielded from only 5 to 14 bushels per acre. Milo did fair but weed control was neglected on the refuge share. Most of the millet never even germinated.

On Gumbo Acres 50 acres of soybeans were planted as the cooperators share. Sixteen acres of milo planted late was intended to be the refuge share. When it failed 16 acres of Japanese millet was sown, which also failed.

On October 19, thirty acres of wheat was sown at Little Twist and ten acres at Gumbo Acres.

9. Fire Management

A 43-acre wildfire occurred on November 8 when fire danger was extreme and Mississippi was experiencing numerous fires. The fire, located along the Sohio pipeline right-of-way west of the West Levee, appeared to have been deliberately set. At discovery, it was burning in two separate areas along the right-of-way. A Mississippi forestry commission crew responded quickly. Using a fireplow (Fig. 6.) they were able to contain the fire in less than two hours. Damage was primarily in the understory, and long-term impacts should be negligible.

Fig. 6. A Mississippi Forestry Commission crew using a fireplow works against a 43-acre wildfire in dense undergrowth. 11/87 DME

10. Pest Control

Our beaver control program remained active and successful in 1987 with 148 animals removed. Biological Aid Lewis Henry trapped 115 of those during the summer. Refuge staff removed another 33 by night-shooting in January. The current removal rate appears to have stabilized the overall population with a noticeable decline in activity in some areas. This intensive effort is needed to keep the population at a manageable level. The goal is to minimize damage to hardwood forests already heavily impacted by beaver activity. This is especially important for waterfowl because areas most susceptible to damage are also areas of high waterfowl value.

G. WILDLIFE

1. Wildlife Diversity

Timber harvest activities and construction of water control structures began in 1986 and continued in 1987. This work represents the first major active management of habitat since the refuge was established in 1978. Both of

these actions have resulted in a significant increase in the diversity of refuge forests, wetlands, and agricultural areas.

Other ongoing management activities that enhance or preserve diversity include reforestation of agricultural areas and management of water levels by controlling beaver activity.

2. Endangered and/or threatened Species

An adult bald eagle was seen over Campbell Brake on December 12. In recent years, a few bald eagles have been seen each winter, primarily in association with catfish farms immediately adjacent to the refuge.

During October a golden eagle was reported using Big Tupelo Brake, a private inholding.

No sightings of alligators were reported on Panther Swamp this year, although they are known to inhabit the refuge and immediate area.

3. Waterfowl

Duck populations declined rapidly after February when a peak population of 16,200 was observed. Mallards (7,000) and wood ducks (5,000) were the predominant species. This disappointingly low peak was down sharply from the previous two years; 48,000 (1986) and 29,000 (1985). It was probably due in part to the mild weather conditions of the 1986-87 winter.

Similarly, year-end duck numbers were low at 5,000. Mild weather continued through most of December. Also, most refuge wetlands, including the new Little Twist field impoundments, were still at less than desired levels due to the severe summer/fall drought. The new Deep Bayou greentree reservoir did fill to pool level in November. However, because of low overall duck numbers on the refuge and because of duck hunting pressure beginning the first week of December, it received only light use through the end of the year.

January is generally the peak month for waterfowl populations on the refuge. Population levels throughout the winter are heavily influenced by weather and water conditions in the major wintering areas of east Arkansas and west Tennessee located further north in the flyway.

4. Marsh and Water Birds

Colonial birds were predominated by great blue herons and increasing numbers of egrets, night herons, white ibis, and anhingas were seen.

Fifty-five white ibises were seen using the Gumbo Acres' moist-soil unit during May.

6. Raptors

A raptor survey was conducted on January 4 as part of a statewide survey. Nine red-tailed hawks, 10 kestrels, and two northern harriers were recorded at Panther Swamp.

September sightings of increasing numbers of kestrels and the first harriers are an obvious sign that fall migrations are beginning. Increased observations seem to indicate a steady population growth.

8. Game Mammals

As a result of altered hunting regimes on Panther Swamp, the white-tail deer herd is beginning to exhibit some expected dynamics that should improve overall herd conditions. Historical harvest ratios on Panther Swamp prior to 1986 were approximately 85%-15%:buck-doe. A hunting season in 1986/87 favored either sex harvest and resulted in a ratio of 44%-56%:buck-doe with a total harvest of 302 animals. With the harvest increased by approximately one-third, a substantial increase in reproduction was observed in 1987. The first fawns were observed in July. Staff and refuge visitors reported an unusual number of twins this year over previous years.

Observed data indices of two closely monitored hunt seasons on Panther Swamp are as follows:

Table 1. Antler Points of 1 1/2 Age Class Bucks, Panther Swamp NWR.

	Number of Points							Total	Average
Year	2	3	4	5	6	7	8	Sample	Points
1987	23	5	7	1	3	0	1	40	3.00
1986	26	11	8	5	6	2	2	61	3.44

Table 2. Average Deer Field Dressed Weights (Pounds) by Age and Sex Classes for Panther Swamp NWR.

Year		1/2	1 1/2	2 1/2	3 1/2	4 1/2	5 1/2	Avg.
1987	Does	44	73	91	100	105	0	83
	Bucks	45	105	148	165	192	0	116
1986	Does	43	84	98	96	100	110	85
	Bucks	49	102	135	151	163	0	120

Table 3. Deer Kill by Age and Sex Class Panther Swamp NWR, 1987.

Age Class	Bucks	Does	Total	Percent
6 months	33	32	65	22
1 1/2	56	22	78	27
2 1/2	22	47	69	24
3 1/2	3	27	30	10
4 1/2	1	7	8	3
5 1/2	0	0	0	0
5 1/2+	0	2	2	1
Unknowns	17	20	37	13
Total	132	157	289	100
Total %	45%	55%		

Table 4. Deer Kill by Age and Sex Class Panther Swamp NWR, 1986.

Age Class	Bucks	Does	Total	Percent
6 months	31	30	61	20
1 1/2	62	44	106	35
2 1/2	16	45	61	20
3 1/2	9	25	34	11
4 1/2	3	8	11	4
5 1/2	0	5	5	2
5 1/2+	0	1	1	1
Unknowns	12	11	23	8
Total	133	169	302	
Total %	44	56		

This was the second year to gather data from harvested deer. The most reliable data comes from deer checked during the two days of either-sex gun hunting. Data cards provide limited information on deer taken during archery, muzzleloader, and bucks only hunts.

10. Other Resident Wildlife

Large flocks of turkeys were observed throughout the year. One flock of 63 was observed in a co-op field in Little Twist in January. Excellent reproduction seems to be continuing with an estimated mid-year population of 500-550 birds.

Other wildlife commonly observed on the refuge were armadillo, bobcat, striped skunk, and the ever increasing coyote. Other species known to exist but not commonly seen include gray fox, otter, flying squirrel, and eastern chipmunk.

Many bird species reside year-round on the refuge and include eastern bluebird, northern cardinal, house sparrow, eastern meadowlark, Carolina chickadee, tufted titmouse, American crow, pileated woodpecker, red-bellied woodpecker, hairy woodpecker, common flicker, downy woodpecker, and red-headed woodpecker. Cavity nesters such as the woodpeckers, chickadees and bluebirds find more than adequate habitat in the many dead or deteriorating trees present.

Reptiles and amphibians at Panther Swamp include the American alligator, red-eared turtle, Mississippi mud turtle, snapping turtle, numerous species of skinks and lizards, southern leopard frog, bullfrog, green tree frog, and a dozen or more species of newts and salamanders.

11. Fisheries Resources

Fish species include channel and blue catfish, largemouth bass, bluegill and several other species of sunfish, crappie, buffalo, carp, bowfin, shad and gar.

16. Marking and Banding

A total of 257 mallards, 14 black ducks and one pintail were banded post-season this year. The following is the sex breakdown:

	Male	Female
Mallard	182	75
Black Duck	10	4
Pintail	1	0

All mallards were recorded as AHY, and black ducks and pintails as ASY.

One hundred sixty-four of these birds were caught in a swim-in trap on Campbell Brake (Fig.6.). Ninety-three were caught with the first-ever rocket net shot on Panther Swamp on a makeshift site in Little Twist Field.

Two new rocket net sites were constructed during the summer (Section I.1.). YCC enrollees repaired and modified the swim-in traps in Campbell Brake.

Fig. 7. The swim-in traps in Campbell Brake are generally reliable but difficult to get to and time-consuming to work. 11/87 DME

17. Disease Prevention and Control

Assistant Manager Ellis attended a waterfowl disease workshop at Wheeler NWR in February.

H. PUBLIC USE

6. Interpretive Exhibits/Demonstrations

The refuge set up a display at the annual forestry and wildlife supper held in Yazoo City on March 7. A System 70 interpretive display borrowed from Tensas River NWR was used, as well as an aerial photo map of the refuge and a variety of brochures. Approximately 400 persons attended.

The Pittman-Robertson anniversary exhibit along with refuge information was displayed at the Yazoo County Fair beginning September 28.

8. Hunting

Hunting and related activities, i.e., scouting, placing deer stands, etc. make up the bulk of public use and is increasing.

Waterfowl hunting continued on Panther Swamp through January 18. Hunter use increased but success remained low. An estimated 1,075 ducks were taken during 800 hunter visits. Waterfowl hunting was allowed daily until 12:00 noon throughout the state season (40 days). Hunter activity and success is directly correlated with waterfowl populations and, unfortunately, seem to be reflecting a definite downward trend.

A major change was in place for the 1987-88 waterfowl season, which began on December 5. The size of the waterfowl hunting area was reduced by approximately one third (Fig. 7). The area closed to hunting included Hamlin Brake, Banana Lake and Brushy Lake. This action was taken to try to offset declining waterfowl use in recent years by making more high quality habitat available. In other words, by making the refuge more of a refuge.

Fig. 8. YCC enrollees re-signed the altered boundary of the Waterfowl Hunting Area which was reduced in size to provide waterfowl sanctuary. 07/87 DME

In an attempt to simplify refuge complex hunt brochures, each refuge developed separate pamphlets for the 1987-88 seasons. The increased map detail, wording and specifics made the effort worthwhile. We just don't get them in time. We received our pamphlets on September 17 with archery season starting on October 3. Our hunt brochures satisfy a significant part of our public contact efforts. Without them we start at a definite disadvantage.

Archery season opened October 3 portending a state deer season that will not end, in one form or another, until next year! Panther Swamp is not conducive to archery hunting. The large contiguous wooded area just doesn't seem to lend itself to this endeavor. As usual hunting pressure was light, but steady. Six deer (2 bucks - 4 does) were the reported harvest.

The first-ever limited-permit either-sex gun deer hunt was held on November 21 and 22. It was a successful hunt (Fig. 9.) with good compliance with the permit system. A total of 237 deer were harvested (59% does, 41% bucks). Hunter success was estimated at 31%. Vicksburg ES office staffers, Charles Baxter, Robert Barkley, and Russ Watson and other volunteers, Joe Tobia and Mark Wooley, provided important manpower for the deer check stations (Fig. 10).

Fig. 9. The limited permit deer hunt November 21 and 22 was a success. This hunter had the best kind of success--taking a nice buck. 11/87 DME

Bucks-only hunting continued through November and an additional 19 deer were taken. Deer hunting ended with the close of the muzzleloader season on December 15. The either-sex gun hunt scheduled for the 19th and 20th was cancelled after it was determined that the total harvest after the muzzleloader hunt would already be near the goal of 300. With only limited either-sex hunting available in the state, heavy hunting pressure was expected on the refuge. Area newspapers were notified a week in advance, and no enforcement problems were encountered with the closing. Total checked harvest for the year was 289 (45% bucks, 55% does).

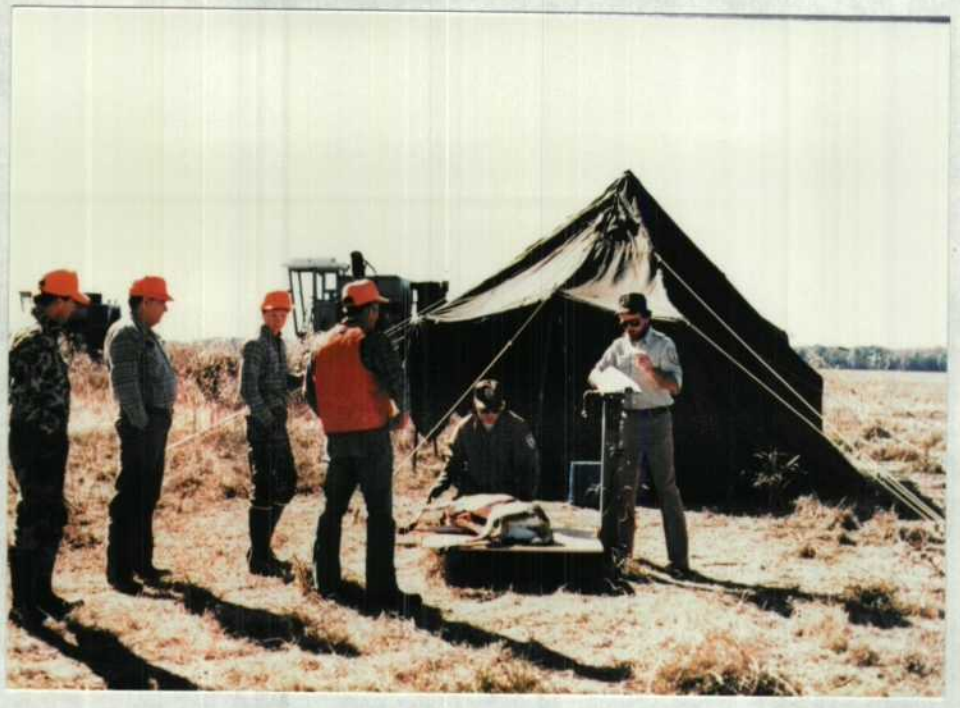


Fig. 10. Refuge deer check station manned by volunteer ecological staff and by refuge staff.
11/87 TMW

The refuge hunt for rabbits (with dogs) occurred during February. Interest and success increased over last year with approximately 800 rabbits taken during 275 visits.

The number of turkey hunters this year was below average. However, harvest data indicates success may have been better than in previous years. An estimated 40 birds were taken. Almost without exception, the staff has received very positive feedback from hunters on closing the refuge to ATV use during the turkey season. However, this policy possibly contributed to lower participation. Approximately 300 visits were recorded during the hunting season,

March 21 - May 1. Despite the overwhelmingly positive comments regarding the restricted ATV use, this policy will be slightly modified for the 1988 season (Section D.3.).

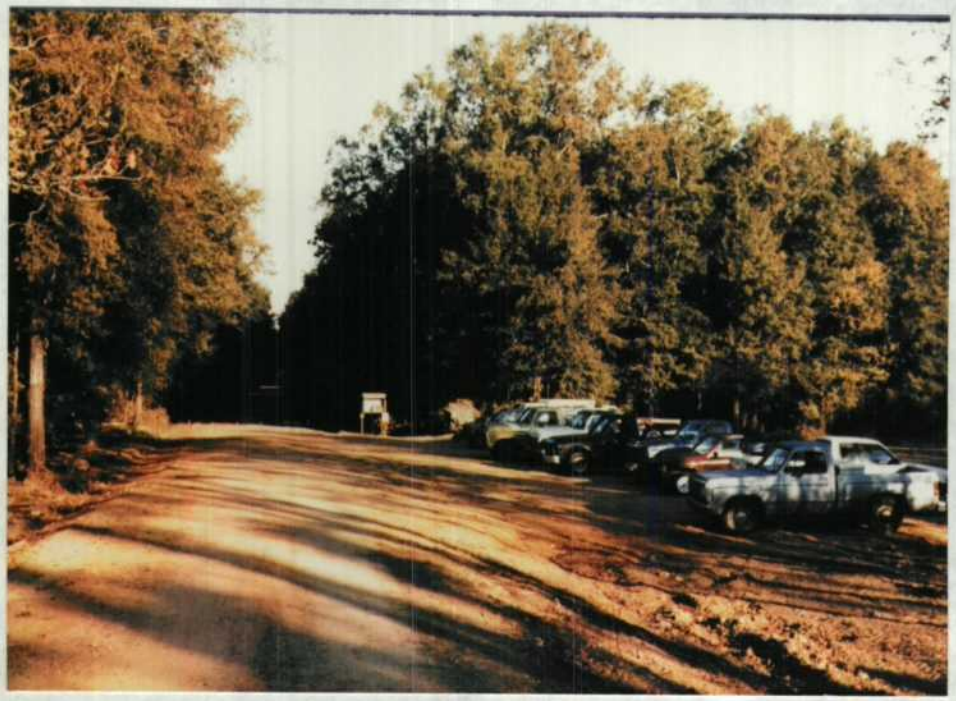


Fig. 11. Squirrel season is always popular on the refuge. This is the new Board Road parking area the second weekend of the season. 10/87 DME

The ever-popular squirrel season (Fig. 11) opened on October 17. Squirrel numbers were lower than last year. This and dry conditions lowered hunter success to approximately 2.6 squirrels/hunter.

10. Trapping

Trapping season was open November 29, 1986 to February 8, 1987. Eleven trappers were issued special use permits, but only a few of these trapped in earnest. Two hundred sixty-one raccoon, 10 beaver, 6 mink, and 1 otter were reported taken.

Dates of the 1987 season are November 28, 1987 to February 7, 1988. Results for this season will be reported in the 1988 narrative.

15. Off-Road Vehicling

Designated ATV access points and trails are used during the hunting season. In July, Mr. Lynn Coleman decided to

no longer allow the public to cross his private land to gain access to the northeast corner of the refuge. The informal agreement to do so had been in effect two years. Mr. Coleman's decision was in conjunction with his refusal of an offer by the Fish and Wildlife Service to purchase an 80 acre parcel of land (Section C.1.). The loss of this access point complicates the existing problem of hunter access and dispersal.

17. Law Enforcement

The continued progression of Panther Swamp NWR from State season hunting to a manageable program with more restrictive regulations and seasons causes concern and selfish anguish among what is hopefully a declining minority. We will continue to address those concerns and find acceptable solutions. We will also explore ways to deal with the other factions and self-interest groups in a positive way. Increased law enforcement efforts were employed in 1987 and resulted in increased compliance, less confusion, and a better understanding of our policies and management goals. As a consequence most staff time during November and December was spent on law enforcement. Considerable effort was expended making contact with the using public, explaining regulations and providing information on our current and anticipated hunting programs.

A total of 72 citations were issued in 1986. The following were issued in 1987:

Table 5.

Violation	No. of Cases
Taking doves over bait	7
Transporting a loaded gun on an ATV	7
Hunting without refuge permit	5
Deer hunting without hunter orange	4
Hunting with dogs during closed season	4
Hunting doves with an unplugged shotgun	3
Vehicle trespass	3
Deer hunting during closed season	3
Enroute to duck hunting area without hunter orange	2
Over the field possession limit of doves	2
Hunting in the closed area	1
Taking migratory waterfowl with lead shot	1
Over the field possession limit of ducks	1
Possession of an illegal deer	1
Taking over the daily bag limit of doves	1
Total	45

Table 6.

Violations	Court	Fines	Cases Pending
15	Federal	$300.	4
30	State	$1,848.	0

Significant cases that were made in 1987:

Four individuals were apprehended on January 10 by Assistant Manager Ellis hunting deer during a closed season. One individual had killed an 8-point buck. A total of eight charges were filed in state court.

Refuge Officers Ellis and Newton assisted two state officers near Panther Swamp NWR on opening of dove season, September 5. A total of 26 cases were made against 14 individuals. These included seven citations for hunting over bait.

I. EQUIPMENT AND FACILITIES

1. New Construction

Fig. 12. The construction of a new 12'x12' cypress sided building provided much-needed storage space for tools and materials. 11/87 DME

A much-needed pumphouse/storage building (Fig. 12) was constructed behind the Gumbo Acres office. The cost of the 12'x12' building was greatly reduced by using cypress siding on hand at Yazoo NWR. The building replaced a small dilapidated pumphouse.

Two new rocket net sites were prepared, one in Little Twist field and the other at Gumbo Acres. The sites were raised with dirt fill and graveled.

YCC projects included construction of a kiosk at the Gumbo Acres office, a 70-foot ATV bridge near (Fig. 13.) Brushy Lake, and two walkways to water control structures (Fig. 14) in Little Twist Field.

Fig. 13. A 70-foot ATV bridge was constructed as part of a new trail south of Brushy Lake. YCC workers from Yazoo NWR assisted Panther's staff and YCC with this project. 07/87 DME

Fig. 14. Watch those fingers! YCC workers put the final touches on a walkway to the Open Ridge moist-soil unit control structure. 07/87 DME

Four new parking areas were constructed during the year: one at the new Board Road access, another in Little Twist Field and one at the entrance to the new Lower Twist property. At the Gumbo Acres office, a staff/office visitor parking area was constructed.

The D-4 dozer was used to clear approximately one mile of new ATV trail west of Gumbo Acres.

A local contractor installed a 500 gallon Clearstream sewage treatment plant at the office. This replaced an inadequate septic system.

Six new impoundments, totalling approximately 75 acres, were constructed in Little Twist Field. Two are located west of the levee adjacent to the Auxiliary Channel (Fig. 15). Constructed across deep drains, these two impoundments will help reduce severe erosion in these areas. Three new culverts with risers were placed under the main field road creating impoundments of eight,

fifteen, and twenty acres. A low dike with riser was constructed across a small drain creating the sixth impoundment, about six acres in size.

Fig. 15. A field impoundment nears completion adjacent to the Auxiliary Channel. Six impoundments were constructed in Little Twist Field this summer. 09/87 DME

A 350-acre greentree reservoir was created by constructing a low, earthen dam near the mouth of Deep Bayou (Fig. 16). Two pipes, one with a flashboard riser and the other with a screwgate, allow control of water levels. The structure was topped with rip-rap to allow overflow at the approximate elevation of 88.5 feet. This raises the water level three feet higher than the water level at the Corps of Engineers weir south of the structure.

Fig. 16. This control structure, constructed near the mouth of Deep Bayou, created a 350-acre greentree reservoir. 08/87 TMW

Work began in August on the Board Road in anticipation of it becoming a new public access. With the loss of the Coleman access (Section C.1.) it became a priority to have the Board Road ready for the hunting seasons. Brush was cleared from 3/4 of a mile of the old roadbed, 40'x 36" steel pipes were placed to cross three sloughs, ditching was completed and fill material hauled to build-up and shape the roadbed. A parking area was graveled, and hunter permit stations and a gate erected to finish the work in time for squirrel season. The initial work was performed by force account, but with several other "priority" projects also needing completion, a local contractor was hired to complete the majority of the work.

A fuel station was put in at the Gumbo Acres office (Fig. 17). Two excess Corps of Engineers fuel pumps were refurbished and two new 1,000 gallon underground fuel tanks installed. Before this station was completed in November, fuel had been hand pumped from a 500 gallon skid tank.

Fig. 17. A fuel station was installed at Gumbo Acres using new tanks and refurbished excess pumps. The concrete slab for the new shop building is in the background. 12/87 DME

A site for a planned shop/equipment shed was raised approximately two feet with dirt fill and then graveled. A local contractor built the form, and the slab and footings were poured in November. The prefabricated building was delivered in November and hopefully will be erected by force account in early 1988. When completed the building will be a three-bay open equipment shed with a 20'x40' enclosed shop bay.

Two new refuge directional signs were erected along River Road; one at the entrance to Gumbo Acres and the other at the Board Road.

2. Rehabilitation

Gravel was added to improve and expand parking areas at the Gumbo Acres access, Cotton's access and in Little Twist Field.

Road maintenance was performed on the entrance roads to Gumbo Acres and the Board Road, and the main field road in Little Twist.

YCC projects included repair and modifications of a swim-in duck trap and repair to ATV bridges over Wade Bayou, Deep Bayou and in Little Twist Field.

Debris from the old barn behind the office was buried using the John Deere 550.

The open sewage lagoon at Gumbo Acres was filled and leveled after a contractor installed a new sewage treatment plant.

Earthen crossings on Panther Creek and Jackson Bayou were reworked and leveled in preparation for the hunting season.

3. Major Maintenance

The engines of the IH-184 mower tractor and portable welder were overhauled during the year.

Repairs to the power steering unit of the LW road-grader and to the fuel system of the Caterpiller road-grader were necessary when the equipment was most needed, of course.

The water pump on the John Deere 4440 tractor was rebuilt and the radiator and oil cooler were steam-cleaned.

The eight wheeled all-terrain vehicle (Argo) had a better year in 1987 than in 1986. Still a broken throttle cable and electrical problems left us stranded three different times. During the year the brake cylinder seals were replaced, valves were adjusted, and a new trailer hitch installed.

Windshields and rear brakes were replaced in both the Jeep Cherokee and Chevy pickup. The Jeep also had power steering hoses and differential seals replaced. U-joints and the fuel pump were replaced in the Chevy pickup.

4. Equipment Utilization and Replacement

In March an IH-184 tractor with belly mount mower, acquired as excess property from the Corps of Engineers, was brought to Panther from Yazoo NWR. An engine overhaul was necessary to make the tractor usable.

During the summer a 12-yard tandem-axle dump truck was borrowed from Wapanocca NWR. The truck was used to haul 250 tons of rip-rap used in the construction of the field impoundments in Little Twist Field.

A Canon PC-24 copier was received after a swap among other refuges in the complex.

In December a new Dodge Ram pickup was received replacing a 1979 Chevy with 92,000 miles.

5. Communications Systems

A 50 foot radio tower was erected at the office in March. A General Electric porta-mobile radio is being used as a base until a permanent base is obtained.

In December, a used State Game and Fish radio was installed in the new Dodge pickup to aid with law enforcement.

J. OTHER ITEMS

2. Items of Interest

Yazoo County's State Conservation Officer Simon Stubblefield was selected as an Officer of the Year for 1987. Simon spends a considerable amount of time on and around the refuge, and his knowledge and interest in the area is an important asset.

A revenue sharing check in the amount of $73,937 was presented to Yazoo County in February.

3. Credits

This narrative was completed with the help of the following:

David M. Ellis - A.,B.,C.,D.,E.,F.,I. and J.
Lucian A. Newton - G. and H.
Claude Carnathan - H.17.
Timothy M Wilkins - K.

Typing and organizing accomplished by Charla Yelverton. Editing and proofreading performed by the Yazoo staff.

K. FEEDBACK

With the addition of the 3,500 acre Lower Twist Tract, waterfowl management on the refuge promises to be greatly enhanced. Panther Swamp NWR will also receive another boost for waterfowl when the Stricklin Tract is purchased. This 640 acre tract will bring with it the lease on the adjacent 16th section lands and leave only one and a quarter sections of inholding in the refuge interior.

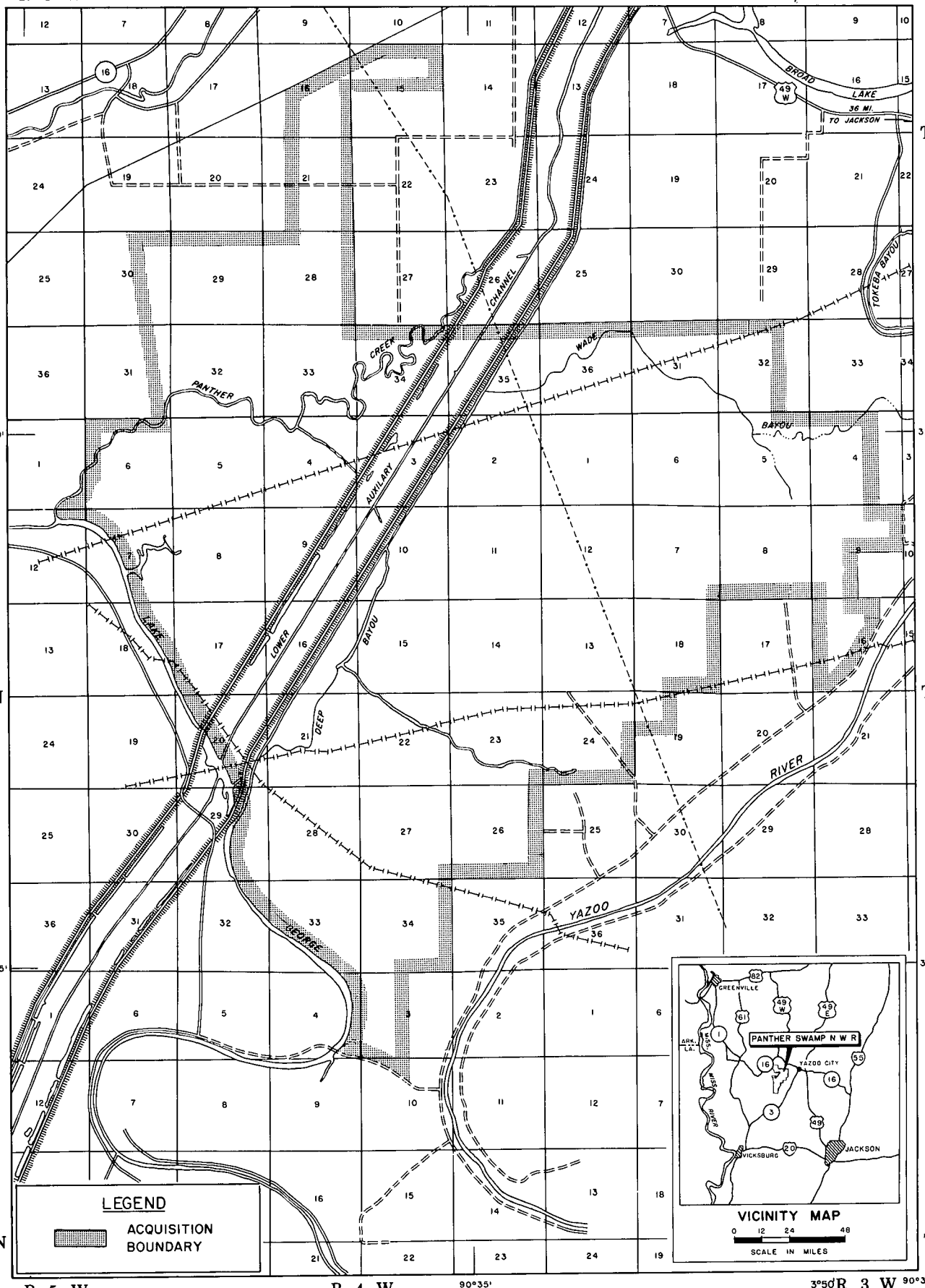
With the recent acquisitions and promise of future acquisition of tracts of land critical to the refuge, this unit of the refuge system will set the table and offer the needed protection wintering waterfowl must have to accomplish its part of the North American Waterfowl Plan.

PANTHER SWAMP NATIONAL WILDLIFE REFUGE

YAZOO COUNTY, MISSISSIPPI

UNITED STATES
DEPARTMENT OF THE INTERIOR

UNITED STATES
FISH AND WILDLIFE SERVICE



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COMPILED BY THE DIVISION OF REALTY
FROM SURVEYS BY U.S.G.S.

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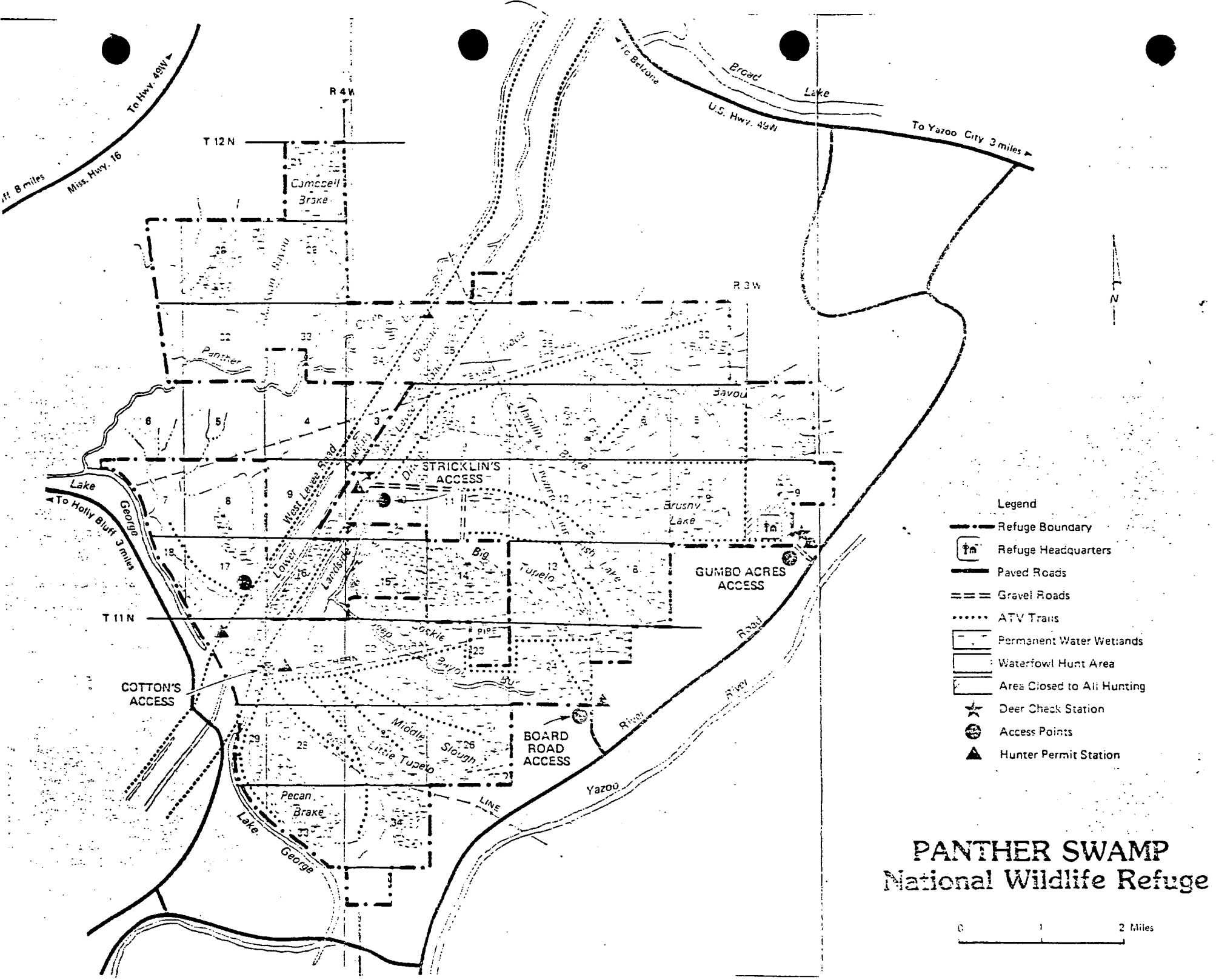

PANTHER SWAMP
National Wildlife Refuge

HILLSIDE NATIONAL WILDLIFE REFUGE

Lexington, Mississippi

ANNUAL NARRATIVE REPORT

Calendar Year 1987

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

INTRODUCTION

Hillside National Wildlife Refuge occupies 15,406 acres in the Mississippi/Yazoo River alluvial plain thirteen miles north of Yazoo City, Mississippi. The refuge is situated at the foot of the loess bluff between the hills and the U.S. Army Corps of Engineers Hillside Floodway Levee in Holmes and Yazoo Counties.

Refuge lands were purchased by the U.S. Army Corps of Engineers under their Hillside Floodway, Yazoo Basin Project and transferred to the Fish and Wildlife Service in 1975 for operation as a National Wildlife Refuge. The refuge serves as a silt collection sump via a cutoff levee containing the altered channels of Black and Fannegusha Creeks.

Refuge habitat types are dominated by bottomland hardwoods interspersed with bald cypress/tupelo sloughs and "brakes" in the wetter areas and buttonbush, water elm, swamp privet, and willow in the more shallow depressions. Prior to Fish and Wildlife Service ownership of Hillside Refuge, 3,573 acres of bottomland hardwood timber were cleared and placed in agricultural production. Land use types include 10,709 acres of bottomland hardwoods, 374 acres of rivers and streams, 2,951 acres of croplands, 534 acres of grasslands, and 838 acres of administrative lands.

In years past, refuge wetlands were noted for large wintering waterfowl populations. Mallards are the dominant waterfowl species with wigeon, pintail, green-winged teal, and wood ducks being common.

Approximately 200 species of shorebirds and other migratory and resident birds utilize the refuge.

Some of the mammals present on the refuge are the white-tailed deer, gray and fox squirrel, swamp and cottontail rabbit, coyote and armadillo. Furbearing species are the nutria, muskrat, beaver, bobcat, spotted and striped skunk, raccoon, mink, otter, and weasel. Small mammals present are the common mole, short-tailed and least shrew, eastern chipmunk, various bats, cotton rat, eastern wood rat, cotton mouse, and harvest mouse.

The endangered American alligator occurs naturally on the refuge, and the bald eagle is an occasional winter visitor. Sloughs, streams, and marsh areas support a number of warm-water fishes.

Most species of reptiles and amphibians indigenous to the area are present on the refuge.

Fig. 1. A view of a cypress/tupelo slough from the South Levee. 08/87 HWB

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G. WILDLIFE

H. PUBLIC USE

I. EQUIPMENT AND FACILITIES

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A. HIGHLIGHTS

Deer harvest largest in short history of refuge. (Section H.8.)

Summer YCC enrollee steals explosives from vault on Halloween night. (Section H.17)

Sheet piling water control structure completed on Turkey Point. (Section I.1.)

B. CLIMATIC CONDITIONS

Once again, weather conditions were unpredictable from month to month and were often a complete flip-flop from the previous year. Temperatures were above average for most of January with some heavy rains and three days of flooding. Mild temperatures and occasional heavy rains continued through February and March; consequently, the refuge was flooded (Figs. 2. and 3.) much of the time.

Fig. 2. Fanagusha Creek flooding. 02/87 HWB

Fig. 3. Tipton Bayou structure at full discharge.
02/87 HWB

April was an extreme month. Only 1 1/2 inches of rain fell, making it the driest April since 1946. An inch of snow fell on April 2, and below-freezing temperatures were present for a week. The following week, temperatures soared into the upper 90's. May and June were wet months. July saw a heat wave with little rain. August was mostly hot with unseasonably cool weather the last of the month. Although some rainfall was received during this month, conditions were dry. Cool, dry weather continued for the next two months. The drought ended in mid-November when heavy rains occurred. December was mostly mild; however, Christmas saw temperatures fall. Heavy rains the remainder of the month flooded the refuge. Total precipitation for the year was almost 55 inches, a normal total.

C. LAND ACQUISITION

3. Other

Contacts were made with adjacent landowners to determine their asking price for land needed to even out the refuge boundary.

D. PLANNING

2. Management Plan

The draft of the all-terrain vehicle plan for Hillside was completed.

5. Research and Investigations

The U.S. Army Corps of Engineers delivered a copy of their sedimentation study performed the previous year. The results indicate the refuge is experiencing siltation at an average rate of .4-.5 feet per year. Some areas have received 8-10 feet of silt since 1962.

E. ADMINISTRATION

1. Personnel

Engineering Equipment Operator Richard Shoops resigned on January 3.

Maintenance Mechanic Claude Carnathan was converted to Refuge Law Enforcement Officer for the complex on February 15.

Maintenance Worker Don Purvis was converted to permanent full-time after working two 30-day appointments and being on a temporary one-year appointment.

Intermittent Bio-Aid Lewis Henry was converted to temporary full-time for summer work and received a promotion toward the year's end.

Much management time was devoted this year to conducting special job evaluation periods for an employee and to documenting a response to a discrimination complaint filed by this employee.

2. Youth Programs

The summer YCC program had four enrollees this year (Fig. 4.). The eight week program began in June and ended in early August. One returning enrollee was assigned as youth leader. No problems were encountered with the enrollees during the camp. However, due to the lack of supervisory staff, transportation for enrollees, and the restrictions on operating equipment and vehicles, it was oftentimes

impossible to perform certain jobs or to keep enrollees busy.

Enrollees were involved in grounds maintenance, shop and vehicle maintenance, beaver trapping, nature trail clearing, impoundment construction, acorn planting, sign work, water gauge installation, boundary posting, beaver dam removal and relocation of wood duck boxes.

1 2 3

Fig. 4. The YCC crew of 1987. 08/87 HWB

1. Christopher L. Allen
2. Sean S. Angell
3. David D. Quon
4. J. Marvin Gleason (not pictured)

4. Volunteer Program

Shyrl Hood and Robert Kesslar of Pennsylvania donated two weeks of their vacation time to trapping beavers from troublesome areas on Hillside. They trapped 51 beavers.

6. Safety

Two vehicles sustained damages from collisions this year. A doe deer broadsided a refuge pickup which was traveling on a narrow trail. The truck sustained a bent front fender and door. The deer ran off, apparently uninjured.

A refuge pickup was parked at a local business when an elderly individual backed into the rear fender and bent it. City police were called, and the individual was cited for causing an accident.

Bumper guards were installed around the gas pumps (Fig. 5.) at the shop to correct an obvious safety hazard. The guards were made from 4-inch pipe and filled with concrete. They should be sufficient to prevent a vehicle from hitting the pumps.

No other accidents or injuries occurred this year.

Fig. 8. Fuel station complete with safety bumper guards. 08/87 HWB

8. Other

Training received this year included a safe driving course presented to the entire staff by the Mississippi Highway Patrol and a hunter safety course presented by the Mississippi Department of Wildlife Conservation. Don Purvis received eight hours of law enforcement training and qualified with a service revolver. Harold Beierman attended the 40-hour law enforcement refresher training in May at Quincy, Florida; pistol re-qualification in October, in Jackson, MS; and a boating safety instructor's course in March given by the Mississippi Department of Wildlife Conservation.

F. HABITAT MANAGEMENT

2. Wetlands

Heavy rains at the beginning of the year filled all impoundments and sloughs to capacity. Serious erosion damage was done to the Impoundment #1 levee.

Beaver dams were removed at the north end of the refuge allowing water to drain from agricultural fields. One field had been inundated for four years due to siltation and beaver dams.

Water levels in all moist-soil impoundments were initially lowered slowly to create desirable seed bed conditions for wetland plant germination. As two weeks of thundershowers kept exposed areas moist and desirable vegetative species germinated, faster drawdowns were implemented.

Impoundment #6 was completely dewatered when beaver dams were removed by explosives. This impoundment produced a good stand of smartweed, Polygonum sp.

Impoundments #4 and #5 were bushhogged and hand chopped to remove buttonbush. In addition these areas were mowed in the fall to create open water areas for waterfowl (Fig. 6.). Impoundment #1 also had a large expanse mowed to create open water and facilitate waterfowl trapping. Millet planted in Impoundments #1 and #5 failed to germinate due to drought conditions. Cocklebur and coffeeweed (Sesbania sp.) were the predominant vegetation in Impoundment #1.

Fig. 6. Moist-soil Impoundment #5 is one of two impoundments which received the majority of waterfowl use. 08/87 HWB

A sheet piling structure was completed this summer on Turkey Point (Fig. 7.) to create a 125-acre moist-soil impoundment. This impoundment filled rapidly and inundated a portion of our road system for a time, preventing access to the banding site. This impoundment has an extremely slow drawdown rate.

Beaver were a problem this year in plugging up control structures during drawdowns. Trapping and shooting efforts for the year resulted in the removal of 96 beaver from the refuge.

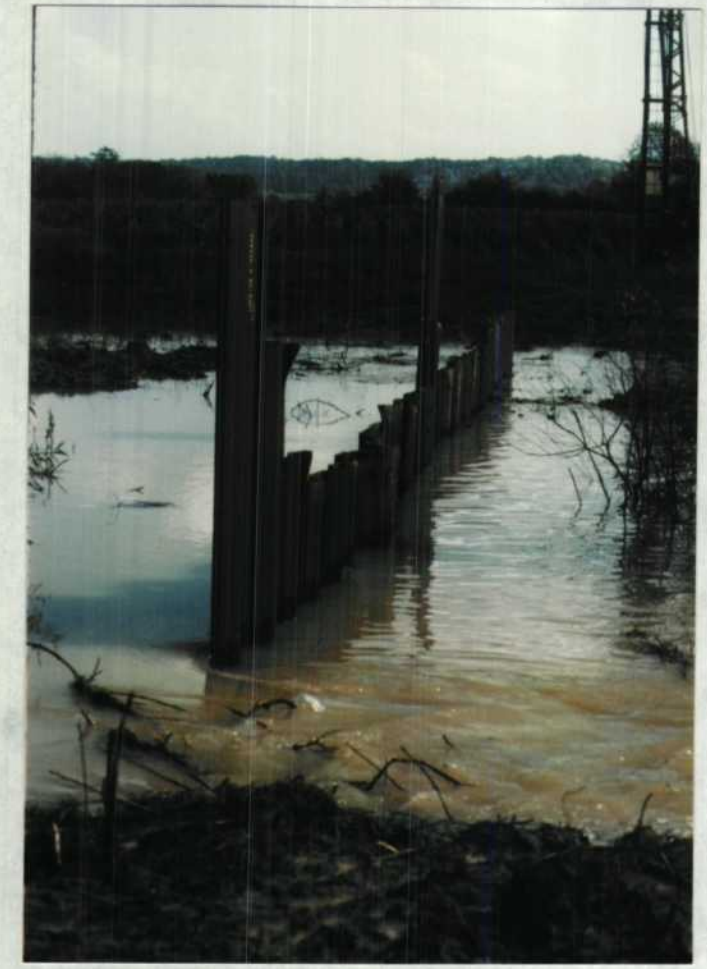


Fig. 7. Beginning construction of the Turkey Point sheet piling structure. 08/87 HWB

3. Forests

Fifty acres of willow/water oak acorns were planted this year on the A.P. Slough area.

For the second consecutive year, Nuttall acorns were scarce. Acorns in general were in short supply. Only one individual provided acorns for the refuge to purchase.

A four-year-old oak plantation adjacent to the Blissdale Swamp area of the refuge was heavily damaged or destroyed by fire on December 30. A fire had been deliberately set, it was felt, in a grass field adjacent to the refuge to clear the area for deer hunters who prefer to "shoot from the road".

An landowner adjacent to the refuge voiced his concerns over reforestation efforts. He was upset that our tree roots might be sapping moisture from his cotton crop and that overhanging branches are destructive to his equipment. He was informed that any branches which extend into his airspace could be cut off at the boundary line. This seemed to satisfy him somewhat.

4. Croplands

The refuge had 2,382 acres assigned to the cooperative farming program for 1987. The predominant crop planted was soybeans. Approximately 10% of the total refuge acreage was planted in corn. The timing of rains was critical and prevented most of the milo from being planted. Only one farmer was able to get milo planted--a total of 121 acres. Farmers were instructed to plant millet if unable to plant milo. Over 200 acres of millet were planted but less than 40 acres germinated. Conditions turned dry when millet needed moisture.

Wheat acreage was 336 acres. Wheat is double-cropped with soybeans. Fifteen acres of sunflowers were also planted. Wheat averaged 25 bushels/acre, soybeans made 20-25 bushels/acre. Milo averaged 60 bushels/acre. Some of the corn did well (Fig. 8.) while other fields produced little corn.

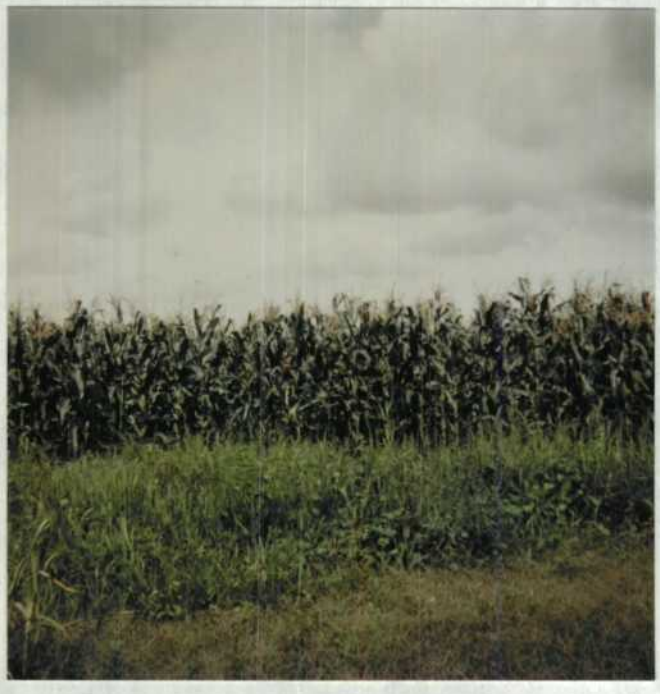


Fig. 8. An excellent corn crop was produced on Turkey Point and was heavily used by waterfowl and other wildlife. 06/87 HWB

Many bean fields did not produce (Fig. 9.) and with the nongermination of the millet, there was a scarcity of food in the field for wildlife. However, ducks heavily utilized available corn during low temperature conditions.

Fig. 9. Poor farming practices produced a substandard crop of soybeans. The farmer responsible seems to have a history of poor crops. 07/87 HWB

5. Grasslands

Fifty acres of broom sedge fields in the A.P. Slough area were placed in the reforestation program and seeded with willow oak and water oak acorns.

8. Haying

One 20-acre field produced two cuttings of hay this year.

9. Fire Management

Tinder-dry conditions for several weeks resulted in the state issuing a "No Burning" bulletin to the public. Fortunately, only two wildfires occurred on the refuge, and they were maliciously set. The first occurred a few days after the deer season opened and greatly improved the visibility of a deer crossing area for a group of "road hunters" who regularly hunt this locale. The Mississippi Forestry Service responded promptly to this fire and controlled it quickly. The fire originated in a grass field adjacent to the refuge and spread to refuge property.

Only minor damage occurred on the refuge. The second occurred on December 30 in the same general location and damaged or destroyed a four year old oak plantation on the refuge. An estimated 10 acres of trees were affected.

10. Pest Control

A variety of approved herbicides and pesticides are used by cooperative farmers for weed, insect, and nematode control on the refuge farm fields.

Beaver have become an increasing problem in many areas. Ninety-six beaver (Fig. 14.) were removed from the refuge in 1987. Some were trapped, using conibear 330 traps, when their activity interfered with drawdowns on moist soil impoundments early in the year. Some were removed by shooting during high water periods when they were more visible than usual.

Forty nutria were also removed by the same methods. Nutria seem to be on the increase after three years of declining populations.

G. WILDLIFE

1. Wildlife Diversity

Hillside has a wide variety of habitats such as bottomland hardwoods, grasslands, marshes, sloughs, streams, ponds, and croplands which combine to provide a wide diversity for wildlife on the refuge. Almost all naturally occurring wildlife is abundant at one time or another throughout the year.

Diversity is an amazing thing. People who know of refuges come to think of them as places to hunt deer, rabbit, squirrel, and raccoon. This may well be true, but refuges also have things to offer others such as the photographer who may be interested in a candid wildlife shot of two hawks sparring with each other or those same hawks racing for a meal. At any given time one may ride the refuge and see deer, bobcat, and even owls. These animals make up the refuge and offer something for everyone.

A male and a female ring-necked pheasant were seen and heard on the north end of the refuge in May. Several sightings were made later in the year.

A hen turkey and three poults were observed near the South Levee in June. This is the first known sighting of turkey poults since acquisition. Groups of up to 15 turkeys were reported at various locations later in the year.

2. Endangered and/or Threatened Species

A bald eagle was observed on fish ponds six miles south of the refuge.

The annual alligator survey was conducted June 26 on Hillside, Morgan Brake, and Mathews Brake. Four alligators were observed on Hillside. Survey routes on these refuges will have to be modified. Vegetation and tree growth along the levees in recent years have obscured visibility.

Fishermen have reported seeing large numbers of alligators of the 2-3 foot class in the marsh along the South Levee. In fact, it has been impossible to bass-fish because of the large number of the small 'gators who will readily attack a busy bait or purple worm. A 13-foot alligator was observed numerous times last winter, but this spring was not seen on the survey. The present survey simply does not reflect the current situation on Hillside and does not accurately survey the alligator habitat on any of the three refuges.

The alligator population is viable as evidenced by the large number of young observed in the marshes in the spring and early summer.

3. Waterfowl

Winter waterfowl populations decreased somewhat this year. Mild temperatures to the north apparently kept any influx of birds away from this traditional wintering area. The mid-winter waterfowl survey censused 12,000 ducks on Hillside. A major flooding event a week later attracted additional waterfowl to the flooded cornfields. A peak of 19,000 ducks was tallied at this time. It is disheartening not to have the large waterfowl numbers present which have occurred in the past. Efforts to improve the habitat and food availability do not appear to be a strong enough drawing card.

Fig. 10. Impoundment #1 is located in a no-waterfowl hunting zone and is the site for the rocket net. 02/87 CWC

Moist-soil impoundments at Turkey Point were planted and otherwise manipulated to enhance waterfowl use. Japanese millet was planted in Impoundments #1 (Fig. 10.) and #5 but failed to germinate due to the drought conditions. Although these stands failed to materialize, smartweed and other moist-soil foods were available.

Waterfowl numbers declined in February, probably due to the continuing mild weather. The duck population was down to about 4,000 birds by the end of the month.

Three hundred blue-winged teal were observed in Impoundment #5 in late March. On August 20 the first teal of the season were noted on Morgan Brake with a small flock appearing on Hillside the first week of September.

Fall duck numbers remained low until mid to late December. During this period up to 3,000 ducks utilized flooded milo and soybean fields on Turkey Point. Low water conditions precluded much of our duck use.

Table 1. Annual Duck and Goose Use Days for Hillside NWR 1980 through 1987.

Year	Ducks	Geese
1987	1,010,300	0
1986	1,014,140	0
1985	866,940	0
1984	1,484,787	9475
1983	1,444,808	1705
1982	849,270	8305
1981	667,782	2781
1980	1,604,340	1478

Several broods of wood ducks were observed in wooded habitat on Hillside throughout late spring and early summer. Three broods were observed on Turkey Point Impoundment #5 on May 18. One of these broods had 11 young.

Wood duck nest box activity increased somewhat over last year. A total of 148 eggs were laid with 39 hatching. Raccoon predation became evident this year. Hopefully greasing the poles will remedy this situation. Data for this year has been summarized in the table on the next page.

Table 2. WOOD DUCK NESTING RESULTS.

Hillside NWR 1987

Boxes available	49
Boxes used	13
Percent boxes used	27%
Boxes used once	13
Boxes used twice	0
Boxes used three times	0
Boxes used four times	0
Total number nesting attempts	13
Total number successful nests	4
Percent successful nest	30.77%
Total eggs laid	148
Total eggs hatched	39
Total eggs unhatched	20
Percent hatchability (from total of eggs laid)	26.35%
Eggs removed	55
Eggs actually bird pecked	12
Eggs that disappeared	3
Eggs predatorized by raccoons	19
Eggs predatorized by snakes	
Eggs left in nest after final check	0
Dead young	0

Table 3.

ANNUAL NARRATIVE REPORT FORM
WOOD DUCK BOX PROGRAM INFORMATION

REFUGE: Hillside

NESTING YEAR: 1987

	NUMBER	PERCENT
Total usable boxes	49	
Estimated boxes used by wood ducks	13	27%
Estimated boxes used by other ducks	0	0%
Estimated boxes used by other wildlife	3	6%
Estimated wood duck broods produced	4	
Estimated total wood ducks hatched	39	
Estimated wood ducks surviving to flight stage*	19	50%

Plans for next year (indicated number

_____more boxes

__x__fewer boxes

_____no change

Remarks: _____

_____

_____

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

4. Marsh and Water Birds

Double-crested cormorants invaded the area by the thousands. They were known to be roosting adjacent to Hillside in Bee Lake and using area catfish ponds. Their number was estimated to be 5,000.

A small number of immature white ibises were observed on several occasions in September.

An estimated 200 common egrets were observed along the South Levee on August 30.

A rookery containing great blue herons, little blue herons, great egrets, and cattle egrets was in full swing in June. The great blue herons and great egrets had the most nests.

Large numbers of great blue herons and great egrets are scattered across the refuge during the summer months. It is a magnificent sight to watch 300 of these birds rise and take flight.

5. Shorebirds, Gulls, Terns, and Allied Species

The most common shorebirds found on Hillside include killdeer, common snipe and American woodcock. Snipe were noted several times in the late winter and spring near impoundments and other wetlands. Killdeer were also found in these areas and during the summer months frequented the graveled areas on the levees and the shop compound. Yellowlegs were observed on the north end using a ditch area adjacent to a farmer's field in April.

6. Raptors

The predominant species found on the refuge include red-tailed hawk, kestrel, northern harrier, and barred owls. Sharp-shinned and red-shouldered hawks are being seen more frequently than in the recent years.

The 1987 raptor survey included 8 red-tails, 2 kestrels, 1 red-shouldered, and 2 northern harriers.

Mississippi kites numbering up to 75 in a group were observed along the Hill Road throughout the month of June. A pair of kites was seen several times on Impoundment #1 during the summer months.

7. Other Migratory Birds

A purple gallinule was spotted May 14 on Turkey Point near the first iron bridge. It moved so quickly, alas, we didn't even get a picture.

The peak mourning dove population was estimated at 3,500 birds in June but took a nose dive in late November.

Cerulean warblers were noted on Turkey Point during the fall migration.

8. Game Mammals

Deer hunting was by far the most successful it has been in recent years. There were 65 deer killed during the gun hunts, and 60 deer taken during the muzzleloader hunts, and approximately 20 deer were taken during the archery hunt. The herd appears healthy, and deer sightings are numerous throughout the year. The following tables give information on both gun and muzzleloader hunts. These do not include data from archery hunters or from the second week of muzzleloader hunting when the check station was not in operation.

Table 4. Hillside Gun Hunt

Nov. 28-29, 1987 & Dec. 17-18, 1987

AGE CLASS	BUCKS	DOES	TOTAL	PERCENT
6 months	13	6	19	29.23
1 1/2	13	5	18	27.69
2 1/2	9	9	18	27.69
3 1/2	1	4	5	7.69
4 1/2	0	1	1	1.54
5 1/2	0	2	2	3.08
5 1/2+	0	0	0	0
Unknowns	2	0	2	3.08
Total	38	27	65	
Percent	58.46	41.54		

Table 5.

Hillside Muzzleloader Hunt

December 2-5, 1987

AGE CLASS	BUCKS	DOES	TOTAL	PERCENT
6 months	5	2	7	18.42
1 1/2	6	7	13	34.21
2 1/2	5	9	14	36.84
3 1/2	1	2	3	7.89
4 1/2	0	1	1	2.63
5 1/2	0	0	0	0
5 1/2+	0	0	0	0
Unknowns	0	0	0	0
Total	17	21	38	
Percent	44.74	55.26		

Table 6.

Total Deer Killed By Age Class

1987

AGE CLASS	BUCKS	DOES	TOTAL	PERCENT
6 months	18	8	26	25.24
1 1/2	19	12	31	30.10
2 1/2	14	18	32	31.07
3 1/2	2	6	8	7.77
4 1/2	0	2	2	1.94
5 1/2	0	2	2	1.94
5 1/2+	0	0	0	0
Unknowns	2	0	2	1.94
Total	55	48	103	
Percent	53.40	46.60		

Table 7. Hunter Success Rates and Deer Kill By Age and Sex Class Compositions, Hillside NWR.

Year	#Hunters	Hunter Success	Fawns B	Fawns D	1 1/2 B	1 1/2 D	2 1/2 B	2 1/2 D	3 1/2 B	3 1/2 D	4 1/2 B	4 1/2 D	5 1/2+ B	5 1/2+ D	Deer B	Deer D	Total Harvested Total
1987	873	12%	16	8	19	12	14	18	2	6	0	2	0	2	55	48	103
1986	783	12%	8	17	19	13	9	6	1	9	1	3	0	1	42	49	91
1985	421	11%	4	6	20	5	6	3	2	1	0	0	0	1	32	16	48

This table shows only deer which were checked at check station. A total of 145 deer were recorded taken during all hunts.

Table 8. Average Deer Field Dressed Weights (lbs.) by Age and Sex Class, Hillside NWR.

	Bucks							Does						
Year	1/2	1 1/2	2 1/2	3 1/2	4 1/2	5 1/2	Avg.	1 1/2	2 1/2	3 1/2	4 1/2	5 1/2	1/2	Avg.
1987	52	105	142	165	0	0	116	47	82	91	100	110	95	88
1986	53	101	125	170	170	0	123	51	94	93	92	97	101	88
1985	52	101	134	144	0	0	108	51	69	90	124	0	105	86

Table. 9. Number of 1 1/2 Year-old Deer by Antler Points, Hillside NWR.

Year	2	3	4	5	6	7	8	9	10	Total	Average Points
1987	7	2	2	4	2	1	1	0	0	19	3.9
1986	4	2	1	4	4	2	1	1	0	19	4.9
1985	3	4	5	2	4	0	1	1	0	20	4.5

Other game found on the refuge includes rabbit, quail, squirrel, opossum, and raccoon. Approximately 900 squirrels were harvested plus 1,200 rabbits and 25 raccoons. Several coveys of quail were seen throughout the summer but they all seemed to disappear when hunting season rolled around. A lack of cover may account for small quail numbers on the refuge. Rabbits and squirrels were quite plentiful. The squirrel harvest increased despite a poor success rate at the onset of the season due to dry conditions.

10. Other Resident Wildlife

Armadillos were seen in increasing numbers during daylight hours. Several carcasses were found along roadways.

Staff sightings of coyotes leads one to believe the population may be getting to the nuisance point. Several have been seen on floodway levees.

11. Fisheries Resources

John Forester, Fishery Biologist, recommended a commercial fishing program be undertaken to help in the removal of rough fish from the borrow ponds on the North Levee. These ponds were once stocked with bass, bream, catfish, and crappie.

The program has been successful in that an estimated 4,000 pounds of buffalo and carp have been removed.

16. Marking and Banding

In January trap sites were baited and prepared for the beginning of banding season.

Banding efforts were disappointing. Ducks did not use the banding site often, and the only time a net shot was attempted the rockets misfired. Further efforts to capture ducks resulted in only one rocket net shot on February 9 with the following birds banded.

Mallards	AHY-M	SY-M	AHY-F	SY-F	Total
	37	5	30	11	83
Black Duck	ASY-M				
	1				1

H. PUBLIC USE

1. General

Hunting and fishing activities account for 95% of the public use on Hillside NWR.

4. Interpretive Foot Trails

Work began this summer on the Alligator Slough Nature Trail. A large trail head sign was erected, and YCC enrollees cut trees and brush to clear the trail. Preliminary work was done toward construction of a boardwalk bridge across the slough. Actual construction is planned for the summer of 1988.

7. Other Interpretive Programs

Claude Carnathan gave a wildlife slide show presentation to 18 members of the Lexington Boy Scouts in January and a presentation to 15 Cub Scouts at Cruger/Tchula Academy in February.

Assistant Manager Beierman gave a refuge slide presentation to 25 employees of Mississippi Chemical Corporation at Yazoo City in February.

8. Hunting

Hunting is by far the most intensely pursued activity on the refuge. The greatest number of hunters in one day occurred on the February opener of rabbit hunting with dogs. An estimated 250 hunters took to the fields to harvest 500 rabbits. The average of only two rabbits/hunter held up throughout the month-long season. Approximately 1,200 rabbits were harvested by 600 hunters.

Dove hunting is quickly becoming a dying activity on the refuge. In two years' time the season opener has gone from 300 to 30 hunters. The refuge is no longer providing a "prepared" field, and the doves are not being attracted to one location. With the absence of a prepared field, the entire refuge has been opened to dove hunting. Hunter success was low, and interest further waned after opening day.

Archery hunting remained stable with a peak of 60 hunters afield each day of opening weekend. Approximately 30-40 bow hunters continued their sport for several weeks on the refuge. This year about 20 deer were taken, which is twice last year's harvest.

A large turnout of 150 squirrel hunters were on Hillside opening day. Dry conditions kept the average limit to only two squirrels. The dry weather kept most squirrel hunters out of the woods for several weeks.

Thirteen hundred hunting visits occurred for gun deer hunts (see Section G). Six to eight hunting clubs adjacent to Hillside plus illegal road hunting generates additional hunting pressure in the area throughout the 10 week state gun season.

Waterfowl hunting was "improved" this year. Hunter numbers increased, and several good hunts occurred throughout the season. The final week of hunting was particularly successful.

The peak number of duck hunters on Hillside on any one day was 60. For the season, nearly 500 hunter visits occurred. Six hundred ducks were harvested compared to last seasons harvest of 225 birds.

9. Fishing

Fishing is open year-around and nearly any day of favorable weather will find fishing activity on the refuge. Peak numbers of fishermen on any given day is 25. Crappie, bass, and catfish are the sought-after species.

11. Wildlife Observation

There is little significant activity in this area other than individuals looking for a place to hunt.

12. Other Wildlife Oriented Recreation

A special use permit was granted George Attkinsson of the Jerry Clower Coon Hunting Association to conduct coon dog field trials in June.

15. Off-Road Vehicling

Hunters were allowed to use ATV's only on designated trails or to retrieve killed deer. Few problems were encountered, and overall acceptance and compliance from hunters was favorable.

17. Law Enforcement

Refuge Law Enforcement Officer Carnathan met with the Holmes County Sheriff, Board of Supervisors, and the Justice Court Judges about garbage being dumped near the refuge (Fig. 11.). Photographs were presented illustrating the impact of flood waters from surrounding creeks carrying this trash into the refuge. Since the meetings, most of the trash dumps have been cleaned up, and all of the dumping has been stopped. We appreciate the cooperation of Holmes County in this matter.

Fig. 11. This photo, showing a trash pile adjacent to the refuge boundary, won-over the County Board of Supervisors. Notice that flooding is carrying trash away (eventually on to the refuge). We were able to get the support of the county in combatting this problem.
03/87 CWC

Officer Carnathan received information that some explosives had possibly been taken from the refuge. An inventory of the explosives vault showed that explosives were missing. The informant was contacted again, and two suspects names were received. Special Agent Pilgreen and Officer Carnathan interviewed the suspects and recovered seven sticks of explosives and twenty-five feet of primer cord. One of the subjects was a minor. The other had been a YCC enrollee this past summer at which time he pilfered a refuge key from an employee's desk. The case

had not been decided by the end of the year. Needless to say, the key to the explosives vault will be made more secure!

Preventive law enforcement continues to take up a great deal of refuge officers' time. This type of law enforcement is necessary on Hillside due to the degree of hunting pressure along refuge boundaries. Irregular boundary lines and the use of dogs for running deer also give the refuge extra problems.

The majority of seasonal Law Enforcement Officer Purvis' time was spent at Hillside. He proved to be a valuable asset to the refuge's law enforcement program.

Citations were issued for 67 violations in the following seventeen categories.

Table 10.

Violations	No. of Cases
Failure to check in on limited deer hunt	13
Hunting without refuge permit	7
Vehicle trespass	6
Animal trespass	6
Transporting a loaded firearm on an ATV	5
Hunting from a public road	5
Hunting in the closed area	4
Deer hunting during closed season	4
Rabbit hunting during closed season	4
Duck hunting during closed season	3
Deer hunting without hunter orange	2
Taking migratory waterfowl after hours	2
Hunting without license	2
Fishing without license	1
Hunting from a motorized vehicle	1
Falsifying a hunting license	1
Deer hunting from an open field	1
Total	67
Written warnings issued	21

Table 12.

Violations	Court	Fines	Cases Pending
22	Federal	$350.	11
45	State	$2,248.50	9

I. EQUIPMENT AND FACILITIES

1. New Construction

The water control structure on Turkey Point was completed this summer. Construction of the water control structure utilizing sheet piling to serve as a weir (Fig. 12.) began in November of 1986. Pile driving operations had been halted due to adverse winter weather conditions. The project was completed by refuge staff with the help of the YCC enrollees. The structure, complete with stop logs, created a 125-acre moist-soil-management unit.

Fig. 12. Sheet piling structure. 10/86 HWB

The access road into agricultural fields on the north end of the refuge was completed. The new access road required two 36-inch culverts with an earth fill and a clay/gravel surface. This enabled access to refuge agricultural fields without crossing private property. It also enables hunters to use the northeast end of the refuge without using a boat. A clay/gravel parking area for 8-10 vehicles was constructed adjacent to the road.

A wooden walkway was constructed to the water control structure on Moist Soil Unit #1. This walkway makes it easy to manipulate water levels without the use of a boat or waders. This was the first of several walkways that will be constructed.

Some of the ground clearing was done on Alligator Slough Nature Trail by YCC workers. The completion of the nature trail will be a priority project for FY'88.

2. Rehabilitation

The old railroad right-of-way (Fig. 13.) on the north end of the refuge was cut down and graded. This new two-lane road ties in with the new access road to agricultural fields.

Fig. 13. Former railroad bed converted to a two-lane road. 1987/Staff

Siltation in several drainage ditches was cleaned out with heavy equipment and partially levied or patched to prevent runoff water from flooding croplands. In addition, a levee (Fig. 14.) which had washed out during a flood was repaired along Black Creek.

Fig. 14. Black Creek Levee after repair and seeding to fescue. 1987/Staff

Major repairs were made to the three miles of road through Turkey Point. The roadbed was cut open and filled with large rip-rap rock to prevent washouts, then closed and covered with clay/gravel. About 1/4 mile of the road had to be elevated three feet because of floodwaters from the new 125-acre moist-soil impoundment. Turkey Point has flooded twice since this work was done and only minor erosion resulted. The rip-rap and elevation of the road were major factors in minimizing the damage. Several sections of this road were also regraveled.

A 24-inch pipe was replaced by a 36-inch pipe in the road across Moist-Soil Unit #5. This pipe will hopefully keep the water head low enough to prevent erosion of the roadbed.

A four-inch layer of clay/gravel was placed on the duck banding net site at Impoundment #1. Parking areas at Turkey Point and A.P. Slough area were enlarged and given a four inch overlay of clay/gravel. The A.P. Slough lot was increased from four to a capacity of six vehicles and the Turkey Point lot was doubled to hold 12 vehicles.

Debris was removed from the boat ramp on Parker Bayou. Because of the ramp's design, debris piles up on the ramp during high water levels. A John Deere 550 dozer was used for the job.

4. Equipment Utilization and Replacement

A Detroit diesel engine was transferred from Mississippi Sandhill Crane NWR for use as a power unit on a planned irrigation well.

The Lorain dragline was loaned to Tensas NWR for 3-4 weeks this fall.

A 12 yard tandem axle dump truck was borrowed from Wapanocca NWR to haul rip-rap to the Turkey Point Road. The task was completed in less than a week and the truck was passed on to Panther Swamp NWR.

A plethora of maintenance activities was accomplished to keep all equipment operational. However, no equipment or vehicles required major maintenance except for the Argo all-terrain vehicle. This machine had drive chains, sprockets, pins, axles, gears, bearings, flanges, seals, solenoid, and blower motor replaced.

6. Energy Conservation

A wood heater was used to heat the shop building again in 1987. Substantial dollars were saved in heating costs.

J. OTHER ITEMS

1. Cooperative Programs

Contract personnel for the U.S. Army Corps of Engineers did extensive repair work to the South Levee Road. The road received heavy use during the winter hunting months and wet conditions left it in poor condition. Repairs consisted of adding fill dirt and gravel and grading the road.

Yazoo County repaired and regraveled Tcheva Creek Road after Tcheva Creek overflowed and washed it out.

A refuge revenue sharing check for $54,712. was delivered to Holmes County Officials.

A permit was renewed for Helms Apiaries to keep 200 bee hives on the refuge at $.10/hive/year. The bees do a service for the refuge in pollinating certain crops and flowering plants.

3. Credits

This narrative was completed with the help of the following:

Harold W. Beierman - A.; B.; C.3.; D.2 and 5.; E.1,2,4,6 and 8.; F. 2,3,4, 5,8,9 and 10.; G.3.; H.1,7,8, 11,12 and 15.; I.1,2,4 and 6.; J.1 and 3.

Claude W. Carnathan - H.17.

Valeria J. Rollins - G.1-8,10,11,15 and 16.

Timothy M. Wilkins - K.

Typing and organizing accomplished by Charla Yelverton. Editing and proofreading performed by the Yazoo staff.

8

K. FEEDBACK

Waterfowl use on Hillside increased this year. This was due partly to designating a sanctuary area and restricting hunting on part of the refuge when waterfowl are present. Increased management activities for moist-soil and more shallow water impoundments was also a factor.

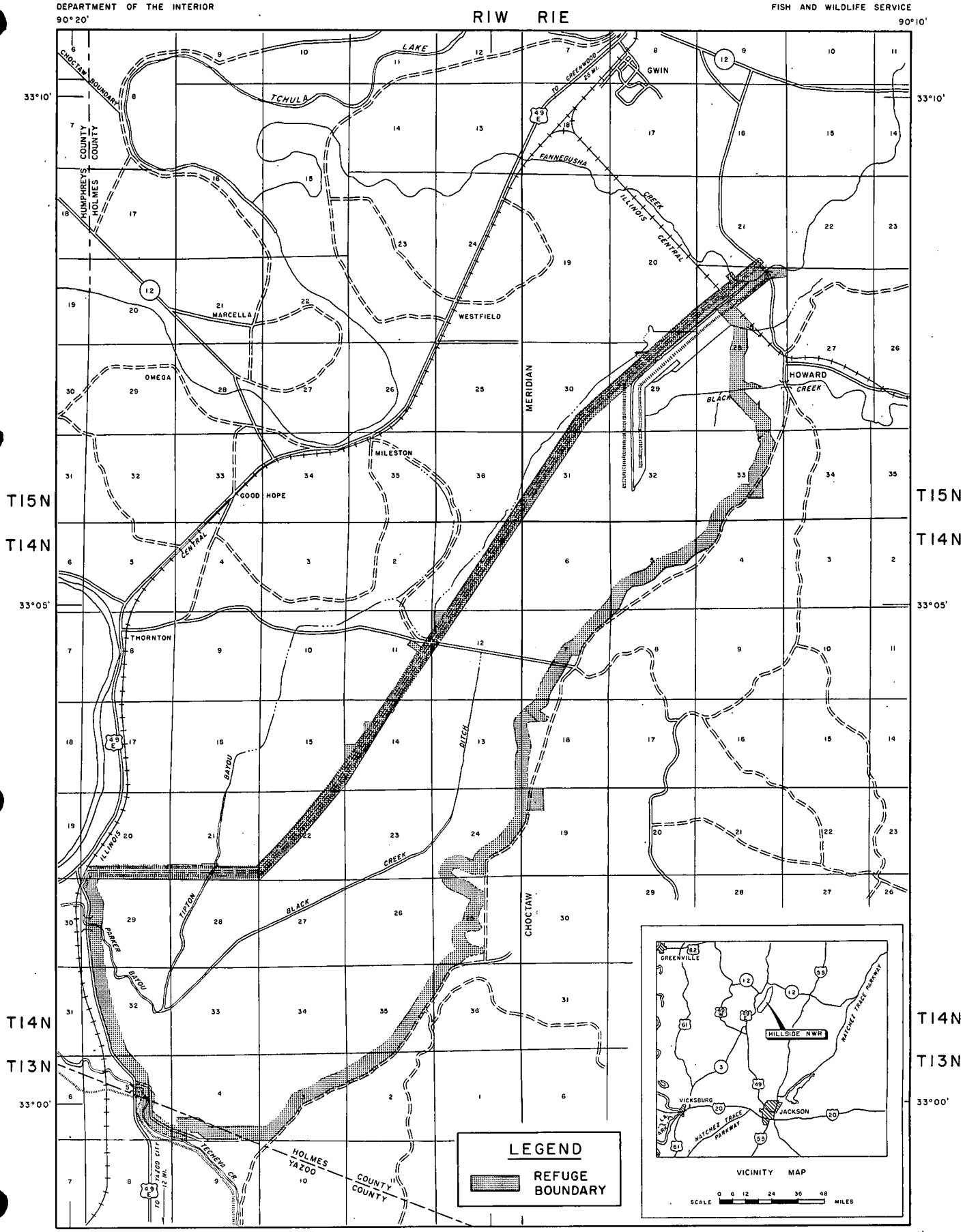
This refuge, although it has severe sedimentation problems from local agriculture, has considerable potential to enhance wintering waterfowl habitat. Efforts will continue to improve refuge waterfowl habitat through the creation of additional moist-soil/shallow water impoundments.

HILLSIDE NATIONAL WILDLIFE REFUGE

HOLMES AND YAZOO COUNTIES, MISSISSIPPI

UNITED STATES
DEPARTMENT OF THE INTERIOR

UNITED STATES
FISH AND WILDLIFE SERVICE



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FROM SURVEYS BY U.S.G.S., CORPS OF
ENGINEERS, AND AERIAL PHOTOGRAPHS

ATLANTA, GEORGIA JANUARY, 1975

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CHOCTAW MERIDIAN

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MAGNETIC N.

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DECLINATION
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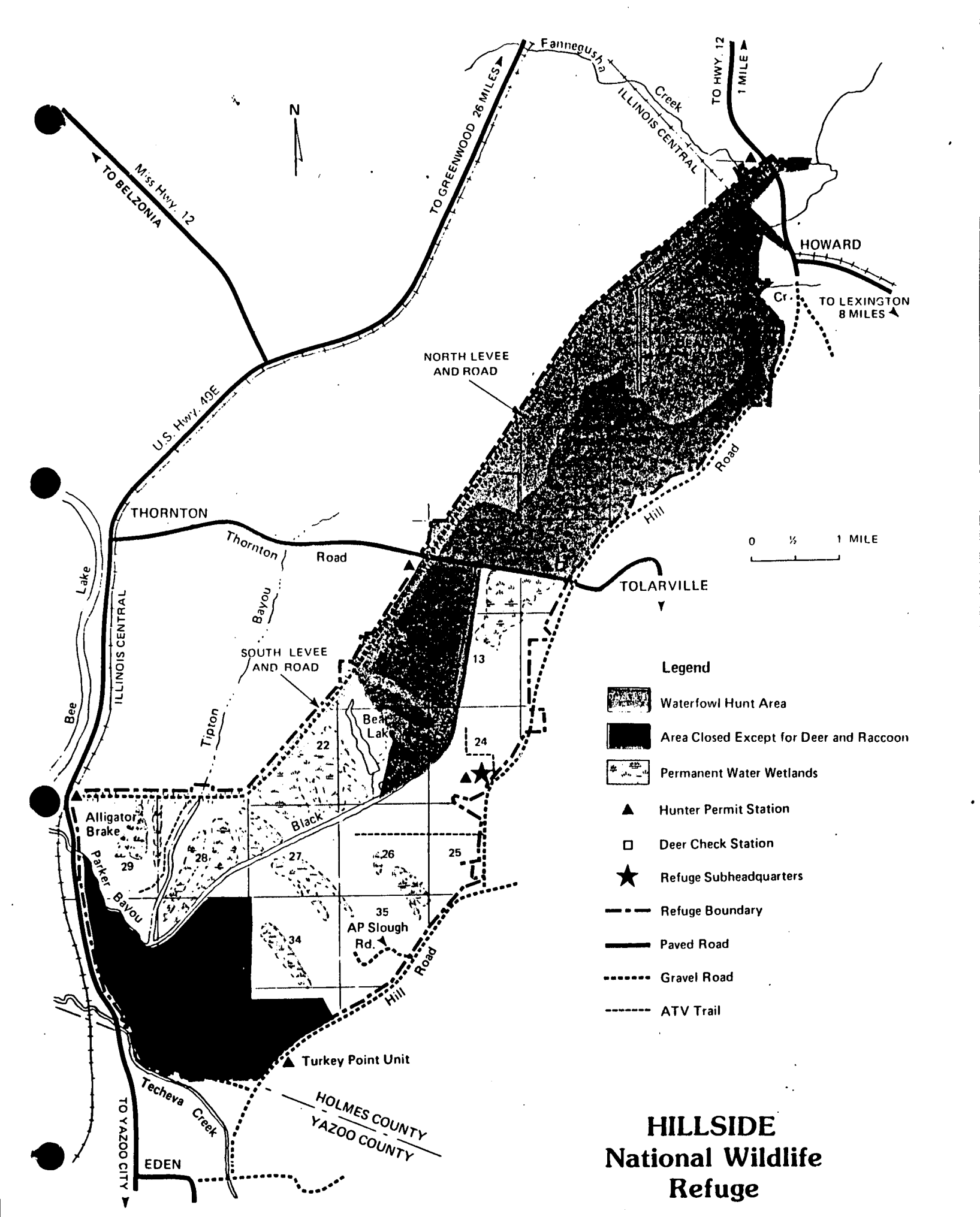

HILLSIDE National Wildlife Refuge

MORGAN BRAKE NATIONAL WILDLIFE REFUGE

Tchula, Mississippi

ANNUAL NARRATIVE REPORT

Calendar Year 1987

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

INTRODUCTION

Morgan Brake National Wildlife Refuge is located in west central Mississippi in the Yazoo River Basin of the Mississippi Delta. The refuge is 21 miles south of Greenwood and three miles north of Tchula in Holmes County. It contains 3,275 acres of bottomland hardwood forests interspersed with sloughs and shallow depressions characterized by bald cypress, button bush, water elm, swamp privet, and willow. Acquisition began in 1979 and the Service took possession in 1980.

Refuge wetlands are noted for large numbers of wintering waterfowl. Mallard, wood duck, wigeon, green-winged teal, and gadwall are the most common waterfowl species. The wood duck is the only resident breeding species of waterfowl. Many species of songbirds, raptors, and marsh birds are present. The bald eagle and the peregrine falcon are winter migrants to the Yazoo Basin.

The major mammals present on the refuge are white-tailed deer, fox and gray squirrel, swamp and cottontail rabbit, red fox and gray fox, flying squirrel, coyote and armadillo. Furbearing species include beaver, muskrat, nutria, spotted and striped skunk, mink, otter, weasel, raccoon, opossum, and bobcat. Other small mammals are the common mole, short-tailed and least shrew, eastern chipmunk, various bats, cotton rat, eastern wood rat, cotton mouse, and harvest mouse.

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I. EQUIPMENT AND FACILITIES

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A. HIGHLIGHTS

An additional 1,187 acres of bottomland hardwood forest was acquired for the refuge. (Section C.1.)

B. CLIMATIC CONDITIONS

No records or daily observations are noted at this refuge. The refuge experiences similar weather conditions as other refuges in the complex.

C. LAND ACQUISITION

1. Fee Title

An approximate 1,187 acres of bottomland was purchased from the John Hancock Insurance Company. Most of this land was forested except for three old catfish ponds (15-20 acres) and about 15 acres cleared for agriculture. The land was removed from Tchula Lake Farms management and transferred to the Fish and Wildlife Service as an addition to Morgan Brake NWR. Additional acquisition is planned which has the potential to create a very intensively used wintering waterfowl area.

D. PLANNING

See Yazoo NWR

E. ADMINISTRATION

1. Personnel

No staff is assigned. Yazoo and Hillside refuges provide personnel for all refuge functions.

F. HABITAT MANAGEMENT

2. Wetlands

Beaver dams were removed throughout the refuge several times this summer by explosives and mechanical means to prevent timber kill. Some success was evident. A tracked backhoe was used to clean out 1 1/2 miles of a silted-in ditch to facilitate drainage.

Fig. 1. Waterfowl foods were abundant but failed to attract large numbers of ducks. 09/87 HWB

9. Fire Management

Extremely dry fall conditions contributed to a small wildfire. A tractor being driven on Highway 49E which bisects the refuge caught fire. The fire rapidly spread to the adjacent right-of-way. Local fire personnel responded quickly as a large railroad trestle was in danger of catching fire. The fire was contained, the trestle was undamaged, and only two acres of refuge trees were damaged.

10. Pest Control

The nine neutered male hogs which have been on the refuge for over a year were sought in an intensive, organized drive in December. The hogs were not sighted; however, evidence that they are present is clearly visible.

Eighteen beaver were trapped this year on Morgan Brake.

G. WILDLIFE

3. Waterfowl

Waterfowl numbers were generally low and sporadic this year. Blue-winged teal were first observed in the area on August 20. On occasion several hundred wood ducks were observed in the evening dropping into the refuge.

Twenty-four nest boxes, which were installed in the summer of 1986, were maintained for wood ducks. Only one nest attempt was made, but nesting success was 100%. A clutch of nine eggs hatched out of one box.

After the nesting season, all twenty-four boxes were relocated. The boxes had been installed close together (about 20-foot spacing) along a firebreak through the woods. They were relocated in the same general area, but placed farther apart (25-30 yards) at staggered depths in the woods. The boxes were formerly on metal poles at a height of 4-5 feet, but were raised to about eight feet as a deterrent to predators. The boxes are made of cypress, and all have predator shields in place.

6. Raptors

Three red-tailed hawks were noted on Morgan Brake during the statewide raptor survey on January 4. An osprey was seen August 31.

16. Marking and Banding

Nine wood ducks were banded this fall.

H. PUBLIC USE

8. Hunting

Deer hunting continues to be popular with archery and muzzleloader hunts open the entire state season on the refuge. An estimated 500 hunter visits resulted in more than 50 deer being harvested. These hunts are either-sex, and post-season observations indicate an abundance of deer remain.

Squirrel hunting pressure was heavy opening weekend with an estimated 100 hunters. Hunters did poorly because of the dry weather. After rainfall occurred, success noticeably improved. The final tally was 175 hunters taking 600 squirrels, a bag increase of 100 from the previous year.

Rabbit hunting increased from 50 hunters last year to 75 this year and from 100 to 150 rabbits taken. Most rabbit hunting occurs in February when hunting with dogs is permitted.

Waterfowl hunting on this refuge is almost non-existent. Plans are to close the refuge to duck hunting.

9. Fishing

Fishing activity was almost non-existent due to dry conditions.

17. Law Enforcement

Seventeen citations were issued for seven categories of violations.

Table 1.

Violation	Cases
Hunting without permits	5
Duck hunting during closed season	3
Hunting from a public road	2
Hunting in the closed area	2
Taking migratory waterfowl with lead shot	2
Deer hunting during closed season	2
Vehicle trespass	1
Total	17

Table 2.

Cases	Court	Fines	Cases Pending
2	Federal		2
15	State	$983.	3

I. EQUIPMENT AND FACILITIES

1. New Construction

Approximately 600 acres, or 1/2 of the new acquisition to the refuge, was boundary posted prior to the start of the state deer season.

A parking area for six to eight vehicles was constructed adjacent to State Highway 49E at the waterfowl hunting boundary line. The parking area enables vehicles to turn around and enter the highway rather than having to back onto the roadway. Services and equipment for site preparation and spreading clay/gravel were donated by G & L Construction of Vicksburg, MS. The construction company had necessary equipment on site because they were engaged in nearby bridge construction.

2. Rehabilitation

A large entrance sign was moved from the Brown gate to a more visible location at the kiosk on the northwest corner. An informational sign at the kiosk was removed.

J. OTHER ITEMS

2. Items of Interest

A two million dollar construction project, (the replacement of four bridges by the State Highway Department) is currently under-way (Fig. 3.) on Highway 49E, which bisects the refuge.

Lack of photographs in this report is due to the loss of four rolls of film by the processor.

Fig. 2. Highway Construction 08/87 HWB

3. Credits

This narrative was completed with the help of the following:

Harold Beierman - A.; B.; C.1.; E.1.; F.2 and 9.; G.15.; H.8 and 9.; I.1 and 2.; J.2 and 3.

Claude Carnathan - H.17.

Valeria Rollins - G.3,6, and 16.

Timothy Wilkins - K.

Typing and organization accomplished by Charla Yelverton. Editing and proofreading performed by the Yazoo staff.

K. FEEDBACK

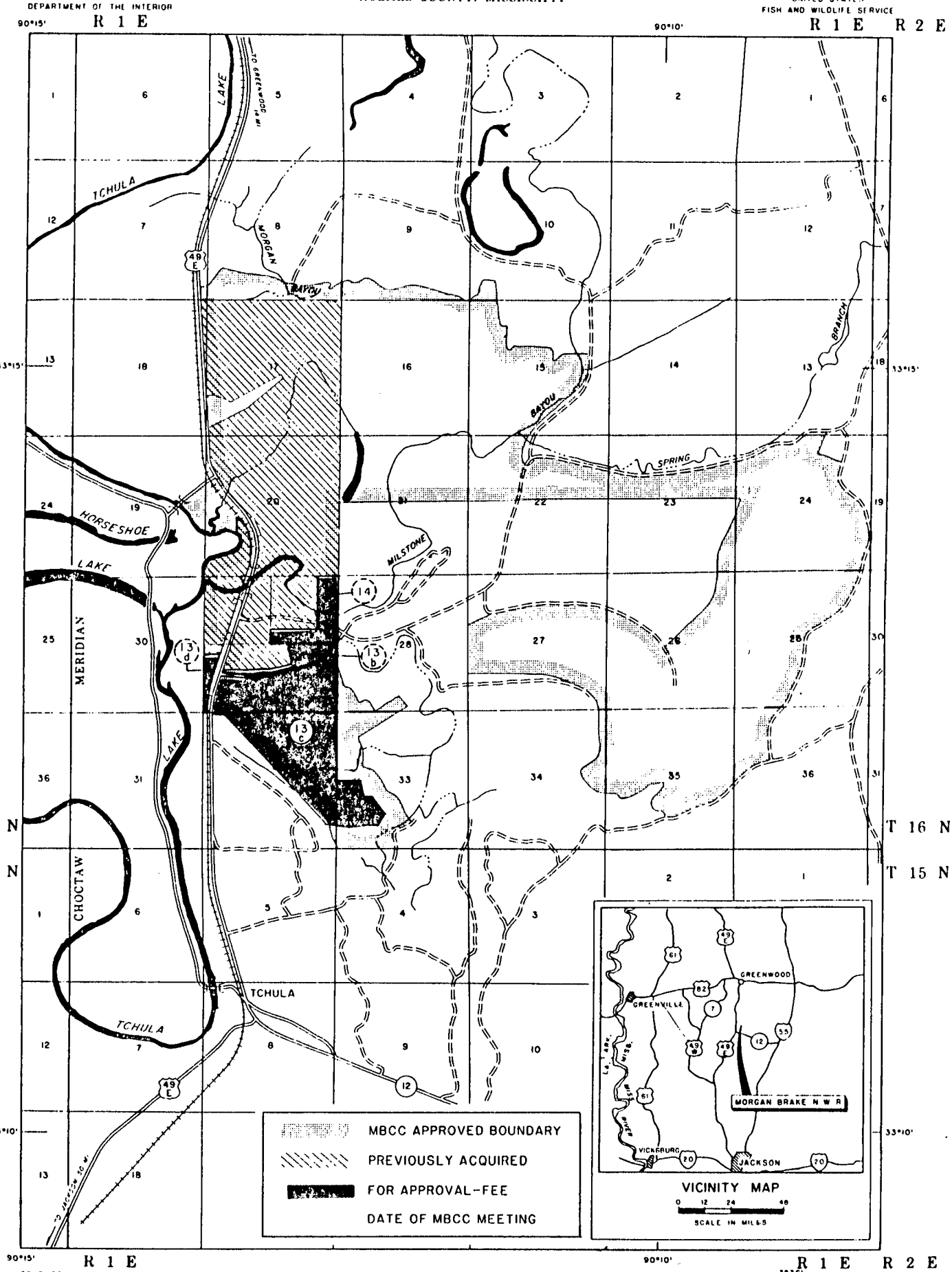
Morgan Brake National Wildlife Refuge has some of the best waterfowl management potential in the Complex. With future acquisition of agricultural lands and old fish ponds adjacent to the refuge, this area could winter 60 to 100,000 waterfowl. It has potential for goose management as well. During the push for increased waterfowl use on Service property and acquisition under the North American Waterfowl Plan, Morgan Brake does not need to be forgotten!

MORGAN BRAKE NATIONAL WILDLIFE REFUGE

HOLMES COUNTY, MISSISSIPPI

UNITED STATES
DEPARTMENT OF THE INTERIOR

UNITED STATES
FISH AND WILDLIFE SERVICE



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MEAN DECLINATION 1977

ATLANTA, GEORGIA JULY, 1977

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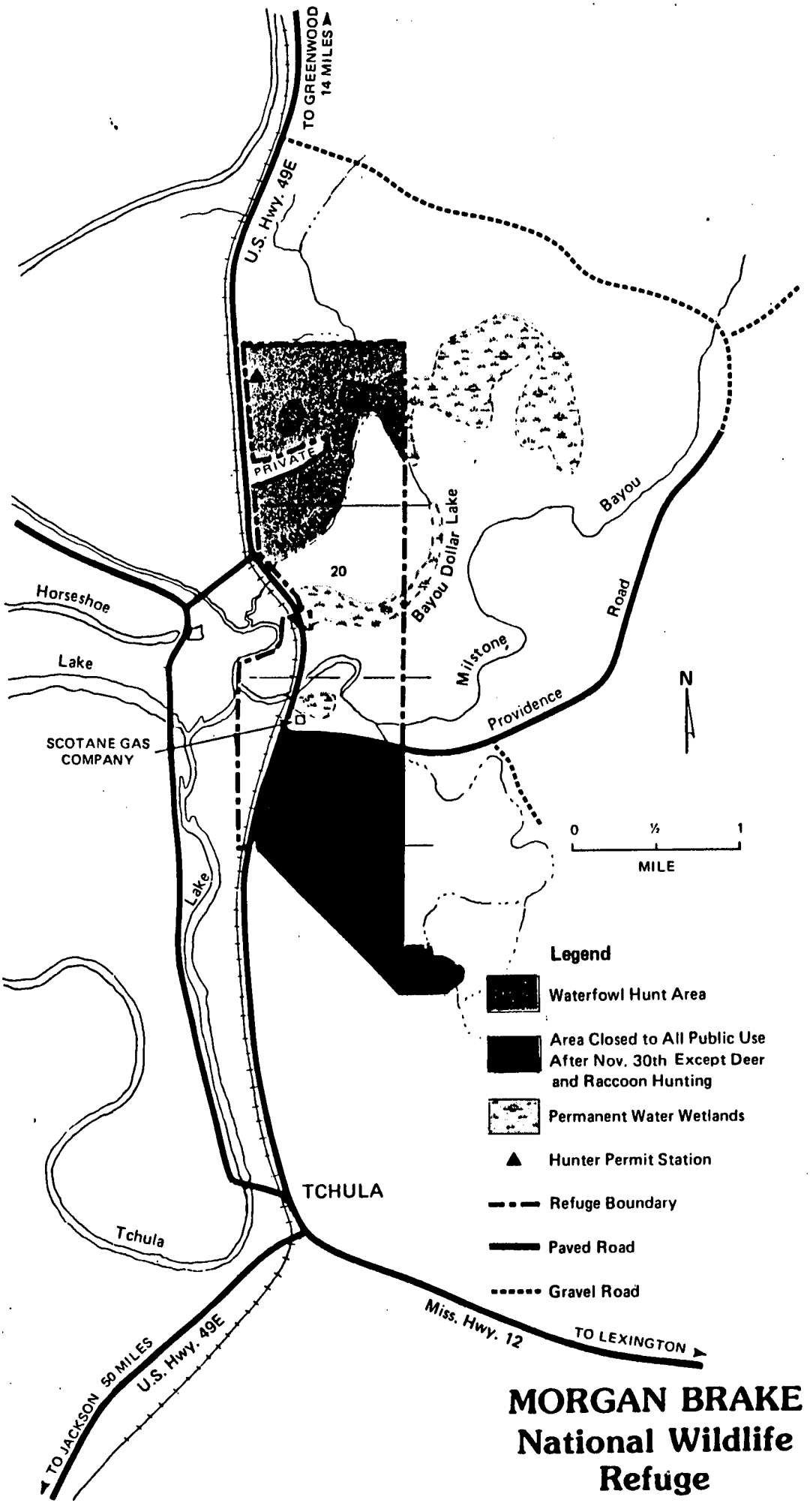

MORGAN BRAKE National Wildlife Refuge