

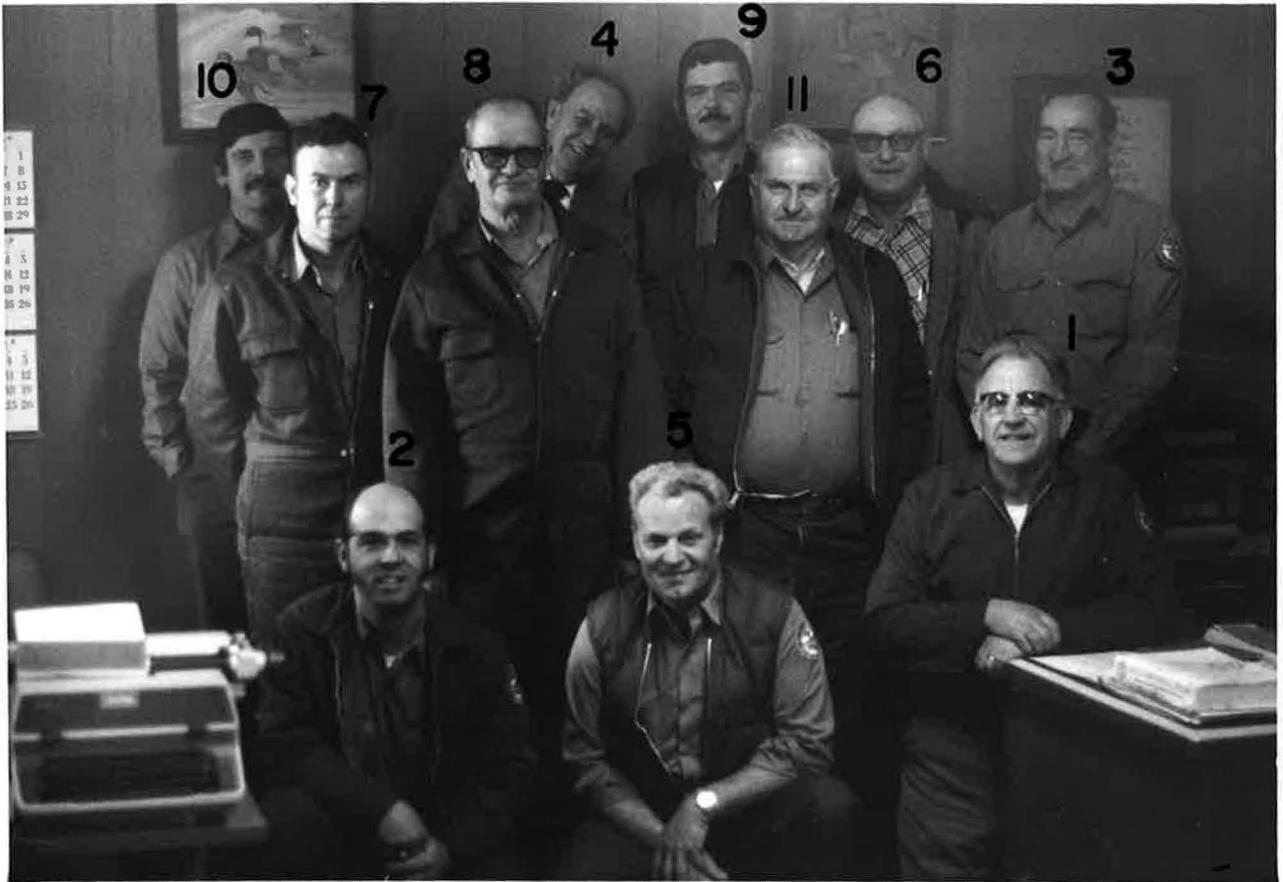
TENNESSEE NATIONAL WILDLIFE REFUGE  
Paris, Tennessee

ANNUAL NARRATIVE REPORT  
Calendar Year 1976

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

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Personnel

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3. Eddie L. Reese, Soil Conservationist, GS-11, PFT
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6. Willie C. McDaniel, Biological Technician, GS-7, PFT
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8. Willie R. Farmer, Engr. Equip. Operator, WG-8, PFT
9. Jerry B. Armstrong, Biological Technician, GS-5, PFT
10. Jim W. Wigginton, Biological Technician, GS-5, PFT
11. Cletus B. Cantrell, Maint. Worker, WG-8, 5/9/76 EOD, PPT

Review and Approvals

*Vandiver L. Childs* 2/11/77  
 Submitted by \_\_\_\_\_ Date \_\_\_\_\_ Area Office \_\_\_\_\_ Date \_\_\_\_\_

Tennessee \_\_\_\_\_  
 Refuge \_\_\_\_\_ Regional Office \_\_\_\_\_ Date \_\_\_\_\_

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TENNESSEE NATIONAL WILDLIFE REFUGE  
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ANNUAL NARRATIVE REPORT  
Calendar Year 1976

I. GENERAL

A. Introduction

Tennessee National Wildlife Refuge is comprised of 51,358 acres located in Benton, Decatur, Henry, and Humphreys Counties. The refuge is broken up into three distinct areas which are the Big Sandy Unit, 21,348 acres, Duck River Unit, 26,738 acres, and Busseltown Unit, 3,272 acres. The three refuge units lie along the Tennessee River and are separated by 55 air miles. The refuge headquarters office is located in Paris, Tennessee.

Tennessee National Wildlife Refuge is superimposed upon lands which belong to the Tennessee Valley Authority. Only a small portion of the refuge is owned in fee title, 563 acres. Definite problems do arise from not owning in fee title the land base which you are managing. T.V.A. has retained the right of public access to, from, and across the waters of Kentucky Lake. We are also at the mercy of T.V.A. and the Corps of Engineers in the control of water level manipulation of Kentucky Lake.

B. Climatic and Habitat Conditions

The refuge received 45.06 inches of rain during 1976 which is just slightly less than the yearly average of 48.35 inches. March recorded the greatest amount of precipitation with 9.86 inches while December had the least with .67 inches. The annual snowfall amounted to 7.8 inches, the major contributor being a four inch snow which fell on February 3, 1976. In brief, our spring can be described as slightly on the damp side while autumn was rather dry. The fall cropping season was described as one of the most hospitable by many farmers in the area.

The winter of '76 was not severe with a low of 3 degrees coming on January 9. A frost which came on May 4 did catch a few folks un-awares and killed back the early planted crops. A high of 95 degrees was recorded on both July 25 and August 15. The mean temperature then dropped rather quickly with the first killing frost of the fall coming on October 18. This apparently was an indication of things to come because the fall of '76 was certainly brisk. October turned out to be the coldest ever on record. Kentucky Lake started freezing up in mid-December due to the extreme cold weather, which included a low of 1 degree coming on December 31.

An earth tremor was felt in the Henry County portion of the refuge on March 25, 1976. No damage was recorded.

Kentucky Lake was extremely kind to us during 1976. We did not encounter the usual spring floods and not once did the Duck River or Tennessee River spill over into the Duck River Bottoms. The maximum level of Kentucky Lake was reached on May 27 with 359.9' and the low reading came on November 22 with 353.8'.

### C. Land Acquisition

#### 1. Fee Title

There were no fee title acquisitions made during calendar year 1976.

The necessity for acquiring inholdings and land to round out the refuge boundary increased during 1976. Hunting Clubs leasing land adjacent to the refuge have created firing line situations in several locations. A new land acquisition proposal is being formulated to offer constructive planning toward eliminating these problem areas. Approximately 1,200 acres are being considered for fee title acquisition. This acreage is located on all three units of Tennessee Refuge, and involved Benton, Decatur, Henry, and Humphreys Counties.

#### 2. Easements

Not applicable.

#### 3. Other

Tennessee Refuge took possession of 11.3 acres of land which had been in the works for transfer to us from the Tennessee Valley Authority. This particular land transfer had been in progress for several years. A 1.2 acre parcel of this land was added to the harbor limits of Mansard Island Marina. A total of three parcels made up the 11.3 acres, all of which were in the Antioch Harbor area.

### D. System Status

#### 1. Objectives

During the fiscal year our operations proceeded almost normally. Flooding did not occur. Consequently, we were able to very nearly meet our major physical objectives based on NFIO funding. Some upgrading of equipment was possible. We accepted delivery of two new pickups and a sub-compact Maverick.

There is no possible way to maintain land use at a high degree of productivity under present NFIO funding. Consequently, we



R5-12-76. Refuge Manager V. L. Childs graphically demonstrates the  $2\frac{1}{2}$  inches of instructions for FY-1977 Program Planning. (LR)



R5-9-76. Something has to be wrong with the system when you have to wade through  $2\frac{1}{2}$  inches of instructions before starting to work. (LR)

have lost many small areas to brush or flooding. Shorelines and creek banks are growing up and the farmers tend to retreat from these brush intrusions. As the brush grows larger, they further influence the fields by shading and sapping, consequently the farmers move back again. Lack of time and funds have prevented our maintaining proper drainage. All factors combined we are probably losing 50 - 75 acres of productive land annually.

Overall our migratory waterfowl management activities were rewarding. We reached a peak of 45,000+ Canada geese and closed in perceptibly on our management objective of 50,000 Canada geese. Duck populations were likewise satisfying.

The banding commitments were reached or exceeded except for black ducks. The black duck failure was a result of our not keeping informed as to the number desired banded. Put another way, we did not start in time.

Our understanding of the desired discussion of coordinating PFMS AND PPBE is not complete. There may have been more amalgamation than we are aware of. There may actually be some mutants around that we have not observed.

## 2. Funding

The chart below indicates the funding and staffing pattern for the years included. It is not difficult to recognize that these figures actually represent a "no funds increase" situation. It is quite apparent that the staff has decreased and that funding has fallen behind the increased cost of people and things. There is, we think, reason to express pride in the management, particularly the staff, for continuing to produce at a reasonably sustained level under these constraints.

Fiscal Year	Rehab. Funds	Total Funds	Personnel	
			FT	PT
1976	14,400	234,300	9	3
1975	8,500	223,000	11	2
1974	18,000	226,200	13	3
1973	-	204,950	13	0
1972	-	185,400	13	0

## II. CONSTRUCTION AND MAINTENANCE

### A. Construction

Two new pickup trucks were received during the year. One was assigned to the Big Sandy Unit and the other to the Busselton Unit to replace aged equipment. We also took possession of a new 2-way mobile radio which replaced a unit of rapidly failing quality. Also during the calendar year a used John Deere AW disk was purchased to upgrade our farm equipment.

Maintenance of refuge roads is a constant problem of major significance during the year. More than 100 miles of public use and farm roads are graded and maintained on Tennessee Refuge. Examples of road repair as a major maintenance problem include the hauling of 160 tons gravel into the Texas farm road, the hauling of 400 tons gravel into the Ruff Island farm road, and 1,400 tons of gravel into the Britton Ford - Sulphur Well road system. It is estimated that more than 2,500 tons of gravel were hauled and spread to maintain our refuge road system during 1976.

Much of our farm road system has never had a solid base on which to build. Many times we find ourselves combating the hazards of farm roads in poor condition when we could more advantageously spend our time in attaining additional objective outputs in water-fowl maintenance and wildlife-wildlands objectives.

Our well at the Busseltown Unit has given us problems for many years and 1976 was no exception. A decided lack of rainfall in the summer and fall more than strained the capacity of the well to provide water. Rehabilitation money was made available during 1976 to drill a new well but the low bid received was \$10,000 more than the rehab monies available. Pursuit of a suitable water supply was then aimed in another direction. On September 15, 1976, an agreement was reached with Perryville Utility District to run a three inch pipeline a distance of four miles to the Busseltown sub-headquarters site. This three inch pipeline when completed will provide a dependable supply of city water to the refuge. Cost of this three inch pipeline will be \$19,000, considerably less expensive than drilling a well with no guarantee of water.

A new boat ramp was constructed adjacent to the Duck River Pump Station to provide additional fishing opportunities in the lower bottoms. Crappie fishermen now have a much easier time gaining access to this prime fishing area. An estimated increase of 20,000 activity hours of fishing resulted from this new unit.

The Tennessee Refuge sign shop continues to turn out interpretive and regulative signing. An estimated 150 signs of various sizes and narration were completed during the year.

#### B. Maintenance

More than 140 shot and damaged signs were replaced during the year. Also, an estimated 25 miles of refuge boundary line was repainted, primarily on the Duck River Unit.

Vehicle, tractor, and equipment maintenance demands a sizeable portion of man-hours in attention on Tennessee Refuge. We attempt to utilize the less demanding winter months to catch up with maintenance on our large and diversified pieces of equipment. During 1976 our Oliver 1900 was completely overhauled and is performing much more satisfactorily now. Also during the year it was necessary to complete



R10-12-76. Private hunting clubs are becoming more numerous in the area surrounding the refuge. (LR)



R10-11-76. Water posting is an annual problem on Tennessee Refuge. The ice (as shown above) takes away many signs with the spring thaw. (JWW)

major repairs on a Case 730 farm tractor for clutch seal repairs and a new P.T.O. shaft. A fresh coat of paint was put on the Duck River Model 12 grader and the Chevrolet station wagon.

More than 16 miles of farm ditches were recut and/or repaired during 1976. Refuge personnel also mowed more than 35 miles of public use roads and farm roads. A recently purchased off-set Bush Hog mower was pressed into service this period. A 35 acre tract of stumpland at Busseltown Unit was cleared for improved utilization.

Three cannon net sites were cleaned, re-graveled, and graded for the upcoming banding season. One of our banding trailers was completely rebuilt for the fall banding operation.

Litter control and enforcement is at its peak during the warm summer months. Public use access areas are picked up and the litter containers emptied once per week during the period from Memorial Day weekend to Labor Day weekend.

### C. Wildfire

A two acre fire occurred at Antioch on February 29, 1976. The Tennessee Division of Forestry was called in to help control what was initially a fast moving grass fire. Source of the blaze was apparently a match or cigarette which had been tossed from a moving vehicle.

Arson apparently was responsible for the fire which destroyed Elkhorn Community Park on the night of March 13, 1976. The entire shelter and accompanying picnic tables were destroyed. A thorough investigation plus an accompanying reward offer failed to flush the culprit.

An extremely dry fall increased the fire danger to the extreme level. At least two fires occurred directly adjacent to the refuge in November but luckily did not spread to refuge lands.

## III. HABITAT MANAGEMENT

### A. Croplands

Cooperative Farmers produce the majority of our waterfowl needs for hot foods and a smaller portion of green browse crops. The total refuge acreage under cultivation this period was 5,408 acres. Of this acreage, cooperative farmers planted 3,191 acres. Service share of Cooperator planted crops is normally 25 percent which is left in the fields for waterfowl. The Service received 582 acres of corn as a portion of its share which produced 35,235 bushels of corn. The yield was above average with 34,585 bushels left in the field for waterfowl and 650 bushels of ear corn harvested for waterfowl banding.

The acreage cultivated as Service operation increased 311 acres this

period as compared to the previous period. Refuge personnel planted 1,710 acres of crops this period. These crops were: Buckwheat 298 acres, Japanese millet 438 acres, and wheat 974 acres.

The use of permanent sod in grass-based rotations along with small grain - lespedeza rotation has been effective in reduction of Johnson grass. Pesticides, particularly restricted ones, are used sparingly and only when needed. This is primarily for control of Fall Army Worm in wheat and Japanese millet and for control of bud and corn ear worm in corn. The main restricted pesticide used is Sevin (carbamate). The use of herbicides for pest plant eradication increases annually. The increase in crop production and reduction in manpower are the main factors for the increase. Atrazine for control of grasses and broad-leaves has been highly effective in corn and milo production. Treflan has been effective for control of Johnson grass and other target pest plants in soybeans.

There were no collection of receipts or exchange of crops with other stations.

#### B. Grasslands

Hayland plantings by Cooperative Farmers increased by 120 acres as compared to previous period. Still, only 188 acres of hayland was harvested as compared to 68 acres. Cooperative Farmers prefer to plant hay crops on their own farms. Waterfowl benefits from the crops seeded as Service share for Cooperator hay harvested, also, waterfowl use the areas for resting and eat the seed not harvested.

The use of grasslands with resulting benefits to waterfowl and soil maintenance and improvement is another tool used to accomplish our major objective. Our present acreage is 507 acres as compared to 586 acres the previous period.

All grazing continues to be carried out under a Cooperative Farming Agreement which limits the number of Animal Use Months and time of grazing is limited to an eight month period to insure proper waterfowl use, maintenance being a factor. Stiffer maintenance requirements, primarily fertilizer and mowing, have increased. Waterfowl benefits with more available and succulent browse, more attractive open resting areas, and farm crops accrued from Cooperator use.

#### C. Wetlands

Wetlands on Tennessee National Wildlife Refuge consist of eight acres open fresh water, 85 acres shallow fresh marshes, 171 acres shrub swamps, 3,074 acres seasonally flooded basins, 400 acres other wetlands, and 23,551 acres rivers and streams. The Kentucky Lake reservoir along the Tennessee River makes up the bulk of our wetland composition.

Almost every spring we can expect the Kentucky Lake water levels to reach or exceed the 365' mark and thereby flood the Duck River Bottoms

and other key farming areas. However, during 1976 the spring rains were light and the lake did not exceed the 360' level, the height of the dike in Duck River Bottoms. Rainfall during the latter half of 1976 was also moderate and lake levels fluctuated in the 354'-356' range.

Certain embayments which have a high concentration of waterfowl and are subject to public disturbance are posted as closed areas each fall about mid-October. These areas include Swamp Creek, Sulphur Well Bay, Bennett's Creek Bay, and Busseltown Dewatering Area. The closed area signs are removed from these wetland areas after the waterfowl seasons are closed. The water boundary line between the Duck River Pump Station and Birdsong Creek is also posted each fall prior to the waterfowl season.

#### D. Forestlands

There are 18,800 acres of woodlands on Tennessee National Wildlife Refuge. Much of the land upon which timber is found is extremely hilly and large continuous blocks of timber on the refuge are unusual. There is currently no commercial timber operation on the refuge nor has there been for several years.

Pine, oak, and black locust seedlings were purchased and planted during 1976. A total of 10,000 loblolly pine, 2,000 black locust, and 1,000 cherrybark oak were planted in specified areas where reforestation was desirable. Many of these seedlings, especially the oaks were presented to our refuge neighbors to be planted along the refuge shoreline.

We recently entered into a 25-year agreement with the Tennessee Department of Conservation, Division of Forestry to provide 102 acres of land for the experimental planting of hardwood trees. The lands involved are in five different areas adjacent to Cuba Landing and test plantings by the Tennessee Department of Conservation are expected to be initiated over the next several years.

#### E. Other Habitat

A small amount of gravel (upwards of 25 cubic yards) was donated to nearby refuge neighbors for their individual use. Most gravel was issued from the Antioch gravel pit via permits which allowed persons to obtain up to five cubic yards each.

#### F. Wilderness and Special Areas

Britton Ford Research Natural Area was established in 1974 and consists of 750 acres of woodlands. Britton Ford Peninsula makes up 500 acres of the natural area while Sulphur Well Island provides the balance of 250 acres. An archery hunt and a muzzleloader hunt for deer were held on these lands during October and December. No alterations was made to this oak-hickory climax woodland during the year.

Mount Zion Church and Cemetery were listed in Volume 40, Number 24 of the Federal Register as a National Historic Place. Our relationship with the Church and Cemetery has changed very little since that time because no funds are available to adequately maintain or restore the structure. A community reunion and picnic was held at Mount Zion Church on July 4, 1976. This reunion has been an annual occurrence since 1944.

G. Easements for Waterfowl Management

Not applicable.

IV. WILDLIFE

A. Endangered and/or Threatened Species

Bald eagles are censused once per week during peak periods of the year, October through February. The eagles are usually counted at the same time as the waterfowl count on Monday mornings. Eagle census by aircraft on Tennessee Refuge has proven to be less than effective. We participated in the statewide eagle survey on February 15 - 16, 1976.

The overwintering population of 1976 was not a good one. A peak of three adult and five immature bald eagles was attained on January 26. We are at a loss to explain this substantial reduction in activity from previous years. The fall flight looked much better with a peak total of eleven adults and eight immature bald eagles during the last week of December.

Donald A. Spencer's book entitled Wintering Bald Eagle indicates a relationship between the presence of the bald eagle in the fall and winter and his dependence upon waterfowl populations as a food source. This unique relationship has been thought to exist on Tennessee Refuge for some time. The eagle population generally lags that of the waterfowl by several weeks.

The majority of the bald eagles can be found on the Duck River Unit, identical to the greatest amount of waterfowl. Lesser numbers of eagles are noted on the Big Sandy and Busseltown Units.

Sightings of peregrine falcons on Tennessee Refuge are rare. Usually no more than a single pair can be noted at any particular time.

Osprey no longer nest along Kentucky Lake as they once did in years past. Up to a half dozen birds are usually seen migrating along the Tennessee River each year. These osprey are believed to belong to the same group which nest in Wisconsin.

B. Migratory Birds

## 1. Waterfowl

An inventory of waterfowl is taken once per week on the entire Tennessee Refuge from mid-September through mid-April. All three units of the refuge are censused individually by vehicle and then a composite figure determined for the entire refuge. An aerial census is usually made three times per year and these flights are made during the peak of the waterfowl season, October through January. The flights not only serve to confirm or upgrade these figures determined on the ground but oftentimes the aerial census will discover pockets of waterfowl not visible from the ground.

An "all time high" figure of 45,200 Canada geese was found on the refuge during the week of January 4 - 12, 1976. This figure did not last long because during the week of December 19 - 25, 1976 a new peak of 48,400 Canada geese were noted utilizing the refuge. The largest number of ducks found on Tennessee Refuge during 1976 was 270,155 during the week of December 12 - 18. These were primarily made up of mallards (166,000), wigeon (41,700), and black ducks (35,750).

Canvasbacks numbering 2,362 were seen on the refuge during mid-January. Nearly all of these ducks were utilizing Sulphur Well Bay on the Big Sandy Unit. Close inspection of these canvasbacks showed that 55 had been color marked by Northern Prairie Wildlife Research Station.

Waterfowl foods disappeared quickly after the first of the year. All available food had been consumed by the third week in January. Even so, waterfowl depredation complaints were few after the waterfowl season had closed. Waterfowl numbers dropped rapidly in late January and February.

A workshop was held in Asheville, North Carolina on August 26 - 27, 1976 concerning waterfowl diseases. Dr. Milton Friend of the National Fish and Wildlife Health Laboratory headed the workshop.

Migrant waterfowl first started arriving in mid-September and the fall flight brought in a surprise or two. On November 16, 1976, a total of 83,000 wigeon were counted on the refuge which was 2½ times the previous high figure. These efficient little lawn mowers went right to work on our winter wheat and this browse disappeared in record time. Correspondingly, black duck numbers were down during the fall flight.

A new species of waterfowl was added to the refuge list this year. A half dozen common scoters were observed in the Big Sandy River on October 7, 1976.

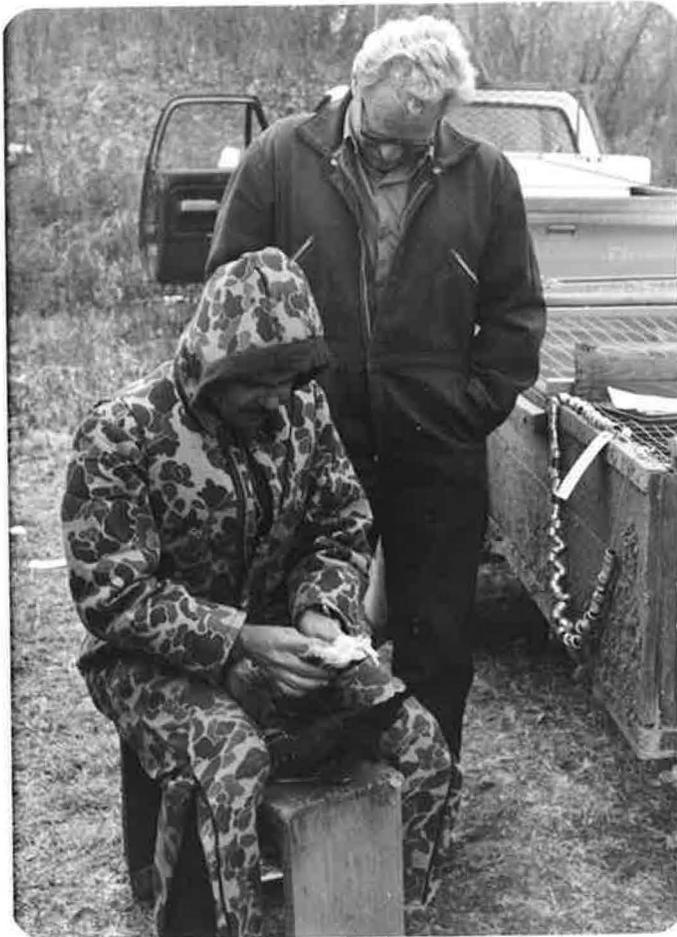
A waterfowl meeting was held in the refuge headquarters office on November 30, 1976. In attendance were Jim Burbank of the Tennessee Valley Authority, Don Hammer of the Tennessee Valley



R1-6-76. Clear cutting is fast becoming "the standard method" for harvesting hardwoods in this area of Tennessee. (LR)



R1-9-76. This newly cut hardwood forest adjacent to Tennessee Refuge will be planted to pines as a more marketable product. (LR)



R7-6-76. Biological Technician Jerry Armstrong (sitting) receives a few pointers from Carl Dowdy on aging and sexing Canada geese. (LR)



R7-3-76. Biological Technician Carl Dowdy describes the various characteristics to look for in aging and sexing geese. (LR)

Authority, Don Orr of the Regional Office, Ken Gamble of the Mississippi Flyway Council, and Refuge Manager Vandiver L. Childs. General waterfowl management problems were discussed.

Three cannon net sites were utilized on the Duck River Unit during the banding season. Ducks on the banding site consistently gave us problems when we were shooting for geese. A shipment of less than standard quality charges also gave us some problems until we sorted out a solution.

Results of our banding success in 1976 plus other banding data is as follows:

Birds banded during the period included 2,463 Canada geese, one Hutchins goose, 20 blue geese, 596 mallards, 240 black ducks, and 931 wood ducks.

The banding and recovery data contained on pages 15 - 18 is maintained on a calendar year basis and include the period July 1, 1975 - December 31, 1976 to bring records to date back to a calendar year basis.

1976	Duck usc-days	20,607,266
1976	Goose usc-days	3,494,208
		<hr/>
		24,101,474

## BANDING RECORD DATA - AS OF DECEMBER 31, 1976

SPECIES	BANDED	TOTAL	RECOVERED	
	1976	BANDED	NUMBER	PERCENT
Canada Goose	2,463	11,026	1,366	12.388
Hutchin's Goose	1	8	0	0
Blue Goose	20	37	3	8.108
Snow Goose	0	4	0	0
Mallard	596	10,019	1,495	14.921
Mallard-Black	0	51	3	5.882
Black	240	2,575	385	14.951
Gadwall	0	4	0	0
Wigeon	0	394	46	11.675
Pintail	0	78	6	7.692
Mallard-Pintail	0	2	0	0
Green-winged Teal	0	10	2	20.000
Blue-winged Teal	0	440	12	2.727
Wood Duck	931	7,080	440	6.214
Ring-necked Duck	0	21	5	23.809
Scaup	0	2	0	0
Coot	0	9	0	0
Mourning Dove	0	2,954	166	5.619
TOTALS:	4,251	34,714	3,929	11.318

## RECORDED GOOSE KILLS BY STATE OR PROVINCE

STATE OR PROVINCE	NUMBER	STATE OR PROVINCE	NUMBER
Alabama	38	South Carolina	5
Illinois	64	TENNESSEE	154
Indiana	43	Virginia	9
Iowa	1	West Virginia	1
Kentucky	92	Wisconsin	76
Maryland	8	TOTAL U. S.:	882
Michigan	194		
Minnesota	10	Manitoba	2
Mississippi	2	Northwest Territories	23
Missouri	9	Ontario	447
New York	6	Quebec	12
North Carolina	1	TOTAL CANADA:	484
North Dakota	1		
Ohio	97		
Pennsylvania	71	GRAND TOTAL:	1,366

## RECORDED DOVE &amp; DUCK KILLS BY STATE, PROVINCE OR COUNTRY

<u>STATE, PROVINCE OR COUNTRY</u>	<u>NUMBER</u>	<u>STATE, PROVINCE OR COUNTRY</u>	<u>NUMBER</u>
Alabama	51	North Dakota	85
Arizona	1	Ohio	27
Arkansas	96	Oklahoma	1
Colorado	3	Oregon	1
Delaware	1	Pennsylvania	4
Florida	14	South Carolina	8
Georgia	11	South Dakota	45
Illinois	150	TENNESSEE	989
Indiana	42	Texas	33
Iowa	41	Virginia	5
Kansas	4	Washington	1
Kentucky	81	Wisconsin	113
Louisiana	142	TOTAL U. S. :	2,315
Maryland	6	Alberta	12
Michigan	56	British Columbia	2
Minnesota	139	Manitoba	82
Mississippi	105	Ontario	51
Missouri	36	Quebec	8
Montana	2	Saskatchewan	90
Nebraska	10	TOTAL CANADA:	245
New Jersey	1	Venezuela	2
New York	4	Dominion Republic	1
North Carolina	7	TOTAL OTHER COUNTRIES:	3
		GRAND TOTAL:	2,563

RECOVERIES BY YEAR - AFTER BANDING AT TENNESSEE REFUGE  
(Geese, Ducks, Doves)

<u>YEAR</u>	<u>NUMBER OF RECOVERIES</u>	<u>PERCENT OF TOTAL RECOVERIES</u>
Same Year Banded	1,065	27.106
1st Year After Banding	1,087	27.666
2nd " " "	651	16.569
3rd " " "	412	10.486
4th " " "	277	7.050
5th " " "	185	4.709
6th " " "	104	2.647
7th " " "	59	1.502
8th " " "	36	.916
9th " " "	29	.738
10th " " "	15	.382
11th " " "	5	.127
12th " " "	0	0
13th " " "	1	.026
14th " " "	0	0
15th " " "	0	0
16th " " "	0	0
17th " " "	2	.050
21st " " "	1	.026
TOTALS:	3,929	100.000

## BIRDS TRAPPED - BANDED ELSEWHERE

The following is a tabulation of birds trapped that have been banded elsewhere than at this station. In addition to the following list, we have 133 reports of recoveries from which we have not received copies of Report to Bander on recaptures.

Agassiz N.W.R.	2
Alabama Department of Conservation	6
Back Bay N.W.R.	1
Blackwater N.W.R.	1
Bombay Hook N.W.R.	1
Canadian Department of Fish and Game	43
Crab Orchard N.W.R.	21
Cross Creeks N.W.R.	39
Des Lacs N.W.R.	1
Ducks Unlimited	3
Florida Game and Fish	1
Horicon N.W.R.	21
Illinois Department of Conservation	71
Indiana Department of Conservation	5
Iroquois N.W.R.	2
Kellogg Bird Sanctuary	10
Kentucky Fish and Wildlife Resources Commission	8
Kentucky Woodlands N.W.R.	9
Lake Andes N.W.R.	1
Lower Souris N.W.R.	3
Mark Twain N.W.R.	2
Michigan Department of Conservation	4
Minnesota Game and Fish Commission	8
Mississippi Game and Fish Commission	3
Montana Game and Fish Commission	1
Necedah N.W.R.	4
North Carolina Resources Commission	1
Noxubee N.W.R.	4
Ohio Department of Natural Resources	38
Ottawa N.W.R.	41
Presquile N.W.R.	4
Pungo N.W.R.	1
Reelfoot N.W.R.	1
Rice Lake N.W.R.	3
St. Marks N.W.R.	2
Sand Lake N.W.R.	2
Santee N.W.R.	5
Seney N.W.R.	7
Shiawassee N.W.R.	50
South Carolina Game and Fish Commission	1
Swan Lake N.W.R.	6
Tamarac N.W.R.	1
Tennessee Wildlife Resources Agency	64
Upper Souris N.W.R.	3
Virginia Commission of Game and Inland Fisheries	3

Wauby N.W.R.	1
West Virginia Conservation Department	2
Wheeler N.W.R.	41
Wisconsin Department of Conservation	4
Wyoming Department of Fish and Game	1
Game Management Agents and All Others	45
	<hr/>
TOTAL:	602

#### TRAPPED BIRDS - BANDED PREVIOUSLY AT TENNESSEE

The table below itemizes the Tennessee Refuge banded birds that have been re-trapped after a period of 90 or more days, during the past 12 years. Numbers indicated are separate returns for individual bands and do not include repeats.

<u>YEAR RETRAPPED</u>	<u>NUMBER</u>
1965	16
1966	23
1967	73
1968	43
1969	23
1970	46
1971	68
1972	56
1973	23
1974	65
1975	29
1976	25
	<hr/>
TOTAL:	490

#### 2. Marsh and Water Birds

The great blue heron rookery at Grassy Lake has continued to decline in both activity and productivity over the last several years. Production of young from this rookery was estimated to be 300 in 1972 and the figure has steadily dropped to an estimated 50 birds in 1976. The rookery site is rapidly failing in quality because high water in the lower bottoms is killing the cypress trees in which the great blue herons nest. The great blue heron is the only marsh and water bird that is a year around resident at Tennessee Refuge.

The green heron is the second most plentiful marsh and water bird on the refuge, the great blue heron being the most numerous. The green heron is one of the few marsh and water birds to consistently nest on Tennessee Refuge. Its close cousin the cattle egret was

once more in abundance on the area than it is today. Cattle egrets seemed to have lost interest in the Tennessee Valley over the past few years.

Double-crested cormorants are more conspicuous during the summer months. These birds usually utilize the deeper waters of Kentucky Lake. Common loons make their appearance during the fall and spring migration. Also a lover of deeper waters, one has to keep a sharp eye out to catch a glimpse of the elusive loon.

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

The area of Kentucky Lake between Pace Point and Sulphur Well Bay is a staging area where both herring and ring-billed gulls congregate each winter before migrating northward again in the spring. Up to 10,000 gulls can be seen at times within this area.

Many species of sandpipers and other shorebirds can be seen daily during the warmer summer months. Duck River Bottoms is a favorite feeding site with its many miles of shoreline and shallow embayments. The killdeer continues to be the most numerous of all shorebirds on the refuge and is one of the few shorebirds which is a year around resident.

### 4. Raptors

The screech owl continues to be the most plentiful of the owls on Tennessee Refuge. The little screech owl is an occasional nester in wood duck boxes. However, the most conspicuous owl is the barred owl which is sometimes seen at dawn or dusk.

Refuge visitors often comment concerning the large number of hawks which can be seen on various portions of the refuge. Both the red-tailed hawk and the red-shouldered hawk continue to nest on Tennessee Refuge.

The golden eagle makes its appearance in approximately the same numbers as that of the bald eagle. During the winter of '76, golden eagles fell to the same mysterious low figures as that of its counterpart. However, they bounced back again to their normal numbers in the fall and during Christmas week seven immature and eight adult golden eagles were utilizing Tennessee Refuge.

An immature golden eagle was received from the Tennessee Wildlife Resources Agency on December 20, 1976. This particular golden eagle had been preying on young goats in the eastern part of the state and was removed to reduce the depredations problem to the particular farmer in DeKalb County. The bird was then banded and released on the Big Sandy Unit the following day.



DONATED. This immature golden eagle had a steady diet of fresh goat in east Tennessee until removed by Tennessee Wildlife Resources Agency officials. The eagle was relocated on refuge lands.



DONATED. The golden eagle was fed a meal of fresh raw meat before being released.

## 5. Other Migratory Birds

The first of three mourning dove seasons opened September 1, 1976. Local hunters reported extremely good hunting as the most plentiful crop of doves in recent years was present in the area.

Blackbirds were again a problem during 1976. Grackles, starlings, red-wings, and cowbirds were the major species causing problems to farmers and harassing local townfolk. Blackbird roosts were known to exist in both the city limits of Paris and Camden, Tennessee.

## C. Mammals and Non-Migratory Birds and Others

### 1. Game Mammals

Negotiations were opened with Tennessee Wildlife Resources Agency during February to discuss the possibility of trapping deer from Tennessee Refuge and transplant to counties where viable deer herds do not exist. Approval was finally granted to Tennessee Wildlife Resources Agency to remove up to 50 deer but the State did not follow up on their trapping operation.

Deer populations were examined on various portions of the refuge and proposals drawn up during late February concerning the various fall hunts. Deer populations on the Big Sandy Peninsula appear to be slowly declining while those herds on other portions of the refuge are holding their own or slowly increasing.

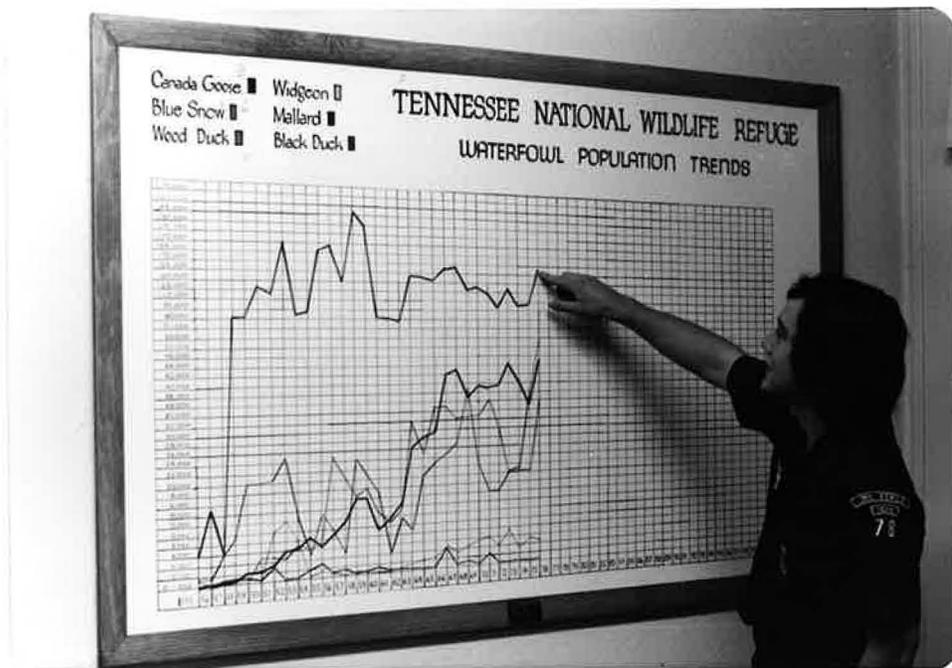
Refuge Manager V. L. Childs was asked by Tennessee Wildlife Resources Agency to participate on a task force committee to study animal damage in Tennessee. The first meeting was held on July 6, 1976 and primarily centered around deer damage and its control. No word was ever received of any follow up meetings.

The five month squirrel season opened August 28, 1976. Nearby hunters reported plentiful squirrel in good condition, no doubt due in part to an excellent mast crop.

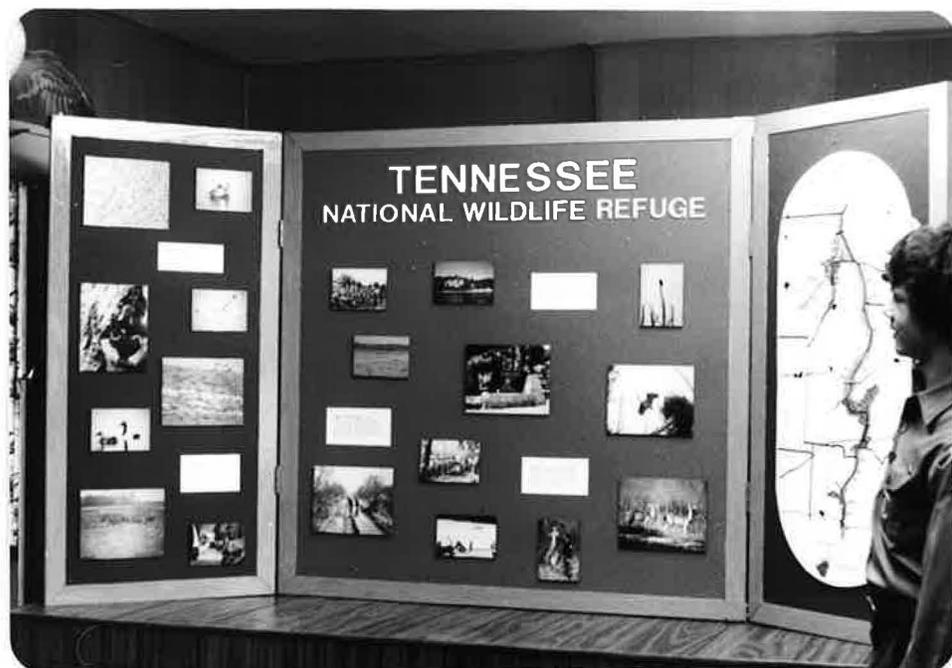
### 2. Other Mammals

Sightings of coyotes at the Big Sandy Unit were much more prevalent in 1976 than in any previous year. Participants of the gun-deer hunt also reported a greater number of coyotes than on any previous hunt. The coyotes may be having an adverse effect on the deer herd but at the same time they have apparently solved a problem with the groundhogs.

The bobcat may be holding its own at Tennessee Refuge. A bobcat



R5-4-76. Chuck Russell of McKenzie, Tennessee constructed this chart depicting waterfowl population trends as his project towards Eagle Scout. The chart now hangs in the refuge headquarters office. (LR)



R5-1-76. Curtis Taylor of Paris, Tennessee constructed this portable refuge display which has been in constant exhibition in three neighboring counties since being donated to the refuge. (LR)

sighting probably brings as much elation to a visitor as anything he could view on the refuge. "Panther" tales continue to spring up occasionally during the year.

### 3. Resident Birds

The eastern wild turkey was sighted at Busseltown Unit during January making it the last of the three units to support a turkey flock. Although turkey have been established on the Big Sandy peninsula for many years, their numbers have remained at no more than stable in recent years. It is most difficult to determine whether predators, disease, the environment, or a combination of the above is the limiting factor.

### 4. Other Animal Life

Refuge personnel made four field encounters with canebrake rattlesnakes during the year. Certainly peculiar how one becomes much more alert and cautious after one of these chance meetings!

The crappie season on Kentucky Lake was one of the worst on record. The spring waters did not rise in customary fashion and this disrupted their usual spawning activities. Many persons feel that the crappie is on a downward cycle and may never be plentiful again.

## V. INTERPRETATION AND RECREATION

### A. Information and Interpretation

#### 1. On-Refuge.

Refuge employees worked with three prospective Eagle Scout candidates during 1976. These three Boy Scouts constructed and provided the refuge with a bird banding display, a wall graph of refuge waterfowl trends, and a portable display of refuge activities.

The Big Sandy wildlife drive continues to be a definite drawing attraction for refuge visitors. Waterfowl and deer along the drive attract the most attention. Chickasaw Nature Trail, also located at the Big Sandy Unit, does not draw the quantity of foot traffic for which it was constructed or intended. Efforts were made in 1976 to make the trail easier to follow.

Several groups made trips to the refuge late in the year and participated in Canada goose banding activities. The West Tennessee Forestry Society visited the refuge in August and observed the wildlife management operations plus reviewing refuge timber stands.

A significant portion of the summer months was spent relating the significant environmental aspects of the refuge to the enrollees of the Youth Conservation Corps. Approximately 25 percent of the enrollee's time was spent in environmental education oriented activities, much of which was provided by refuge personnel.

## 2. Off-Refuge

Twice during the year Tennessee Refuge was featured on WBBJ-TV in Jackson, Tennessee on the weekly Tennessee Wildlife Resources Agency program entitled T.W.R.A. Today. Assistant Manager Rhodes presented a 15 minute slide presentation of refuge activities on March 2, 1976. On December 8, Refuge Manager Childs narrated a 30 minute color film documentary on the waterfowl of Tennessee Refuge. The entire film had been shot on the refuge and contained some excellent footage. An audience estimated at 50,000 was reached.

Wildlife Week was observed March 14 - 20 during 1976. Refuge personnel again assisted in promoting Wildlife Week and presenting programs to the various schools in Henry County. During the period of March 15 through March 26, refuge employees cooperated with the Tennessee Wildlife Resources Agency personnel in presenting 42 programs to 2,970 students in the local area.

A portable refuge exhibit (discussed earlier) was accepted from the Eagle Scout candidate on April 26, 1976 and immediately pressed into service. This exhibit has been on public display since that time at ten different sites.

Tennessee Refuge issued four statewide press releases during the year concerning refuge activities. The refuge also was covered many times in various newspaper features. A 30 minute radio interview was made on December 15 over local radio station WTPR concerning refuge operations and recreational opportunities.

## B. Recreation

### 1. Wildlife Oriented

Warmwater fishing on Tennessee Refuge constitutes the largest single category of public use. Usually more than 700,000 activity hours are devoted to this endeavor on refuge waters each year. Two marina concessions add significantly to the number of fishermen using refuge waters.

The temperatures climbed into the 50's and 60's during February and this brought out the first crappie fishermen of the season. Crappie fishing peaked out in April and May but success was not



R9-17-76. No need to explain that this fellow is happy with the outcome of the deer hunt. (LR)



R9-16-76. This is just one of 143 deer taken by 376 hunters during the 1976 gun-deer hunt. (LR)

as good as previous years. Commercial fishermen after catfish had a mediocre season. November saw the upswing of sauger fishing with many good catches coming from the Tennessee River. Musseling was off about 80 percent this year due to the low price being offered for the shells.

Birdwatching on all three units of the refuge took a definite upswing during October and November. The coming of the waterfowl always brings out the birding enthusiasts, especially on Sunday afternoon. Total wildlife/wildlands observation usually will total more than 225,000 activity hours annually.

Census of public use activities on Tennessee Refuge is difficult at best. Being divided up into three separate units upwards of 55 miles apart with literally hundreds of entrance and access points makes an accurate survey impossible. Therefore personnel stationed at the three individual units provide supportive information each month for their respective areas concerning the types and amounts of public use.

The three annual deer hunts provided substantial interest again this year. Details of the three individual hunts are as follows:

a. Archery Hunt

The 1976 archery hunt was held during October 2 and 3 on Britton Ford Peninsula, Sulphur Well Island, and the area south of Interstate 40 and east of the Tennessee River. A total of 264 hunters arrived the opening day and killed six deer. Only 48 hunters bothered to come back the second day. The archers logged a total of 2,090 hours in pursuit of their game.

b. Gun Hunt

A public drawing was held in the headquarters office on September 7 to select 500 hunters from a total of 3,853 who applied for the gun-deer hunt. The hunt was held on December 26, 27, and 28 with permits issued in the increments of 150, 170, and 180 for the three day hunt. A total of 376 hunters spent 2,619 hours harvesting 143 deer on the Big Sandy Peninsula.

c. Muzzleloader Hunt

Muzzleloader hunt permits were issued on a first come - first served basis. A total of 310 permits were distributed after October 1 and all were issued within five days. The 1,900 acre hunt area was identical to that of the archery hunt. A total of 241 blackpowder hunters logged 1,737 hours



R8-6A-76. Biological Technician Jim Wigginton weighs and checks out a deer taken on Sulphur Well Island during the muzzleloader hunt. (LR)



R8-10A-76. This party went five for five during the muzzleloader hunt. All muzzleloaders pictured above were completely hand crafted. (LR)



R6-10-76. USGMA Willie J. Parker gives the command to start firing as personnel from the four refuges in west Tennessee qualify on the pistol range. (LR)



R6-12-76. Pistol qualification was just one part of the 2-day enforcement workshop held at Tennessee Refuge during July. (LR)



R4-10-76. An over-anxious business-man cut down timber on the I-40 right-of-way and also on refuge lands as shown below. He paid. (LR)



R4-1-76. Refuge Manager V. L. Childs stands beside a shag bark hickory felled on refuge lands. This was one of more than 200 trees illegally cut to improve the view to commercial establishments. (LR)



R3-7-76. Biological Technician Carl Dowdy returned home one evening to find that a .30 caliber had been fired thru the bedroom of his mobile home. (LR)



R4-14-76. Litter is an ever present problem on many areas of the refuge. Usually a little garbage now leads to a lot of garbage later. (LR)

of hunting and killed 52 deer during the two days of hunting. It was certainly the most productive muzzle-loader hunt ever held on the refuge.

## 2. Non-Wildlife Oriented

Ninety soldiers from Fort Campbell bivouaced at Nix Landing on the Duck River Unit during the night of April 21. This was one of several stops that the soldiers made along the Tennessee River during a Bicentennial float exercise. The refuge usually provides one or more areas per year for military maneuvers.

June, July, and August brought a dramatic upswing in swimming, boating, and water skiing. Kentucky Lake draws people on a warm summer day like a hot apple pie draws flies. Even though no effort is made to lure or provide for this type of recreation, we get it just the same. And of course these folks leave behind them a distinctive trail of litter when they depart.

Camping is only permitted at several locations on the refuge. Most camping occurs at Sugar Tree Marina where a sizeable campground is located. A primitive campground has been provided for the Boy Scouts at Britton Ford Peninsula where several large campouts take place each year.

A significant increase in 4-wheel drive vehicles was observed in 1976. It is difficult not to view each one with suspicion as they enter the refuge. Although no off-road vehicling is permitted, one will occasionally want to test his "Gumbo Mudders" on refuge hillsides or open fields. Off-road motorcycling did not increase on Tennessee Refuge during 1976.

## C. Enforcement

Violations showed a definite increase during 1976. The previous four year average was 62 cases per year but violations jumped to 107 during 1976. A breakdown of refuge and wildlife violations encountered during the past 12 month period are as follows:

Enter closed area. . . . .	37
Trespass with firearms . . . . .	18
Trespass . . . . .	3
Violation of hunting regulation. . . . .	10
Artifact collecting. . . . .	3
Hunting without permit or license. . . . .	1
Attempting to take or kill wildlife. . . . .	9
Dumping or littering . . . . .	3
Private use. . . . .	4
Theft. . . . .	12

Destruction of Government Property- - - - -	5
Camping - - - - -	<u>2</u>

Total: 107

Several interesting cases were encountered during the year. Three persons were apprehended on January 10, 1976 in violation of the Antiquities Act. The three were found digging and sifting thru an Indian mound on refuge lands. Stakeouts during the month of August in refuge corn fields produced eighteen "roasting ear" thieves. Six persons were apprehended during the opening day of goose season for hunting over bait, a catch which included two law enforcement officers.

At approximately 7:30 P.M. on the evening of April 15, 1976, someone drove by the subheadquarters site at the Duck River Unit and fired a .30 caliber bullet through Biological Technician Carl Dowdy's mobile home. No one was in the residence when the shot was fired. An investigation by the FBI failed to turn up any suspects.

Two incidents of timber cutting on the refuge were investigated during 1976. One commercial installation near Cuba Landing cut timber on and adjacent to the Interstate 40 right-of-way. Several campers in the Beech Creek area cut approximately 60 trees during July. Both incidents of timber cutting were prosecuted.

After more than ten years of negotiations, Louis Harper of Broadview Subdivision finally relinquished ownership of an unsightly boat dock located on refuge waters. The boat dock was dismantled and removed.

A law enforcement workshop was held on July 29 and 30, 1976 in Paris, Tennessee. Personnel from four refuges in west Tennessee met with U.S.G.M.A.'s Parker, Blakemore, and Standish and discussed game laws, refuge regulations, and field contact techniques. All persons attending the two-day workshop qualified with a .38 caliber pistol on the firing range. Refuge personnel worked in cooperation with U.S.G.M.A.'s both on and off the refuge during 1976.

Additional signs were erected during the year for improved visitor traffic. A number of cable gates were also erected for more adequate vehicle control. A new johnboat was purchased and a bait scrape constructed for increased enforcement capabilities.

## VI. OTHER ITEMS

### A. Field Investigations

Not applicable.

## B. Cooperative Programs

Although the Youth Conservation Corps is billed as an 8-week summer program, it seems that refuge employees are involved with the project eleven months of the year. News and instructions of the 1976 Y.C.C. program started coming to us in January. In February we started the search for vehicles and were finally able to obtain an excess station wagon from Big Lake National Wildlife Refuge and two rental station wagons from GSA. Camp Director Rhodes and Environmental Awareness Coordinator Jones attended the Y.C.C. workshop in Asheville, North Carolina, March 29 - April 1, 1976.

Statewide Recruiter John Gaines selected the 20 Y.C.C. enrollees and an additional 20 alternates on April 19. The Atlanta personnel office completed their selection of the Y.C.C. staff during late April. The entire staff reported on June 7, 1976 for a week of indoctrination to the program.

The Y.C.C. enrollees comprised of 10 males and 10 females reported for duty on June 14. A few resignations occurred during the first week or two but replacements were found. The camp was terminated with an open house and picnic on August 7 with a full complement of 20 enrollees.

Some of the work accomplished by the Y.C.C. group included the erection of two cannon net blinds, nature trail maintenance, litter pickup, equipment painting, wood duck banding, and boundary line painting. Also accomplished by the enrollees was the clearing back of road edges, bridge maintenance, sacking and loading seed, grounds maintenance, erect picnic tables, and sign painting.

During the summer of 1976 we were able to work three employees under the Comprehensive Employment Training Act (C.E.T.A.). Messrs. Brummitt and Patton and Miss Dobbins worked a total of nine weeks at 40 hours a week. We were able to put Brummitt back to work via a C.E.T.A. appointment under a limited basis of eight hours per week starting December 4, 1976.

During 1976, Tennessee Refuge participated in six local or national cooperative programs. These included the mid-winter waterfowl survey, the annual eagle survey, color-marked bird survey, shorebird banding, annual blackbird roost count, and experimental hardwood plantings.

Special use permits were issued to 18 individuals or parties during 1976. Fourteen of these special use permits were issued to persons in the Britton Ford - Killebrew Subdivision area to cover personally owned facilities (boat docks, etc.) on public lands. The additional four special use permits covered a water line installation, an agricultural operation, disposition of a tree, and storage space.

### C. Items of Interest

Cletus B. Cantrell was appointed to a WG 8/1 Maintenanceworker position at Duck River Unit on May 10, 1976. This is a permanent-part time position and Mr. Cantrell works 35 hours per week. Vernice Bell, GS-2 Clerk-Typist, was appointed to a 700 hour position on July 21, 1976 to aid with the gun-deer hunt applications.

A G.A.O. audit was conducted at Tennessee Refuge on March 11, 1976. G.A.O. officials inquired into and investigated the current Fish and Wildlife Service reorganization.

Administrative Assistant Russell E. Wilson fell victim to Rocky Mountain spotted fever during late May and spent from May 30 to June 4, 1976 in the Henry County General Hospital. Mr. Wilson made a good recovery and was back to work on a part-time basis by June 22.

Soil Conservationist Eddie L. Reese attended a herbicide school in Nashville, Tennessee on December 16, 1976. After passing the required examination, Mr. Reese was certified to apply specified restricted herbicides.

Biological Technician Carl E. Dowdy received a \$200.00 Incentive Award during 1976 for his outstanding performance in trapping and banding waterfowl.

### D. Safety

Three accidents were recorded during 1976. On January 13, General Maintenance Mechanic Truman C. Robertson caught a finger in the fan belt of a dump truck and severely lacerated the last segment of his right ring finger. Attempts were made to repair the finger but after several weeks most of the end segment was cut away when it failed to heal correctly. Maintenance worker Cletus B. Cantrell was involved in a two car accident on August 15 while on the Duck River Unit. Biological Technician Jim W. Wigginton received a cut on his left forearm while emptying refuge litter barrels. The cut was caused by a broken piece of glass and took seven stitches to close.

The Y.C.C. enrollees received the 8-hour American Red Cross Safety Course during the second week of the summer program. All 20 youngsters participated in the safety course.

The last lost time accident for Tennessee Refuge was September 5, 1974. Since the last lost time accident, refuge employees have worked a total of 748 days and 64,158 man-hours.

### Acknowledgements

The body of the calendar year 1976 Narrative Report was written by Assistant Manager Leon Rhodes. Individual sections of the narrative were compiled and written by Refuge Manager Childs, Soil Conservationist Eddie L. Reese, and Biological Technician Jim W. Wigginton. The banding information and data was written and updated by Administrative Assistant Russell E. Wilson. Refuge Manager Childs provided consultation and critique of the narrative and proofed the final draft. Administrative Assistant Wilson typed the final copy.