

TENNESSEE NATIONAL WILDLIFE REFUGE
Paris, Tennessee

ANNUAL NARRATIVE REPORT
Calendar Year 1980

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



PERSONNEL

1. Vandiver L. Childs, Refuge Manager, (In-charge), GS-12, PFT
2. Leon I. Rhodes, Refuge Manager (assistant), GS-11, PFT
3. Eddie L. Reese, Soil Conservationist, GS-11, PFT
4. Ries S. Collier, Outdoor Recreation Planner, GS-9, PFT
5. Carl E. Dowdy, Biological Technician, GS-8, PFT
6. James Kelly, Refuge Manager, (Assistant), GS-7, PFT
7. Willie C. McDaniel, Biological Technician, GS-7, PFT (Retired 8/29/80)
8. T. Clint Robertson, General Maintenance Mechanic, WG-11, PFT
9. Billy D. Carter, Maintenance Worker, WG-7, PFT
10. Dorothy G. Easley, Administrative Clerk, GS-6, PFT
11. Cletus B. Cantrell, Maintenance Worker, WG-8, PFT
12. Kenneth L. Litzenberger, Refuge Manager, (Assistant), GS-7 (Transferred 12/28/80)
13. Wm. Ronnie Parker, Public Use Specialist, (Enforcement), GS-5, PFT
: (Transferred 6/20/80)
14. Elgin H. Himes, Maintenance-Helper, WG-5, PFT
15. Wm. Terry Cherry, Tractor Operator, WG-5, PFT
16. J.W. Rhodes, Tractor Operator, WG-5, 2,080 hour appointment ended 11/15/80

Review and Approvals

Karlina Wald *3/26/81*
Submitted by Date

TENNESSEE NATIONAL WILDLIFE REFUGE

Refuge

William Hilling *4/3/81*
Area Office Date

Central Office

Date

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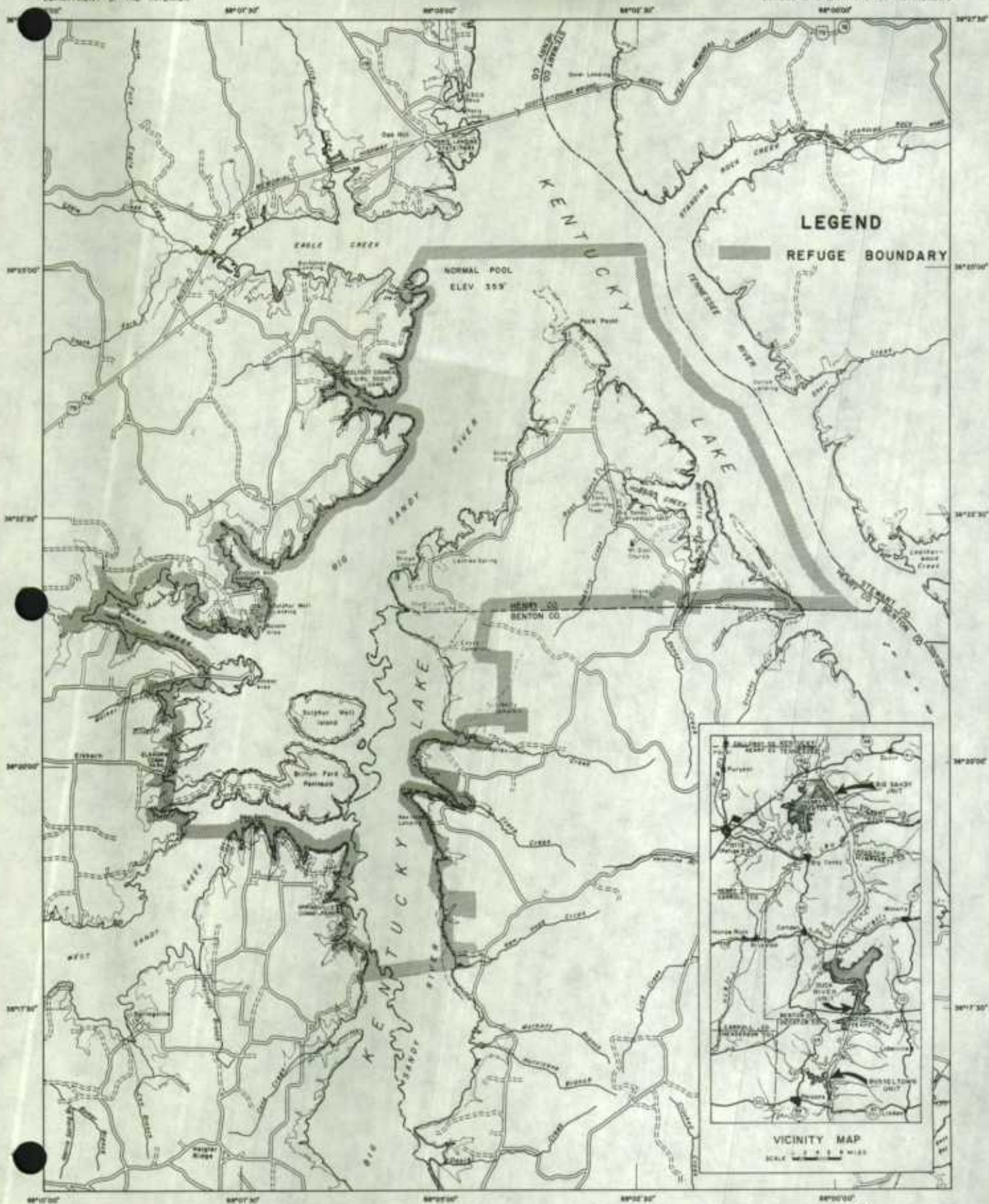
TENNESSEE NATIONAL WILDLIFE REFUGE

BIG SANDY UNIT

BENTON, DECATUR, HENRY, HUMPHREYS, AND PERRY COUNTIES, TENNESSEE

FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

UNITED STATES
DEPARTMENT OF THE INTERIOR



LEGEND

REFUGE BOUNDARY

NORMAL POOL
ELEV 355'

VICINITY MAP

SCALE 0 1 2 3 MILES

COMPILED IN THE BRANCH OF ENGINEERING
FROM SURVEYS BY TENNESSEE VALLEY
AUTHORITY



DATUM IS MEAN SEA LEVEL

MEAN
DECLINATION
1964

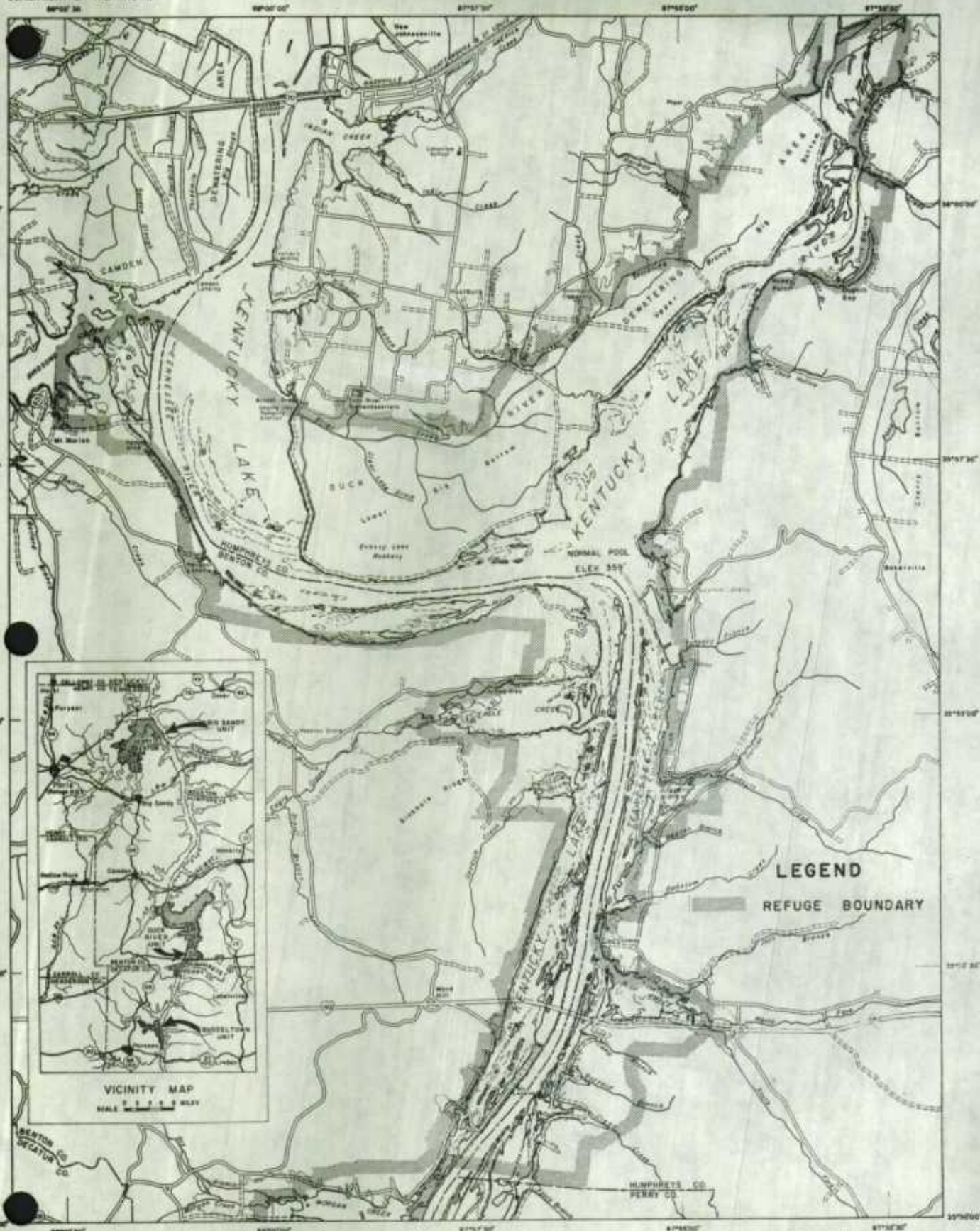
TENNESSEE NATIONAL WILDLIFE REFUGE

DUCK RIVER UNIT

BENTON, DECATUR, HENRY, HUMPHREYS, AND PERRY COUNTIES, TENNESSEE

FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

UNITED STATES
DEPARTMENT OF THE INTERIOR

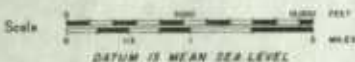


LEGEND

REFUGE BOUNDARY

COMPILED IN THE BRANCH OF ENGINEERING
FROM SURVEYS BY TENNESSEE VALLEY
AUTHORITY.

ATLANTA, GEORGIA FEBRUARY, 1964



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DECLINATION
1964

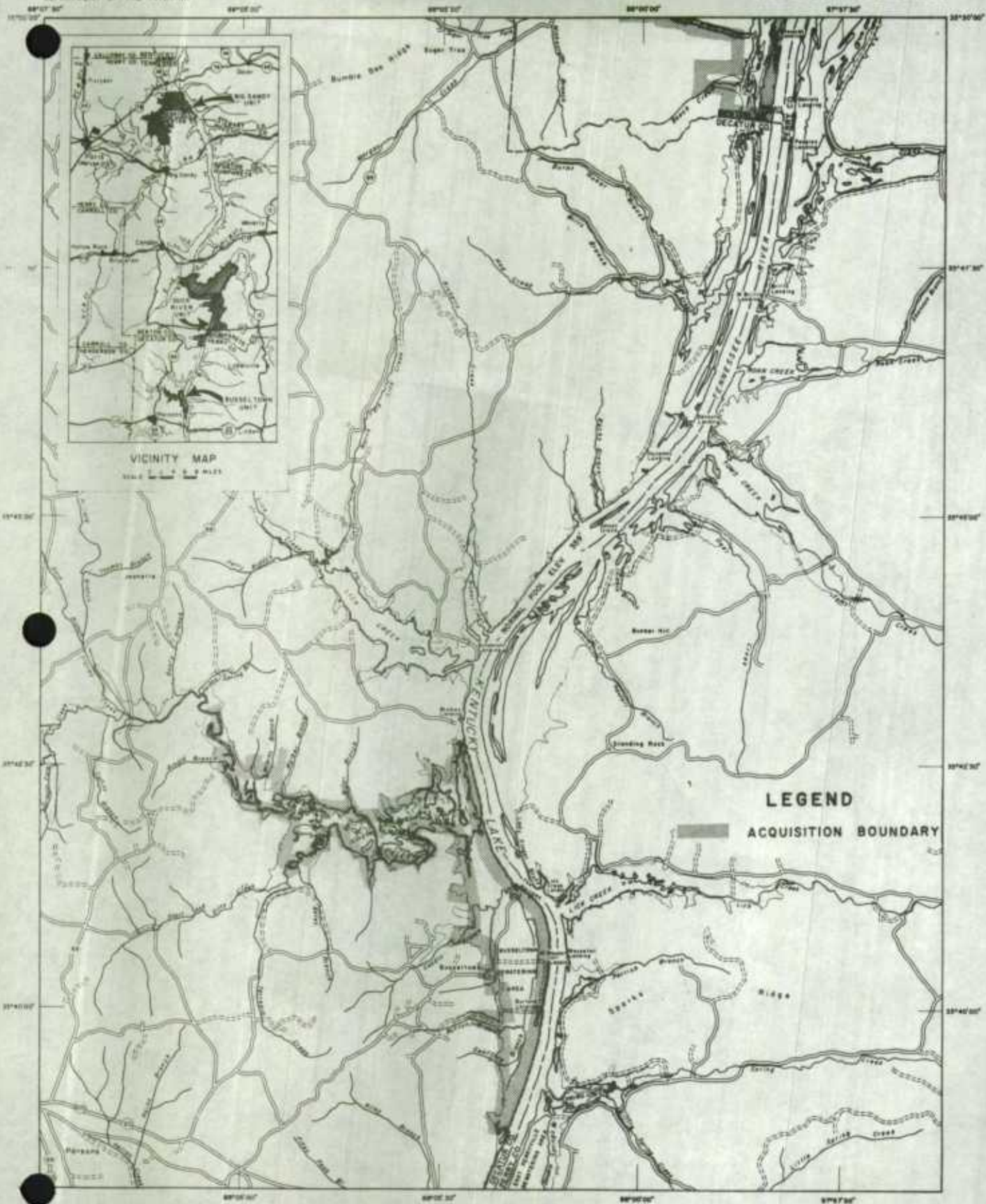
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TENNESSEE NATIONAL WILDLIFE REFUGE
BENTON, DECATUR, HENRY, HUMPHREYS, AND PERRY COUNTIES, TENNESSEE

BUSSELTOWN UNIT

UNITED STATES
 DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE
 BUREAU OF SPORT FISHERIES AND WILDLIFE



VICINITY MAP
 1000 FEET 1/4 MILE

LEGEND

ACQUISITION BOUNDARY

COMPILED IN THE BRANCH OF ENGINEERING
 FROM SURVEYS BY TENNESSEE VALLEY
 AUTHORITY

ATLANTA, GEORGIA FEBRUARY, 1964

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MEAN DECLINATION 1964

4R TENN. 401 403

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TENNESSEE NATIONAL WILDLIFE REFUGE
Paris, Tennessee
ANNUAL NARRATIVE REPORT
Calendar Year 1980

I. GENERAL

A. Introduction

Tennessee National Wildlife Refuge lies within the Tennessee River Valley with Kentucky Lake being the dominant feature of the refuge. Three separate units make up Tennessee Refuge. They are: Big Sandy Unit with 21,348 acres, Duck River Unit with 26,738 acres, and Busselton Unit with 3,272 acres. Headquarters for the Tennessee Refuge is in Paris, Tennessee but a subheadquarters area exists at all the field units.

Three occurrences took place during 1980 which greatly affected the refuge: (1) The weather was extremely hot and dry causing many agricultural complications. (2) T.V.A. and the Corps of Engineers decided to hold Kentucky Lake up to 359' for an additional two weeks, with a gradual drawdown July 1. (3) Duck River Bottoms dewatering area was pumped down to the 353.5' level, the first time the pumps had been activated in thirteen years. More will be said about these influences later.

Cross Creeks, Hatchie and Reelfoot are waterfowl refuges located in West Tennessee adjacent to Tennessee Refuge. T.V.A. is the dominant land managing agency in the area.

B. Climatic and Habitat Conditions

To really be able to visualize the unusual year that was experienced during 1980, the following chart will describe how the rainfall and temperature pattern led to a less than successful year for area farmers.

<u>1980</u>	<u>Rainfall</u>	<u>Snow</u>	<u>High</u>	<u>Low</u>
January	2.12	2.2"	61	20
February	2.56	10.4"	70	8
March	6.72	3.2"	72	3
April	3.86		88	31
May	2.54		88	37
June	3.65		96	47
July	2.37		105	59
August	.78		101	59
September	3.93		100	49
October	3.45		84	27
November	4.08	T	77	22
December	1.67		71	10
Total	<u>37.73"</u>	<u>15.8"</u>		

Spring weather started out in a normal fashion but then the April showers never did really materialize and things turned dry shortly thereafter. Not only was 1980 one of the driest on record but also one of the hottest. July and August turned out to be the most critical months for the farmer as only a little more than 3.15" of rain fell during these two months when maturing crops need adequate moisture. Above normal temperatures also had a devastating effect on total crop land production.

The low amount of precipitation during the growing season did have some beneficial effects in certain areas. Some portions of Duck River Bottoms which stay damp during normal years actually had more desirable soil-moisture conditions for crop production during the growing season. The relatively dry fall allowed farmers to have a better than average harvest season. Some area residents described the mild, beautiful fall as the most excellent harvest conditions they could remember.

This area of Tennessee normally receives 48.35" of rainfall annually. The year 1980 recorded only 37.73", quite a drop from 76.24" which fell in 1979.

Flooding of Duck River Bottoms was minimal during the year. The Duck River jumped its banks at Waverly Pump Station during mid-May but this was the only inundation during the year.

C. Land Acquisition

1. Fee Title

No land purchased in fee title during 1980. The 245 acre McCampbell farm which was submitted for possible purchase during 1979 was bought by private interests in 1980. The McCampbell farm would have made a fine round out holding in the Poplar Creek area of the Big Sandy Unit. The farm has now been converted into a hunt club situation, with the usual associated problems.

A 10-year land acquisition plan was submitted to the regional office on September 15, 1980. This plan outlined twenty parcels of land totaling 8,091 acres by priority.

2. Easements

Not applicable.

D. System Status

1. Objectives

An environmental assessment was submitted during 1980 covering all the applicable projects on this station's 1-page development plan. We hope to be ready with the preliminary paperwork should development funds become available.

Energy Conservation became even more critical this year as guidelines for gasoline and diesel fuel reductions arrived at field stations. A belt tightening exercise was put into effect.

Refuge objectives have not been updated for several years. The grapevine has it that this exercise will one day fall upon us. No one at this station is looking forward to the full scale refuge program scheduling process.

Projection for the 1980 annual work plan came out relatively close in most instances. However, there were a few deviations. In activity 1210, we overspent in internal training (130) because we did not foresee sending a Y.C.C. cadre member to the annual workshop nor did we anticipate some additional administrative training. Special program training (131) was grossly underspent because Glynco enforcement training did not materialize as we had expected nor did as many trainees attend Beckley as envisioned. Cropland (310) overspent predicted monies by more than \$18,000 due to the fact that the \$20,000 item of pumping Duck River Bottoms was not included in this work element. Investigation/Enforcement (552) only expended about half of its intended monies due to fewer people on the staff having law enforcement authority and pressing duties elsewhere. The special studies (750) work element was completely unspent due to no one at this station being called to undertake the annual dove nest survey in Mississippi as had been done in the past.

Activity 1240 also realized a few deviations during 1980. Program information (125) spent nearly twice the amount planned due to unforeseen demands in public programs and leaflet publication. Approximately three times the amount of Y.C.C. (198) funding was spent as was envisioned due to the marginal monies being allotted the program and the station needing to take up the slack by subsidizing the Y.C.C. project. Recreation-nonwildlife underspent dramatically due to a continued effort de-emphasize this type activity.

2. Funding

The chart below will reflect the funding and staffing pattern at Tennessee National Wildlife Refuge over the past five years. Funding increases have slowed dramatically over the past several years and have not kept abreast of the inflationary pace.

<u>Fiscal year</u>	<u>Rehab Funds</u>	<u>B.L.H.P.</u>	<u>Total Funds</u>	<u>Personnel</u>	
				<u>FT</u>	<u>PT</u>
1976	14,000		234,000	9	3
1977		157,000	223,000	12	0
1978	-	614,000	309,000	13	2
1979	-	92,688	330,000	11	7
1980	-	93,822	330,000	10	5

II. Construction and Maintenance

A. Construction



80-8-14. Reworking refuge farm equipment usually takes place each spring in anticipation of the upcoming farming season. (LR)



R2-4-80. Tennessee Refuge was fortunate during 1980 to have gotten rid of numerous items of excess equipment. This lucky bidder trucked his items all the way back to Texas. (LR)

1. General

A limited amount of new equipment was purchased during the year due to monetary constraints. A new four wheel drive Chevrolet Suburban was purchased and placed into service. This unit has an eight passenger carrying capacity. Also, a 225 amp portable Lincoln welder was obtained during the year. We are able to use the welding unit in the field and save time by not having to carry equipment to the shop. Other equipment purchased during the year included a Cannon AE-1 camera with 300 mm. telephoto lens and a White metal detector.

The local Soil Conservation Service assisted Tennessee Refuge in laying out 7,725' of parallel terracing in the Sulphur Well Peninsula area of Big Sandy Unit. During the year, refuge personnel moved equipment into the area (dozers, graders, earth pans, backhoes, etc.) and formed up all 7,725' of this parallel terracing. Waterways were constructed, culverts installed, and critical areas were seeded on hopes of curbing excessive erosion on this refuge farm unit.

Two wet, boggy fields near Walker's corner were fitted with 5,100' of 4" plastic field tile. The tile did such a good job of draining there. Two fields had row crops planted in them for the first time in years.

Quarters #108 at Busseltown Unit was removed by transporting this 12x60' mobile unit to Duck River and setting it up as office space on the subheadquarters site. Set up of the office space included water and sewer connections, graveled pads and parking areas, underpinning, and electrical and gas hookups.

An excess 1,600 gallon fuel tank was obtained from Wheeler Refuge in Alabama this year. This tank was installed at Duck River Unit for diesel fuel storage.

A proposal was made to this station by T.V.A. On Nov. 24, 1980 that we jointly engage in an effort to raise the levee at Waverly Pump Station from the 362' elevation to the 364'. Flood waters from the Duck River have been cresting over the present dike structure at more frequent intervals in recent years. It is hoped that a raised levee at this location will divert more water down stream and assist in flushing out the mouth of the Duck River itself. An official decision has not yet been received by this office as to whether we will participate in the joint effort.

A total of 1,500 tons of crushed gravel was purchased to complete certain portions of the new dike-road in Duck River Bottoms. This gravel was dumped and spread on various low areas during the year.

B. Maintenance

The colder winter months and early spring have traditionally been used by this station to get farm machinery and other equipment in proper running order. This year was no exception as many pieces of equipment were reworked and made ready for the upcoming season.



5-18-80. The flooding of Busseltown Bottoms is an expected annual event as the spring rains push the Tennessee River out of its banks. (JBA)



80-11-21. Holding Kentucky Lake at 359' until July 1 followed by a slow drawdown caused the loss of low lying field edges in many instances. (LR)

Significant repairs during the year included a new clutch, pressure plate, and throw out bearing for the Case 730 tractor, a new bendix and various clutch repairs for one of our Model 12 graders, and a new clutch, pressure plate and throw out bearing for the Oliver 1900 tractor.

Tennessee Refuge had very good luck in 1980 ridding itself of excess and surplus equipment. Many pieces of equipment were moved via the Transfer of Property Report (DI-104). This station even experienced a "scrap sale" during the year. The annual property inventory took nearly a week to undertake as each piece on all three refuge units was individually checked.

Extensive reworking of the refuge's boundary system was accomplished during the year. Y.A.C.C. enrollees at Tennessee Refuge contributed a large portion of the manpower in updating the 180 miles of refuge land boundary line. A metal detector was utilized in locating some of T.V.A.'s old monument and steel contour markers. Several 14' treated poles were affixed with refuge boundary signs and installed at refuge shorelines where the boundary entered Kentucky Lake. Two large creosote piling were pulled from the lake after ice from the winter of 1980 had pushed these water boundary markers over.

Phil Curry of the realty section, Atlanta, Georgia, visited the refuge in early December to verify the location of the 22 water boundary markers on Tennessee Refuge. The creosote piling were found to have been driven in the proper location and the precise data concerning their exact placement was furnished to T.V.A., the Army Corps of Engineers, and the Coast Guard for incorporation onto their navigational charts. Mr. Curry also assisted Tennessee Refuge in straightening out an old lingering boundary line problem at Rochelle Island.

Spring flooding damaged sections of dikes in Duck River Bottoms and 1,500 tons of field dirt were hauled in to make needed repairs. Spillway repairs required the purchased of 1,785 tons of gravel and 500 tons of oversize rock to bring the dike back into shape again. Bermuda sod was placed on 7 acres of spillway in an effort to help hold the structure. Spring flood damages to the Lawrence Creek dike road required 2,000 tons of fill dirt and 1,000 tons of gravel.

Refuge buildings were maintained and cared for throughout the year. The Williams barn siding and roof were painted during the year and a new amp service entrance was installed at the Duck River work center. The Big Sandy Unit well and water system were reworked after a positive test was received on a quarterly water check.

Hundreds of tons of gravel were hauled and spread on refuge roadways and dikes during the year. The refuge road system was graded and maintained on a regular basis.



80-8-9. More than 7,000' of contour terraces were constructed on the Sulphur Well peninsula to help control water run-off and erosion. (LR).



80-8-17. The local Soil Conservation Service office provided expertise in laying out the contour on the appropriate grades. (LR)

The Britton Ford-Sulphur well road system was raised in three different locations totaling 1,350' during 1980. Raising these three low sections to the 362' level required 2,000 cubic yards of fill dirt and a top layer of crushed gravel.

Shorelines at the Big Sandy Unit were maintained and up graded in an effort to lure waterfowl into the Bennett's Creek Bay area. Both trees and brush were removed from key area along the shoreline at Bennett's Creek Bay. Other up graded areas included Ross Creek, Robbin's Creek, Bennett's Creek, and the Lashlee Springs area.

Major work was accomplished at the Birdsong farm unit as one mile of farm acres road was completely reworked and topped with 2,500 tons of gravel. The assess road was also fitted with four new culverts. Cooley Bottoms was also the site of another major maintenance project as numerous tree and brush piles were dozed to clean up prime farm land in this area. Sites of other rehabilitation projects included Dug Hill, Sycamore Landing, Blue Creek, Nix Landing, and Huff Island.

Refuge dikes and roadways were mowed throughout the year. Rehabilitation work was undertaken on the Breeden Road bridge with the addition of top decking and bulkheads.

Maintenance was performed on the new small water control structure at Duck River Bottoms as spring flood waters showed that the fill around this facility was not adequate. A total of 1,500 tons of additional fill dirt was hauled in to reinforce the structure.

C. Wildlife

None to report.

III. Habitat Management

A. Croplands

The total refuge acreage under cultivation was 6,184 acres this period. This was an increase of 669 acres over the previous period. This increase was due to dewatering of the lower Duck River Area, the first time since 1968. The Cooperative Farming operations continues to produce the majority of our waterfowl hot foods and a much smaller portion of the waterfowl needs for green browse crops. Cooperative farmers planted 3,553 acres of row crops, an increase of 653 acres over previous period. The Service's share of Cooperator crops is normally 25 percent which is planted to corn and left in the field for waterfowl use. The Service received 861 acres of corn from Cooperative plantings which produced 56,998 bushels. This was an average yield of 67 bushels per acre. This yield was considered good when compared to this year's state average greatly reduced yield due to extremely hot and droughty conditions. TVA holding Kentucky Lake at 350' elevation until after July 1 adversely affected many acres due to late plantings causing poor stands and heavy insect damage.



80-8-8. Soil Conservationist Eddie L. Reese "fine grades" all of the contours and drains on the entire Sulphur Well terracing project. (LR)



80-8-11. All of the earth moving and heavy equipment was provided by the refuge. Y.A.C.C. labor was utilized whenever possible. (LR).

Corn yields varied from 2 to 130 bushels per acre. Some fields didn't pollinate due to the hot-dry weather. Waterfowl banding needs were taken care with the harvest 750 bushels of ear corn kept here and 350 bushels of shelled corn going to Big Lake and Holla Bend Refuges. Other crops accrued to the Service Cooperator use of other lands such as pasture and hayland. The Service received plantings of buckwheat and wheat which enhanced our management for soil stabilization and improvement was accomplished and waterfowl use was increased.

The acreage cultivated as Service operation increased slightly this period. This period refuge personnel planted 1,774 acres as compared to 1,539 acres for previous periods. Wheat planting for browse increased 284 acres due mainly to availability of harvested seed with due thanks to Hillside for providing a portion. Favorable conditions allowed us to complete our planting the earliest ever, BLHP equipment was certainly a factor. Waterfowl arrived and found browse crop adequate. Harvest of wheat this year from previous fall plantings was poor with an average of 17 bushel per acre. Refuge planting included 40 acres buckwheat which was harvested with poor yields attributed to the hot-dry summer, buckwheat with millet 30 acres, millet alone 360 acres, fescue and clover 154 acres to serica to stabilize critical areas.

This period refuge personnel constructed almost two miles of parallel terraces, shaped and seeded waterway outlets and field borders to reduce erosion on 60 acres of marginal land at the Sulphur Well portion of Big Sandy Unit. To complement this, 7700 feet of drainage tile was installed to drain 16 acres of wet land. This will allow Cooperative farmer better access to fields and will please neighbors and bird watchers who considered it an eye sore. Approximately 3.5 miles of road ditches were seeded to prevent erosion and as a beautification project on a heavily used roadway in the same area.

The use of herbicides for pest plant control of annual grasses, broadleaves and for eradication of perennials such as Johnson grass continues. The energy crisis, farm manpower shortage, the need to increase production at the lowest possible cost, and the need for land improvement are the factors considered in their extensive use. Cooperative farmers use 99% of the herbicides applied. The use of Atrazine for control of target pest plants in corn and milo has been highly effective when applied at proper time and rate. Other chemicals, such as Lasso, are being used in combination with Atrazine to control the most hardy pest plants such as fall panicum, foxtail and Johnson grass seedlings. Cooperative farmers applied Atrazine alone on 1,170 acres corn-milo and Atrazine - Lasso tank mix on 620 acres. The overall treatment was highly effective in control of Johnson grass and other target pest in soybeans. Cooperative farmers applied Treflan preplant on 1,582 acres of a total of 1,744 acres planted in 1980. The new "Wick Bar" applying



80-10-8. T.V.A. furnished the helicopter for an aerial inspection of Duck River Bottoms. The helicopter was able to carry nine persons. (LR)



80-10-11. The pumping of Duck River Bottoms not only provided additional agricultural lands but also gave an extra margin of safety to the cooperative farmers. (LR)

roundup while cultivating soybeans is doing a good job controlling the broadleaves. The use of Eradicane to control mature Johnson grass in corn has been erratic.

B. Grasslands:

The use of grasslands, with resulting benefits to waterfowl and soil maintenance and improvement is another tool used to accomplish our major objective. Flooding with continued high lake elevation killed the young fescue on the new road-dike at Duck River. The side slopes on each side was replanted for a distance of one mile with bermuda grass seed this summer. Good cover was obtained and plans are to plant the remaining miles the summer of 1981. Last fall, plantings of fescue on the improved section of Big Sandy appear only fair and will probably require some replanting.

Grazing is allowed on permanent sod only and is carried out under Cooperative Farming Agreements that limit the number of Animal Use Months. The time of grazing is limited to an eight month period, March through October. Cattle are not allowed on pasture through most of the waterfowl season. This insures proper waterfowl use of the area, and with limited grazing, the areas are maintained in better condition with less soil loss. Cattle are presently grazing 508 acres of pasture land. This total represents a reduction of eight acres which were converted to growing wheat. Continued cooperator use of these grasslands will provide additional waterfowl feeding and resting areas.

Hayland planting and harvest by Cooperative farmers was down this period. Hayland, harvest including fescue, clover, lespodeza, soybeans and timothy was only 229 acres as compared to 403 acres for previous period. Farmers prefer hayland planting on areas other than their own. Waterfowl benefit from crops accruing to the service for cooperator hay harvested. Also, waterfowl use the planted areas for browse, resting, and eat the seed not harvested.

C. Wetlands

Acreage classified as "wetlands" on Tennessee Refuge total 26,551 acres of this amount. The remainder is made up of 3,074 acres of seasonably flooded basins, 85 acres of shallow fresh marshes, 34 acres of shrub swamps, and 8 acres of open fresh water.

Pumping of the Duck River Bottoms dewatering area was certainly a highlight in 1980. The pumps were activated on May 7 which was the first time they had operated in thirteen years. The two electric pumps at Duck River pump station have a capacity of 60,000 gallons per minute. The bottoms flooded once on May 19 which set our dewatering efforts back about two weeks. By the end of June the water level in the dewatered area had been brought down to 353.3' and from that time on only intermittent pumping was needed to hold it at the desired level.



80-11-15. Refuge Manager V.L. Childs and Staff Specialist Carrell Ryan get a first hand view of the results to pumping Duck River Bottoms dewatering area.
(LR)



80-11-8. The production of natural waterfowl foods along some shorelines, mudflats, and low areas was somewhat of an unexpected bonus to the pumping project.
(LR)

Frank Bowers and Don Hammer along with Carroll Eyan of the area office of T.V.A. visited Tennessee Refuge on August 4 & 5, 1980 to review the pumping operations at Duck River Bottoms dewatering acres and to make future plans concerning the project. A helicopter was provided by T.V.A. on August 5 and a tour was made of the entire Duck River Bottoms. Observers were pleased at the amount of natural waterfowl foods that the pumping project had stimulated in the bottoms.

The pumping of Duck River Bottom during 1980 provided for an additional 669 acres of cropland to be planted in that area. It also allowed for a number of our cooperative farmers in that area to plant their crops at an earlier date with a greater margin of safety. Both T.V.A. and Tennessee Refuge share the cost of the pumping on an equal basis and our share amounted to just over \$20,000 for the entire year. T.V.A. stated in a December 9, 1980 meeting that they wanted to continue this arrangement through the 1981 season.

The pumping of the Duck River Bottom dewatering area and subsequent drawdown allowed for improvement and maintenance which had not been possible the past thirteen years. Internal roads and levees were rebuilt and field access roads were improved. Several low lying fields received maintenance which had been impossible during previous years.

The Duck River pump station functioned reasonably well during the year. The refuge dragline was used during October to lift off the bigger electric pump so that a new thrust bearing could be installed.

While the pumping of Duck River Bottoms was a big improvement during 1980, T.V.A. and the Corp of Engineers dropped a disappointment on us by way of their water level management practices on Kentucky Lake and Barkley Lake. News of the change in lake levels came at a May 8 meeting in Nashville, Tennessee as supporters of the new proposal suggested that Kentucky Lake be held to 359' until July 1 with a subsequent slow drawdown rather than holding 359' water level until June 15 followed by a quick drawdown. Primary supporters of this new procedure were sport fishing oriented rather than prowaterfowl. Tennessee Refuge attended a second meeting in Nashville, Tennessee on Nov. 18 which was held for government agencies involved or affected with the new water level management program (T.V.A., Corps of Engineers, Tennessee Wildlife Resources Agency, U.S. Fish and Wildlife Service). This office also attended a public meeting at Barkley Lodge on December 2, 1980 concerning the water level issue. Shortly thereafter a decision was recorded by T.V.A. and the Corps to try the "experimental" water level management another year (1981) due to its apparent beneficial effects to the sport fishing community.

D. Forestlands

This office obtained 6,000 loblolly pine seedlings 2,000 shortleaf (Virginia) pine seedlings, and 2,000 autumn olive seedlings for reforestation projects on the refuge. The bulk of the 10,000



80-13-17. Beaver are definitely on the increase at Tennessee Refuge. A huge dam was built along Bennett's Creek and backed up water over agricultural fields. (RSC)



80-4-17. Refuge Manager V.L. Childs and Frank Bowers of T.V.A. check over one of two new water control gates located at the newly rehabilitated Duck River Bottoms dewatering area. (LR)

seedlings were planted on the Big Sandy Unit for shoreline stabilization purpose.

Timberlands on Tennessee Refuge total 18,000 acres but little of this is in sizeable blocks. Most of the woodland exist as narrow strips along hilly refuge shoreline. Nearly all of the woodland is oakhickory climax with a limited amount of conifers.

The Tennessee Division of Forestry is continuing an experimental planting study of hardwoods on refuge lands. Both yellow popular and black walnut seedlings were planted during the year. Tennessee Refuge has provided four fields on the Duck River Unit totaling 75 acres for the long term project.

E. Other Habitat

The old Antioch gravel pit still provides nearby residents with a source of loose gravel they can obtain adjacent to the shorelines. This office provided approximately twenty permits for small amounts of gravel to local individuals during the year.

F. Wilderness and Special Areas

Somewhat of a resurgence of interest has been shown in various islands on the refuge which might qualify as wilderness areas. A fall survey by station personnel indicated that Sulphur Well Island and Eagle Island on the Big Sandy Unit and Goat Island at Busseltown Unit are still visible candidates for wilderness area status. T.V.A. has indicated on several occasions that they would have no objections to the 262 acre Sulphur Well Island becoming an official wilderness area. Refuge personnel indicated that some of the low lying islands on the Duck River Unit also had some potential for becoming wilderness areas. The last official submission for wilderness area consideration submitted by Tennessee Refuge was in 1972.

Two special areas existing on Tennessee Refuge are the 578 acre Britton Ford Research Natural Area and the Mount Zion Church and Cemetery, both located on the Big Sandy Unit. Various Indian mounds are also located throughout the refuge. There are approximately a dozen Indian mounds which have been identified on the area.

G. Easements for Waterfowl Management

Not applicable.

IV. Wildlife

A. Endangered and/or Threatened Species

As members of the western Tennessee and western Kentucky "Eagle Management Team", Tennessee Refuge participated in two meetings during the year concerning the plight of the eagle. The April 30 meeting at LBL dealt primarily with the results of the winter surveys and bald eagle management while the September 17 meeting at Paris Landing State Park centered on the upcoming eagle inventories and survey technique.

Tennessee Refuge personnel participated in three of the nationwide eagles counted at Tennessee Refuge during the year. This final inventory of the year showed 11 adult and 34 immature bald eagle on the refuge. A record number of 9 bald eagle were counted on Big Sandy Unit during the December 15, 1980 aerial survey and a press release noting this new high was released locally.

There appears to be a growing proportion of immature bald eagle in recent years. This is certainly encouraging news if more of the young eagles can survive to the breeding age. Other raptor survey counts in the west Tennessee and west Kentucky area also report this same phenomenon.

An unusual sighting of four bald eagles was made on Duck River Unit on August 4, 1980. One adult and three immature bald eagles were sighted in the Duck River Bottoms and were witnessed by several individuals. The foursome was not sighted again.

Osprey continue to migrate through the refuge both spring and fall but none has stopped to nest in many years. A peak number of 10 osprey were noted in mid-winter October on the three units of the refuge.

B. Migratory Birds

1. Waterfowl

Weekly waterfowl surveys are taken on all three refuge units during the periods of increased activity, usually October through March. Three aerial waterfowl inventories were made during key periods of the year such as the mid-winter waterfowl survey and scheduled eagle inventories.

The peak period for waterfowl during 1980 came during the week of December 21-27 when 39,767 geese and 157,955 ducks were counted on Tennessee Refuge. Mallards continue to hold a dominant position in the duck picture as 107,300 of the 157,955 ducks were this specie.

Duck populations were down in calendar year 1980 when compared to previous years. There was a particular decline in both black ducks and wigeon during the year. Waterfowl use-days were down during the twelve month period of calendar year 1980 as the legend below will indicate. (Tennessee Refuge objective goal is 23% million waterfowl use-days).

CY	1977	waterfowl use-days -----	24,891,174
CY	1978	waterfowl use-days -----	23,987,871
CY	1979	waterfowl use-days -----	23,723,491
CY	1980	waterfowl use-days -----	19,897,134

It was predicted that ducks would be down in the fall of 1980 as drought hit throughout the prairie states but geese also showed somewhat of a decline. The fall migration was not only late in arriving but also low in numbers.

The fall food supply for waterfowl looked entirely adequate at the end of the cropping season. The low numbers of waterfowl combined with reasonable food reserves on the refuge may have accounted in part for a mediocre opening day goose season on November 12 and an equally poor duck season which opened December 2. Special-Agent-In-Charge Paul Gladys made a tour of the refuge on December 10 to inspect our cropland manipulation practice to insure that no unintentional baiting situations occurred. Agent Gladys said everything looked satisfactory at Tennessee Refuge.

Swamp Creek, Sulphur Well Bay and Bennett's Creek Bay were again closed this year for the express solitude of the waterfowl which utilized those areas. The areas were opened shortly after the close of the waterfowl seasons so that crappie fisherman and commercial fisherman could use the area.

The only significant depredations problem recorded during 1980 was at the Swain field near Sulphur Well Peninsula. Geese started browsing heavily on the wheat late in the winter and Robert Fisher of Wildlife Assistance was called in. Zon guns were utilized in the field by the local farmer for several weeks.

Fall geese banding was a frustrating experience. Two new cannon net sites were constructed when it was found that the three previously reliable sites were not productive.

A total of 750 bushels of ear corn was obtained for the 1980-81 banding season. Tennessee Refuge was also able to ship 200 bushels of shelled corn to Holla Bend Refuge and 150 bushels of shelled corn to Big Lake Refuge.

The 1980 banding season was the last year that the \$15.00 black duck "reward band" was to be used at Tennessee Refuge. Every fifth duck of the 579 black ducks banded in 1980 were fitted with one of the green reward bands.



80-4-15. Waterfowl banded during 1980 included 783 mallards, 597 black ducks, 462 wood ducks, and 708 Canada Geese. (LR)



80-6-2. Patuxent Wildlife Research Center collected nine great blue heron eggs from Grassy Lake rookery for environmental contaminant residue studies. (KL)

The following is a compilation of total banding activity at this station:

BANDING RECORD DATA - AS OF DECEMBER 31, 1980

SPECIES	BANDED 1980	TOTAL BANDED	1980	RECOVERED (kill returns)	
				CUMULATIVE TOTAL	PERCENT OF TOTAL BANDED
Canada Goose	708	13,708	125	2,057	15.0
Hutchin's Goose	-	8	-	-	-
Blue Goose	-	37	-	4	10.8
Snow Goose	-	4	-	-	-
Mallard	783	12,352	36	1,669	13.5
Mallard-Black Duck	-	52	-	4	7.7
Black Duck	579	4,655	40	499	10.7
Gadwall	-	4	-	-	-
Wigeon	-	397	1	47	11.8
Pintail	-	120	-	6	5.0
Mallard-Pintail	-	2	-	-	-
Green-Winged Teal	-	10	-	2	20.0
Blue-Winged Teal	-	440	-	12	2.7
Wood Duck	462	8,011	31	591	6.6
Ring-necked Duck	-	21	-	5	23.8
Scaup	-	3	-	1	33.3
Coot	-	9	-	-	-
Mourning Dove	-	2,954	-	166	5.6
Totals:	2,532	143,787	-	5,063	11.6

CUMULATIVE DOVE AND DUCK RECOVERIES, (kill returns) BY STATE, PROVINCE
OF COUNTRY - AFTER BANDING AT TENNESSEE REFUGE - AS OF DECEMBER 31, 1980.

<u>STATE, PROVINCE OR COUNTRY</u>	<u>NUMBER</u>
Alabama	68
Arizona	1
Arkansas	122
Colorado	3
Delaware	2
Florida	20
Georgia	14
Illinois	174
Indiana	47
Iowa	45
Kansas	4
Kentucky	95
Louisiana	187
Maine	1
Maryland	7
Michigan	78
Minnesota	162
Mississippi	139
Missouri	39
Montana	2
Nebraska	10
New Jersey	2
New York	4
North Carolina	8
North Dakota	98
Ohio	34
Oklahoma	2
Oregon	1
Pennsylvania	7
South Carolina	11
South Dakota	48
Tennessee	1,097
Texas	42
Virginia	7
Washington	1
Wisconsin	132
TOTAL U.S.	<u>2,714</u>
Aberta	12
British Columbia	2
Nanitoba	88
Ontario	78
Quebec	10
Saskatchewan	99
TOTAL CANADA	<u>289</u>
Venezula	2
Dominion Republic	1
Total of Other Counties	<u>3</u>
GRAND TOTAL	3,006

CUMULATIVE RECOVERIES (kill returns) BY YEAR -
AFTER BANDING AT TENNESSEE REFUGE - AS OF DECEMBER 31, 1980
(GEESE, DUCKS, DOVES)

<u>YEAR</u>	<u>NUMBER OF RECOVERIES</u>	<u>PERCENT OF TOTAL RECOVERIES</u>
Same Year Banded	1,320	26.07
1st Year After Banding	1,368	27.02
2nd " " "	868	17.14
3rd " " "	519	10.25
4th " " "	325	6.42
5th " " "	234	4.62
6th " " "	142	2.80
7th " " "	103	2.03
8th " " "	60	1.19
9th " " "	53	1.05
10th " " "	31	.61
11th " " "	14	.28
12th " " "	12	.24
13th " " "	9	.18
14th " " "	2	.04
17th " " "	2	.04
21st " " "	1	.02
	<u>5,063</u>	<u>100.00</u>

CUMULATIVE GOOSE RECOVERIES (kill returns) BY STATE OR PROVINCE -
AFTER BANDING AT TENNESSEE REFUGE - AS OF DECEMBER 31, 1980.

<u>STATE OR PROVINCE</u>	<u>NUMBER</u>	<u>STATE OR PROVINCE</u>	<u>NUMBER</u>
Alabama	69	Manitoba	3
Arkansas	2	Northwest Territories	77
Illinois	97	Ontario	594
Indiana	68	Quebec	15
Iowa	4	TOTAL CANADA	<u>689</u>
Kentucky	132		
Maryland	13		
Michigan	312		
Minnesota	17		
Mississippi	5		
Missouri	12		
Nebraska	1		
New Jersey	1		
New York	7		
North Carolina	2		
North Dakota	1		
Ohio	167		
Pennsylvania	99		
South Carolina	6		
Tennessee	208		
Virginia	10		
West Virginia	1		
Wisconsin	134		
	<u>1,368</u>		

CUMULATIVE TOTAL OF BIRDS TRAPPED AT TENNESSEE N.W.R. - BANDED ELSEWHERE AS OF DECEMBER 31, 1980.

The following is a tabulation of birds trapped at Tennessee Refuge that have previously banded elsewhere.

Agassiz N.W.R.	2
Alabama Department of Conservation	6
Back Bay N.W.R.	1
Big Lake N.W.R.	2
Blackwater N.W.R.	1
Bombay Hook N.W.R.	1
Canadian National Resources Departments, Etc.	63
Crab Orchard N.W.R.	22
Cross Orchard N.W.R.	51
Deslacs N.W.R.	1
Ducks Unlimited	3
Florida Game and Fish	1
Horican N.W.R.	24
Illinois Department of Conservation	82
Indiana Department of Conservation	7
Iowa Conservation Department	1
Iroquois N.W.R.	2
J. Clark Saylor N.W.R.	1
Kellogg Bird Sanctuary	12
Kentucky Fish and Wildlife Resources Commission	16
Kentucky Woodlands N.W.R.	9
Lake Andes N.W.R.	1
Lower Souris N.W.R.	3
Mark Twain N.W.R.	2
Maryland Department of Natural Resources	1
Michigan Department of Conservation	6
Minnesota Game and Fish Commission	8
Mississippi Game and Fish Commission	3
Montana Game and Fish Commission	1
Necedah N.W.R.	4
New York Department of Conservation	2
North Carolina Resources Commission	1
Noxubee N.W.R.	4
Ohio Department of Natural Resources	43
Ottawa N.W.R.	43
Presquile N.W.R.	4
Pungo N.W.R.	1
Reelfoot	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
Shiwassee N.W.R.	63
South Carolina Game and Fish Commission	1

Swan Lake N.W.R.	6
Tamarac N.W.R.	1
Tennessee Wildlife Resources Agency	67
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.	47
Wisconsin Department of Conservation	8
Wyoming Department of Fish and Game	1
Game Management Agents and All Others	47
TOTAL:	<u>705</u>

TRAPPED BIRDS - Banded PREVIOUSLY AT TENNESSEE

The table below itemize the Tennessee Refuge banded birds that have been re-trapped at Tennessee Refuge after a period of 90 or more days, during the past 16 years. Numbers indicated are separate returns for individual bands and do not include reports.

<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
1977	45
1978	14
1979	11
1980	8
TOTAL:	<u>568</u>

2. MARSH and WATER BIRDS

It is gratifying that the great blue heron rookery at Grassy Lake has made a turn around in productivity. Young birds brought to the flight stage has risen from an all time low of 47 birds in 1977, to 85 in 1978, to 130 in 1979, and to 140 in 1980. We can offer no real explanation for the upswing in activity at the heron rookery.

The great blue heron continues to be the most plentiful of the marsh and water birds. More than 2,000 were counted during December of 1980. Green herons are the second most abundant of the marsh and water birds.

Probably the most unusual visitors to the refuge this year were three immature white ibis which appeared at Busseltown Unit in September. The white ibis only stayed for approximately a week.

3. Shorebirds, Gulls, Terns, and Allied Species

Ring-billed gulls and herring gulls remain the two dominant species of gulls on Tennessee Refuge. A peak of just over 7,000 gulls were noted in March of 1980 prior to their annual migration north.

The killdeer continues to hold a firm grip as the most abundant shorebird on the area. An estimated 2,000 killdeer utilized the area during the late summer and fall. The killdeer is the only shorebird known to nest on Tennessee Refuge.

4. RAPTORS

One injured red-tailed hawk was picked up during the year and transported to the raptor rehabilitation center at Murray State University, Murray, Kentucky. An injured screech owl was brought to the headquarters office in November, 1980 and cared for by station personnel. The screech owl was successfully reintroduced into the wild nearly a week later. Golden eagle activity has dropped off dramatically during the past three years. The following will give an indication of the sudden exodus of the golden eagle from Tennessee Refuge:

<u>YEAR</u>	<u>PEAK NUMBER</u>	<u>USE - DAYS</u>
1978	39	2,015
1979	22	1,017
1980	8	476

The red-tailed hawk continues to be the most abundant raptor on Tennessee Refuge followed by northern harriers, American kestrels, and screech owls. The peak number of red-tails on Tennessee Refuge during 1980 was estimated to be 380 during the fall.

5. Other Migratory Birds

The blackbird problem surfaced again during the fall and early winter of 1980. A roost of more than 1 million blackbirds located itself near the edge of Paris, Tennessee and another roost of more than 4 million blackbirds took up residence just north of the Perryville Bridge near Busseltown. The Perryville roost proved to be the largest roost in Tennessee during 1980.

C. Mammals and Non-Migratory Birds and Others

1. Game Mammals

Various refuge areas were examined during the late winter and early spring of 1980 to determine what areas would be suggested for deer hunts during the fall season. A responding deer herd on the Big Sandy Peninsula called for the resumption of a traditional gun hunt in that area. A flourishing deer herd in the Duck River Bottoms caused us to "propose the first ever"

managed deer hunt in the bottoms which was suggested as a muzzleloading rifle hunt. Also, muzzleloading rifle hunts were again suggested for the Britton Ford-Sulphur Well area and the area south of I-40 on the Duck River Unit. The archery hunt on Britton Ford Peninsula and Sulphur Well Island which had been a tradition for so many years was dropped in 1980 due to declining success. Fluctuating deer populations on Tennessee Refuge calls for constant alertness so that over abundance situations do not occur.

Beaver are constantly pitting their wits and engineering ability against our patience. Beaver have moved into the Bennett's Creek area and built a huge dam which has backed up the stream considerably. Several dams and areas of high activity are present in the Duck River Bottoms. It seems as though all of West Tennessee has experienced a dramatic jump in beaver activity over the past 10 or 12 years.

Reports received by this office seem to indicate that the price being paid for raw fur has gone up considerably this year. Maybe this is one reason that racoon hunting is so popular around this area. However, the price for beaver pelts remain low and trapping for profit has proven to be the only consistent way beaver have ever been controlled in west Tennessee.

2. Other Mammals

The coyote continues to gather momentum as a problem animal in the area. To the local farmer, the coyote becomes a serious threat to his livestock operation at calving time. Goat operators also report serious losses in some areas.

3. Resident Birds

The Eagle Creek Turkey population continues to grow. Tennessee Wildlife Resources Agency released 5 gobblers and 15 hens in that area 1978 and the turkey has apparently realized good breeding success. We now believe that more than fifty turkey exist in the Eagle Creek area. Areas such as Rochelle Island, Nix Landing, and Dug Hill have also shown an increase in Turkey activity. The Big Sandy Peninsula population of turkey continues to stagnate.

Bobwhite quail had a reasonably good productive year during 1980 with only light to moderate spring and summer rains to interfere with nesting.

4. Other Animal Life

Tennessee Wildlife Resources Agency expended many man-days of effort in planning and constructing fish attractors in Kentucky Lake to assist the local sport fishing industry. Refuge areas selected for fish attractors included Morgan Creek, Rockport, Birdsong Creek, and Eagle Creek. The underwater fish attractors work especially well on crappie. All of the attractors are marked with a buoy indicating the purpose of the site.



80-12-3. The first ever muzzleloader hunt for deer in Duck River Bottoms saw 131 hunters harvest 47 deer for a 31% success rate during the 2-day hunt. (LR)



5-12-80. The Tennessee Division of Forestry has several experimental fields on the refuge where they have test plantings of yellow poplar and walnut seedlings. (JBA)

The sport fishing activity on refuge waters was certainly busy during 1980. Crappie fishing was reasonably successful and bass fishermen report an increase in catches. Most sport fishermen favored the holding of Kentucky Lake at 350' the additional two weeks this year.

V. INTREPRETATION AND RECREATION

A. Information and Intrepretation

1. On-Refuge

Receipt of currently approved major and secondary entrance signs virtually complete the transition from our former obsolete sign system to the current one. Installation of the signs will be accomplished at a later date.

School and university groups utilized the refuge for a variety of programs including bird banding and waterfowl management tours. Two local high school science classes took part in aquatic ecology field trips led by refuge staff.

Public weekend waterfowl tours of Duck River Unit were continued this winter. Response was very disappointing, however, causing seven of the nine scheduled tours to be cancelled. Those who did participate were treated to excellent views of waterfowl and eagles.

The YCC program was expanded to eight weeks this year but enrollment was cut to 15. Environmental awareness training was coordinated by a local high school teacher and was the strongest EA program in recent years.

This year for the first time Tennessee Refuge supplied a staff person as a YCC training cadre member for the regional YCC staff workshop in Atlanta, Georgia.

2. Off-Refuge

Twenty-three off-refuge programs were presented in 1980. These included general presentations to civic groups and garden clubs, service training in environmental education and career opportunities to high school faculty, a commencement presentation at a local private school, and a lecture on wildlife management, as practiced by the USFWS, presented to a college forestry and wildlife class. In addition 28 programs for 1,556 students were conducted during National Wildlife Week. The refuge supplied the judge for the annual Henry County 4-H wildlife food and plot contest.

Thirteen news releases were issued to keep the public informed of wildlife recreation opportunities and regulatory policies during 1980.

A great number of written and telephoned requests for information were answered during the year. Numerous walk in requests were also responded to by the office staff.



80-12-6. Outdoor Recreation Planner Ries Collier provides "outdoor classroom" programs for local high schools on aquatic biology. (JK)



R4-1-80. Chickasaw Nature Trail was nominated to the National Recreation Trail system during 1980. (LR)

Our information dispensing capabilities were given a boost with the receipt of a mammal list, a reptile-amphibian list, and the long-awaited fish list. Status of the Chickasaw Nature Trial interpretive pamphlet remains hazy. We first submitted a text for the pamphlet in 1978. After considerable correspondence with the regional interpretive staff and numerous reworkings of the text there is now some doubt that the pamphlet will be printed. The trial was nominated this year for inclusion in the Federal Recreation Trial System and this Tennessee Recreation Trial Inventory.

B. Recreation

1. Wildlife Oriented

In spite of rising fuel costs and a less than outstanding fishing season, both of our marina concession did substantially more business than last year. No major additions or new construction projects were begun or seriously contemplated for either of the concessions. Vigilance is required to insure that grounds and facilities reflect credit on the Service.

YCC enrollees produced a 116 concrete logs to be used in upgrading launching ramps. Some of these were used at the Duck River pump station ramp. The remainder are earmarked for a Big Sandy Unit Site.

Our deer hunts were quite successful this year. We were blessed with good weather for most of them, a fact particularly relevant to muzzleloaders. The hunting program was expanded by opening Duck Bottoms to an early season muzzleloader hunt. The Big Sandy conventional weapons hunt was reinstated this year, also. All participants were selected by public drawings. A summary of our hunts follows:

- a. Duck River Bottom, primitive weapons September 27 & 28, 1980. This was the first time the 4,000 acre Duck River Bottoms was opened to deer hunting. Participation was good with 131 hunters killing 47 deer for a 37% success rate.
- b. I-40, primitive weapons November 29 & 30, 1980. All of the Duck River Unit south of I-40, 2,100 acres, provided 102 hunters with 34 deer, a 33% success rate.
- c. Big Sandy, conventional weapons December 20 & 21, 1980. This hunt created some interest; 2,081 applications for 100 available permits. Ninety-one hunters killed 46 deer on the 5,000 acre area. Success rate was 51%.
- d. Britton Ford - Sulphur Well, primitive weapons December 27, 1980. This final hunt of the season on 750 acres allowed 49 hunters to kill 22 deer for a 47% success rate. Not too bad for muzzleloaders.

Wildlife observers and those taking our self-guided auto tour numbered 95,000 for the year.



80-1-11. The demand for crappie bed material and a desire to get a view of the lake frequently result in this type of shoreline manipulation. (WRP)



80-3-4. A total of 10,000 seedlings were planted during 1980 to help stabilize critical shoreline areas. (WRP)

2. Non-Wildlife Oriented

As in the past, we have no programs to encourage non-wildlife oriented recreation. Swimming, water skiing, and pleasure boating opportunities will continue to draw large numbers of recreation.

C. Enforcement

Refuge violations which are being processed thru the Middle and West Tennessee Federal Courts by the Special-Agent-In-Charge, Nashville, Tennessee have been on a downward trend over the past four years. Cases processed in 1980 totaled 21 as compared to 38 in 1979, 28 in 1978, and 134 in 1977. This can be attributed in part to the reduced number of station employees who have law enforcement authority. A breakdown of the violations encountered during 1980 are as follows:

Enter closed area	2
Trespass with firearms (weapons)	2
Off-road use of vehicle	2
Parking violations	5
Taking or destroying plant life	3
Theft of government property	3
Littering	3
Reckless boat operation	1
Total	<u>21</u>

A total of 22 violations were handled by letter when the seriousness of the offense did not warrant prosecution. Another 39 contacts were made with individuals found camping on the refuge. None of the 39 campers were found to have been apprehended camping on Tennessee Refuge in years before and none were charged because of a second offense.

Three young men were apprehended during January at the subheadquarters of Big Sandy Unit in the act of stealing fuel from Government vehicles. Up to 100 gallons of gasoline had been stolen from refuge vehicles in the weeks previous and a stake out proved effective in apprehending the violators. Various other 2-man patrols were used throughout the winter months in enforcement duties.

Several individuals were apprehended while cutting trees along the refuge shoreline. The purpose of most such tree cutting is for use as crappie beds in refuge waters. Others just want a better view of the lake.

Our problems are continuing at Antioch with Ben Gaines. Mr. Gaines negotiated with T.V.A. to cut trees up to 3" in diameter on one of the two designated 50' corridors. A clearing operation was undertaken shortly after issuance of the permit and a number of trees over 3" d.b.h. were known to have been cut. An investigation by Special Agents Blakemore and Wright turned up enough evidence whereby Mr. Gaines was charged with cutting eight trees on refuge lands. The case had not been settled by the end of 1980.

Illegally placed buoys in refuge waters continue to be a problem. The adjacent Britton Ford subdivision and Killibrew subdivision are the apparent source of most of the problem. The buoys are primarily used for tying up sailboats and pantoon boats. Both persuasion



80-7-22. Antioch Owner Ben Gaines exercised his permit from T.V.A. by cutting the 50' wide corridor to Kentucky Lake. (LR)



82-16-80. The war against litterbugs will probably never be won. During 1980 we were only successful on three occasions in catching someone in the act. (WRP)



80-8-2. Y.A.C.C. enrollees numbered eight at one point during the year. No group leaders were assigned to Tennessee Refuge during 1980. (LR)



80-13-5. Y.A.C.C. enrollees were given the standard 8-hour chain saw safety course and substantial personal instructions prior to actually operating the chain saws. (LR)

and legal efforts have proven to be ineffective in removing the buoys up to this point.

Both vandalism and theft of refuge property took place during 1980. Farm tractor batteries were a favorite this year as five "marked" batteries disappeared during the season. The Hough front end loader received vandalism while being parked near Elkhorn Landing. Vandalism included breaking the dash instruments and cutting both hydraulic and air hoses. Our cooperative farmers were also hit as vandals removed parts from farm equipment stored at Birdsong.

Off-road vehicle operation is a violation which appears to be on the rise. The increase of high floatation 3-wheelers and off-road cycles is certainly contributing to our problem. The popularity of 4-wheel drive units is tapering off but there are plenty of them still around.

VI. Other Items

A. Field Investigation

Y.A.C.C. enrollee Vicki Wheatly spent the summer months collecting historical information on Tennessee National Wildlife Refuge which could possibly be made into a refuge historic leaflet. A history major, Ms. Wheatley collected relevant information from all three refuge units and the surrounding area which has been formulated into a field draft for submission as a possible refuge leaflet handout.

Patuxent Wildlife Research Center requested that up to 10 great blue heron eggs be collected from the Grassy Lake rookery site. Jim Flemming of the research center arrived on April 15, 1980 and collected 9 eggs from the rookery. Purpose of the collection project was to evaluate the eggs for possible environmental contaminant residues. Other sites in the South were also sampled.

B. Cooperative Programs

A meeting sponsored by the Corps of Engineers was held in Nashville, Tennessee on January 23, 1980 to discuss the possibilities of the city of New Johnsonville, Tennessee in constructing the industrial port complex known as Trotters Landing near the Duck River Unit. Government agencies attending included the Corps of Engineers, Tennessee Valley Authority, Ecological Services, the city of New Johnsonville, and Tennessee Refuge. The city fathers of New Johnsonville were faced with the prospect of a long term creation of an environmental impact statement and a short option on the purchase of the land where they already had considerable investment. The location of the industrial complex adjacent to the refuge was certainly not favorable to this office considering the large number of bald eagles using the nearby Duck River Bottoms.

The Young Adult Conservation Corps program hit full stride during 1980. Tennessee Refuge received permission in February to hire an additional four Y.A.C.C. enrollees bringing the total to an all time station high of eight, all of which were without a group leader. Y.A.C.C. enrollees fluctuated between a high of eight and a low of two during the year. Work accomplished during the year included clerical office help, historical research, litter control,



80-4-13. Emphasis was given to refuge boundary lines at shoreline points which entered Kentucky Lake. (WRP)



80-7-2. Y.A.C.C. Enrollees were utilized in upgrading a major portion of the 180 miles of land boundary at Tennessee Refuge. (WRP)



Refuge Manager V.L. Childs was named "Conservationist of the Year" by the Tennessee Conservation League and presented with the Z. Carter Pattern Award. (LR)



R3-17-80. The Sulphur Well peninsula road was reshaped and ditched in connection with the terracing work in adjacent fields. (LR)

boundary line work, mowing, equipment and building maintenance, shoreline work, trimming road edges, and assisting in the refuge farming program.

Y.A.C.C. Camp Director Donnie Rape held a meeting at the Tennessee Refuge headquarters on March 3, 1980 at which representatives from all four West Tennessee Refuge attended. Current Y.A.C.C. problems were discussed as well as the future direction of the program.

Tennessee Refuge received a 12 passenger Ford van during the year for use in the station's Y.A.C.C. program. This office was also able to get rid of three Y.A.C.C. sedans which we had been holding for 2½ years but were unable to use.

Outdoor Recreation Planner Ries Collier attended the Y.C.C. training workshop in Atlanta, Georgia on April 8 & 9, 1980 as an official cadre training team member. Assistant Refuge Manager Jim Kelly also attended this meeting because of his assignment as Y.C.C. camp director for the refuge's summer program.

Tennessee Refuge's 8-week Youth Conservation Corps program started on June 16 and was attended by 15 enrollees. Heading up the program were two group leaders, an environmental awareness coordinator, and the Camp Director. All fifteen students made the entire 8-week program. Projects undertaken by the Y.C.C. enrollees included the construction of concrete logs for boat ramps, litter control, road edge clearing and cleanup, shoreline maintenance, sign maintenance, and vehicle and building maintenance. The enrollees had 25% of their total time directed toward environmental education activities.

Tennessee Refuge participated in five other cooperative programs of local, regional, or national significance. These programs included the reporting of color marked birds, water quality monitoring, mid-winter waterfowl inventory, the annual eagle count, and experimental hardwood study plots.

Seventeen Special Use Permits were issued to individuals or organizations during 1979. Thirteen of these permits were issued to cover privately maintained facilities such as boat docks and electric lines for individuals in the Britton Ford-Killebrew Sub-division area on public lands. Special Use Permits were also issued to the Reelfoot Girl Scout Council, West Tennessee Area Council Boy Scouts, Elkhorn Community Club, and private storage space.

C. Items of Interest

Refuge manager V.L. Childs was selected as "Conservationist of the Year" by the Tennessee Conservation League. Mr. Childs accepted the Z. Carter Pattern Award on March 8, 1980 at Nashville, Tennessee during the League's annual banquet.

Personnel changes were few during the calendar year 1980. Biological Technician Willie C. McDaniel retired from the Fish and Wildlife



80-12-17. Several Y.A.C.C. enrollees were taught skills in heavy equipment operation during the year.
(LR)



80-13-9. Shoreline maintenance at Big Sandy Unit was a major operation this year as trees and brush were removed from between the water and waterfowl food areas.
(LR)

Service after 35 years at Tennessee Refuge. Just prior to his retirement, MR. McDaniel had been on O.W.C.P. for more than 2½ years. Mr. McDaniel officially separated from the Service on August 29, 1980. Tractor Operator James W. Rhodes ended his 2,080 hour appointment on November 15, 1980. Mr. Rhodes had been stationed at Busseltown Unit. Assistant Refuge Manager Ken Litzenberger transferred to Carlina Sandhills on December 27, 1980. This station was advised that Randy Cook of Big Lake Refuge, Arkansas would be taking his place as Assistant Refuge Manager at Tennessee Refuge.

This office was visited by several U.S. Fish and Wildlife Service employees during the year. Staff Specialist Carrell Ryan made the annual inspection on April 7 and 8, 1980. Travis McDaniel of the Atlanta R.O. and Art Wemmerus of the Washington C.O. visited the refuge on May 12, 1980 and discussed refuge farming operations. Area Manager William Hickling made a courtesy visit to Tennessee Refuge on June 19 while Senior Staff Specialist Phillip VanDyke came the following day to discuss refuge operations. Mr. Wes Motley, T.V.A. Administrator of the western district made a familiarization visit to the refuge on July 10, and also a follow up visit later on December 12, 1980. Local outdoor writer Kenneth Clayton made a tour of Big Sandy Unit and Duck River Unit on August 6, 1980 with a special look at the refuge's farming operations. Multiple official visits were made to the refuge during the year by S.A.C. Paul Gladdys, Special Agent Blakemore, and also by Robert Fisher of Wildlife Assistance.

Several important meetings and training session were attended during the year. Staff members Childs, Reese, Rhodes, Collier, and Easley attended the Area Office Conference in Nashville, Tennessee from April 4 thru 7, 1980. Assistant Refuge Manager Ken Litzenberger attended the 4-week Basic Refuge Management Academy while Assistant Refuge Manager James Kelly attended the 3-week Mid-Level Management Course at Beckley, West Virginia during the late winter of 1980. Our annual meeting with the Tennessee Wildlife Resources Agency was held on April 23, 1980, a time when we can get together and discuss our mutual problems and goals. Refuge Manager Childs attended the 1½ day workshop in Atlanta, Georgia on November 20&21, 1980 concerning the purpose and procedure for holding a public meeting.

General Maintenance Mechanic T. Clint Robertson was presented two awards during the year. Mr. Robertson received a \$250 Outstanding Performance Award for his adjustment to supervisory duties at Big Sandy Unit plus a 30 year service pin, all of the years being accrued at Tennessee Refuge.

D. Safety

A fatal public use accident occurred on the refuge May 25, 1980 as two boats collided near Eagle Island on Big Sandy Unit. Killed was Donald E. Rich of Big Sandy, Tennessee, a passenger in one of the boats. The driver of one of the boats was charged with vehicular

homicide but this was later dropped. Evidence indicated that alcohol was a possible contributor to this fatality.

Refuge personnel were involved in eight reportable accidents during the year. Wm. Ronnie Parker strained his back on January 24, 1980 while engaging in boundary line work. A rock fell from a dump truck that Billy Carter was operating and broke a windshield of a vehicle while traveling on a state highway on February 7, 1980. Wm. Ronnie Parker scraped the side of a pickup truck on May 24, 1980 while maneuvering thru standing timber. Ken Litzenger was operating a refuge pickup and was struck in the left rear fender by another vehicle which had run a stop sign. Wm. Ronnie Parker was driving a refuge sedan on May 28, 1980 when a young boy threw a rock which broke the windshield of the vehicle. Jerry B. Armstrong reinjured his back while maintaining refuge equipment on May 30, 1980. Ar. Armstrong underwent surgery on June 11 and did not return for work until September 22, 1980, a period of nearly four months. Y.A.C.C. enrollee Mark McFadden had a piece of earth moving equipment fall on his foot after a handyman jack had slipped from the unit. A station wagon that Manager Childs, was operating on August 26, 1980 slipped into a field ditch and damaged the left front fender.

Safety precautions taken this year include the mounting of "boom stops" on the station's Koenig 405 dragline. Boundary line posts were painted a conspicuous color in the upper bottoms to prevent adjacent landowners from hitting them with farm equipment. Trees and brush have been cleared back from many public roadways and blind corners.

A refuge safety meeting was held on the second Wednesday of each month for the entire refuge staff. A safety film accompanied each meeting along with relevant safety material and suggestions.

E. Acknowledgements

The body of the 1980 Narrative Report was written by Assistant Manager Leon Rhodes. Specialized sections of the narrative were compiled and written by Soil Conservationist Eddie Reese, Outdoor Recreation Planner Ries Collier and Assistant Refuge Manager James Kelly. Refuge Manager V.L. Childs critiqued the narrative and proofed the final draft. The narrative was typed by Y.A.C.C. enrollee Connie Crutchfield.