

TENNESSEE

Narrative Reports

January-December 1950

ROUTING SLIP

BRANCH OF WILDLIFE REFUGES

DATE: _____ 195

MR. SALYER _____

MR. KRUMMES _____

MR. DUMONT PAD

MISS BAUM _____

SECTION OF HABITAT IMPROVEMENT:

~~MR. CRITCHEL~~ REG

~~DR. BOURN~~ WSP

SECTION OF OPERATIONS:

~~MR. GALE~~ J.N.B.

MR. REGAN _____

~~DR. MERRET~~ LCM

SECTION OF LAND MANAGEMENT:

MR. ACKERKNECHT _____

STENOGRAPHERS:

NARRATIVE REPORT

REFUGE: TENNESSEE

PERIOD: SEPT - DEC., 1950

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 PARIS, TENNESSEE

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NARRATIVE REPORT
 PERIOD FROM SEPTEMBER 1 TO DECEMBER 31, 1950
 TENNESSEE NATIONAL WILDLIFE REFUGE
 PARIS, TENNESSEE

I. GENERAL

A. Weather Conditions:

<u>Month</u>	<u>Snowfall</u>	<u>Precipitation</u>	<u>Max. Temp.</u>	<u>Min. Temp.</u>
September	0	9.52 inches	90	35
October	0	1.75 "	90	40
November	3 inches	5.14 "	85	-2
December	1.44 "	2.51 "	73	7

September was as unusually wet as October was unusually dry, even for a dry month. The normal precipitation for October in the vicinity of Paris is 3.18 inches. Excessive precipitation during September along with high winds blew down large acreages of crops with particular damage to corn. The rather warm September weather with heavy rainfall greatly retarded the planting of fall cover crops, and damaged those which were already planted. Crimson clover, vetch, and barley seemed to be the cover crops receiving the greater amount of kill. October was ideal for harvesting summer crops, and those farmers taking advantages of the long hot October days must have had a premonition of what was in store for them in November - a usually favorable month. November started off with a series of heavy rains followed by a series of cold waves which finally reached a low of 2 degrees below zero - and more or less below freezing weather with several snow storms and severe ice conditions were to follow until the close of the year 1950.

B. Water Conditions: (359 Ft. Bank Full)

<u>Month</u>	<u>Max. Flow</u>	<u>Min. Flow</u>	<u>Max. Elev.</u>	<u>Min. Elev.</u>
September	129,000 CCFS	51,700 CCFS	357.8	354.7
October	55,400 "	29,300 "	355.5	354.1
November	94,700 "	33,400 "	356.0	354.0
December	143,200 "	54,100 "	355.5	353.7

The Tennessee Valley Authority was able to maintain reservoir elevations in accordance to the approved schedule during the period. Even though 9.52 inches rainfall were recorded in September, the peak discharge at Kentucky dam of 129 million cubic feet per second rapidly lowered the reservoir so that the steady drawdown to the minimum of 354 feet for flood control was closely adhered to. As usual this fall drawdown for flood control presents an uninviting water level condition for fall migrants, except where the ducks and geese find rye grass on planted mud flats.

T.V.A. did not close the water control structures at Busseltown and Duck River dewatering projects until December 12 which was later than

usual, and which probably resulted in the concentrating of ducks on crops planted at higher elevations. As soon as the water gates were closed the ducks began to feed in the newly flooded areas.

C. Fires:

Only one fire totaling two acres occurred on the refuge during the period. Little damage resulted from this fire as the lands involved are used for agricultural purposes. The rains and snows occurring during November and December held fire hazard conditions to a minimum of danger. The fire prevention campaign being carried out by the Tennessee Conservation Department is showing results as fewer people each year are now resorting to burning their lands. Refuge patrolmen maintained close cooperation with State fire patrolmen and fire lookouts during the period.

II. WILDLIFE

A. Migratory Birds:

1. Population and Behavior:

Blue-wing teal by September were numerous on Big Sandy and Duck River Refuge Units having been first observed early in August. An estimated 650-700 blue-wing teal were using Tennessee Refuge by mid October. Wood duck concentrations were already quite developed by September as near-by migrants began concentrating on the refuge. Evening flights at both Duck River and West Sandy areas during late September and early October were estimated from 800 - 1,000 birds, and by November had reached about 5,000 in number. Migrant Black ducks were more numerous during the late September and early October migrations than mallards. Thirty-four blacks were seen on Robbins Creek on September 29, and by the end of October several thousand were using the refuge. Dickerson reported 1,000 black ducks at Broad Slough and Rock Port Island on the Duck River Refuge Unit on October 26. Observations throughout the period indicated a large increase in the number of black ducks as compared to their relative numbers during previous seasons.

Mallards were not observed in appreciable numbers until mid October when numerous observations were recorded from the various parts of the refuge units. These early observations varied from 200 to 400 in number, but by October 26, Dickerson reported 3,000 mallards at Duck River when they began to concentrate in that area.

By November ringnecks, Gadwall, pintails, and baldpates were common on the refuge, and as the season advanced the pintails

increased rapidly until they were the third most common duck, with ringnecks running forth. Fewer in number, usually ranging from 10 - 100, were individual observations of green-wing teal, shovellers, red heads and canvas backs. The main section of the fall migration of ducks at Tennessee Refuge started during the last week of October and continued to about November 7. Generally, the fall migration was earlier by about 10 days than last year, and about 30 percent heavier in this area. Refuge ducks reached a total of 10,000 by the close of October; were recorded at 32,000 November 2; and reached 62,000 by November 11. Then there was a lull in the migration for about 16 days. By the end of November refuge ducks suddenly increased to 90,000; and 100,000, last years peak, by December 15. By the close of December and the period of this report our refuge wintering population began to stabilize at an estimated figure of 155,000 ducks, a new peak for Tennessee Refuge.

The estimating of waterfowl figures at Tennessee Refuge, and ducks in particular, is becoming a rather complex and difficult job. All refuge personnel make daily checks and estimates on the three refuge units, and the numbers are compared with those present the preceding year. We have found that air plane reconnaissance is of little value in obtaining total over-all figures, due to the excessive speed of the plane, poor coverage, and the inability to flush the ducks in fields, woodlands, swamps, and slough areas. However, the airplane is satisfactory on open water, and mud flats. Then again, the periodic coverage by a plane will miss evening or morning flights of ducks coming on or leaving the refuge - and gives only a true picture of part of the daytime resting population. We are making our observation chiefly from auto, boat, and by foot, While it may be true that some ducks are recounted by this method, the average daily coverage and estimates which are maintained at a conservative level will give a fairly accurate estimate of the entire refuge population.

The species composition of our ducks is about as follows: Mallards 60 % - Blacks - 15%; Pintails - 15%; Ringnecks - 5%; others 5%. Thus we see that the puddle ducks comprise more than 90% of the total number, which is probably true of the Tennessee Valley as a whole where the duck population is for the most part dependant upon upland agricultural crop. It would be quite safe to say, that our waterfowl can be expected in number in proportion to the amount of food available - which here at Tennessee is agricultural crops. Herein also lies our weakness, for it is during the critical fall migratory period that the agricultural crops are not available, the diking and dewatering projects are dry, and the recently exposed mud flats are barren of food. Rather than showing this humiliating face to our fall migrants, the refuge should certainly

endeavor to present a more inviting picture, an attraction to both ducks and geese. For the refuge to play its roll as a stopping, feeding, and wintering area on the Mississippi flyway, it is of utmost importance that the refuge attraction be enhanced during the fall migration so that the waterfowl will be held during this period of September 15 to November 15. The August and September planting of the mud flats with rye grass is a very satisfactory but expensive annual operation which will continue to be limited by available funds. This rye grass planting should certainly be continued at all important feeding locations and be expanded as funds will permit, as it is an important fall attraction for ducks as well as geese. The planting of shattering seed crops such as peas, beans, millet, and buckwheat should be encouraged. Buckwheat appears to be the most desirable food producing crop for fall waterfowl use, due not only to availability but for its palatability to both ducks and geese. The establishment of permanent level lateral pools, stocked with marsh and aquatic foods will also afford considerable attraction to waterfowl during the fall season. These pools can be constructed at Tennessee Refuge with considerable acreages and at a relatively small cost. Even without these improvements necessary to present a more adequate fall attraction for waterfowl, the continued extension of reclaiming land for agriculture, and the planting of a larger acreage of isolated areas will provide additional food for a greater waterfowl potential. The ducks that can be wintered at Tennessee Refuge can be easily several times the present numbers.

This season, blue and snow geese did not put in their usual August and September appearance but waited until early October and arrived along with the Canada geese. While the ducks arrived early this fall, this timing was not true of the geese and especially the blue and snow geese. Thirty Canada geese were seen on Jake Ridge, October 11, Fifty-three blue geese were seen at Sulphur Wells on October 13, and 103 blue and 7 snow geese at the same location on October 15. A flock of 37 snow geese were also seen at the mouth of Big Sandy on October 15. It is interesting to note that percentage of snow geese in the blue and snow goose flocks have increased from 5 to about 12 percent. Also individual flocks of snow geese have been recorded during the past two years. The total number of blue and snow geese using the refuge was estimated at 1500 birds, but they stayed a relatively short time and most of them departed by mid November and were all gone by the close of the month. It appears that they received a weather forecast and knew that below zero weather was approaching. Last year we experienced a very mild winter and both blue and snow geese remained on the refuge the entire season. The spring migrants which appeared for the first time in the Tennessee Valley combined with these wintering blue and snow geese on the refuge - and of course we are anxiously

awaiting to see if this spring, following a long severe winter, if the blue and snow geese will re-occur in the Tennessee Valley.

The Canada geese did not appear to be ² affected by the cold weather this period but with the advent of freezing temperatures moved from the pastures to the croplands. Previously they were attracted to rye grass planting and winter cover crops, but with the knocking down of agricultural fields they were soon feeding on corn, beans, milo, peanuts, and buckwheat. As in the case of the ducks, buckwheat was eagerly sought for and consumed by the geese before utilizing the other crops. This selection was due to availability as well as palatability. As compared to last year, Canada geese appeared in larger numbers earlier in the season. By the close of November the number of geese was about equal to those present the previous year, and remained about in this category until the end of the year when there was sudden increase in Canada geese at the time of this writing which will be reported in more detail in the next report covering the month of January. The Canada goose wintering peak last season reached 2,100 birds, and is now recorded at 2400 for this season. Waterfowl numbers, both geese as well as ducks, are reported as daily peaks. No attempt is made to indicate total waterfowl use, as sudden changes in the species composition of the various flocks indicate rapid and periodic changes, especially in ducks. The turn-over in the fall, late winter and spring months is considerable with perhaps very slight change in numbers present at any given time. A graph showing daily waterfowl use will be made for the entire waterfowl season and included in the next narrative report.

Coots, showed a considerable increase this season as compared to last year. 1,000 coots were seen at Sulphur Wells on October 27 and 3,000 at Rockport near Duck River on November 3. It is estimated that a peak of 6,000 coots were using the refuge during the season. Observations indicate little change in the numbers of herons, egrets, and cormorants using the refuge during the period as compared to last year. The number of local doves appeared to be about the same as last year and afforded excellent hunting during the first few days of the open season. However, migratory doves were considerably fewer in number than Tennessee raised doves.

2. Food and Cover:

Waterfowl foods were discussed in some detail under the previous heading. While the growing of agricultural crops is the backbone of our waterfowl program, extensive plantings of perennial smartweed, American pondweed, and square stem spike rush have been successful at Duck River diking and dewatering project. One of the enclosed photographs indicates the remarkable degree which perennial smartweed is adaptable to conditions in the area. The disking of marginal lands have been successful in the introduction of pioneer species, and we are hopeful that by the removal of the willow overstory in certain locations through the use of herbicides

that the range of the newly established perennial smartweed can be greatly and rapidly extended.

When the ducks and geese start arriving at Tennessee Refuge in late September and early October they begin feeding on rye grass and dwarf spike rush. Some soon find the small ponds and sloughs within the dewatering projects where they feed on marsh and terrestrial plants including tree mast. After a few days both ducks and geese find the buckwheat fields. By November soy beans are being eagerly taken by the waterfowl and as the corn is knocked down they move into these fields. Later, usually December, they begin concentrating in the recently flooded fields, slough, swamps, and woods when the water control gates are closed at the diking and dewatering projects. When the winter rains soften the soil, the waterfowl congregate on the peanut fields, which has been especially true at Busseltown and Rochelle Island this winter. Field checks indicate that we have sufficient food available for our wintering waterfowl. The critical need as previously expressed is improved feeding conditions to attract more waterfowl during the fall migrations. As habitat conditions are sufficiently improved to stop more birds during the migrations, additional unharvested foods will be provided for wintering concentrations. The practical limits of this operation would give Tennessee Refuge a carrying capacity of several times the present population of ducks and geese.

During November and December below normal temperatures froze the backwaters of the reservoir for a longer period than at any previous time since the establishment of the refuge. Yet, this season was the first time that the freezing of the backwaters did not force the waterfowl to leave the refuge, at least temporarily. We believe that the chief reason for holding the ducks and geese during sub-zero weather was due to the large amount of agricultural crop available on unflooded fields. At times the ducks and geese did not even seek open water which was always available in the river channels but congregated on the ice for escape areas when not feeding in the fields. Last spring local farmers in a few instances appeared concerned regarding depredations of blue and snow geese on recently planted pastures. But this winter the farmers in the vicinity of Elkhorn and Springville complained about ducks eating their feed where hogs were hogging down corn fields. It is to be expected where the ducks and geese became accustomed to feeding in refuge corn fields that they will move to inland farms as our concentrations increase. How much crop depredation may be expected in the future will depend upon whether or not the farmer harvests his crops or allows them to remain in the field. In most instances crops are harvested in this section of the southeast prior to the time that any concentration of waterfowl may be expected to damage private crops.

B. Upland Game Birds:

Quail have had greater use of refuge diking and dewatering projects during the period than in previous years due to the lack of impounded waters within these areas. Waterfowl food crops left unharvested on the refuge are attracting quail from adjacent lands and are likely to show increases wherever land is reclaimed for agricultural purposes. Although hedge rows are being removed, the usually long and narrow fields present a long feeding edge and short escape flight for the birds.

C. Big Game Animals:

During the period of this report, a few deer tracks were in evidence about the Big Sandy Primary Area, but there appears to be a definite decline in the numbers of deer using the refuge as sight observation were common in this section last year. One deer was killed in the lake near the refuge by getting snared in a commercial fisherman's snag line. Several other deer were reported illegally killed in areas outside of the refuge.

D. Fur Animals, Predators, Rodents, and Other Mammals:

The red fox has become a common daytime sight-seer on the refuge. Recently the writer saw two adults playing about on the open lake shore without any fear of being observed. Other than a noticeable increase in the rabbit population, there appears to be little change in the number of fur bearers on the refuge.

Following considerable damage to our duck traps and serious depredations on trapped ducks, steel traps were set about the banding station. As a result of this operation one coyote and two bobcats were captured, along with a skunk and one o'possum. The coyote was certainly a typical specimen of the western coyote and we have no idea of its origin in this area. The coyote was kept alive with the thought that some zoo may desire it for a specimen. However, we plan now to send the skin and skull to Dr. Stanley Young in Washington.

E. Fish:

Although, there is a slight decrease in the number of commercial fishermen using the refuge, due to good employment in industry, the older and more experienced fishermen are increasing their average daily catch as compared to the previous year. The number of sports fishermen also shows a decline as compared to the same period last year. While the experienced fishermen are catching good strings of larger bass, the amateur has poor luck with bass, but find crappie fishing more successful. It is becoming quite evident that crappies are rapidly becoming the main sports fish on Kentucky Reservoir with black bass and stripe bass in second and third place. Cat fish is still the most sought for and captured commercial fish on the reservoir. Drum, buffalo and carp play a secondary role in the commercial take

while paddle bills are getting uncommon. Comparing the three units of Tennessee Refuge, Big Sandy Refuge has the greatest sports fishing pressure, and Duck River Refuge has the greater commercial fishing pressure. Busseltown Refuge due to its small size and up stream location is far below the other two units in both sport and commercial fishing.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Developments:

The refuge personnel have worked practically full time on Soil and Moisture conservation activities during the period. This work was confined to clearing 163 acres of agricultural lands, planting 300 acres of cover crops, and crop improvements on 180 acres. Funds were used to purchase 8 tons of phosphate and 100 tons of limestone to improve soil fertility. Approximately one-half mile of new road was constructed at the Sulphur Wells area, including the installation of concrete culverts in addition to the new bridges reported last period. At the Big Sandy work center a new loading ramp was constructed, the old gasoline and oil house was converted to an oil house and a new pump installed in the open area for gasoline. Additional field surveys were made of the Morgan Creek- Eagle Creek permanent pool project for dike and fill locations. Work was started on the posting of the water boundaries of the refuge which will be continued next period when warmer weather prevails. Two new metal duck traps were constructed and placed in operation at Robbins Creek.

B. Maintenance:

Following the termination of clearing and farming operations, refuge trucks and heavy equipment were consigned in turn to the Big Sandy work center for routine check over and repair. The breakdown of the old gas 50 Caterpillar tractor was our big job. With the use of salvaged parts, this Caterpillar unit is now back in operating condition. Adjustments and minor repairs were made to the D-8 Caterpillar which is in good condition. The recent acquisition of a heavy bush and bog disk for the D-8 will greatly accelerate the clearing of waterfowl planting areas scheduled of this spring. Graveling of roads, repair of bridges, and maintenance of ditches were continued during the period on the primary refuge roads. The road graveling work is still seriously handicapped by the lack of a dump truck. The farmall front end loader has proved to be very satisfactory for the loading of road gravel from dozer made stock piles.

C. Plantings:

All plantings during the period were confined to use of agricultural crops. Cooperative farmers working under T.V.A. license planted

most of the refuge crops for wildlife use. The refuge staff and two permittees planted less than five percent of the total refuge crops. Attached hereto is a summary of our agricultural program at Tennessee Refuge.

On the attached "Total Crop Summary" forms are listed 4,473.82 acres agricultural crops planted through T.V.A. license and refuge cooperative farming agreements. The crop details as listed are as shown on the permits without corrections or adjustments instituted by the farmers in the case of T.V.A. permits which have not been too closely complied with. In addition to this acreage shown, approximately 850 acres of pastures have been planted in improved legume and grass mixtures along with winter cover crops for grazing. Also, approximately 100 acres of the 252.67 acres of hay lands were planted for harvest. Thus the total agricultural use at Tennessee Refuge would be approximately 5,500 acres.

Since T.V.A. is presently preparing a new "Agreement" for the transfer of Tennessee Refuge secondary lands to the classification of primary lands, placing all agricultural lands within the refuge under the administration of the Service - all farming permits in 1952 will be issued by the refuge manager. The new cooperative farming agreements will permit additional acreages of crops to remain unharvested in the field for waterfowl use, and the details of the refuge farming program will become more exacting as to performance and compliance which is rather lax under the T.V.A. system.

IV. ECONOMIC USES OF REFUGE

A. Grazing:

The Service and T.V.A. rented 1,431.83 acres of refuge lands for pasture at a total revenue of \$329.20. The listing of the individual permits are shown on the attached form NR-10.

B. Haying:

T.V.A. rented 252.67 acres of refuge lands for hay and received a total of \$146.33 in revenue. The details of the individual haying permits are listed on the attached NR-10 form.

C. Timber Removal:

During the period of this report, T.V.A. gave permits for 95 cords of domestic fuel wood to seven individuals. T.V.A. received the following revenue from the sale of timber. Saw timber \$37.07. Chestnut acid wood \$10.40. Fence Posts - \$17.10. A summary of timber removal for the 1950 calendar year is included on the attached NR-11 form.

V. FIELD INVESTIGATIONS AND APPLIED RESEARCH

A. Duck Trapping and Banding

Duck trapping and banding started last year was continued this season at the Robbins Creek area near the Big Sandy work center. While this location is not suitable for trapping large numbers of ducks, it is convenient and ducks can be trapped here with a minimum of time and effort by employees on duty at the work center. If trapping and banding of ducks were carried out at either Sulphur Wells or on the Big Sandy Unit or at Duck River diking and dewatering project a truly large number of ducks could be trapped and banded - but this activity would then become a distinct project and one no longer incidental to routine field activities. Last year, we trapped and banded 513 mallards, 172 blacks, 18 pintails, 17 ring necks, 16 baldpates, 8 blue-wing teal, 3 green-wing teal, and 1 gadwall. This season to date the following ducks have been trapped and banded: 297 mallards, 68 blacks, 2 baldpates, 1 pintail, 1 blue-wing teal, 1 green-wing teal, and one coot. Thirty eight returns have been received from this total number of 1,118 ducks. These 38 returns have been contained within the Missouri and Mississippi watersheds from Manitoba south to the State of Mississippi. Several birds trapped and banded last year have been retaken at the local station indicating close adherence to flyway routes. Traps placed on the bare ground have captured ducks as readily as those placed in shallow water. The attached photographs show both the wood and metal types of traps used, which appear to function with equal success. While the major purpose of our banding operations is to determine the extent and make up of the minor flyway in the Tennessee Valley, we are also attempting to determine the extent to which our refuge wintering populations continue southern migrations and to what locations. Present returns show that only one banded ducks was taken south of Tennessee.

VI: PUBLIC RELATIONS

A. Recreational Uses:

The demand for the recreational use of the refuge continues to grow. There exists a considerable amount of local interest in the development of summer home sites at both Big Sandy and Duck River refuge units. At the T.V.A. Service meeting in October at Decatur, Alabama, the T.V.A. recreational planners wanted the Service to withdraw certain sections of the Big Sandy land area from the refuge for local recreational use. Much of this recreational pressure is placed on T.V.A. by local interest looking for financial gain through real-estate developments. At the Decatur meeting, Service representatives clearly indicated to T.V.A. that the refuge lands would be available to group summer time public use. Recreational use would be encouraged where it did not conflict with our wildlife interests, but the land would not be with drawn for public sale or lease as private cabin sites. With the completion

of the Paris Landing State Park adjacent to the Big Sandy Refuge Unit, the public use of the refuge will increase many times. The rather sudden influx this winter of 30,000 ducks and 1250 geese at Sulphur Wells clearly shows the need for our present land buffer in this section of Big Sandy. The T.V.A. land area is generally too narrow at present and any contraction of this strip even in non-agricultural sections should be vigorously opposed. By catering to the visiting public as a whole rather than to a few local individuals, the Service will have a greater opportunity to contact a larger number of people and win greater support for the refuge program. Fishing and boating continues to be the chief recreational use of the refuge. However, with the increase in waterfowl use on the refuge, a greater response to and interest in wildlife observations and study is noted among local residents. The favorable relations of the refuge to local duck hunting success is now being generally accepted by local sportsmen. The refuge is working with T.V.A. land use planners to develop a recreational plan for the use of refuge lands which will be compatible with wildlife interests.

B. Official Visitors:

<u>Date</u>	<u>Name</u>
Sept. 16	President Henry, Benton Co. Sportsmen Club
Sept. 7	Howard Miller, Regional Office
Sept. 7	Carl Fermanich, Regional Office
Sept. 17	Lawrence Givens, Regional Office
Sept. 17	" " " "
Sept. 19	Parker Smith, Tenn. P-R Leader
Sept. 27	C. D. Boone, T.V.A. forester
Sept. 27	Roy Hicks, Tenn. Conservation Supervisor
Sept. 29	John Gibson, Tenn. Conservation Officer
Oct. 1-3	Edwin Ball, Regional Office
Oct. 2	Parker Smith, Tenn. P-R Leader
Oct. 9	Clerk Agee, White River Refuge
Oct. 8	John Key, T.V.A. Agriculturalist
Oct. 27	James T. Hammond, Game Management Agent, Tennessee
Nov. 2	James T. Hammond, " " " "
Nov. 2-3	James A. Hammond, Tenn P-R Leader
Nov. 13	Parker Smith, P-R Leader
Nov. 15	Lawrence Givens, Regional Office
Dec. 4	James T. Hammond, Game Manager Agent, Tennessee
Dec. 8	Earl Cady, T.V.A. Fish & Game Technician
Dec. 14-15	Roy Wood, Regional Office
Dec. 14	Parker Smith, Tenn. P-R Leader
Dec. 14-15	Edwin Ball, Regional Office
Dec. 14-15	Howard Miller, Regional Office
Dec. 15	James Elliot, Game Management Agent, Tennessee
Dec. 15	John Gibson, Tenn. Conservation Officer
Dec. 19	James A. Hammond, Tenn. P-R Leader
Dec. 27	William Davis, Regional Office
Dec. 27	James T. Hammond, Game Management Agent, Tennessee
Dec. 27	Robert Soaper, Game Management Agent, Kentucky
Dec. 28	Parker Smith, Tenn. P-R Leader

C. Fishing:

This topic has been discussed elsewhere in this report.

D. Violations:

During the period the following persons were apprehended hunting on the refuge; were found guilty in State Courts; and paid the following fines:

Ben J. Creech, White Bluff, Tennessee	\$29.50
Robert Wynns, Elkhorn, Tennessee	29.50
J. C. Merrill, Springville, Tennessee	14.50
Cecil Jackson, Paris, Tennessee	29.50
Leon Brewer, Paris, Tennessee	29.50
C. B. Johnson, Darden, Tennessee	29.50
John L. Sesson, Lexington, Tennessee	29.50

During the waterfowl season, a daily patrol schedule, seven days a week is maintained on the three refuge units. This constant vigilance appears to pay off in keeping to a minimum the number of our refuge violations.

Respectfully submitted,

January 15, 1951

Chester R. Markley

Chester R. Markley,
Refuge Manager

Approved: *Howard A. Miller*
Regional Refuge Supervisor

Date: Jan. 19, 1951



The Big Sandy Work Center, and showing
the prepared goose pasture area at
Robbins Creek. CHG



Mallards, blacks, and pintails rising from a draining ditch.
Duck River Bottoms.

CHG



Pace Point Island
at the month of Big
Sandy River. One of
the better goose
pasture developments
at Big Sandy Refuge
Unit.

CHG



Mallards in the wood type duck trap which was
constructed last year. Robbins Creek near the
work center. CHG.



The new type metal duck trap at Robbins Creek.
CHG.



A good catch of ducks in the trap at
Robbins Creek. CHG.



Thompson netting the ducks in the trap at Robbins
Creek. This method has proved most satisfactory.
CHG.



Easley and Thompson banding ducks and making notes.
Ducks are retained in the banding pen when removed
from trap. CHG.



Easley and Thompson placing a band on male mallard.
CHG.



Result of depredation at Duck trap. Predators would tear
open the wire netting on the traps. CHG.



One of the culprits responsible for the above damage.
A coyote and another bob-cat were caught a little later.
CHG



Ducks from the Diking and Dewatering Project
resting in Duck River. Concentrations of
80,000 ducks are common in this area.

CHG.





Typical shot showing the manner in which perennial smartweed is becoming established about the water and marsh areas within the Duck River Bottoms.

CHG.



Close up of the smartweed growth in the above photo.

CHG.



Peanut field on Rochelle Island, Duck River
Refuge. 6,000 ducks and 180 geese were
later observed feeding on this field.

CRM.



New Antioch Landing recreational area on the
Big Sandy Refuge from the air. A 19 year
lease.

CRM.



X

Excellent fields of milo maize from May planting on Rochelle Island, Duck River Refuge. Entire crop left unharvested for waterfowl use. Compare productivity with August planting on Big Sandy Refuge new page.

CRM.





Close-up of a milo head on Rochelle Island
field. Duck River Refuge.

CRM.



Milo maize field at Ross Creek Big Sandy Refuge
Unit showing small seed heads resulting from
late-August planting as compared to May planting
on previous page.

CRM.



Winter cover crop of Oats and Vetch in corn on Sulphur Wells waterfowl planting area. Soil and Moisture crop improvement project.

CRM.



Easley, Thompson, and Gresham posting the water boundary of Big Sandy Refuge from the Canute Boat.

CRM.



Britton Ford waterfowl feeding area, Big Sandy Refuge.
Showing section of 50 acre field cleared of trees and
brush for cropping. Soil and Moisture Operations.
CRM.



Dozed tree completely fill the old eroded roadbed
at Sulphur Wells. Soil and Moisture Operations.
CRM.



June, 1950 - the old road section at Sulphur Wells
Waterfowl Area. Before Soil & Moisture Operation.
CRM.



After shot, October 1950, showing new road and
drainage, and waterfowl crops at Sulphur Wells.
Soil and Moisture Operation.

CRM.



New out-rigger placed on floating boathouse at
Paris Landing. CHG.



New loading ramp constructed at Big Sandy work
center. CRM.



Pilot Edwin Ball planting rye grass seed on Face Point
Island. Big Sandy Refuge. CRM.





Gresham and Thompson loading rye grass in the hopper of Ball's plane at T.V.A. airport.

CRM.



Gresham checking rye grass strip planted from plane on Jakes Ridge. The air planting was not satisfactory on coverage but the geese heavily grazed it.

CRM.



Boy Scout group from Paris on over-night hike
on Big Sandy Primary Refuge Area. CHG.



WATERFOWL

REFUGE

Tennessee

MONTHS OF

Sept.

to Dec.

1950

(1) Species	(2) First Migrants Seen		(3) Peak Concentration		(4) Last Migrants Seen		(5) Young Produced		(6) Total
	Number	Date	Number	Date	Number	Date	Broods Seen	Estimated Total	Estimated for Period
1. <u>Swans:</u> Whistling swan									
2. <u>Geese:</u> Canada goose	30	Oct. 11, 1950	2400	Dec. '50					2400
Cackling goose									
Brant									
White-fronted goose									
Snow goose	7	10-15-50	150	Oct.					150
Blue goose	53	10-13-50	700	Oct.					700
3. <u>Ducks:</u> Mallard	Permanent Res.		130,000	Dec.					130,000
Black Duck	34	9-29-50	20,000	Dec.					20,000
Gadwall	Permanent Res.		1,000	Nov.					1,000
Baldpate	6	11-1-50	5,000	Dec.					5,000
Pintail	500	10-26-50	4,000	Dec.					4,000
Green-winged teal	6	11-4-50	300	Nov.					300
Blue-winged teal	Last Period		400	Oct.					400
Cinnamon teal									
Shoveller	20	11-4-50	300	Nov.					300
Wood duck	Permanent Res.		600	Sept.					600
Redhead									
Ring-necked duck	230	10-26-50	1,000	Nov.					1,000
Canvas-back	150	12-9-50	400	Dec.					400
Scaup									
Golden-eye									
Buffle-head	2	12-9-50	15	Dec.					15
Ruddy duck	1	12-1-50	25	Dec.					25
4. <u>Coot:</u> 3-1750									6,000

Form NR-1

SUMMARIES

Total Production:

Geese _____

Ducks _____

Coots _____

Total waterfowl usage during period _____

Peak waterfowl numbers _____

Areas used by concentrations _____

Principal nesting areas this season _____

Reported by _____

INSTRUCTIONS

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance.
- (2) First Seen: The first refuge record for the species during the season concerned in the reporting period, and the number seen. This column does not apply to resident species.
- (3) Peak Concentration: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned in the reporting period.
- (5) Young Produced: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (6) Total: Estimated total number of the species using the refuge during the period. This figure may or may not be more than that used for peak concentrations, depending upon the nature of the migrational movement.

Note: Only columns applicable to the reporting period should be used. It is desirable that the Summaries receive careful attention since these data are necessarily based on an analysis of the rest of the form.

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Tennessee Months of Sept. to December 1945

(1) Species Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total Estimated Number
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	
I. Water and Marsh Birds:										
Double Crested Cormorant	Permanent Res.		7,000	Nov.						500
Great Blue Heron	" "		1,000	Oct.						1000
American Egret	Last Period		500	Oct.						500
Snowy Egret	" "		15	Sept.						15
Little Blue Heron	" "		200	Sept.						200
II. Shorebirds, Gulls and Terns:										
Killdeer	Permanent Res.		500	Sept.						500
Wilson Snipe	1 Sept.		50	Oct.						50
Herring Gull	Last Period		4000	Dec.						4000
Ring-billed Gull	" "		6000	Dec.						6000

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u>					
Mourning dove					
White-winged dove	Permanent Res.	1800	Sept.		1800
IV. <u>Predaceous Birds:</u>					
Golden eagle					
Duck hawk					
Horned owl					
Magpie					
Raven					
Crow	Permanent Res.	10,000	Nov.		10,000
Ball Eagle	" "	25	Dec.		25
Reported by.....					

INSTRUCTIONS

- (1) **Species:** Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) **First Seen:** The first refuge record for the species for the season concerned.
- (3) **Peak Numbers:** The greatest number of the species present in a limited interval of time.
- (4) **Last Seen:** The last refuge record for the species during the season concerned.
- (5) **Production:** Estimated number of young produced based on observations and actual counts.
- (6) **Total:** Estimated total number of the species using the refuge during the period concerned.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Months of Sept. to December, 1945

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
						Hunting	For Re- stocking	For Research		
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage				Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Bobwhite Quail	7,000 Acres of Quail habitat.								1500	No. charge.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

BIG GAME

Refuge _____ Calendar Year _____

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions	(7) Estimated Total Refuge Population		(8) Sex Ratio
			Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss		Number	Source	
Common Name	Cover types, total Acreage of Habitat	Number											
Deer	and sand-wooded land suitable for deer.												

Remarks:

Reported by _____

INSTRUCTIONS

Form NR-3 - BIG GAME

- (1) **SPECIES:** Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.
- (2) **DENSITY:** Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) **YOUNG PRODUCED:** Estimated total number of young produced on refuge.
- (4) **REMOVALS:** Indicate total number in each category removed during the year.
- (5) **LOSSES:** On the basis of known records or reliable estimates indicate total losses in each category during the year.
- (6) **INTRODUCTIONS:** Indicate the number and refuge or agency from which stock was secured.
- (7) **TOTAL REFUGE POPULATION:** Give the estimated population of each species on the refuge at period of its greatest abundance and also as of Dec. 31.
- (8) **SEX RATIO:** Indicate the percentage of males and females of each species as determined from field observations or through removals.

116000

Refuge Tennessee Year 1960

Botulism

Lead Poisoning or other Disease

Period of outbreak _____

Period of heaviest losses _____

Losses:

	Actual Count	Estimated
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Areas affected (location and approximate acreage) _____

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.) _____

Condition of vegetation and invertebrate life _____

Remarks No. Botulism

Kind of disease _____

Species affected _____

Number Affected Species	Actual Count	Estimated
_____	_____	_____
_____	_____	_____
_____	_____	_____

Number Recovered _____

Number lost _____

Source of infection _____

Water conditions _____

Food conditions _____

Remarks No lead poisoning observed.

Refuge

TennesseeYear 1960

Species	Relative Abundance	Sport Fishing		Commercial Fishing		Restocking		Number removed for Restocking
		Man days Fishing	Number Taken	No. of Permits	Pounds Taken	Number Stocked	Area Stocked	
Black Bass	30%		45,000					
Crappie	35%		55,000					
Stripped Bass	10%		10,000					
Bream	20%		30,000					
Pike	5%		7,500					
Catfish	50%			50	250,000			
Carp	10%			50	50,000			
Buffalo	20%			50	100,000			
Spoon bill	20%			50	100,000			
Mussels					12,000,000			
		75,000						

REMARKS:

3-1757
Form NR-7
(April 1946)

PLANTINGS
(Marsh - Aquatic - Upland)

Refuge Tennessee

Year 1950

Species	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount & Nature of Propagules	Date of Planting	Survival	Cause of Loss	Remarks
NONE								

TOTAL ACREAGE PLANTED:

Marsh and aquatic NONE
Hedgerows, cover patches NONE
Food strips, food patches NONE
Forest plantings NONE

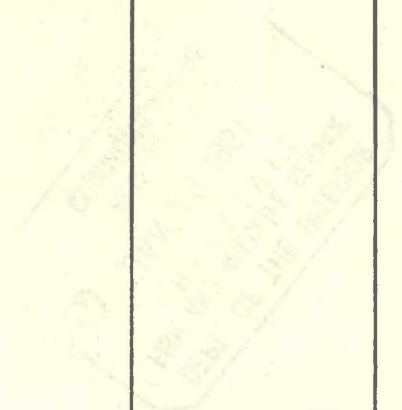
COLLECTIONS AND RECEIPTS OF PLANTING STOCK
(Seeds, rootstocks, trees, shrubs)

Refuge _____

Tennessee

Year 1948

Species	Collections				Receipts		Total Amounts on Hand	Amount Surplus
	Amount	Date or Period or Collection	Method	Unit Cost	Amount	Source		
None								



Department of the Interior
 Bureau of Land Management
 Receipts and Disbursements

Local Account Amounts on Hand	Receipts		Collections				Specimen
	Amount	Source	Method	Date or Period of Collection	Unit Cost	Amount	

DEPT. OF THE INTERIOR
 FISH AND WILDLIFE SERVICE
 RECEIVED JAN 29 1951
 FEDERAL BUREAU OF INVESTIGATION
 COMMUNICATIONS

RECEIVED
 JAN 9
 FISH AND WILDLIFE SERVICE
 WILDLIFE RESOURCES

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS

Cultivated Crops Report Form NR-8 should be prepared on a calendar-year basis for all crops harvested or utilized during the calendar year and submitted with the December 31 refuge report.

Permittee - List each permittee separately. If lands of the refuge are farmed by refuge personnel or hired labor, this should be indicated in the Permittee column.

Permit No. - List the number of the Special Use Permit issued to the individual.

Use or Location - The Unit No. or name specified in the Economic Use Plan should be listed in this column.

Crops Grown - A separate line of the form should be used for each crop grown by each permittee or by refuge personnel. This is important, since if each crop grown by each operator is not specifically enumerated, the report will be of no value for statistical purposes.

Average Yield per Acre - It is important that the average yield per acre of each crop grown by each operator should be shown.

Permittee's Share - Only the number of acres harvested or utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. It is requested that all crops harvested be reduced to bushels wherever possible, or, as in the case with the harvesting of seed such as that of sweet clover, alfalfa, brome grass, etc., the total harvested crop in pounds may be shown. Timothy, alfalfa, or other hay harvested by the permittee should be shown on Form NR-10 and should not be shown in the Permittee's Share column.

Government's Share or Return - Harvested - Show the number of bushels harvested for the Government and the acreage from which this share is harvested, both for grain raised by refuge personnel and by permittees. Unharvested - show the exact number of acres of crops allowed to remain unharvested as food and cover for wildlife. An estimate of the number of bushels of grain that is available for the wildlife in such unharvested crops should be shown in the Bushels column.

Compensatory Services, or Cash Revenue - Show other services received by the Government in cooperative farming activities, the number of acres of food strips planted for wildlife, the amount of wildlife crops not otherwise reported that are planted by cooperators for the Service, or the cultivation of wildlife plantations. If the permit is on a fee basis, the total cash revenue received by the Service.

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(Ab-11 1046)
FORM NR-8
2-1-68

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS

Cultivated Crops Report Form NR-8 should be prepared on a calendar-year basis for all crops harvested or utilized during the calendar year and submitted with the December 31 refuge report.

Permittee - List each permittee separately. If lands of the refuge are farmed by refuge personnel or hired labor, this should be indicated in the Permittee column.

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Average Yield per Acre - It is important that the average yield per acre of each crop grown by each operator should be shown.

Permittee's Share - Only the number of acres harvested or utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. It is requested that all crops harvested be reduced to bushels wherever possible, or, as in the case with the harvesting of seed such as that of sweet clover, alfalfa, bromegrass, etc., the total harvested crop in pounds may be shown. Timothy, alfalfa, or other hay harvested by the permittee should be shown on Form NR-10 and should not be shown in the Permittee's Share column.

Government's Share or Return - Harvested - Show the number of bushels harvested for the Government and the acreage from which this share is harvested, both for grain raised by refuge personnel and by permittees. Unharvested - show the exact number of acres of crops allowed to remain unharvested as food and cover for wildlife. An estimate of the number of bushels of grain that is available for the wildlife in such unharvested crops should be shown in the Bushels column.

Compensatory Services, or Cash Revenue - Show other services received by the Government in cooperative farming activities, the number of acres of food strips planted for wildlife, the amount of wildlife crops not otherwise reported that are planted by cooperators for the Service, or the cultivation of wildlife plantations. If the permit is on a fee basis, the total cash revenue received by the Service.

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SUMMARY CROPS

CROP	ACREAGE	Permittee's		Government's Share				Revenue T.V.A.
		Share Acres	Bu. Har.	Harvested Acres	Bu.	Unharvested Acres	Bu.	
<u>Duck River Refuge Units:</u>								
Corn	2,451.70	2,184.33	57,545.30	-	-	247.37	-	3,468.45
Beans	2,451.70	-	-	-	-	2451.70	-	-
Milo	326.65	-	-	-	-	326.65	-	-
Buckwheat	8.20	-	-	-	-	8.20	-	-
Soybeans	68.65	68.65	-	-	-	-	-	-
Peanuts								
Ryegrass	15.0	-	-	-	-	15.0	-	-
<u>Berkon County :</u>								
Corn	267.97	183.07	4,241.40			84.90	-	39.00
Beans	267.97	-	-	-	-	267.97	-	-
Milo	-	-	-	-	-	-	-	-
Buckwheat	18.6					18.6		
Peanuts	20	20	120					
Ryegrass	63.0					63.00		
TOTALS:	5,919.44	2,455.98	61,906.70			5,463.39	-	3,507.45
<u>Busseltown Refuge Units:</u>								
Corn	238.90	223.10	6,049	-	-	15.80	-	490.35
Beans	238.90	-	-	-	-	238.90	-	-
TOTALS	476.80	223.10	6,049			254.70	-	- 490.35
<u>Big Sandy Refuge Units:</u>								
Corn	312.49	236.16	11,163.9	-	-	76.33	-	6.25
Beans	1.75	-	-	-	-	1.75	-	-
Soybeans	3.0	-	-	-	-	3.0	-	-
Oats & Vetch	200	-	-	-	-	200.0	-	-
TOTALS:	417.24	236.16	11,163.9	-	-	81.08	-	- 6.25

TOTAL CROP SUMMARY

CROP	ACREAGE	PERMITTEE'S SHARE		Government's Share		Unharvested		Revenue T.V.A.
		Acres	Bu. Har.	Acres	Bu.	Acres	Bu.	
<u>Total Crop Refuge</u>								
Corn	3,294.56	2,859.29	79,732.10	3.5	140.0	435.24	10,881.00	
Beans	2,940.32*	-	-	-	-	2,940.32	35,283.84	
Milo	330.65	-	-	-	-	330.65	11,572.75	
Buckwheat	8.20	-	-	-	-	8.20	123.5	
Soybeans	71.65	71.65	-	-	-	-	-	
Ryegrass	193.00	-	-	-	-	193.00	1,930.00 (winter forage)	
Peanuts	20.0	20.0	120.0	-	-	-	-	
Oats	39.50	29.63	317.2	9.87	107.2	-	-	
Barley	43.96	32.97	493.1	10.99	130.2	-	-	
Wheat	12.37	9.28	73.3	3.09	5.0	-	-	
Crimson	23.96	17.97	20.4	5.99	4.2	-	-	
Vetch	28.37	20.28	89.2	7.09	19.2	-	-	
Barley & Crimson Clover	10.00					10.00	400.0 (Green Manure)	
Barley, Vetch & Oats	19.00					19.00	855.0 (Green Manure)	
Buckwheat & Barley	26.00					26.00	910.0 (Green Manure)	
TOTALS	7,314.14	3,055.57	80,845.30	40.53	405.8	4,209.04	61,956.09	\$4,004.05

* On same land as corn- companion crop.

RECEIVED AND
 INDEXED
 APR 13 1921
 U.S. DEPT. OF THE INTERIOR
 BUREAU OF LAND MANAGEMENT

Correct Copy W.B.S.

RECEIVED
 APR 8 - 8
 1921
 U.S. DEPT. OF THE INTERIOR
 BUREAU OF LAND MANAGEMENT



* On some land as corn-comparing crop.

TOTALS 7,214.12 3,082.57 30,845.30 40.84 403.8 4,209.04 81,282.09 \$4,004.05

Barley 28.00
 Buckwheat & 28.00
 Oats 19.00
 Barley, Vetch & 19.00
 Clover 10.00
 Barley & Crimson 10.00

Vetch 28.27
 Crimson 23.98
 Wheat 15.27
 Barley 42.98
 Oats 39.50
 Peanuts 20.00
 Soybeans 71.65
 Buckwheat 8.20
 Milo 230.25
 Beans 2,940.22*

Corn 2,294.28
 5,820.29 78,725.10 2.2 140.0 435.34 10,881.00

Government's Share 1,280.00 (winter forage)
 Harvested Acres 193.00
 Acres 193.00

Government's Share 11,272.75
 Harvested Acres 107.2
 Acres 107.2

Government's Share 2,940.22
 Harvested Acres 130.2
 Acres 130.2

Government's Share 435.34
 Harvested Acres 2.0
 Acres 2.0

CROP ACREAGE PERMITTEE'S SHARES
 Acres Bn. Hrs. Acres Bn. Hrs. Acres Bn. Hrs.
 Revenue T.V.A.

TOTAL CROP SUMMARY

Total Crop Returns

TOTAL CROP SUMMARY

CROP	ACREAGE	PERMITTEE'S SHARE		Government's Share				Revenue T.V.A.
		Acres	Bu. Har.	Acres	Bu. Harvested	Acres Unharvested	Bu.	
<u>Total Crop Refuge</u>								
Corn	3,294.58	2,859.29	79,732.10	3.6	140.0	435.24	-	
Beans	2,940.32*	-	-	-	-	2,940.32	-	
Milo	330.65	-	-	-	-	330.65	-	
Buckwheat	8.20	-	-	-	-	8.20	-	
Soybeans	71.65	71.65	-	-	-	-	-	
Ryegrass	193.00	-	-	-	-	193.00	-	
Peanuts	20.0	20.0	120.0	-	-	-	-	
Oats	39.50	29.63	317.2	-0.67	107.2	-	-	
Barley	43.96	32.97	493.1	10.99	130.2	-	-	
Wheat	12.37	9.28	73.3	3.09	5.0	-	-	
Crimson	23.96	17.97	20.4	5.99	4.2	-	-	
Vetch	28.57	20.28	89.2	-7.09	19.2	-	-	
Barley & Crimson								
Clover	10.00					10.00		
Barley, Vetch & Oats	19.00					19.00		
Buckwheat & Barley	28.00					28.00		
TOTALS	7,314.14	3,055.57	80,845.50	40.53	405.8	4,209.04		\$4,004.05

*On same land as corn - companion crop.

Copy corrected - WBS

3-1570
NR-8a

REFUGE GRAIN REPORT

Refuge Tennessee

Months of Sept. thru Dec. 1945

(1) VARIETY	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED USE		
				TRANS- FERRED	SEEDED	FED	TOTAL		SEED	FEED	SURP.
Blue Grass	300	none	300	-	-	-	-	300	300	-	-
Vetch	300	none	300	-	300	-	300	100	100	-	-
Crimson Clover	50	none	50	-	-	-	-	50	50	-	-
Barley	50	none	50	-	-	50	50	none	-	-	-
Oats	14	none	14	-	-	14	14	none	-	-	-
Rye Grass	3700	200	4900	-	4600	-	4600	none	-	-	-
Corn	none	185 Bu.	185	-	-	75	75	60	-	80	-

- (8) Indicate shipping or collection points Paris, Tennessee
- (9) Grain is stored at Big Sandy Refuge Unit
- (10) Remarks

NR-8a

REFUGEE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lbs., Corn (ear)—70 lbs., Wheat—60 lbs., Barley—50 lbs., Rye—55 lbs., Oats—30 lbs., Soy Beans—60 lbs., Millet—50 lbs., Cowpeas—60 lbs., and Mixed—50 lbs. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately: Corn, wheat, proso millet, etc. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share-cropping, or harvest from food patches.
- (4) A total of Columns 2 and 3.
- (6) Column 4 less Column 5.
- (7) This is a proposed breakdown by varieties of grain listed in Column 6.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters grainary", etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

HAYING AND GRAZING

Refuge Tennessee Year 1950

Permittee	Permit No.	Unit or Location	Actual Acreage Utilized	Animal Use Months	Tons of Hay Harvested	Period of Use		Rate	Total Income	Remarks
						From	To			
Henry Rochelle	1150.302	Duck River	100	-	-	1-1-50	12-31-50	-		Ryegrass payment
F. H. Sims	1150.416	"	44	-	-	1-1-50	12-31-50	-	27.00	
G. T. Bell	1150.417	"	33	-	-	"	"	-	1.00	Milo payment
J. T. Pleasant	1150.362	"	8	-	?	"	"	-	40.00	
G. H. Moore	1150.165	"	30	-	?	"	"	-	-	Share of row crop
LLOYD Fuller	1150.352	"	8	-	-	"	"	-	24.00	"
Wesley Forrest	1150.304	"	6	-	?	"	"	-	21.00	
Edgar H. Forrest	1150.342	"	10	-	?	"	"	-	35.00	
Charlie Forrest	1150.323	"	5	-	?	"	"	-	15.50	
Henry & Ed Spencer	1150.347	"	8	-	?	"	"	-	24.00	
Bob Smith	1150.334	"	322	-	-	"	"	-	-	Corn payment
J. C. Perkins	1150.321	"	11	-	-	"	"	-	-	"
L. H. Peebles	1150.186	"	100	-	-	"	"	-	90.00	
G.R. & T.M. Morris	1150.108	"	186	-	-	"	"	-	60.00	
J. H. Hallin	1150.197	"	9	-	-	"	"	-	18.00	
H. H. Hallin	1150.196	"	1	-	-	"	"	-	-	Corn payment
T. H. Hardison	1151.306	Dusselton	18	-	-	"	"	2.00	36.00	
W. H. Hays	1151.343	"	32	-	-	"	"	2.00	64.00	
"	"	"	14	-	-	"	"	1.00	14.00	
J. L. Churchwell	1151.318	"	5	-	-	"	"	2.00	10.00	
G. A. Snodes	1151.351	"	4	-	-	"	"	2.00	8.00	
Mrs. Lucy Hallin	1151.339	"	6	-	-	"	"	2.00	12.00	
W. T. Loper	1151.319	"	5	-	-	"	"	2.00	10.00	

Totals: Acreage grazed _____ Animal use months _____ Total income Grazing _____
 Acreage cut for hay _____ Tons of hay cut _____ Total income Haying _____

HAYING AND GRAZING

Refuge Tennessee

Year 1945

Permittee	Permit No.	Unit or Location	Actual Acreage Utilized	Animal Use Months	Tons of Hay Harvested	Period of Use		Rate	Total Income	Remarks
						From	To			
Henry Winsett	1154.312	Big Sandy Secondary	3.5	-	-	1-1-50	12-31-50	-	4.75	
S. L. Wimberley	1154.149	"	5.0	-	-	"	"	-	12.50	
D.A. Wright ASon	1154.324	"	300.0	-	-	"	"	-	100.00	
Jack Hamilton	1154.155	"	125.0	-	-	"	"	-	167.50	
J. R. Whitworth	1154.141	"	80.0	-	-	"	"	-	50.00	
H. C. Thornhill	1154.137	"	13.0	-	-	"	"	-	8.00	
D. A. McDaniel	141.71	Big Sandy Primary	160	248	-	4-1-50 to 12-1-50		.80	128.00	To Dept. of Interior
			1,694.50						\$852.53	T.V.A.
									125.00	Dept. of Interior

Totals:

Acreage grazed 1,431.83

Animal use months ?

Total income Grazing \$829.20

Acreage cut for hay 252.57

Tons of hay cut ?

Total income Haying \$146.33

TIMBER REMOVAL

Refuge..... Tennessee Year 1946

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
J. G. Oakley	1950.21	Duck R.	4	10 cords	none	none	Dead, down marked	-
Tom Byrn	1143.285	"	-	240 posts	1/2	3.60	marked	Black Locust
John L. Breeden	1951.14	"	5	15 cords	none	none	down & marked	-
Charlie Forrest	1951.3	"	5	10 cords	"	"	"	-
R.L. Richardson	1951.10	"	5	15 cords	"	"	"	-
Sam P. Breeden	1951.9	"	5	20 cords	"	"	"	-
F. M. Mims	1951.8	"	-	10 cords	"	"	2" Dia.	For hay sticks
Loyd Fuller	1143.303	"	4	1.8 MBF	\$10.00	\$18.00	-	Cypress
"	"	"	4	72 LF	.01	.72	-	Red Cedar post
"	"	"	4	823 LF	.01	12.42	-	Black Locust post
J. D. Ferrester	1951.5	"	3	10 cords	none	none	marked	fuel wood
C. S. Whitson	1951.4	"	2	10 cords	"	"	"	"
B.B. Forrest	1951.5	"	1	10 cords	"	"	"	"
Loyd Fuller	"	"	2	1.03 MBF	\$10.00	\$10.30	"	Cypress
Tom Larkin	1143.299	"	5	3.1 MBF	\$11.00	\$35.31	"	Red & Black Oak
"	"	"	5	1.22 MBF	\$12.00	\$14.64	"	White Oak
"	1443.276	"	5	1.65 MBF	\$20.00	\$33.00	"	White Oak Stave Timber
J. T. Reeves	1143.271	"	75	12 cords	1.00	12.00	dead timber	Chestnut (acid wood).
"	"	"	"	2400 LF	1/2	12.00	"	Chestnut posts
O. W. Reeves	1143.307	"	-	3.37 MBF	\$11.00	\$37.07	marked	Red Oak Saw Timber

Total acreage cut over..... 100 acres Est. Total income.. \$166.66

No. of units removed B. F. 12280 Method of slash disposal... Spreading

Cords... 122

Ties.....

1,275,5300

TIMBER REMOVAL

Refuge: _____ Year: 1951

DEPT. OF THE INTERIOR
 FISH AND WILDLIFE SERVICE
 RECEIVED
 JAN 22 1951
 RECORDED AND INDEXED

Permittees	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reserve and/or	
							Species Out	Other
J. W. Reeves	1125-27	"	-	5.87 107	\$11.00	\$67.07	various	various
J. Y. Reeves	1125-271	"	70	12 cords	1.00	12.00	good timber	
J. B. Reeves	1125-270	"	0	1.88 107	\$30.00	\$55.00		
"	"	"	0	1.88 107	\$25.00	\$46.00		
"	1125-269	"	0	1.88 107	\$25.00	\$46.00		
"	1125-268	"	0	1.88 107	\$25.00	\$46.00		
"	1125-267	"	0	1.88 107	\$25.00	\$46.00		
"	1125-266	"	0	1.88 107	\$25.00	\$46.00		
"	1125-265	"	0	1.88 107	\$25.00	\$46.00		
"	1125-264	"	0	1.88 107	\$25.00	\$46.00		
"	1125-263	"	0	1.88 107	\$25.00	\$46.00		
"	1125-262	"	0	1.88 107	\$25.00	\$46.00		
"	1125-261	"	0	1.88 107	\$25.00	\$46.00		
"	1125-260	"	0	1.88 107	\$25.00	\$46.00		
"	1125-259	"	0	1.88 107	\$25.00	\$46.00		
"	1125-258	"	0	1.88 107	\$25.00	\$46.00		
"	1125-257	"	0	1.88 107	\$25.00	\$46.00		
"	1125-256	"	0	1.88 107	\$25.00	\$46.00		
"	1125-255	"	0	1.88 107	\$25.00	\$46.00		
"	1125-254	"	0	1.88 107	\$25.00	\$46.00		
"	1125-253	"	0	1.88 107	\$25.00	\$46.00		
"	1125-252	"	0	1.88 107	\$25.00	\$46.00		
"	1125-251	"	0	1.88 107	\$25.00	\$46.00		
"	1125-250	"	0	1.88 107	\$25.00	\$46.00		
"	1125-249	"	0	1.88 107	\$25.00	\$46.00		
"	1125-248	"	0	1.88 107	\$25.00	\$46.00		
"	1125-247	"	0	1.88 107	\$25.00	\$46.00		
"	1125-246	"	0	1.88 107	\$25.00	\$46.00		
"	1125-245	"	0	1.88 107	\$25.00	\$46.00		
"	1125-244	"	0	1.88 107	\$25.00	\$46.00		
"	1125-243	"	0	1.88 107	\$25.00	\$46.00		
"	1125-242	"	0	1.88 107	\$25.00	\$46.00		
"	1125-241	"	0	1.88 107	\$25.00	\$46.00		
"	1125-240	"	0	1.88 107	\$25.00	\$46.00		
"	1125-239	"	0	1.88 107	\$25.00	\$46.00		
"	1125-238	"	0	1.88 107	\$25.00	\$46.00		
"	1125-237	"	0	1.88 107	\$25.00	\$46.00		
"	1125-236	"	0	1.88 107	\$25.00	\$46.00		
"	1125-235	"	0	1.88 107	\$25.00	\$46.00		
"	1125-234	"	0	1.88 107	\$25.00	\$46.00		
"	1125-233	"	0	1.88 107	\$25.00	\$46.00		
"	1125-232	"	0	1.88 107	\$25.00	\$46.00		
"	1125-231	"	0	1.88 107	\$25.00	\$46.00		
"	1125-230	"	0	1.88 107	\$25.00	\$46.00		
"	1125-229	"	0	1.88 107	\$25.00	\$46.00		
"	1125-228	"	0	1.88 107	\$25.00	\$46.00		
"	1125-227	"	0	1.88 107	\$25.00	\$46.00		
"	1125-226	"	0	1.88 107	\$25.00	\$46.00		
"	1125-225	"	0	1.88 107	\$25.00	\$46.00		
"	1125-224	"	0	1.88 107	\$25.00	\$46.00		
"	1125-223	"	0	1.88 107	\$25.00	\$46.00		
"	1125-222	"	0	1.88 107	\$25.00	\$46.00		
"	1125-221	"	0	1.88 107	\$25.00	\$46.00		
"	1125-220	"	0	1.88 107	\$25.00	\$46.00		
"	1125-219	"	0	1.88 107	\$25.00	\$46.00		
"	1125-218	"	0	1.88 107	\$25.00	\$46.00		
"	1125-217	"	0	1.88 107	\$25.00	\$46.00		
"	1125-216	"	0	1.88 107	\$25.00	\$46.00		
"	1125-215	"	0	1.88 107	\$25.00	\$46.00		
"	1125-214	"	0	1.88 107	\$25.00	\$46.00		
"	1125-213	"	0	1.88 107	\$25.00	\$46.00		
"	1125-212	"	0	1.88 107	\$25.00	\$46.00		
"	1125-211	"	0	1.88 107	\$25.00	\$46.00		
"	1125-210	"	0	1.88 107	\$25.00	\$46.00		
"	1125-209	"	0	1.88 107	\$25.00	\$46.00		
"	1125-208	"	0	1.88 107	\$25.00	\$46.00		
"	1125-207	"	0	1.88 107	\$25.00	\$46.00		
"	1125-206	"	0	1.88 107	\$25.00	\$46.00		
"	1125-205	"	0	1.88 107	\$25.00	\$46.00		
"	1125-204	"	0	1.88 107	\$25.00	\$46.00		
"	1125-203	"	0	1.88 107	\$25.00	\$46.00		
"	1125-202	"	0	1.88 107	\$25.00	\$46.00		
"	1125-201	"	0	1.88 107	\$25.00	\$46.00		
"	1125-200	"	0	1.88 107	\$25.00	\$46.00		

Total acreage cut over: _____ Total income: \$46.00

No. of units removed B. F. _____ Method of slash disposal: _____

Cords _____

Ties _____

ROUTING SLIP

BRANCH OF WILDLIFE REFUGES

DATE: Sept. 15 1945

MR. SALYER _____

SECTION OF HABITAT IMPROVEMENT:

MR. KRUMMES _____

~~MR. GRIFFITH~~ REG 9-22

~~MR. DUMONT~~ PAD _____

~~DR. BOURN~~ WSB _____

MISS BAUM _____

MISS COOK _____

SECTION OF OPERATIONS:

SECTION OF LAND MANAGEMENT:

MR. BALL _____

MR. KENT _____

MR. REGAN _____

MR. ACKERKNECHT _____

MORLEY Len

SECTION OF STRUCTURES:

STENOGRAPHERS:

MR. TAYLOR _____

MR. JOHNSTON _____

NARRATIVE REPORT

REFUGE: TENNESSEE _____

PERIOD: May - August, 1950 _____

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 PARIS, TENNESSEE

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NARRATIVE REPORT

PERIOD FROM MAY 1, TO AUGUST 31, 1950
 TENNESSEE NATIONAL WILDLIFE REFUGE
 PARIS, TENNESSEE.

I GENERAL

A. Weather Conditions:

<u>Month</u>	<u>Snowfall</u>	<u>Precipitation -</u>	<u>Max. Temp.</u>	<u>Min. Temp.</u>
May	0	7.76	90	47
June	0	3.43	94	47
July	0	8.80	92	51
August	0	5.14	91	47

This period received approximately the same total precipitation as did that of 1949; however, the distribution was not the same. The intensity and frequency of rainfall for the past four months have been, for the most part, more beneficial to agricultural pursuits than were those of last year. Intensive late July and early August rains have caused some crop damage in the Duck River bottoms, but the extent of this damage has not been determined, but it is estimated that the farmers will loose about 20 percent of their crops.

B. Water Conditions: (359 Ft. Bank Full)

<u>Month</u>	<u>Max. Flow</u>	<u>Min. Flow</u>	<u>Max. Elev.</u>	<u>Min. Elev.</u>
May	74,100	31,200	359.3	358.6
June	56,100	33,000	359.26	358.2
July	69,700	16,700	359.0	357.69
August	70,100	39,800	357.6	356.2

As shown by the maximum and minimum elevations in the above chart, there were substantial fluctuations in the level of Kentucky Lake throughout the period covered by this report. Were it feasible for the lake drawdown to be made in late July or early August rather than in late August and September, duck and goose food plantings on the marginal land would be greatly facilitated. Stabilized water levels during the greater part of the growing season restrict the growth and range of smart weeds, wild millet and rice cut grass, which in the past have provided considerable waterfowl foods. As demands for hydro electric power become critical, it is quite possible that the lake draw down will be restricted to flood control, with little if any manipulation for mosquito control.

C. Fires:

Adequate precipitation and the green condition of the vegetation rendered this period comparatively safe from fire damage. Only one fire was detected on the refuge, that being on the Big Sandy Unit and apparently of incendiary origin. It was confined to two acres of broom-sedge and scrub brush. The refuge can now expect very little assistance from T.V.A. on fire protection as they have practically withdrawn from this operation. The various States have now been allocated the responsibility of fire protection on T.V.A. lands. The refuge will definitely miss the services of the T.V.A. patrol plane which placed fire detection at a high degree of efficiency. However, the refuge will encourage the State of Tennessee to assist our personnel in every possible manner to keep fire damage to a minimum.

II WILDLIFE

A. Migratory Birds:

1. Population and Behavior:

Few waterfowl remained on the area after the beginning of this period. A few blue winged teal, wood duck, and mallards were noted in early May. Six mallard broods and three gadwall broods were seen during May and July. One blue winged teal was seen at Sulphur Wells (Big Sandy Unit) on August 1st, but it is not known whether this bird was a permanent resident or an extremely early transient. About 75 wood ducks were using the Lashlee Springs Area of the Big Sandy Unit on August 14.

Coot were present on the refuge until May 24th. The heron and egret rookery has expanded somewhat in area since last year and presumably in the total number of nesting birds. The cormorant rookery, however, has shown a decline in the number of nesting pairs. This latter is probably due to the habitat deterioration caused by the falling of many of the water killed trees.

Mourning doves were unusually abundant throughout the summer. Small flocks began building up the first part of August, and about 150 birds were using the Sulphur Wells Area on August 11. These doves were feeding in a freshly sown field of buckwheat, oats, and vetch. More than 100 doves were using the Big Sandy Primary Area on August 14.

2. Food and Cover:

The amount of food for migratory birds on Tennessee Refuge has been steadily increasing each year as more land is placed in cultivation. Grain crops as well as improved goose pastures have been increased during the current year. The extensive development of the new 500 acre goose pasture and duck feeding area at Sulphur Wells and adjoining Britton Ford on the Big Sandy Unit will provide for additional waterfowl use at this location.

Since it is apparent that T.V.A. will in the near future transfer the refuge lands to the Service which will eliminate cash rentals of food crops by T.V.A., a large amount of additional waterfowl foods can be left unharvested in the field for waterfowl use. Recent inspections of plantings of square stem spike rush, american pondweed, and perennial smartweed indicate a very satisfactory establishment and spread in the Duck River dewatering project. The perennial smartweed, Polygonum hydropiperoides, shows the best promise for extensive spread in the marsh areas of the refuge. It appears to be a very poor crop of mast this year which will place greater pressure on cultivated crops.

B. Upland Game Birds:

The refuge quail population is considerably up from that of the past few years, with the Big Sandy Primary Area showing the greatest increase. In this latter area there are a number of old home sites which at present have reverted to the stage where they are providing extremely good quail habitat. It is anticipated that, unless something is done to disrupt plant succession, these sites will steadily become of less and less value to quail. As a consequence of this it is reasonable to expect a decline in the quail population of this Primary Area within the next few years. Since we are now concentrating on physical development work at Sulphur Wells, we can expect a marked decline in quail numbers on that area by next year. The bull dozing of hedgerows, fence rows, and thickets which is making Sulphur Wells so desirable from the duck and goose standpoint is simply not compatible with high quail populations.

C. Big Game Animals:

No deer observations were made during the period but tracks and other signs indicate little change in numbers. Deer in small numbers are present on the Big Sandy and Duck River Refuge Units. The total number of deer using the refuge is estimated at 15 head.

D. Fur Animals, Predators, Rodents, and Other Mammals:

Rabbits have made a rapid recovery this year from the steady decline which has been evident for the past five years. Other fur bearers including, raccoons, o'possums, squirrels, mink, and foxes show little change.

E. Fish:

The number of sport fishermen and the amount of the take has declined on the refuge as compared with the same period last year. There appears to be a sharp reduction in the number of bass but a large increase in crappie. This change over in the species of game fish has been the story on similar impoundments. The commercial fishing shows little change in the number of species or individual volume as compared to last year. A new boat dock and fish camp has been established at the Antioch Landing area of the Big Sandy Refuge Unit.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Developments:

This spring, the strategic Sulphur Wells Area on the Big Sandy Refuge Unit was finally licensed by T.V.A. for waterfowl crops and the refuge personnel permitted to work on the area along with cooperating farmers to develop a model waterfowl feeding area. This Sulphur Wells Area has now been combined with the adjacent Britton Ford Unit to provide approximately 285 acres of summer grain and 430 acres of cover crops and improved pastures for ducks and geese. Through the use of the newly acquired D-8 tractor from Oak Ridge and soil and moisture conservation funds the project is now 30 percent completed and should be finished by the end of the present fiscal year. All available lands suitable for agriculture are being reclaimed, improved, and planted to soil building crops. Old crop lands are being placed in legumes, pastures, or in a rotation with soil building crops. Hedge rows, and reverting fields have been cleared, and plans provide for terracing and other soil protection practices.

The marginal, low land disking program in the Duck River Dewatering Project has been suspended during the period, due to the need for equipment and funds on other acres, but will be continued next year as equipment again becomes available. Through our cooperative farming program the waterfowl plantings of grain crops and pastures have been extended at Rochelle Islands, Sycamore Landing and Eagle Creek on the Duck River Refuge Unit.

B. Maintenance:

During the period a front end loader was acquired for use with our farmall tractor which enabled us to start graveling the main arterial system on the Big Sandy Primary Area. The D-8 tractor was used during the period to open, develop, and stock pile gravel for use with the farmall loader. 650 tons of gravel were placed on the roads and project will be continued during the present period so that the most critical sections of the road system will be graveled before wet winter weather sets in. Five new bridges were constructed on the Sulphur Wells Areas, and four repaired at Big Sandy Primary Area during the period. The 50 h.p. Caterpillar tractor was repaired, cleaned, and painted during the period. Essential repair work was done on the three International pickup trucks and the 1 1/2 ton stake truck during the period. A hog-trough gravel bed was purchased and placed on the stake truck so that it could be used in the graveling project.

C. Plantings:

No plantings other than agricultural crops were made during the period. The refuge agricultural crops which total approximately 5,000 acres will be listed in detail in the next report. These plantings may show a slight increase over the corresponding period last year. The unfavorable wet weather during the summer months has greatly retarded

the planting of milo maize, buckwheat, permanent pastures, and winter cover crops. Since it is expected that T.V.A. will in the near future transfer the title of Tennessee Refuge lands to the Service, the refuge may soon be in position to provide more unharvested grain for waterfowl use, and grow a certain amount of seed for distribution to other stations.

IV. ECONOMIC USES OF REFUGE

A. Grazing:

Thirty head of cattle are being pastured on the Big Sandy Primary Unit at a charge of \$.50 per head per month. T.V.A. has rented a total of 1195.5 acres for pasture on the secondary areas.

B. Haying:

Although no haying was done on the refuge Primary Area, T.V.A. rented 219 acres of secondary area land for haying purposes.

C. Timber Removal:

T.V.A. has made seventeen individual timber sales thus far in 1950. Most of these were for a few selected trees, for down timber, or for fence posts. A few individual cypress trees were cut in the Duck River Bottom, and since we considered this practice detrimental to the welfare of the water birds using the area, we have taken steps which should insure the preservation of these remaining cypress trees.

The total timber removal from the refuge during this calendar year and the revenue which accrued to T.V.A. there from are as follows:

Saw timber	14.6 mbf	\$ 170.58
Posts	4,084	34.21
Stave Bolts	12 cords	12.00
Fuel Wood.	82 cords	no charge
Total		\$ 216.78

V. FIELD INVESTIGATIONS AND APPLIED RESEARCH

A. Progress Reports:

Investigations have been started in the Duck River Dewatering area through a series of check plots to determine the value of the refuge disking program on marginal low areas. A series of check plots have been outlined and plant species recorded for a comparison study with the pioneer species that appear on various exposure, elevations, and soil types on the newly disked areas.

Two additional duck traps are being constructed so as to expedite

trapping and banding operation on the refuge. One of the major purposes of our banding operations will be to determine the extent and make up of the minor flyway along the T.V.A. chain of lakes. Also the refuge is planning to cooperate with the State P-R dove project in trapping and banding doves on the refuge.

VI: PUBLIC RELATIONS

A. Recreational Uses:

The development of Paris Landing State Park, which is expected to result in the finest unit of the Tennessee State Park System is located adjacent to the Big Sandy Refuge at the confluence of the Big Sandy River with the Tennessee River. It is expected that thousands of people will make daily use of this area and many will extend their recreational activities to refuge lands. During the spring and early summer months the great increase in sport fishing for crappie encouraged large numbers of people to visit the refuge. On fair weather days two to three thousand people could be seen on the three refuge units. Fishing continues as the chief recreational use of the refuge, with boating, picnicing, hiking, swimming, and nature study as minor uses. The west Tennessee Negro Boyscout Council conducted their annual camporee on the Big Sandy Refuge during June.

B. Official Visitors:

<u>Date</u>	<u>Name</u>
June 9	Earl Cady, T.V.A., Game Technician
June 12	Parker Smith, Tennessee P-R Leader
June 12	Earl Cady, T.V.A. Game Technician
June 15	Lawrence Givens, Regional Office
19	" " " "
20	" " " "
27	Parker Smith, Tennessee P-R Leader
17	" " " "
18	Charles Rawls, Tenn. P-R. Leader
Aug. 2	Earl Cady, T.V.A. Game Technician
7	Robert Martin, Mechanic, White River Refuge
10	Tom Atkeson, Biologist, Wheeler Refuge
11	" " " "
13	L. L. Glasgow, Professor, L. S. U.
14	" " " "
16	R. C. Soaper, Game Management Agent, Kentucky
16	James T. Hammond, Game Management Agent, Tennessee
16	Mr. Hudson, Game Management Agent, Mississippi
16	Bill Davis, Regional Office
16	Ted Ball, Regional Office
17	Roy Wood, Regional Office
17	Fred Summerall, Regional Office
17	Parker Smith, Tennessee P-R Leader

C. Fishing:

As discussed elsewhere in this report, fishing constitutes the major public use of the refuge. Commercial fishing continues at a high level of maintenance with no indication of deteriorating in the near future. The commercial take consist chiefly of catfish and drum with carp and paddle bill showing a marked decrease.

D. Violations:

No violations occurred on the refuge during the period. One case made last period was prosecuted in June. A conviction was received, and the violater fined \$10.00 for possessing a firearm on the refuge.

September 8, 1950.

Respectfully submitted,

Chester R. Markley

Chester R. Markley,
Refuge Manager

Claude H. Gresham, Jr.,
Refuge Manager

REFUGE

Yennessee

WATERFOWL

MONTHS OF

to Aug. 31, 1950

(1) Species Common Name	(2) First Migrants Seen		(3) Peak Concentration		(4) Last Migrants Seen		(5) Young Produced		(6) Total
	Number	Date	Number	Date	Number	Date	Broods Seen	Estimated Total	Estimated for Period
1. Swans: Whistling swan									
2. Geese: Canada goose Cackling goose Brant White-fronted goose Snow goose Blue goose									
3. Ducks: Mallard	Few Permanent						6	30	150
Black Duck									
Gadwall	Few present during summer						3	15	30
Baldpate									
Pintail									
Green-winged teal									
Blue-winged teal	1	Aug. 1							10
Cinnamon teal									
Shoveller									
Wood duck	Permanent Residents								450
Redhead									
Ring-necked duck									
Canvas-back									
Scaup									
Golden-eye									
Buffle-head									
Ruddy duck									
4. Coot: 3-1750 (June 1949)					12	May 24,			

Form NR-1

(over)

SUMMARIES

Total Production:

Geese _____

Ducks _____

Coots _____

Total waterfowl usage during period _____

Peak waterfowl numbers _____

Areas used by concentrations _____
_____Principal nesting areas this season _____

Reported by _____

INSTRUCTIONS

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance.
- (2) First Seen: The first refuge record for the species during the season concerned in the reporting period, and the number seen. This column does not apply to resident species.
- (3) Peak Concentration: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned in the reporting period.
- (5) Young Produced: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (6) Total: Estimated total number of the species using the refuge during the period. This figure may or may not be more than that used for peak concentrations, depending upon the nature of the migrational movement.

Note: Only columns applicable to the reporting period should be used. It is desirable that the Summaries receive careful attention since these data are necessarily based on an analysis of the rest of the form.

3-1751

Form NR-1A
(Nov. 1945)MIGRATORY BIRDS
(other than waterfowl)Refuge..... Tennessee Months of May 1, to Aug. 31, 1945

(1) Species Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total Estimated Number
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	
I. Water and Marsh Birds:										
Double Crested Cormorant	Permanent Res.		1600	Nov.			1	100	?	1,000
Great Blue Heron	Permanent Res.		700	Oct.			1	(Combined	?	900
American egret	Last Period		600	Oct.			1	500 nests)	?	700
Snowy egret	1	Aug. 22	rare							10
Little Blue Heron	10	Aug. 22	75							100
Green Heron	Last period		200	May						300
Bittern	Last Period		rare							?
King Rail	1	Aug. 11			1	Aug. 11				20
Pied Billed Grebe	1	Aug. 28	80	Dec.	3	May 4				100
II. Shorebirds, Gulls and Terns:										
Killdeer	Permanent Resident									1,000
Spotted Sandpiper	Common this period									100
Solitary Sandpiper	Last Period									
Lesser Yellowlegs	Last Period									
Greater Yellowlegs	Last Period									
Black Tern	Last Period				3	Aug. 11				
Herring Gull	Last Period		2000	Feb.	Present					2,200
Ring-billed Gull	Last Period		6000	Feb.	Present					7,600

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u>					
Mourning dove					Abundant
White-winged dove					
IV. <u>Predaceous Birds:</u>					
Golden eagle					
Duck hawk					
Horned owl					
Magpie					
Raven					
Crow					

Reported by.....

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge TENNESSEE Months of MAY 1, to AUGUST 31,, 1945

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
						Hunting	For Re- stocking	For Research		
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage				Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Bobwhite Quail	Approx. 7,000 Acres of quail habitat.								1,500	Apparently a good nesting season this year.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1570
NR-8a

REFUGE GRAIN REPORT

Refuge TENNESSEE

Months of MAY 1, thru AUG. 31, 1945

(1) VARIETY	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF			(6) ON HAND END OF PERIOD	(7) PROPOSED USE		
				TRANS- FERRED	SEEDED	FED		TOTAL	SEED	FEED
Buckwheat	100#	621#	721#		721#					
Blue Grass	450#	0	450#		150#		300#	300#		
Vetch	0	2720#	2720#		2420#		300#	300#		
Crimson Clover	0	350#	350#		200#		50#	50#		
Barley	0	125	125		75		50	50		
Oats	0	114	114		100		14	14		
Wheat	0	5	5		5		0			
Rye Grass	0	4000#	4000#		300		3700	3700		
Fescus	0	150#	150#		150#		0			

- (8) Indicate shipping or collection points Paris, Tennessee
- (9) Grain is stored at Big Sandy Primary Area.
- (10) Remarks _____

NR-8a

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lbs., Corn (ear)—70 lbs., Wheat—60 lbs., Barley—50 lbs., Rye—55 lbs., Oats—30 lbs., Soy Beans—60 lbs., Millet—50 lbs., Cowpeas—60 lbs., and Mixed—50 lbs. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately: Corn, wheat, proso millet, etc. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share-cropping, or harvest from food patches.
- (4) A total of Columns 2 and 3.
- (6) Column 4 less Column 5.
- (7) This is a proposed breakdown by varieties of grain listed in Column 6.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters grainary", etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.



Boat harbor at Paris
Landing State Park
adjacent to Big Sandy
Refuge Unit, July, 1950.



Personnel rebuilding truck trail bridge at Sulphur
Wells Area, Big Sandy Refuge Area., May, 1950.



Cooperator Rochelle using D-6 tractor and Rome Harrow Plow M-20-28 to make seed bed in one operation. Duck River Refuge, May 1950.



View of lower end of Duck River Dewatering Project, January, 1950.



Recreational Area. New boat dock concession at Antioch Landing, Big Sandy Refuge Unit. July, 1950.



Cub sea-plane hanger, Tennessee Conservation Department at Antioch Landing, Big Sandy Refuge Unit, April, 1950.



Blue and Snow Geese near 'Swamp Creek, Big Sandy
Refuge Unit, April, 1950. Spring flight birds.





Views of lowland areas following disking operations
at low water elevations. Duck River Dewatering Project,
January, 1950.





Preparing and seeding new goose pasture at
Robbins Creek, Big Sandy Refuge Unit, April, 1960.





Showing new farmall loader in operation at gravel pit on Big Sandy Primary Area, June 1950.



ROUTING SLIP

BRANCH OF WILDLIFE REFUGES

DATE: May 12 19~~4~~ 50

MR. SALYER _____

MR. KRUMMES _____

MR. DIMONT PAD _____

MISS BAUM _____

SECTION OF HABITAT IMPROVEMENT:

~~MR. GRIFFITH~~ REG 5-16

DR. BURN _____

MISS COOK _____

SECTION OF OPERATIONS:

MR. BALL _____

MR. REGAN _____

SECTION OF LAND MANAGEMENT:

~~MR. KENT~~ _____

~~MR. ACHERKNECHT~~ jo

SECTION OF STRUCTURES:

MR. TAYLOR _____

MR. JOHNSTON _____

STENOGRAPHERS:

NARRATIVE REPORT

REFUGE: TENNESSEE

PERIOD: JANUARY-APRIL 1950

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 PARIS, TENNESSEE



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NARRATIVE REPORT

PERIOD FROM JANUARY 1 TO APRIL 30, 1950
 TENNESSEE NATIONAL WILDLIFE REFUGE
 PARIS, TENNESSEE.

I GENERAL

A. Weather Conditions:

<u>Month</u>	<u>Snowfall</u>	<u>Precipitation</u>	<u>Max Tem.</u>	<u>Min. Temp.</u>
January	Trace	12.50 inches	74	22
February	Trace	6.65 "	74	19
March	0	4.86 "	80	19
April	0	2.72 "	82	23

The weather during the period of this report was unusual, unseasonable, and just simply very, very wet. Rain occurred on 27 days of January for a total of 12 1/2 inches which was an all time record for this area. The total precipitation for the four month period of 26.73 inches was above normal. Temperatures during January, February, and March were considerably above normal followed by a cold April which ruined the early vegetative growths. There were 10 days during April having reported temperatures below freezing. The mild winter, however, was conducive for continual waterfowl use in the valley and the excessive precipitation provided favorable feeding conditions.

B. Water Conditions: (359 ft. Bank Full)

<u>Month</u>	<u>Max Flow</u>	<u>Min. Flow</u>	<u>Max Elev.</u>	<u>Min Elev.</u>
January	300,600 CFS	71,800 CFS	368.6	354.3
February	397,800	129,300 CFS	365.4	354.7
March	260,800	55,300 CFS	358.6	354.2
April	71,500	23,000 CFS	358.5	355.7

During both January and February, the waters of Kentucky Reservoir were at the highest flood stage since the impoundment of the reservoir in 1944. The maximum elevation of 368.6 feet at the middle section of the reservoir was 9.6 feet above the bank full stage or approximately 7 feet higher than the previous peak elevation. High waters on the Ohio and Mississippi Rivers in February also necessitated holding water in Kentucky Reservoir during February until the crest passed Cairo, Illinois. This resulting rise to 365.4 feet placed the water elevation to 6.4 feet within the surcharge zone. At the refuge waterfowl feeding areas it was observed that too much water may be as detrimental as too little water

and in some cases prevented our shallow water feeding ducks from reaching the food crops in the diking and dewatering projects. Fortunately, the waterfowl moved to adjacent high land feeding areas and returned to the low lands as the waters gradually receded. The high waters carried away many of the refuge bridges which were not securely anchored by T.V.A. These bridges will have to be replaced by the refuge, since T.V.A. disclaims future need for them.

C. Fires:

During the period 3 fires occurred in the Big Sandy Unit and one in the Duck River Unit of the refuge. No fires were reported from the Busseltown Refuge Unit. These four fires totalled 87 acres burned with very small damage as they were chiefly confined to broom sedge, grasses and small shrubs. Excessive precipitation was largely responsible for the small degree of fire damage. The panama fire pump received this season for use on a Jeep truck has proved to be very satisfactory for use on Tennessee Refuge.

II WILDLIFE

A. Migratory Birds:

Canada goose and ducks population estimates for the past four waterfowl seasons have been plotted on graphs which are enclosed in this report. It is interesting to note that the Canada goose trends show an approximate 100 percent increase in each of the four seasons. This is exactly the trend which occurred at Wheeler Refuge following its establishment. The Canada goose increase this past season resulted without the use of decoys or dumped feed but resulted from habitat improvement. The gradual development of approximately 1,250 acres of forage crops and 4100 acres grain or seed crops for waterfowl use will provide sufficient goose grazing but the ducks are actively competing with the geese for the grain and seed crops. Plans are being made to increase the amount of grain planted and the amounts left unharvested in the field.

Canada geese have considerable room for expansion and if present trends continue and habitat improvements can keep pace with population increases, Tennessee Refuge can winter a large number of these birds.

Blue and lesser snow geese are stopping at the refuge during the fall and spring migrations as well as definitely wintering on the area when mild winters are present. The spring flight of blue and lesser snow geese on the east side of the Mississippi River this spring is definitely a new northern route for these geese and probably caused by favorable habitat in the Tennessee Valley. A brief paper on the "Blue and Lesser Snow Geese in the Tennessee Valley" was prepared for publication in the "Tennessee Conservationist" and is enclosed for the details which apply to this area. During mild winters, the Tennessee Valley will probably be host to many thousands of blue and lesser snow geese. The past season, these birds usually stayed for short periods

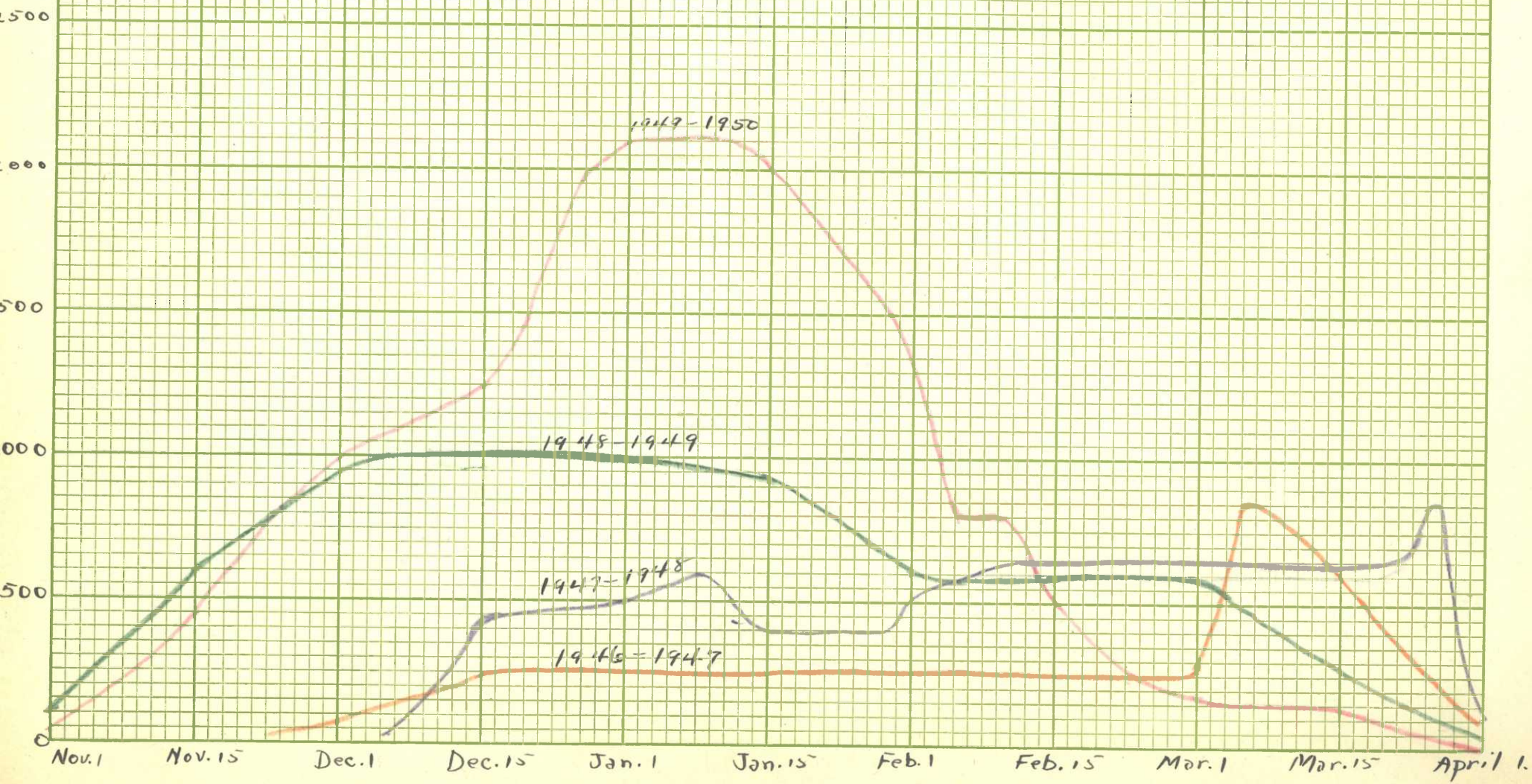
of three to ten days. The peak daily use was reported at 550 geese. 49 birds remained the entire winter. The last spring migrants, 100 blues and 10 snows, left the refuge on March 16, 1950.

The refuge duck population showed the same December - January peak of last years, - 100,000 birds. The duck day use during the fall and spring was less than last year but greater than last year during the mid-winter months. Considering duck use during the entire season it amounts to practically the same as the previous year. We feel that the high surcharge of water during January and February of this year restricted our peak duck use as well as total duck day use.

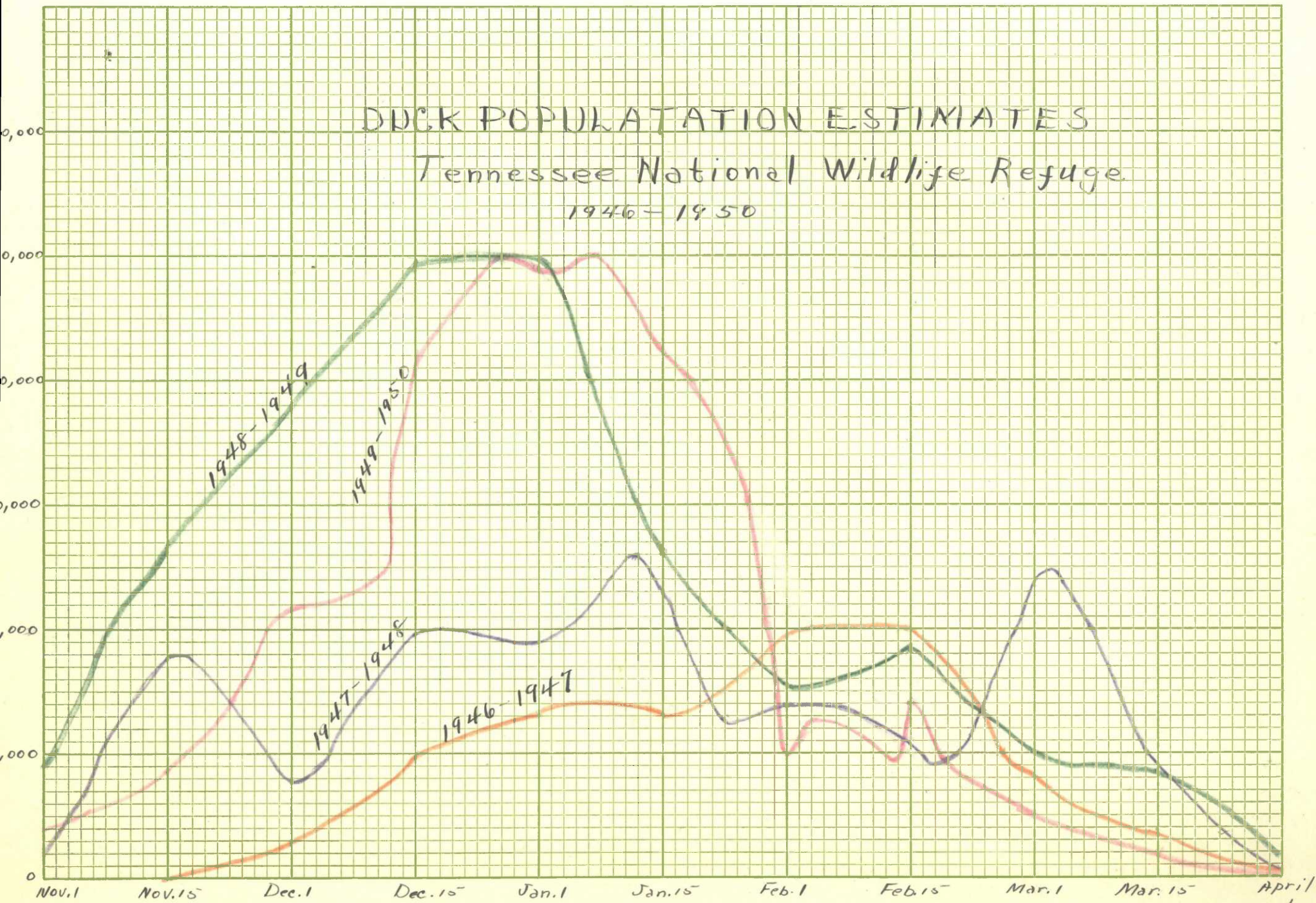
A check of our waterfowl feeding areas this spring showed that all food crops were consumed by the ducks and geese. This feeding use indicates that to support more ducks and for a longer period, habitat improvement work must continue or populations will become stabilized. Marginal lands reclaimed under our Soil and Moisture Conservation Activities are being placed in waterfowl food crops. Whenever a Sarge or L.C.M. is received islands and inaccessible areas will be placed in cultivation. Mast and volunteer growths of annual plants greatly supplemented planted crops on the three units of Tennessee Refuge.

Dove populations this spring show a large increase over the number reported a year ago. Nesting pairs are in evidence in all sections of this area. Wilson snipe while not common in this region of north-west Tennessee are more numerous than in previous years. Several reports of woodcocks have been received the later part of March and in April but these migratory birds are rare in the vicinity of Paris, Tennessee. From the number of woodchuck reports received it is possible that they show a slight increase.

CANADA GOOSE POPULATION ESTIMATES
 Tennessee National Wildlife Refuge
 1946 - 1950



DUCK POPULATION ESTIMATES
Tennessee National Wildlife Refuge
1946-1950



BLUE AND LESSER SNOW GEESE IN THE TENNESSEE VALLEY:

Blue and lesser snow geese are appropriately classed as unpredictable. Yet, even though they have appeared baffling to our biologists from time to time, these geese are creatures of habit, and as such their life histories assume definite patterns. These birds breed in the far arctic and while in strong physical condition have been known to fly non-stop to the Gulf Coast marshes. The blue and lesser snow geese traversed both the east and west sides of the Mississippi River in their southern migration, but on their return flight the following spring, the migration route was confined to the west side of the Mississippi River where favorable feeding areas permitted frequent stopping places. The geese wanted to linger and enjoy the early spring days for the vegetive foods were now lush and tender with the cold arctic winds and encroaching ice no longer at their backs to hurry them along. Perhaps a few reasons why the blue and snow geese made this wide circuit to the west enroute to Manitoba and the northern breeding grounds.

The Tennessee Valley Authority has completed a chain of lakes from Paducah, Kentucky to the mountains of Georgia and the Carolinas. These multiple purpose reservoirs impounded on the Tennessee River and its tributaries were something new on the southern landscape. After a few years of "just looking" as they passed over on their non-stop southern flight to the Gulf Coast, the blue and lesser snow geese began to come down out of the sky for a close-up look at these newly created lakes which cut their flyway from east to west in the region of the Tennessee Valley. First observations of blue and lesser snow geese were made on Wheeler National Wildlife Refuge in north central Alabama in October, 1939. That fall an estimated 2,000 geese were observed on various sections of Wheeler Reservoir, and they have used the refuge and adjacent sections of Wheeler Reservoir each fall. An estimated number of 8,000 blue and snow geese used the Wheeler Refuge in the fall of 1945. The flocks were usually composed of 50 to 150 birds with about five percent being lesser snow geese. An occasional blue goose was sometimes seen bringing up the rear of a flight of Canadas, usually looking rather dejected and ostracized. The blue and snow geese preferred to feed on the dwarf spike rush which was found on the mud flats rather than join the ducks and Canada geese on the upland agricultural fields. The planting of rye grass on the mud flats gradually assisted in weening the geese from the limited natural vegetation.

The first fall observations of 40 migrant blue geese were recorded on October 24, 1940 at Kentucky Woodlands National Wildlife Refuge near the western end of the Tennessee Valley. These fall visitors were now being reported in small numbers throughout the Tennessee Valley Area. At the Tennessee National Wildlife Refuge in the middle section of Kentucky Reservoir in northwestern Tennessee, the blue and lesser snow geese usually appear in October. The earliest fall record was September 30, 1948. Last season (1949 - 1950) the main section of their fall flight appeared between October 20- 28. The peak daily wintering use was 550 geese, while the refuge was host to approximately 2500 birds during the

migratory period. The number wintering on the refuge was gradually reduced to 3 lesser snow and 46 blue geese. During this early period in the Tennessee Valley the blue and lesser snow geese remained until cold weather set in or about the last week of December before rejoining the flocks along the Gulf Coast. An occasional goose was sometime stranded for the winter with a flock of Canadas or a sudden cold spell sapped his vitality beyond the desire to migrate. September plantings of rye grass on the exposed mud flats appear to be eagerly grazed by the geese and in supplementing the limited, natural vegetation along the shoreline of the reservoirs this added inducement plays an important part in prolonging the wintering period of blue and lesser snow geese on the "Great Lakes of the South". After showing a certain amount of hesitation the blue and lesser snow geese are now making heavy use of winter cover crops, improved pastures, and fields planted to corn, milo maize, buckwheat, peanuts, and soybeans; although, they still have a liking for new growths of drawf spike rush if present on the mud flats upon their arrival in the valley. A certain small number of blue and lesser snow geese stay the entire winter in the Tennessee Valley depending upon weather conditions. During the past several years these wintering geese were present on Kentucky Woodlands, Tennessee, and Wheeler Refuges in flocks from 10 to 200 birds. Practically all the waterfowl leave the Tennessee Valley if the weather becomes cold enough to freeze the major part of the reservoirs; but they return as soon as the first thaws set in.

From March 3 - 16, 1950, the first spring flight of blue and lesser snow geese was in evidence in the western section of the Tennessee Valley. The only previous record was an observation of 7 blue geese on Kentucky Woodlands Refuge on May 3, 1940. The actual intensity of this spring flight as compared to the fall flight cannot be accurately estimated since many of the birds pass over in the night. During a severe rain and hail storm on the night of March 5, 1950 a flock of approximately 400 geese were attracted by the lights of Paris, Tennessee and almost made a forced landing in the streets of the town. Flocks of 60 to 200 blue and lesser snow geese were observed on Kentucky Reservoir during the following week. One flock of 100 blue and 10 lesser snow geese remained on Tennessee Refuge until March 16, 1950, this being the latest record for the geese on this area. On nearby Reelfoot Lake 500 blue and lesser snow geese were recorded during the period March 15, 16, and 17. A report from the Kentucky Bend Area of the Mississippi River on March 22, 1950 indicated several thousand blue and lesser snow geese in the area. Although a flock of 14 blue and 4 lesser snow geese were observed on Wheeler Refuge on March 14, of this year, there is no evidence that this spring flight extended as far east as central Alabama, but probably centered over western Tennessee.

The blue and lesser snow geese back in 1939 stopped off in the Tennessee Valley and found that the T.V.A. reservoirs had possibilities. Food plantings encouraged them to linger; mild winters induced a few to spend the entire winter season in the Valley; and now a new spring flight has occurred northward on the east side of the Mississippi River to feed for a week or two in the Tennessee Valley and pick up the rebels who stayed the winter along this new chain of lakes before continuing to

their northern breeding grounds. Perhaps blue and lesser snow geese are unpredictable, but it is quite possible that the Tennessee Valley has not seen the last of wintering and spring migrant blue and lesser snow geese. This great system of T.V.A. reservoirs, where the cooperative efforts of U. S. Tennessee Valley Authority, the State Conservation Departments, and the U. S. Fish and Wildlife Service are showing results in waterfowl development and management, is making history. What is being done in the Tennessee Valley for waterfowl may be indicative of waterfowl possibilities in other watershed developments.

Chester R. Markley, Refuge Manager
Tennessee National Wildlife Refuge
Paris, Tennessee

B. Upland Game Birds:

Nesting conditions for quail appear to be excellent so far this spring. A fair number of adult birds appear to be present on the refuge. If conditions for rearing continue favorable a sizable increase should be expected in quail numbers which are at an all time low in this section of Tennessee.

C. Big Game Animals:

Two late winter fawns have been reported on the refuge which indicate unusual breeding dates for virginia white tail deer. The refuge population indicates little change if any in number.

D. Fur Animals, Predators, Rodents and other Mammals:

Squirrels, rabbits, and foxes continue to show a good increase. Coons are about the same with mink and o'possum indicating a slight decrease in number.

E. Fish:

Bass including stripes are still showing a decrease in number as crappie increase. During the later winter and spring crappie was the chief fish caught by sportsmen. Carp and paddle bill also are decreasing in number while buffalo and cat fish show little change in the take of the commercial fishermen. There has been an extension of area used by mussel men by the take of shells appears to be decreasing on the older beds.

III REFUGE DEVELOPMENTS AND MAINTENANCE .

A. Physical Development.

Inclimate weather conditions and greatly reduced funds practically terminated construction jobs during the period. In case additional funds become available this fiscal year, unfinished jobs at the new Big Sandy Work center will be completed and additional progress can be made on habitat improvement work. The power system & water system are now on hand and can be installed and the serviced building wired as soon as funds can be allotted to this project. Various details of our ten year Soil and Moisture Project can be worked on as funds become available for the development of waterfowl food planting areas. Most of the materials are on hand for building a grease rack.

B. Maintenance:

Repairs have been practically completed on the RD 7 and gas 50 caterpillar tractors. Essential repairs work has been done on refuge trucks and a paint gun purchased for repainting units. Four truck trail bridges were repaired during the period. Additional lumber has been sawed at Kentucky Woodlands Refuge for the rebuilding of six bridges

destroyed by the January - February floods. Many other bridges need repairs. The farmall loader has been received which will enable us to gravel major roads as time and funds will permit. The road system on the Big Sandy Primary Area has been ditched and graded during the period. Road extensions have been developed in Benton County Secondary Area adjacent to Big Sandy River.

C. Plantings:

1. Aquatics and Marsh Plants: No plantings made during period.
2. Trees and Shrubs: No plantings made during period.
3. Cultivated Crops: During April, refuge permittees started planting crops on various sections of the refuge. A detail listing of these crops planted will be shown in the next report.

IV. ECONOMIC USES OF REFUGE

A. Grazing:

Very little grazing was accomplished on the refuge during the period except on those permanent pastures and winter cover crops which were on the highest lands safe from the flood water. New licenses indicate that the amount of grazing this year will show little change over the previous year.

B. Haying:

No haying during the period.

C. Timber Removal:

During the period one timber permit was issued for fence posts and one for fire wood.

V. FIELD INVESTIGATIONS AND APPLIED RESEARCH

A. Progress Report:

Biologist Cypert continued the study of materials and data gathered at various field stations in the region relative to forest management studies.

VI. PUBLIC RELATIONS

A. Recreational Uses:

During the period two new boat docks were licensed on the refuge by T.V.A. one at Antioch Landing, Big Sandy Refuge Unit and the second at Briar Branch on Duck River Refuge Unit. These recreational areas are operated from April 1 to October 30 and should not conflict with our

wildlife interests on the refuge areas. We recently granted approval for the west Tennessee Negro Boy Scout Council to have their June Camporee on the Big Sandy Refuge Unit, near Paris Landing State Park. The development of this summer time recreational uses on non-agricultural areas will encourage good public relations and not adversely effect the waterfowl developments on the Refuge Units.

Since the first of March an estimated 100 to 5,000 people make daily use of the refuge primarily for fishing. During the summer season an increase in boating, swimming, and picnicing, will be evident.

B. REFUGE VISITORS:

Date	Name
Jan. 12	Parker Smith, P-R Leader, Tenn.
Jan. 12	James Hammond, G.M. A., Tenn.
Jan. 16	Earl Cady, T.V.A. Game Technician
Jan. 26 - 28	Dr. Clarence Cottam, Asst. Director
Feb. 1	Patrolman Woodson, Noxubee Refuge
Feb. 3	John Key, T.V.A. Agriculturalist
March 2	Parker Smith, P-R Leader, Tenn.
March 2	Fred Somrell, River Basin Studies
March 3	James Hammond, G.M.A., Tennessee
March 3	James Elliott, G.M.A., Tennessee
March 3	Warden Odlemyer, Tenn. Conservation Dept.
March 3	Claude Denton, Reelfoot Lake Refuge
March 3	Patrolman Davis, Reelfoot Lake Refuge
March 7 - 8	Lawrence Givens, R.O. Soil & Moisture Program
March 9	Supervisor Hicks, Tenn. Conservation Dept.
March 9	John Gibson, Tenn. Conservation Officer
March 13	Lawrence Givens, R. O. Soil and Moisture Program
March 14	James Hammond, G.M.A. Tennessee
March 16	Supervisor Hicks, Tenn. Conservation Dept.
March 16	Johnny Gibson, Tenn. Conservation Officer
April 19	Arthur Davis, White River Refuge

C. Fishing:

Fishing is the chief form of outdoor recreation for the people in this area. Fishing was excellent during April and thousands of local people enjoyed their outings on the units of Tennessee Refuge. Fishing pressure on the commercial and sport species is high and shows a steady increase each year.

D. Violations:

Four individuals were apprehended during the period trespassing with firearms on the refuge. Three cases were made at Duck River Unit, and one on the Big Sandy Unit of the refuge. Three cases have been tried and convictions received. The fourth case occurred near the close of the period and will be tried in the near future.

Hunting violations as well as incendiarism have been maintained at a minimum on the units of Tennessee Refuge and at present do not present difficult problems.

Respectfully submitted,

Chester R. Markley
Chester R. Markley,
Refuge Manager

May 5, 1950

Approved
M. R. Shuman
Assistant Regional Refuge Supervisor
5/10/50

WATERFOWL

Refuge Tennessee

Months of Jan. 1

to April 30,

1945

(1) Species	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Young Produced		(6) Total
	Number	Date	Number	Date	Number	Date	Broods Seen	Estimated Total	Estimated for Period
I. <u>Swans:</u> Whistling swan									
II. <u>Geese:</u> Canada goose	Last Period		2,100	Jan. 1	67	Mar. 15	-	-	3,200
Cackling goose									
Brant									
White-fronted goose									
Snow goose	Last Period		Last Period		10	Mar. 18	-	-	50
Blue goose	Last Period		Last Period		100	Mar. 16	-	-	500
III. <u>Ducks:</u> Mallard	A few permanent residents		80,000	Jan. 6			-	-	140,000
Black duck	A few permanent residents		10,000	Jan. 6			-	-	28,000
Gadwall	Last Period		Last Period		10	Mar. 18	-	-	8,000
Baldpate	Last Period		Last Period		1	Mar. 11	-	-	400
Pintail	Last Period		Last Period		587	Mar. 23	-	-	10,000
Green-winged teal	Last Period		Last Period		2	Mar. 23	-	-	600
Blue-winged teal	Last Period		Last Period		8	Mar. 18	-	-	4,000
Cinnamon teal	-		-		-	-	-	-	-
Shoveller	Last Period		Last Period				-	-	4,500
Wood duck	Permanent resident		Last Period		-	-	-	-	400
Redhead	Last Period		90	Mar. 3	63	Mar. 3	-	-	300
Ring-necked duck	Last Period		Last Period		2	April 8	-	-	
Canvas-back	Last Period		400	Feb. 7	2	Feb. 8	-	-	8,000
Scaup	Last period		3,000	Feb. 20	-	-	-	-	200
Golden-eye	-		-		-	-	-	-	-
Buffle-head	Last Period		-		4	Mar. 9	-	-	50
Ruddy duck	3	Mar. 4	Scarce						
Old Squaw	2	Mar. 10	-		-	-	-	-	
IV. <u>Coot:</u>	Last Period		Last Period		still present				2,000

SUMMARIES

Total Production:

Geese 0
 Ducks 0
 Coots 0

Wintering & Spring Migrants

Total waterfowl usage during period 248,700

Peak waterfowl numbers 108,000

Areas used by concentrations Duck River Dewatering

Project, Busselton Dewatering Project

Principal nesting areas this season _____

Reported by _____

**Chester R. Markley,
Refuge Manager**

INSTRUCTIONS

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance.
- (2) First Seen: The first refuge record for the species during the season concerned in the reporting period, and the number seen. This column does not apply to resident species.
- (3) Peak Concentration: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned in the reporting period.
- (5) Young Produced: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (6) Total: Estimated total number of the species using the refuge during the period. This figure may or may not be more than that used for peak concentrations, depending upon the nature of the migrational movement.

Note: Only columns applicable to the reporting period should be used. It is desirable that the Summaries receive careful attention since these data are necessarily based on an analysis of the rest of the form.

3-1751

Form NR-1A
(Nov. 1945)MIGRATORY BIRDS
(other than waterfowl)Refuge TennesseeMonths of Jan. 1 to April 30 1945

(1) Species Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total Estimated Number
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	
I. Water and Marsh Birds:										
Pied billed Grebe	Last Period		150	4-18-50	Still present		-	-	-	250
Double Crested Cormorant	Permanent resident		1500	4-30-50			1	100	?	2,000
Great Blue Heron	" "		480	4-30-50			1	Combined	?	800
American Egret	6	3-20-50	700	4-30-50	Present		1	500 nests	?	700
Loon	Last Period		3	4-6-50	3	4-6-50				
The American Egret and Great Blue Heron nests are combined within one rookery.										
Holboell's Grebe	1	3-18-50								
II. Shorebirds, Gulls and Terns:										
Killdeer	Permanent Resident		-	-	-	-	-	-	-	500
Wilson Snipe	Last Period		100	4-2-50	1	4-28-50	-	-	-	250
Woodcock	1	4-28-50	-	-	-	-	-	-	-	-
Herring Gull	Last Period		5,000	3-15-50	Present		-	-	-	4,000
Ringbilled Gull	Last Period		700	3-15-50	Present		-	-	-	850

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. Doves and Pigeons:					
Mourning dove Permanent Resident		400	4-30-50		
White-winged dove					
IV. Predaceous Birds:					
Golden eagle Bald, Permanent Resident		12	1-1-50		12
Duck hawk					
Horned owl Permanent Owl Resident					50
Magpie					
Raven					
Crow Permanent Resident					numerous

Reported by.....

Chester R. Markley

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Tennessee Months of Jan. 1 to April 30, 1946

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Bobwhite Quail	Approximately 7,000 acres quail habitat.								1200	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

Refuge Tennessee

April 30, 1950

(1) Species Common Name	(2) Density		(3) Removals					(4) Disposition of Fur					(5) Total Popula- tion	
	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control	For Re- stocking	For Research	Share Trapping		Total Refuge Furs Shipped	Refuge Income	Furs Donated		Furs Destroyed
								Permit Number	Trappers' Share	Refuge Share				
Stripped Skunk			No fur has been harvested											200
O'possum														600
Raccoon														150
Muskrat														500
Gray Fox														150
Red Fox														75
Mink														100
Otter														2

REMARKS:

INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i.e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

<p>(2) Total Population</p>	<p>Area</p>	<p>Population</p>	<p>Income</p>	<p>Refuge</p>	<p>Share</p>	<p>(1) Species</p>
						<p>(1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan. "List of North American Recent Mammals" by G. S. Miller, Jr., a very good reference, is now out of print, although a revision is scheduled for publication in the near future.)</p>
						<p>(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.) Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.</p>
						<p>(3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year. Also show any removals not falling under heading listed.</p>
						<p>(4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market and the total income to the refuge by species, including share-trapped furs and furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.</p>
						<p>(5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.</p>
						<p>REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.</p>

3-1570
NR-8a

REFUGE GRAIN REPORT

Refuge Tennessee

Months of Jan. 1 thru April 30 1945

(1) VARIETY	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED USE		
				TRANS- FERRED	SEEDED	FED	TOTAL		SEED	FEED	SURP.
Corn	35	10	45	0	0	45	45	0	-	-	-
Oats	5	-	5	0	0	5	5	0	-	-	-
Barley	5	-	5	0	0	5	5	0	-	-	-
Buckwheat	100#	0	100#	0	0	0	0	100#	100#	-	-
Blue Grass	300#	300#	600#	0	150#	0	150#	450#	450#	-	-
Lespedeza	0	100#	100#	0	100#	0	100#	0	-	-	-
Fescus	0	100#	100#	0	100#	0	100#	0	-	-	-
White Clover	0	20#	20#	0	20#	0	20#	0	-	-	-

- (8) Indicate shipping or collection points Paris, Tennessee
- (9) Grain is stored at Big Sandy, Tennessee
- (10) Remarks

(10) REFUGES
(a) REFUGES IN GENERAL

NR-8a REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lbs., Corn (ear)—70 lbs., Wheat—60 lbs., Barley—50 lbs., Rye—55 lbs., Oats—30 lbs., Soy Beans—60 lbs., Millet—50 lbs., Cowpeas—60 lbs., and Mixed—50 lbs. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately: Corn, wheat, proso millet, etc. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share-cropping, or harvest from food patches.
- (4) A total of Columns 2 and 3.
- (6) Column 4 less Column 5.
- (7) This is a proposed breakdown by varieties of grain listed in Column 6.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters grainary", etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.