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REFUGE NARRATIVE REPORT  
CAROLINA SANDHILLS NATIONAL WILDLIFE REFUGE  
SEPTEMBER TO DECEMBER 1962

I GENERAL

A. WEATHER CONDITIONS:

<u>MONTH</u>	<u>RAINFALL</u>	<u>NORMAL</u>	<u>MEAN MAX. TEMP.</u>	<u>MEAN MIN TEMP.</u>
SEPTEMBER	6.20	4.14	85.5	59.4
OCTOBER	1.03	2.46	76.16	52.84
NOVEMBER	4.90	2.80	60.67	40.67
DECEMBER	<u>2.31</u>	<u>3.46</u>	52.16	31.29
TOTAL:	14.44			
NORMAL:	<u>12.86</u>			
EXCESS:	1.58			

EXTREMES: 98(Sept. 11) 5 (Dec. 13)

Although October was an extremely dry month the excess rainfall from September prevented fire danger conditions from becoming hazardous. December brought with it the lowest temperature reading in the history of the refuge....5 degrees for the morning of the 13th. With a 3 day siege of freezing temperatures, as much as 4 inches of ice accumulated on the smaller lakes.

B. HABITAT CONDITIONS:

1. Water. Levels in all existing lakes were maintained per normal. A make shift drain stop was installed in the old Lake Bee dam to determine if the existing stand of vegetation on the lake floor would be attractive to ducks when flooded. When some 5 or 6 acres of water was contained, ducks began to utilize the area. The water was then released to prevent its washing over the already "washed out" spillway.

2. Food and Cover. The goose flock is somewhat short of that anticipated this year. This condition has resulted in an abundance of corn in the fields in the Martin Lake and Ox Pen development areas. There is thorough utilization of the buckwheat plantings in both areas by both geese and ducks.

Although some 240 bushels of wheat were planted, stands are poor and probably will be considered as failures if no change is evidenced.

The more fertile creek bottom areas and hardwood stands yielded good crops of wild foods. Acorns, grapes, persimmon, and green briar are

among the most preferred food items with persimmon ranking high on the diet of at least a half dozen species of upland game. Interestingly enough, bumper crops of persimmons were noted throughout the general area and are still in evidence outside the refuge. While on the refuge, utilization was so thorough, that not a single persimmon has been left.

## II. WILDLIFE

A. Migratory Birds. The first Canada goose arrived on September 21 and was joined on the following day by 2 more. The flock dribbled in by 8's and 10's, however, and it was not until early November that the count reached 200. It is now 600, only 2/3 of the number present at this time last year. A portion of the reduction in goose numbers may be attributed to the build up in goose usage of the U. S. Fish and Wildlife Service National Fish Hatchery some 20 airmiles northeast of the refuge on U. S. Highway #1. It is assumed that the 150 geese now using the hatchery lakes formerly used the refuge lakes.

A similar reduction in duck numbers is also evident. Duck numbers now total 600, about a 30% reduction from this same time last year. No explanation is offered for this reduction.

With the exception of one persistent old Great Blue heron, seen at Lake Bee on December 30, all wading birds left the refuge with the onset of cold weather.

B. Upland Game Birds. It appears that the bobwhite quail population has reached the carrying capacity of the refuge as present management dictates. In areas where farming is intensive, quail numbers are relatively high. "Woods birds" are commonly seen however, in areas far removed from any refuge development or farming areas. It is hoped that the initiation of the current control burning operation along with the clearing of several hundred acres of scrub oak areas will induce and accelerate the growth of native foods and therefore raise the carrying capacity of the sandhills.

The wild turkey flock of the Sandhills has introduced a phenomenon not clearly defined and certainly not understood. In late winter and throughout the spring turkeys are much in evidence over much of the refuge area. With the onset of warm weather, observations become increasingly rare and indeed null from mid June to October, at which time turkeys again appear rather commonly. This points up the need for an investigation of the population dynamics of the flock. Perhaps the key to much more rewarding numbers lies in this period of apparent absence from the refuge.

C. Big Game Animals. It appears that the deer herd is due for a harvest. Reports from hunting clubs adjacent to the refuge show that at least 30 deer were killed this year and it is probable that the actual kill exceeds this number many fold since the reports received were given with extreme reluctance. The animals are healthy and fat and at least 2 bucks were weighed in at 188

and 195 pounds respectively. Plans are now actively being made to include a controlled deer hunt in our hunting plan for next year.

D. Fur Animals, Predators, Rodents and other Mammals. Beavers and their activities are becoming more and more evident. Clogging of lake drains and cutting of runways across dams are presenting problems both in terms of manpower required to clear drains, and in the potential danger of spillway washout as the result of such activities. We can expect to exercise some controls in the near future.

Skunks, raccoons, and foxes are numerous throughout the refuge but no unbalance in populations is obvious. We wonder if raccoons are responsible in part or are indeed the limiting factor in our nesting woodducks and wild turkey populations but these facts are yet to be determined. Thus far this year the annual trapping program has been delayed. Perhaps this will provide us with the means of evaluating the merits of a predator program.

E. Hawks, Eagles, Owls, Crows, Ravens and Magpies. No eagles or ospreys were observed on the refuge during the reporting period. Crows are common and since the beginning of the control burning program, they seem to be attracted to and concentrate in the burned areas.

Red tailed hawks present in fair numbers and marsh hawks are abundant in favorable habitat.

F. Other Birds. Slate colored juncos are numerous since the onset of cold weather. They are commonly observed in groups in excess of 100.

On November 15 a male European Widgeon was observed on Martin Lake by Forester Russell L. Tyre and Assistant Manager Earl R. Cunningham. This is a new addition to our bird list.

Notable of mention is a flock of 30 Hooded Mergensers which have been using the Triple Lakes since mid November. Occasionally, a few of them venture to Martins Lake but for the most part they range between the middle and upper Triple Lakes where top minnows are abundant.

G. Fish. Public use of our lakes was almost null during the period. The few fisherman who did venture forth fished during September and early October with Lake 17 receiving most usage. Catches were poor to fair. All lakes were closed to the public on November 30.

H. Reptiles. It appears that we have more poisonous snakes than was previously supposed. Observations of water moccasin (Agkistrodon piscivorus Lacepede) are common and at least 2 have been noted (one killed) that approached 4 feet in length.

The timber rattlesnake (Crotalus horridus L.) is also present in fair numbers. Observations are not uncommon, and one hibernating individual was ousted from a stump during a recent road grading operation.

I. Disease. No incidence of disease in wildlife was evident during the period.

### III REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development. Bids were opened for the sale of 78 acres of timber, (70 acres in the Ox Pen development area and 8 acres along the water's edge on the south side of Ham Branch immediately north of TT 9) in mid August. An agreement was negotiated with the logger to allow us to push over the trees before they were felled, thus affecting ease of stump removal. Accordingly, the timber was pushed over and logged in October and November. As time and funds permit, the stumps and other slash will be cleared from the area, and these 70 acres will be added to the farm program.

The 8 acres along Ham branch will also be cleared with the idea that by so doing waterfowl will be enticed to utilize food crops in the field contiguous to the proposed clearing.

The clearing of a 120 acre field, a Soil Moisture project, was begun in early December. Used as a bombing range during the early part of World War II the field is circular in shape and lies between truck trails 9 and 10 in compartment 4. Adverse weather has hindered operations considerably but progress is being made.

#### B. Plantings.

##### 1. Aquatics and Marsh Plants.

None

##### 2. Trees and Shrubs.

The initial steps were taken during the period to determine what species of oak, if any, could successfully be grown in the Sandhills. Two nursery beds, 6' x 12', were prepared and planted to 4 species of acorns, sawtooth oak (Quercus acutissina), water oak (Q. nigra), live oak (Q. virginiana), and swamp chestnut oak (Q. prinus). These will be transplanted as 1 year seedlings. In addition to the nursery stock, some 23 acres were direct seeded with the same four species using 36" between rows and 6" to 12" spacing within rows. By using such close spacing we hope to compensate for poor survival and rodent depredation. Thinning and transplanting of these seedlings will take place when they have overcome the critical period. Those acorns not direct seeded in the prepared fields or planted in the nursery beds were drilled randomly along fire breaks, at clearing edges and in openings in young pine plantations. In areas not conducive to drilling, acorns were hand planted or broadcasted and covered with a fire plow. Total acorns planted as follows:

<u>Species</u>	<u>Pounds of acorns planted</u>	<u>Approximate number of acorns per Lb.</u>
<u>Q. acutissina</u>	12	90
<u>Q. prinus</u>	15	62
<u>Q. nigra</u>	38	450
<u>Q. virginiana</u>	243	425

(We are grateful to Mr. Jim Greene of the School of Forestry, University of Georgia, and Mr. Verne E. Davison of the Soil Conservation Service, Athens, Georgia, for their contributions of sawtooth acorns.)

### 3. Upland Herbaceous Plants. None

4. Cultivated Crops. Although 225 acres of wheat and 4 acres of a rye, clover, fescue mixture were planted during the period, adverse weather conditions climaxed by a 5 degree low temperature in December has all but destroyed the entire stand. Three cooperative farming contracts were lent for which harvest was due within this period. Soybeans were planted on 112 acres, Lespedeza bicolor on 37 acres and Lespedeza sericea 12 acres. Cooperating farmers report that soybeans planted were poor and harvesting conditions are aggravated by hogging of equipment.

### C. Collections and Receipts.

1. Seed and other Propagules. Thus far, 148 bushels of soybeans have been delivered to the refuge headquarters by cooperating farmers. Since this represents the refuge's share from 112 acres, an extremely poor harvest is reflected. Condition of the beans, however, is fair.

D. Control of Vegetation. No herbicide work was done during 1962. However a Model 99 Hardie sprayer with a 100 gallon capacity tank was purchased about mid year and plans are now imminent for a herbicide program for the next calendar year.

Brush control for the year past was confined to mechanical chopping and clearing of lake dams and water edges particularly in the Martins Lake and Oak Pen areas.

E. Planned Burning. See "Forestry" in Resource Management section, part B, of this report.

F. Fires. Reported under "Forestry" in Resource Management section, part B of this report.

## IV. RESOURCE MANAGEMENT

A. Grazing. The only grazing on refuge lands is confined to 700 acres more or less cooperatively farmed by Mr. Gus Catoe in the Oak Pen area. Permanent pasture is maintained in satisfactory and some use by deer is evident though insignificant insofar as refuge population in general are concerned.

B. Timber Removal. The South Carolina Commission of Forestry is continuing its Scrub Oak Eradication Project (S.O.E.P.). To date, 1600 acres have been cleared in Compartment 8 in preparation for the winter pine planting schedule. Merchantable timber removed from this Compartment was reported in a previous narrative. Timber sales were active during this period and two additional compartments were earmarked for clearing. Total volumes removed from these areas are as follows:

## COMPARTMENT     SAWTIMBER-BD. FT.     PULPWOOD STD. COS.     ACRES

9	375,793	861	877
10	916,139	1,222	1513

No improvement cutting was conducted on the refuge during this reporting period. It is expected that improvements cuttings as well as other stand management practices will be rather limited for at least the next 18 to 24 months, the reason for this being the all-out effort to complete the S.O.E.P. program as soon as possible. Tentative plans do include, however, an improvement cut in pine plantations and natural stands throughout Compartment 9, where warranted to begin in January 1963.

Only one wildfire has been reported to have burned refuge lands this period. This fire, number 11 for the year, began as a small refuse fire on lands adjacent to the refuge and spread by gusty winds which carried burning embers into a nearby sericea field. The county fire warden was summoned and the fire extinguished after burning some 29 acres, 25 of which were on Bureau lands. It is estimated that no damage to timber or habitat were involved as a result of this fire.

As set forth in the refuge timber management plan for FY 1963, 921 acres in Compartment 9 were scheduled for a controlled burn, stand protection and habitat improvement being our main objective. The program began early in December and 195 acres have been burned to date. This program initiates the first planned controlled burning at Carolina Sandhills since the latter part of 1948.

## V. PUBLIC RELATIONS

A. Recreational Uses. Public use of refuge was limited primarily to fishing and birdwatching with one local church group holding a cook out in the old Lake Bee picnic shelter.

B. Refuge Visitors.

Mr. M. E. Roberts - Dixie Pipeline Co. 9/5/62  
 Mr. H. B. Southwood - Corp. of Engineers, U. S. Army, Charleston, S.C. 10/23/62  
 Mr. Jeff Fuller - S. C. Wildlife Resources Dept., Columbia, S.C. 10/23/62  
 Mr. Frank P. Nelson - S.C. Wildlife Resources Dept., Columbia, S.C. 10/23/62  
 Mr. Billy Wiest - Br. of River Basin Studies, Raleigh, N.C. 10/23/62  
 Mr. Donald J. Hankla - Wildlife Management Biologist, Atlanta, Ga. 10/23/62  
 Mr. Dennis Holland - Santee N/S Refuge, Summerton, S. C. 10/24/62  
 Mr. Thomas W. Martin - Santee N/S Refuge, Summerton, S. C. 10/24/62  
 Mr. W. O. Morgan - S. C. Forestry Commission, Camden, S. C. 10/25/62  
 Mr. W. M. Smith - Chesterfield County Ranger, Chesterfield, S. C. 10/25/62  
 Mr. Art Buehler - S. C. Wildlife Resources Commission, Columbia, S.C. 11/5/62  
 Mr. Rembert Jones - S. C. Wildlife Resources Commission, Chesterfield, S.C. 11/5/62  
 Mr. Olin Campbell - S.C. Wildlife Resources Commission, Chesterfield, S.C. 11/5/62  
 Mr. Harold M. Steele - U.S. Game Management Agent, Columbia, S. C. 11/5/62  
 Mr. Verlon Carter - Forester, Division of Wildlife, Atlanta, Ga. 12/11/62  
 Mr. Preston W. Lane - Savannah N/S Refuge, Fort Wentworth, Ga. 12/11/62  
 Mr. C. S. Hodges - U.S. Forest Service, Durham, N. C. 12/18/62

Mr. J. R. Jackson - U.S. Forest Service, Durham, N. C. 12/18/62

C. Refuge Participation. None to report for the period.

D. Violations. On the morning of November 3, State wardens Jones and Campbell of Chesterfield, S. C. apprehended 7 men who were deer hunting near the junction of Old Wire Road and Old Scotch Road on Government land under lease to the S. C. Commission of Forestry. Lounie Rivers of Chesterfield, S. C. pleaded not guilty to the Meigs magistrate on the grounds that he did not carry a gun but was involved only in handling of dogs. He was not fined. The other 6 men, Allen Briggan, Dean White, Charles Maxwell, Carson, and Murry Durr, all of Chesterfield, S. C. and Roy Lynch of Hartsville, S. C. posted bonds of \$20.00. All bonds were forfeited.

On November 4th Warden Jones and Campbell again apprehended Roy Lynch on refuge lands accompanied by William Pardue of Hartsville, S. C. Both men declared they were hunting dogs but both carried shot guns. Both were charged with possession of weapons and illegal trespass on Government lands. This case is now pending.

E. Safety. With the ending of this period the Carolina Sandhills National Wildlife Refuge has enjoyed 244 accident free days since the last lost time injury. Safety meetings have been conducted periodically as prescribed and all personnel have been kept abreast of safety literature and hazards pertinent to our operations. Use of safety equipment and common sense have been constantly stressed.

## VI. OTHER ITEMS

A. Items of Interest. Assistant Manager Cunningham has accepted the position of Scout Master of the McBee Boy Scouts of America troop 651. The troop is 13 boys strong and have demonstrated a decided interest in wildlife and forests.

Mr. and Mrs. Ernest F. Holland were host to the McBee Garden Club over the Christmas holidays.

B. Photographs. Photographs covering some of the refuge activities taken during this period are attached.

SUBMITTED: January 12, 1963.

Approved: \_\_\_\_\_

*Acting*

*Ernest F. Holland*  
ERNEST F. HOLLAND,  
Refuge Manager.





"TORCHING"....a new control burn program.



FORD WHEEL TRACTOR opens good fire break in open, but is handicapped in forest stand.



HEAVY ACCUMULATIONS of pine straw and scrub oak leaves carry fire satisfactorily but in dense pine stands such as this one, a second burn will probably be required to expose the forest floor.



DENSE STANDS of scrub oak provide inadequate fuel to carry a good fire. It will be interesting to see if fire will enhance wildlife food production in these areas.





PENSACOLA BAHIA GRASS(*Paspalum Notatum*) planted on Dixie Pipeline Right-of-way (11 miles of 50 ft. R/W) in spring of 1962. An excellent stand producing a good seed crop the first growing season.



SEEDING AND CULTIPACKING a mixture of white clover, Kentucky 31 fescue and ryegrass in upland game food patch.



FORESTER TYRE PLANTING ACORNS in 38" rows in old abandoned agricultural field in central portion of refuge.



UNIT USED FOR PLANTING ACORNS in 38 inch rows in cleared areas previously prepared by disking.





REPLACING STEERING CLUTCHES in Allis-Chalmers HD-14 bulldozer.

W A T E R F O W L

REFUGE Carolina Sandhills National Wildlife Refuge

MONTHS OF September TO December, 19 62

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
<u>Swans:</u>										
Whistling Trumpeter										
<u>Geese:</u>										
Canada			3	111	106	106	120	200	200	300
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
<u>Ducks:</u>										
Mallard			25	15	15	15	15	35	35	262
Black				4	4	4	15	15	15	88
Gadwall										
Baldpate										4
Pintail										
Green-winged teal										
Blue-winged teal								15		20
Cinnamon teal										
Shoveler										
Wood			50	56	56	56	50	50	50	50
Redhead										
Ring-necked									10	10
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
<u>Coot:</u>										

3 -1750a

Cont. NR-1  
(Rev. March 1953)WATERFOWL  
(Continuation Sheet)REFUGE Carolina Sandhills National Wildlife RefugeMONTHS OF September TO December, 19 62.

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen: total
	11	12	13	14	15	16	17	18		
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	283	335	435	600	600	600			24,978	0 0
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	65	200	200	200	220	220			11,094	0 0
Black	56	200	200	200	250	250			9,107	0 0
Gadwall										
Baldpate	4	4	4	4					140	0 0
Pintail										
Green-winged teal		8	8	8					168	0 0
Blue-winged teal									245	0 0
Cinnamon teal										
Shoveler										
Wood	75	100	100	100	50	50			6,351	0 0
Redhead										
Ring-necked	10	10	10	10	50	50			1120	0 0
Canvasback										
Scaup	10	12	12	12	15				427	0 0
Goldeneye										
Bufflehead										
Ruddy										
Other European Widgeon									21	
Hooded Merganser	30	30	30	30	30	30			1320	0 0
Coot:										
				(over)						

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese	24,978	600	0
Ducks	29,993	615	0
Coots			

# SUMMARY

Principal feeding areas Martins Lake and Ox Pen Lake

Principal nesting areas \_\_\_\_\_

Reported by

*Ernest F. Holland*

ERNEST F. HOLLAND, Refuge Manager.

## INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (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) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: 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.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).



Form NR-1A  
(Nov. 1945)

Refuge Carolina Sandhills N/W

Months of September to December 1951-1962.

(over)

(1)	(2)		(3)		(4)		(5)			(6)
III. <u>Doves and Pigeons</u> : Mourning dove White-winged dove	1000	Sept.	4500	Nov.	1000	Dec.				1000
IV. <u>Predaceous Birds</u> : Golden eagle Duck hawk Horned owl Magpie Raven Crow										
						Reported by <i>Ernest F. Holland</i>				

ERNEST F. HOLLAND, Refuge Manager.

#### 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

Refuge Carolina Sandhills N/W Months of September to December, 19 62.

(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'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Wild Turkey	40,000	400	1	6	60m/40f				100	
Bob white quail	40,000	13	40	2000	50m/50f				3000	

## 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.

3-1753  
Form NR-3  
(June 1945)

BIG GAME

Refuge Carolina Sandhills N/W Refuge

Calendar Year 1962.

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
White Tailed Deer.....	46,000	475	50*						85			1335	1200	45M/55F

Remarks: \* At least 30 deer are reported killed on properties adjacent to the refuge. It is estimated that at least 20 others were killed and not reported.

Reported by

*Ernest F. Holland*  
ERNEST F. HOLLAND, Refuge Mgr.

## 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.

116008

DISEASE

Refuge Carolina Sandhills National Wildlife Refuge Year 19 62.

Botulism

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	_____	_____

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 None Observed.

Lead Poisoning or other Disease

Kind of disease \_\_\_\_\_

Species affected \_\_\_\_\_

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

Number Recovered \_\_\_\_\_

Number lost \_\_\_\_\_

Source of infection \_\_\_\_\_

Water conditions \_\_\_\_\_

Food conditions \_\_\_\_\_

Remarks None Observed.

PUBLIC USE

Refuge Carolina Sandhills National Wildlife Refuge

Calendar Year 1962

Total Use Visitor-Days	Hunting Use	Fishing Use	Miscellaneous Use
<u>4590</u>	<u>0</u>	<u>1,500</u>	<u>3090</u>

Where practical, by means of occasional spot checks, or other methods, show by percent and visitor-days the breakdown of the above figures and other related information:

Hunting (on refuge lands):	Percent	Visitor-Days	Acres
Waterfowl	<u>0</u>	<u>0</u>	<u>0</u>
Upland Game	<u>0</u>	<u>0</u>	<u>0</u>
Big Game	<u>0</u>	<u>0</u>	<u>0</u>

Supervised by refuge 0 by State 0 No. of blinds 0

Hunting (off  
refuge lands): Estimated man-days of hunting on lands  
adjacent to the refuge 5,000 (These figures  
should not be included in hunting-use totals above).

Fishing:

Acres of ponds or lakes 64 and miles of streams  
6 open to fishing.

Miscellaneous:	Percent	Visitor-Days
Recreation *	<u>10.9</u>	<u>500</u>
Official	<u>1.8</u>	<u>80</u>
Economic Use	<u>54.3</u>	<u>2500</u>
Other	<u>.2</u>	<u>10</u>

Comments:

Economic use attributed to timber marking and  
removal operations by and under contract to S. C.  
Commission of Forestry.

(\*including picnicking, swimming, boating,  
camping, viewing wildlife, and photographing)



Refuge Carolina Sandhills

Calendar Year 1962.

Facilities

Picnic areas 1 tables 1 fireplaces 2 toilets 2  
areas:

drinking water 1 shelters 1

Swimming: designated areas No bathhouses No

Boating: launching sites No rental facilities No

service facilities No

are motors allowed No maximum horsepower No

Camping: permitted \_\_\_\_\_ or not permitted X

tent camps 0 total capacity 0

group camps 0 total capacity 0

hunter camps 0 total capacity 0

trailer camps 0

lodges 0 capacity 0

cabins 0 motels 0 total units 0

Tours: Season No frequency None

self-guided nature trails No is trail leaflet available? No

self-guided auto tour route Yes is tour leaflet available? No

Access estimate number in public use Throughout refuge.  
points:

General - Brief statement of two to five lines on recreational opportunities available on refuge (suitable for inclusion in refuge leaflets or briefing reports).

Nine refuge lakes comprising some 64 acres of water are open to public fishing from Feb. 15 to Nov. 30 at no charge. Bird watching, wildlife observing and nature studies are encouraged and when schedules permit, refuge personnel are available to guide visitors.

(Over)

### INSTRUCTIONS

Supply numbers wherever appropriate. These may be estimated if necessary.

Where operation and maintenance is supervised by this Bureau, but the responsibility of a concessioner, group, or agency, indicate by a single \*. Where supervision of such activities is by another Federal Bureau indicate by two \*\*.

3-1757  
Form NR-7  
(April 1946)

PLANTINGS  
(Marsh - Aquatic - Upland)

Refuge Carolina Sandhills National Wildlife Year 194 1962.

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
Crotalaria	Over Refuge		65 A		Mar.-May	Good		
Peas	King Field		69 A		June-July	95%	Deer depredation	
Corn	Martins Lake		48A		Apr.-June	Good		
	Ox Pen							
	Food Strips							
Lespedeza Sericea	Martin Lake		40 A		March-April	Good		
	Ox Pen							
	Ham Branch							
Wheat	Over Refuge	1 Bu./A	225 A		Nov.	Poor	Cold Weather	
Fescue & Clover	Martin Lake							
	Ham Branch		4 A		Oct.	Fair	Cold Weather	
Soybeans	Over Refuge		14 A		May	Fair		
Buckwheat	Ox Pen	1 Bu./A	10 A		Sept.	Good		
	Martin L.							
Acorns	Over Refuge		23 A		Oct.	Pending		

TOTAL ACREAGE PLANTED:

Marsh and aquatic.....  
Hedgerows, cover patches.....  
Food strips, food patches...475.....  
Forest plantings.....23.....

TOTAL: 498

3-1758  
Form NR-8  
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Carolina Sandhills National W/R County Chesterfield State South Carolina

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water- fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
Soybeans	88.05	537 Bu.	23.95	1,8 Bu.			112	14Ac. for C.	126
Lespedeza Sericea	9	None			3	Failure	12		
					40		40	40Ac. for erosion control	52
Lespedeza bicolor	29.6	Pending	7.4	Pending			37		37
Crotalaria					65		65	GA	65
Cowpeas					69		69	C&B	69
Corn					48	1000	48	Browse	48
Wheat					225		225	Browse	225
Fescue & Clover					4		4	Browse	4
Buckwheat					10	150	10	Browse	10
Fallow Ag. Land									

No. of Permittees: Agricultural Operations 3 Haying Operations 0 Grazing Operations 1

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle	110	1320		300
				2. Other				
				1. Total Refuge Acreage Under Cultivation				636
Hay - Wild				2. Acreage Cultivated as Service Operation				475

DIRECTIONS FOR PREPARING FORM NR-8  
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres 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. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

## REFUGE GRAIN REPORT

Refuge Carolina Sandhills National Wildlife RefugeMonths of May through December 1962.  
195

(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 OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Lespedeza bicolor	1760 Lbs.		1760 Lbs.	100 Lbs.			100 Lbs.	1660 Lbs.	100 Lbs.		1560 Lbs.
Lespedeza sericea	950 Lbs.		950 Lbs.	200 Lbs.			200 Lbs.	750 Lbs.			750 Lbs.
Soybeans	172 Bu.	148 Bu.	320 Bu.		172 Bu.		172 Bu.	148 Bu.	148 Bu.		
Chufas	68 Bu.			25 Bu.	43 Bu.		68 Bu.				
Cowpeas	75 Bu.		75 Bu.		70 Bu.		70 Bu.	5 Bu.	5 Bu.		
Corn	178 Bu.		178 Bu.			40 Bu.	40 Bu.	138 Bu.		138 Bu.	
Brown Top Millet	100 Lbs.	100 Lbs.	200 Lbs.		200 Lbs.		200 Lbs.				
Wheat		307 Bu.	307 Bu.		272 Bu.		272 Bu.	35 Bu.	35 Bu.		
Germ(F) Millet	50 Lbs.		50 Lbs.		50 Lbs.		50 Lbs.				
Milo	25 Lbs.		25 Lbs.		25 Lbs.		25 Lbs.				
Crotalaria		3000 Lbs.	3000 Lbs.		3000 Lbs.		3000 Lbs.				
Buckwheat		10 Bu.	10 Bu.		10 Bu.		10 Bu.				
Ky. Fescue		90 Lbs.	90 Lbs.					90 Lbs.	90 Lbs.		
Ryegrass		2 Bu.	2 Bu.		1 Bu.		1 Bu.	1 Bu.	1 Bu.		

(8) Indicate shipping or collection points Refuge Headquarters.(9) Grain is stored at Refuge Headquarters. Corn at Martins Pond crib.(10) Remarks This form not entered in May-August 1962 narrative. Receipts & disposals applicable to period of May-Dec.

\*See instructions on back.

/1962.

## 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 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. 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 break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

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

Refuge Carolina Sandhills National Wildlife Refuge Year ~~1952~~ 1962.

Species	Collections				Receipts		Total Amounts on Hand	Amount Surplus
	Amount	Date or Period or Collection	Method	Unit Cost	Amount	Source		
<u>ACORNS</u>								
Quercus acutissima	12 Lbs.	Sept.-Oct.	Donated	.00				None Surplus All acorns planted.
Quercus prinus	13 Lbs.	Sept.-Oct.	Hand gathered	\$1.34/ Lb.				
Quercus nigra	38 Lbs.	Sept.-Oct.	Hand gathered	\$1.34/ Lb.				
Quercus virginiana	243 Lbs.	Sept.-Oct.	Hand gathered	\$1.34/ Lb.				



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
<u>THE STATE FORESTRY COMMISSION OF S. C. HAS AGREED TO THE TIMBER UNDER A COOPERATIVE AGREEMENT.</u>								

Total income

Method of slash disposal

Ties

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REFUGE NARRATIVE REPORT  
CAROLINA SANDHILLS NATIONAL WILDLIFE REFUGE

MAY TO AUGUST 1962

PERSONNEL

REFUGE PERSONNEL:

Ernest F. Holland, Refuge Manager	GS-11
Earl R. Cunningham, Asst. Refuge Manager	GS-7
Russell L. Tyre, Forester	GS-7
Roy F. Rogers, Wildlife Aid	GS-5
Mark A. Brown, Clerk	GS-4
Brook Dixon, Operator General	(Uncl.)
Roosevelt Blackwell, Laborer	(Uncl.)
Harnell Hammonds, Laborer	(Uncl.)
Scott Murphy, Laborer	(Uncl.)

I. GENERAL

A. WEATHER CONDITIONS:

MONTH	PRECIPITATION	NORMAL	MAXIMUM TEMPERATURE	MINIMUM TEMPERATURE	MEAN TEMPERATURE
MAY	.99	3.32	99	50	78.73
JUNE	6.95	3.86	94	56	75.35
JULY	3.35	5.40	99	56	79.22
AUGUST	3.36	5.36	95	51	77.59
TOTAL:	<u>14.65</u>	<u>17.94</u>			

May was an extremely dry month with a mean temperature of 12.05 degrees above May 1961. This drought condition was alleviated, however by 6.95 inches of rainfall in the month of June. July and August fell short of the normal precipitation by some 2 inches each but temperatures were average for the period. However, since less than an inch of rain was received the second half of August we found ourselves again wanting for rain.

B. HABITAT CONDITIONS:

1. Water. Levels have been maintained in all lakes with one exception. Several inches were drawn off Middle Triple Lake to expose a sand bar which was baited for anticipated wood duck trapping.

2. Food and Cover. Wild turkeys are apparently finding ample wild foods since no utilization of food strips or patches has been noted since early May. A good corn crop is expected in spite of heavy usage by raccoons and deer while the corn was in the milk stage. Since the corn has hardened, squirrels have begun to utilize it rather noticeably, and in areas where

corn is not available, long leaf pine cones are being utilized by both fox squirrels and gray squirrels.

Superficial observations indicate a good acorn crop this year.

## II WILDLIFE

### A. MIGRATORY B IRDS:

Only 2 broods of wood ducks have been seen this season. One group of 10 young were observed at Martin's Lake in mid-May and an adult female with 2 juveniles just flying were noted at Martin's Lake in early August. Twenty four woodies were counted in one group at Middle Triple Lake on August 28 and it is thought that this number represents about half the resident population. To date there has been no influx of migrating ducks or geese.

Lowering the water level in Middle Triple lake some 10 inches has exposed several feet of the shallow bottom. Subsequently, several wading birds have concentrated there apparently to feed on the exposed organisms. Included in these are 6 green herons (2 immatures), 4 little blue herons (3 immatures) and 2 great blue herons.

Dove numbers are not appreciably changed from previous years but concentrations are evident near the watermelon fields on leased lands.

### B. UPLAND GAME BIRDS:

A good quail crop is evident. Most pairs were successful in bringing off young and clutches range from 1 to 18 young, with 8 to 12 being most prevalent. The nesting is over, however, and regrouping is as evidenced by an observation on August 30, of several adult birds and 3 different aged groups of young in one covey.

No young turkeys have been seen. There is some evidence, however, to support the supposition that a seasonal late summer emmigration to surrounding areas is underway.

### C. BIG GAME ANIMALS:

Observations of deer in food patches during May and June were scanty. This indicates that natural browse was utilized during that time. Where corn began to mature, however, they were much in evidence, often in herds of 7 to 10 animals. Actual observations and tracks indicate that most does have had 2 young and there is every reason to expect an appreciable fall increment. Reports of crop depredations on adjacent lands are becoming common and indications are that the herd is approaching peak proportions.

### D. FUR ANIMALS, PREDATORS, RODENTS AND OTHER MAMMALS:

A permanent type duck trap was literally destroyed by beavers when it was baited for wood ducks at Martin's Lake in early August.

Tracks indicate that raccoon, fox and wild cat population are about normal for this time of year. Skunk and o'possum are not numerous.

**B. HAWKS, EAGLES, OWLS, CROWS, RAVENS AND MAGPIES:**

Red tailed hawks have been common during the period and horned owls are heard at night. Crows frequent the corn fields in great numbers but the damage to crops is of no major consequence.

No eagles or ospreys were seen during the period.

Sparrow hawks were observed on the area the 3rd week of August and have become increasingly evident.

**F. OTHER BIRDS:**

Nothing to report.

**G. FISH:**

Fishing has been poor for the period. This is attributed primarily to the water temperature and abundance of watermilfoil which has discouraged most fishermen.

Lakes 16, 17, and the Twin Lakes were fertilized two different times during latter July and early August. However, there was little response in any case with the exception of lower Twin Lake which showed a nice plankton bloom in a few days.

### III REFUGE DEVELOPMENT AND MAINTENANCE

**A. PHYSICAL DEVELOPMENT:**

During the second week of July the decoy goose pen was taken down in the Ox Pen area. The area inside the pen site which was not too boggy was disked and 2 acres were sown to buckwheat and millet.

Ten acres of new ground, from which the trees were removed last year, were disked along the east side of the Ox Pen development area and 6 of these acres planted to buckwheat.

**B. PLANTINGS:**

**1. Aquatics and Marsh Plants.**

None

**2. Trees and Shrubs.**

None

**3. Upland Herbaceous Plants.**

None

#### 4. Cultivated Crops.

In early May 8 acres of corn were planted in upland food patches, 50 acres of peas and 14 acres of soybeans were broadcast for cover crops and soil improvement. In addition to this 15 acres of peas were planted in rows for harvest.

#### C. COLLECTION AND RECEIPTS:

None

#### D. CONTROL OF VEGETATION:

None

#### E. FIRES:

Ten fires are reported for the period, 9 lightning fires and one caused by a burning vehicle (details not available). Six fires occurred in May, 2 in July and 2 in August. A total of 252.25 acres were burned at a cost to the refuge of \$124.33.

### IV PUBLIC RELATIONS

#### A. RECREATIONAL USES:

Fishing in refuge lakes has been meager for the period probably because of high water temperatures and obnoxious aquatic pest plants. However, some of the more diligent fishermen were rewarded with nice broom and some medium size bass. One large mouth bass, 14 1/2 lbs. was caught in Martins Pond on May 5, see photo this report.

#### B. REFUGE VISITORS:

Mr. E. C. Pickens - S. C. State Forestry Commission 5/1/62; 6/13/62  
 Mr. H. R. Scott - S. C. State Forestry Commission 5/1/62; 6/13/62; 8/3/62  
 Mr. Charles Mosher - FBI, Florence, S. C. 5/2/62  
 Mr. Charles Hodges - S.E.F. Experimental Station, Raleigh, N.C. 5/10/62  
 Mr. Bill Holland, Florence, S. C. 5/15/62  
 Mr. Harland McLees - S. C. State Forestry Commission 5/17/62  
 Mr. Randolph B. Lee - Director Sand Hills State Forest, Patrick 5/17/62 ; 6/13/62  
 Mr. Eugene F. Jordan - U. S. Dept. of Agriculture, Crop Survey 5/31/62  
 Mr. Gordon Brown - S. C. Wildlife Resources Commission 6/4/62  
 Mr. W. R. Jones - S. C. Wildlife Resources Commission 6/7/62  
 Mr. L. S. Givens - Reg. Supervisor, Atlanta, Ga. 6/13/62  
 Mr. Verlon E. Carter - Reg. Forester, Atlanta, Ga. 6/13/62  
 Mr. Thomas P. Shuler - Santee N/W Refuge, Summerton, S. C. 6/17/62  
 Mr. Clark G. Webster - Wildlife Mgmt. Biologist, Fortworth, Ga. 6/19/62  
 Mr. F. C. Gillett - Chief, Div. of Wildlife, Atlanta, Ga. 7/12/62  
 Mr. Donald Hankla - Wildlife Mgmt. Biologist, Atlanta, Ga. 7/12/62  
 Mr. Victor Johnson - Property Utilization Officer, GSA 7/19/62  
 Mr. Billy Sears - AG Teacher, Hartsville High, Hartsville, S. C. 8/8/62  
 Mr. W. L. Norton Jr., - GAO, Quarters Review 8/8/62  
 Mr. M. Brumbach - GAO, Quarters Review 8/8/62  
 Mr. Dennis Holland - Santee N/W Refuge, Summerton, S. C. 8/21/62

### C. REFUGE PARTICIPATION:

On May 14 and 15, Assistant Manager Cunningham participated in a wildlife seminar conducted by the South Carolina Commission of Forestry at Camp Juniper, Cheraw, S. C. On the 15th he gave a short talk to some 60 foresters and wildlife technicians and then conducted a field trip through the refuge pointing out various refuge programs and activities.

On June 6, Manager Holland, Assistant Manager Cunningham and Forester Tyre visited the Sandhills Wildlife Management Area of the North Carolina Wildlife Resources Commission at Hoffman, North Carolina. They were received by Messrs. Lyle Morgan and Ken Wilson of the N. C. Commission and taken on a field trip to various management sites. Later, talks were held with controlled burning and public hunting being the chief topics of discussion.

On June 7, a field trip was conducted by Assistant Manager Cunningham for a group of 15 teen-aged conservationists attending a summer camp at Camp Forest, Cheraw, S. C. Refuge activities and purposes were discussed with the group and points of interest were visited in the field. In attendance were Messrs. Gordon Brown, H. R. Jones and Olin Campbell of the S. C. Wildlife Resources Commission, and Mr. W. C. Lehman, Game Management Agent, U. S. Fish and Wildlife Service.

A conference between officials of the Bureau and the S. C. Commission of Forestry was held at the refuge headquarters on June 13. Timber and wildlife management plans were discussed and plans were made to effect more lucrative liaison between the two agencies. Messrs. Lawrence S. Givens, Verlon Carter, Ernest F. Holland, Earl R. Cunningham and Russell Tyre represented the Bureau and State officials included Messrs. Randolph B. Lee, E. C. Pickens, H. R. Scott, and Joe Mills.

### D. VIOLATIONS:

The case of the United States V.S. L. D. Hall Jr., Harold Hall and Carroll Hoffman Jr. all of Rt. 4, Hartsville, S. C. was brought before U. S. Commissioner Henry Kirkland in Columbia, S. C. on August 27. The 3 men charged with trespassing and transporting of fire arms on the refuge pleaded not guilty on the grounds that the road on which they were apprehended on Jan. 5 was a public road. The Commissioner ruled to drop the charges against Harold Hall and Carroll Hoffman Jr., but L. D. Hall Jr. driver of the automobile and owner of the guns was fined \$100 and given 30 days. The sentence was suspended however, and all 3 were placed on probation for an indefinite period.

### E. SAFETY:

Four regular safety meetings were held during the period and all refuge personnel attended. All safety periodicals published by the Bureau were given adequate attention and other pertinent safety points of interest to our particular program were discussed.

August 26 was our second accident free anniversary - 727 days, 27,178 hours without a lost time accident. The Refuge Manager will bake the cake.

## V RESOURCE MANAGEMENT

### A. FORESTRY:

The South Carolina Commission of Forestry is continuing its scrub oak eradication program on the refuge. This project is aimed at converting areas of scrub oak where pine is either poorly represented or entirely absent to more valuable plantations of longleaf or slash pine. These proposed plantations are to give wildlife every consideration in that they are so arranged as to leave buffer zones or access lanes where natural travel lanes or good potential habitat exists. Areas which are adequately stocked with pine or merchantable hardwood are left undisturbed forming boundaries for these proposed clearings. Where adequately stocked stands are absent, a grid clearing system has been adopted establishing 40 acre square blocks in a checkerboard fashion and having 40 acres of undisturbed land for every 40 acre clearing block.

Two timber sales were conducted in Compartment 8 during the period totaling 588,010 board feet of pine sawtimber and 841 cords of pine pulpwood. In addition, 53,766 board feet of sawtimber and 58 cords of pulpwood were sold by the Commission in order to expand the refuge waterfowl development program at Martin's Lake and Ox Pen.

Plans are presently being formulated to explore the possibilities of Sawtooth Oak (*Quercus acutissima*) as a superior mast producer for upland sites in the sandhills. Test plantings made in Georgia and Mississippi have shown this species to be (1) a heavy and dependable mast producer (2) able to produce acorns at an early age (3) free from excessive damage by insects, weather and decay.

Several test sites have been selected within the refuge and providing acorns can be obtained plantings will begin in the fall.

## VI OTHER ITEMS

### A. OPERATIONS SWIFT STRIKE II:

The joint Army and Air Force maneuver, "Swift Strike II", during August was a huge success according to General Paul D. Adams, Commander in Chief, U. S. Strike Command. This year maneuver was centered through Sumter, Florence and Lumberton between Fort Jackson and Fort Bragg with U. S. Highway No. 1 its northern limit. No military personnel used any portion of the refuge although the Department of the Army had acquired a special permit to use approximately 50% of the refuge for maneuver purposes. Considerable effort was expended to post the south-central portion of the refuge to exclude the maneuver, however this effort was wasted since no use was made of the area authorized by the permit.

### B. PHOTOGRAPHS:

Photographs covering some of the refuge activities taken during this period are attached.



SUBMITTED: September 11, 1962.

*Victor W. Koy*

Approved: \_\_\_\_\_

*Acting*

National Refugee Supervisor

SEP 13 1962

*E. F. Holland*

ERNEST F. HOLLAND,  
Refuge Manager.



#1... Bill Andrews, Department of Internal Revenue, with 14 $\frac{1}{4}$  lb. large mouth bass caught at Martins Pond on May 5, 1962.

#2. Group of campers from Junior Conservation Camp, Camp Juniper, Cheraw State Park on tour of refuge June 7, 1962.





#3 and 4....Views of lake bottom of Little Martins Pond after tilling, disking and seeding to buckwheat and millet. Some indication of the severe August drought may be had since this is the first time the lake bottom has been dry enough for a thorough mechanical operation since the lake was finished in 1954. The area will be flooded during the waterfowl season.







#5 and 6....Views from opposite sides of Ox Pen valley of clean-up and seeding operation in the Ox Pen waterfowl management area during the August drought. Some of the spring fed seeps were still too wet to support mechanical equipment but considerable acreage was added to the area this period.





#7...The "Darlington" oak was set as a seedling in the spring of 1948 in the headquarters area. The center of the crown has been cut back twice to clear electric power lines directly over the tree. This specie is a consistent mast producer and adaptable to sandy soil, experimental nursery plantings of "Darlington" acorns will be attempted this fall.

#8...Rear view of a "one legged tractor" International TD-9 down for repairs to final drive, one instance of a continual re-occurring maintenance problem with worn out equipment.



W A T E R F O W L

REFUGE Carolina Sandhills National Wildlife

MONTHS OF May TO August, 19 62.

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
<u>Swans:</u>										
Whistling										
Trumpeter										
<u>Geese:</u>										
Canada										
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
<u>Ducks:</u>										
Mallard										
Black										
Gadwall										
Baldpate										
Pintail										
Green-winged teal										
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood .....	22	22	22	22	30	35	40	45	50	55
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
<u>Coot:</u>										

WATERFOWL  
(Continuation Sheet)

REFUGE Carolina Sandhills National Wildlife

MONTHS OF May TO August, 19  

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production : Broods: Estimated : seen : total	
	11	12	13	14	15	16	17	18			
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada											
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard											
Black											
Gadwall											
Baldpate											
Pintail											
Green-winged teal											
Blue-winged teal											
Cinnamon teal											
Shoveler											
Wood .....	55	55	55	55	55	55			7,168	2	55
Redhead											
Ring-necked											
Canvasback											
Scaup											
Goldeneye											
Bufflehead											
Ruddy											
Other											
Coot:											

(over)

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans	:	:	:
Geese	:	:	:
Ducks	4711	55	33
Coots	:	:	:

SUMMARY

Principal feeding areas Martins Pond and Triple Lakes  
Carolina Sandhills National Wildlife Refuge, McNe, S. C.

Principal nesting areas Martins Pond and Triple Lakes

Reported by *Ernest F. McNe*  
ERNEST F. MCNE, Refuge Manager.

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (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) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: 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.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).



Form NR-1A  
(Nov. 1945)

MIGRATORY BIRDS  
(other than waterfowl)

Refuge Carolina Sandhills National W/Life Months of May to August 1962.

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
<b>I. <u>Water and Marsh Birds:</u></b>										
American Egret	1	July 9	1	July 9	1	July 9	0	0	0	1
Green Heron	4	June 20	6	July 1	6	Aug. 31	0	0	0	6
Little Blue Heron	4	June 20	4	June 20	4	Aug. 31	0	0	0	4
Great Blue Heron	4	May 15	6	June 1	6	Aug. 31	0	0	0	6
<b>II. <u>Shorebirds, Gulls and Terns:</u></b>										

(over)

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

WERNER F. HALL, Refuge Manager.

#### 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.

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE  
BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Carolina Sandhills For 12-month period ending August 31, 1962.

Reported by Mr. Ernest F. Holland Title Refuge Manager

(1) Area or Unit Designation	(2) Habitat		(3) Use-days	(4) Breeding Population	(5) Production
	Type	Acreage			
NORTHERN Zone	Crops	0	Ducks 1904	4	6
	Upland	12,090	Geese		
	Marsh		Swans		
	Water	80	Coots		
	Total	12,170	Total 1904	4	6
CENTRAL Zone	Crops	1055	Ducks 93,002	16	24
	Upland	19665	Geese 130,074		
	Marsh		Swans		
	Water	150	Coots		
	Total	20,870	Total 223,076	16	24
SOUTHERN Zone	Crops	136	Ducks 1120	2	3
	Upland	11,741	Geese		
	Marsh		Swans		
	Water	10	Coots		
	Total	11,887	Total 1120	2	3
TOTALS:	<del>Crops</del>	<del>44,927</del>	<del>Ducks</del> 226,100	22	33
	Upland		Geese		
	Marsh		Swans		
	Water		Coots		
	Total		Total		
	Crops		Ducks		
	Upland		Geese		
	Marsh		Swans		
	Water		Coots		
	Total		Total		
	Crops		Ducks		
	Upland		Geese		
	Marsh		Swans		
	Water		Coots		
	Total		Total		
	Crops		Ducks		
	Upland		Geese		
	Marsh		Swans		
	Water		Coots		
	Total		Total		

(over)

## INSTRUCTIONS

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge grand totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August Narrative Report.

- (1) Area or Unit: A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.
- (2) Habitat: Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.
- (3) Use-days: Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form NR-1.
- (4) Breeding  
Population: An estimate of the total breeding population of each category of birds for each area or unit.
- (5) Production: Estimated total number of young raised to flight age.

UPLAND GAME BIRDS

1613

Refuge Carolina Sandhills N/Wildlife Months of May to August, 1962.

(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'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Wild Turkey	40,000	400	0	40	60/40 M/F		NONE		100	
Bob-white quail	40,000	16	25	1500	50/50 M/F		NONE		2500	

## 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.

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REFUGE NARRATIVE REPORT  
CAROLINA SANDHILLS NATIONAL WILDLIFE REFUGE

JANUARY TO APRIL 1962

PERSONNEL

REFUGE PERSONNEL:

Ernest F. Holland, Refuge Manager	GS-11
Earl R. Cunningham, Asst. Refuge Manager	GS-7
Russell L. Tyre, Forester	GS-7
Roy F. Rogers, Wildlife Aid	GS-5
Mark A. Brown, Clerk	GS-4
Brock Dixon, Operator General	(Uncl.)
Roosevelt Blackwell, Laborer	(Uncl.)
Barnell Hammonds, Laborer	(Uncl.)
Scott Murphy, Laborer	(Uncl.)

I. GENERAL

A. WEATHER CONDITIONS:

Above average rainfall occurred during the months of January, February and March. Rainfall during the 1st half of April was above normal but from April 14 we began to experience a dry spell with little or no rainfall. Severe fluctuation of temperatures during the period nipped many flowering trees and plants causing some damage to fruiting. High winds were experienced during March and April. The local peach crop was cut about 30% from normal production. No alarm, however since it is almost always necessary to nip buds off the trees anyway. Farmers expect a normal crop this year but would like additional rainfall at the close of this period.

MONTH	PRECIPITATION	NORMAL	MAXIMUM TEMPERATURE	MINIMUM TEMPERATURE
JANUARY	4.35	3.26	76	12
FEBRUARY	3.58	3.25	90	18
MARCH	6.18	3.95	79	28
APRIL	<u>2.51</u>	<u>3.80</u>	92	31
	16.62	14.26	Extremes 92 April	12 January

B. HABITAT CONDITIONS:

1. Water. Gauge readings on Martins Lake and inspection of refuge lakes indicate that water levels were near normal during this period. No flood conditions were observed on the refuge.

2. Food and Cover. Food was over abundant for waterfowl and upland game. Corn and green browse were plentiful and in surplus left standing in the fields and food strips. Cover is no problem here for it is more than adequate to take care of all forms of upland game.



**A. MIGRATORY BIRDS:****1. Waterfowl:**

Our Canada goose population came up to last years peak of 1500 birds the 5th week of this reporting period which was 2 weeks earlier than the peak period in 1961. The peak of 1500 birds remained constant for the 5th, 6th, 7th and 8th week while last years peak was for 2 weeks only, the 7th and 8th weeks. Last years goose use days was 73,150 and this years total was 72,170. The duck population for the entire waterfowl season was very dissapointing, particularly the mallard and black duck population. At no time during the period did the combined mallard and black population exceed 800 against a peak of 2000 for January of 1961. The duck use story is even worse, the mallard use days for 1961 was 63,000 and for this period it was 25,459 which is 37,541 use days less than last years, black duck use days was off approximately 6,000 use days als o. The fall off in waterfowl use days necessitated the harvesting of several acres of corn in the Ox Pen and Martins Pond waterfowl areas, this is the first harvesting done at Sandhills since the winter of 1958.

**2. Mourning Doves:**

The dove population for the period was fairly constant and breeding birds were scattered throughout the refuge at the end of the period. The waterfowl areas and upland game food patches supplied an abundance of food for doves.

**B. HABITAT CONDITIONS:**

1. Water. There was no shortage of water during this period. Actual rainfall was 2.36 inches above the normal but the excess was evenly divided between January and March. Black Creek, Skipper Creek and Big Sandy Creek bottoms were flooded periodically and created good feeding conditions for waterfowl. The marshes and beaver pools in the Ham Branch watershed maintained top water levels and provided excellent feeding and resting habitat for mallards and wood ducks.

2. Food and Cover. Browse plantings of wheat, abruzzi rye, clover and ryegrass supplied sufficient green foods for all wildlife however the browse crop was not as lush as previous years due to the severe drought of September and October. Corn planted in the Ox Pen and Martins Pond waterfowl areas supplied abundant food for waterfowl, turkeys, deer, doves and quail. The small plantings of corn made in numerous upland game food patches were consumed in the early part of this period and some supplemental feeding of turkeys was done by spreading ear corn taken from storage and from the fields in the waterfowl areas. This food was scattered in isolated food patches away from main trails to maintain flock dispersal and to discourage organized poaching.

**B. UPLAND GAME BIRDS:**

1. Bobwhite Quail. All desirable habitat is used by quail and no adverse weather or food conditions affected this popular game bird. By the end of the period nested pairs were common along truck trails, field borders and other forest openings. On April 8 Assistant Manager Cunningham flushed

7 coveys ranging from 7 to 14 birds for an average of 10 each within a 240 acre section of the Ox Pen waterfowl area. Food and cover is sufficient for present population.

2. Eastern Wild Turkey. Field observations indicate that we have an excess "Gobbler" population, the sex ratio appears to be 60-40 in favor of toms. The population appears to be dependent on our farm and food patch program for food and the Ham Branch watershed which is the central point of our development affords reasonable cover. Some nesting occurs in remote sections of the refuge but in early fall most of the breeding hens migrate with their brood back to Ham Branch and Black Creek watersheds due to scarcity of good hardwoods natural winter foods for turkeys is deficient but our waterfowl and upland game food patch program fills this gap. Summer food is plentiful in the Sandhills, the entire area produces excellent crops of low growing berries, particularly huckleberries, weed and grass seeds and an abundance of insects. Cold weather delayed the nesting season but by the first week in April "Gobbling" was in full swing one interesting observation was made on April 8 when 7 hens and 5 "strutting" toms were seen in a small food patch on wire road adjacent to Ham Branch.

#### C. BIG-GAME ANIMALS.

There is no noticeable change in the status of the refuge deer heard since the last report period. Dispersal is much better after the close of the legal season, January 1, as the harassment by hound dogs during the open season drives the bulk of the population into the interior of the refuge.

#### D. FUR ANIMALS, PREDATORS, RODENTS AND OTHER MAMMALS.

Under our approved predator and rodent control program a total of 181 animals were removed during January 17 to February 23, which included the following species: 23 red foxes, 28 gray foxes, 10 bobcats, 40 raccoons, 14 o'possums, 16 dogs, 2 feral house cats and 48 skunks. These figures appear to be normal with the exception of skunks, when compared with the records of the program beginning in 1950. The 48 skunks taken this period is more than 3 times the annual average of 15 skunks trapped per year for the past 12 years. Field observation also indicate an increase in the skunk population. Beaver continue to be a nuisance by insisting on clogging the water control structures on our smaller lakes, no decrease in their population is likely.

#### E. HAWKS, EAGLES, OWLS, CROWS, RAVENS AND MAGPIES.

No observation of eagles for this period, red-tailed hawks are common and coopers' and sharp-shinned hawks are seen occasionally. The crow population has remained fairly constant for the past 3 years but no serious damage to food patches or wildlife is expected.

#### F. OTHER BIRDS.

Nothing to report.

#### G. FISH:

All refuge lakes with the exception of Martins Pond were opened to sport

fishing on February 15, Martins Pond was opened on March 15. Due to cold weather there was very little fishing activity until the first of April and the pressure has been real light the entire period. The new Lake Robinson on Black Creek adjacent to the refuge which was filled in 1959 is offering the public excellent fishing with limit catches of bass, bluegills, crappie and pickerel the rule rather than the exception has taken considerable fishing pressure off our refuge lakes. Some refuge fishermen have been taking nice catches of medium size bass and by the end of the period the big bass, up to 13 lbs., were beginning to bite. No fertilizing of lakes was done this period due to low temperature of the water but management will begin when water temperature rises to 70 degrees.

### III REFUGE DEVELOPMENT AND MAINTENANCE

#### A. PHYSICAL DEVELOPMENT.

An additional 9 acres of clearing was added to the 5 acres cleared last period on Ham Branch adjacent to Truck Trail 9 for the purpose of extending an old clearing into the marsh and to provide new land for a chufa nursery planting. The steep slope on the marsh side of this 14 acre clearing has been terraced and seeded to lespedeza sericea and the balance will be planted to chufas for harvest. Approximately 40 miles of truck trails were machined and diversion ditches cleaned. 4,425 ft. of overmature longleaf pine timber was harvested for custom sawing into bridge timber, the trees were harvested on the Ham Branch clearing. All vehicles, crawler tractors, farm tractors and farm equipment was periodically inspected and routine repairs and preventative maintenance performed as needed. The refuge office was expanded to twice the old size, the addition includes 2 private offices, 1 complete bath room and a connecting combination hall and cloak room, total floor space 330 square ft. A 1250 gallon septic tank was constructed from 8 inch concrete blocks with air space holes filled with concrete and reinforced with stull. This improvement provides private office space for the refuge manager, assistant manager and forester and toilet and wash room facilities under the same roof.

#### B. PLANTINGS.

##### 1. Aquatic and Marsh Plants.

None.

##### 2. Trees and Shrubs.

The S. C. Commission of Forestry planted 560 acres of longleaf pine in the refuge this period. The plantings were made with mechanical planters and spacing was 6' X 8' or 1000 seedlings per acre. 400 acres was planted in compartment 2 and 160 acres in compartment 4, total number of trees planted 560,000. Most of the plantings were made in old watermelon clearings without any preliminary preparation other than burning to remove litter, consequently survival is expected to be poor.

### 3. Upland Herbaceous Plants.

None

### 4. Cultivated crops.

The wet cold weather of early spring delayed land preparation and seeding of lespedeza bicolor, L. sericea and cultivated row crops, however by the end of the period a total of 40 acres of corn was planted, 30 acres of this was planted in the martins pond and ox pen waterfowl areas and 10 acres in scattered upland game food patches. 40 acres of lespedeza sericea was seeded on terraces, waterways and steep slopes at Ox Pen, Martins Pond and Ham Branch clearing. Giant striata crotalaria was seeded on 50 acres of fallow farm and food patch land to provide a summer cover crop, green manure and nitrogen, an additional 50 acres will be seeded to crotalaria as time permits.

### C. COLLECTION OF RECEIPTS:

None.

### D. CONTROL OF VEGETATION:

None.

### E. FIRES:

There were no fires on the refuge during the period.

## IV PUBLIC RELATIONS

### A. RECREATIONAL USES:

Twin lakes, triple lakes, lakes 12, 16 and 17 were opened to public fishing on February 15, Martin's Pond was opened on March 15. Public fishing was the only recreational use for the period other than occasional trips by visitors to ~~observe~~ waterfowl and other wildlife.

*Observe*

### B. REFUGE VISITORS:

Mr. Julian Loflin - Cheraw Fish Hatchery, Cheraw, S. C. Jan. 3, 1962.  
 Mr. Haney F. Johnson - Cheraw Fish Hatchery, Cheraw, S.C. Jan. 3, 1962.  
 Mr. W. R. Jones - S. C. Game Dept., Chesterfield, S. C. 1/9/62; 2/1/62  
 Mr. C. J. Hoffman - Middendorf, S. C. Jan. 9, 1962.  
 Mr. H. M. Steele - U.S. Game Mgt. Agent, Columbia, S.C. 1/18/62; 4/18/62.  
 Mr. Olin G. Campbell - S.C. Game Dept., Chesterfield, S.C. 2/1/62  
 Mr. Clyde C. Rice - S.C. State Forestry Comm. 2/2/62; 2/26/62  
 Mr. Randolph B. Lee - Director Sandhill State Forest 2/2/62  
 Mr. Charles S. Cook - Gen. Engineer, Atlanta, Ga. 2/15/62; 4/18/62  
 Mr. Dennis Holland - Santee N/W Refuge 3/16/62  
 Mr. John R. Eadie - Santee N/W Refuge 3/16/62  
 Mr. Victor Kay - Asst. Reg. Supervisor, Atlanta, Ga. 4/3/62  
 Mr. George Garis - Cape Romain Refuge, April 10, 1962.  
 Mr. Jimmy D. Utsey - Cape Romain Refuge, April 10, 1962.

Mr. Colin King - S. C. State Law Enforcement Div., Hartsville, S.C. 4/10/62  
 Mr. Cecil E. McMullan - Kentucky Woodlands N/W Refuge April 11, 1962.  
 Mr. James R. Cassey - Kentucky Woodlands N/W Refuge April 11, 1962.  
 Mr. G. R. Scott - S. C. Forestry Comm., Columbia, S. C. April 11/62  
 Mr. Milford K. Thurber - Regional Office, Atlanta, Ga. 4/11/62  
 Mr. Robert E. Lines - Br. of Realty, Reg. Office, Atlanta, Ga. 4/11/62  
 Mr. E. C. Pickens - S. C. State Forestry Comm., Columbia, S.C. 4/30/62

#### C. REFUGE PARTICIPATION:

The McBee Garden Club held their annual flower show on Saturday March 17. The Refuge Manager with the assistance of Mr. Gordon Brown of the S. C. Wildlife Resources Commission arranged an exhibit of slides on conservation. A total of 42 slides made on the refuge and at the Conservation Camp at Cheraw State Park was shown continuously through the state's selectrovision with electroslide projector for the duration of the show from 11:00 AM to 6:00 PM. The flower show judges, from Darlington and Bennettsville were really impressed with the exhibit and each one personally congratulated the Manager for an excellent idea. The local members of the clubs were also very pleased and jokingly complained that the "Selectrovision" drew more attention than the flower show. The registered attendance was 214 from McBee, Jefferson, Pageland, Chesterfield, Cheraw, Bethune, Hartsville and Darlington, however a large portion of the visitors failed to register.

#### D. VIOLATIONS:

On the night of January 5 Wildlife Aid Roy F. Rogers apprehended L. D. Hall Jr., age 30; Harold Hall age 22; Carroll Hoffman Jr., age 16; and Pascal Hoffman age 14 on Park Road in the vicinity of Martin's Pond. They were riding in a Ford station wagon, 2 were riding in the front seat and the other 2 were riding on the station wagon tail-gate with 2 guns lying on the station wagon floor, the temperature was freezing. The violators refused to go before a local magistrate, plead guilty and pay a fine, consequently the case was given to Game Management Agent Harold Steele who arranged for a preliminary hearing before U. S. Commissioner Henry Kirkland in Columbia on April 21. The defendants appeared before the Commissioner and was represented by a local attorney from Chesterfield whose plea was: "Not enough time" to prepare his case and was granted a "reasonable" amount of time - no specific date was set. The Attorney did advise the defendants to sign the consent to be tried by the Commissioner. Pascal Hoffman age 14, being a minor was not charged. It is expected that the case will be disposed of next period.

#### E. SAFETY:

There were four safety meetings held during this period. These discussions were on various topics: fire suppression, safety belts, review of accidents in the region, proper lifting, working around motors and equipment. No accidents occurred on the refuge during this period. Number of accident free days to date is 609 calendar days. The refuge will continue to conduct it's monthly safety meetings and hazardous conditions will be corrected from time to time as they are noted. Protective goggles were purchased.

## V OTHER ITEMS

A. PERSONNEL:

On January 2 Russell L. Tyre, Forester GS-7, was transferred from Piedmont Refuge to Carolina Sandhills and on March 12 Earl R. Cunningham, Refuge Manager GS-7, was assigned to Sandhills as the Assistant Manager, this is Mr. Cunningham's first assignment. Both young men are recent graduates of the University of Georgia and are very welcome additions to the Sandhills staff. Mr. Tyre will be concerned primarily with coordination of forestry and wildlife practices between the S. C. Forestry Commission on the refuge and the Carolina Sandhills Wildlife Management Area. Mr. Cunningham, a manager trainee, will assist the manager in all phases of management.

B. FORESTRY:

A 1% cruise of a representative compartment, some 3500 acres in size was begun in April by Messrs. Russell L. Tyre and Earl R. Cunningham. Merchantable timber volumes were tallied on 1/5 acre plots while more intensive data was collected on 1/40 acre plots; these data include diameter breast high, merchantable heights, bark thickness and growth rates (per last 10 years). Numbers and kinds of reproduction, quantity of available browse, forest types, and general site condition are other pertinent data collected. When the cruise was slightly more than half finished Mr. Tyre received military orders to spend 2 weeks active duty with the U. S. Air Force. Upon his return the cruise will be resumed and a complete report of the forest stand, along with silvicultural recommendations, will be presented.

C. PHOTOGRAPHS:

Six photographs of refuge activities were taken during this period. These photographs are attached.

SUBMITTED: May 18, 1962.

APPROVED: \_\_\_\_\_

*Victor L. Tyre*  
Acting Regional Wildlife Supervisor

MAY 18 1962

*Ernest F. Holland*  
ERNEST F. HOLLAND,  
Refuge Manager.



1. Wildlife Aid Roy F. Rogers added another vocation to his "Jack of All Trades" career - that of mason - as he constructed this concrete block septic tank for disposal of sewage waste from office washroom and toilet.



2. Earl Cunningham, Refuge Manager Trainee, begins his indoctrination in wildlife management by digging a ditch for sewage disposal - this is the "long way around."





3. View of sewage disposal area after completion of construction - area leveled and sodded with original sod with no visible evidence of the system underground.



4. Partial view of new clearing on Hem Branch to remove screen of trees from marsh area (in background) for waterfowl to utilize adjoining agricultural area.





5. Planting corn in the Ox Pen waterfowl area.



6. Planting corn in the Martins Pond waterfowl area.

W A T E R F O W L

REFUGE Carolina Sandhills National Wildlife

MONTHS OF January TO April, 19 62.

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
<u>Swans:</u>										
Whistling Trumpeter										
<u>Geese:</u>										
Canada	900	1000	1000	1200	1500	1500	1500	1500	150	60
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
<u>Ducks:</u>										
Mallard	700	400	400	400	400	400	400	400	122	25
Black	125	400	400	400	400	400	400	400	38	
Gadwall										
Baldpate										
Pintail										
Green-winged teal										
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood	50	50	50	50	50	50	50	50	50	50
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
Hooded Mergansers						10	10			
<u>Coot:</u>										

3 -1750a

Cont. NR-1  
(Rev. March 1953)WATERFOWL  
(Continuation Sheet)REFUGE Carolina Sandhills National WildlifeMONTHS OF January TO April, 19 62.

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total
	11	12	13	14	15	16	17	18		
Swans:										
Whistling										
Trumpeter										
Geese:									72,170	
Canada										
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:									25,459	
Mallard									20,721	
Black										
Gadwall										
Baldpate										
Pintail										
Green-winged teal										
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood									3,500	
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
Hooded Mergansers									140	
Coot:										

(over)

	(5)	(6)	(7)
	<u>Total Days Use</u>	<u>Peak Number</u>	<u>Total Production</u>
Swans			
Geese	72,170	1500	
Ducks	49,840	875	
Coots			

SUMMARY

Principal feeding areas Ox Pen, Martins Lake  
developments.

Principal nesting areas Wood Ducks - Ham branch,  
Rogers Branch, Skipper Creek, Black Creek.

Reported by Ernest F. Holland, Refuge Manager.

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (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) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: 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.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1751

Form NR-1A

(Nov. 1945)

## MIGRATORY BIRDS

(other than waterfowl)

Refuge Carolina Sandhills National  
WildlifeMonths of January to April 1962 1963

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Great Blue Heron	1	Apr. 30	4	Jan-Apr.						10
II. <u>Shorebirds, Gulls and Terns:</u>										

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons</u> :					
Mourning dove	Resident 2,500				
White-winged dove					
IV. <u>Predaceous Birds</u> :					
Golden eagle					
Duck hawk					
Horned owl	Resident				10
Magpie					
Raven					
Crow	Resident				1,600
Reported by <i>[Signature]</i>					

#### 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 Carolina Sandhills National Wildlife

Months of January to April, 19  

(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'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
E. Bob White (Quail)	40,000 A (All types)	15							2,500	
E. Wild Turkey	40,000 A (all types)	400			60% 40 F				100	

## 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.



Form NR-4  
(June 1945)

SMALL MAMMALS

Refuge Carroll County Wildlife Refuge Year ending April 30, 1952

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs					(5) Total Popula- tion	
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re- Stocking	For Re- Search	Share Trapping			Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	
								Permit Number	Trappers Share	Refuge Share				
coons	40,000	20			40									200
ever	6,500	25												260
sk	6,500	200												30
tor	6,500	150												40
skunk	6,500	150												40
prosser	40,000	100			10									400
skunk	40,000	100			10									400
gray squirrel	40,000	100												400
red squirrel	40,000	50												400
gray fox	40,000	20			20									100
red fox	40,000	20			20									100
bob cat	40,000	100			10									100

\* List removals by Predator Animal Hunter

\* List removals by Predator Animal Hunter

REMARKS:

Reported by George S. S.

## 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.)

- (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.)
- (2) DENSITY: Applies particularly to those species considered in removal programs. 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.
- (3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headings listed.
- (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, including 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.
- (5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.
- REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

# REFUGE GRAIN REPORT

Refuge Carolina Sandhills National Wildlife

Months of January through April 1962, 495

(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 OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Chufas	78 Bu's		78 Bu's	10 Bu's			10 Bu's	68 Bu's	68 Bu's		
L. Bicolor	1260 Lbs.	700 Lbs.	2060 Lbs.	300 Lbs.			300 Lbs.	1760 Lbs.	200 Lbs.		1560 Lbs.
L. Sericea	3250 Lbs.	800 Lbs.	4050 Lbs.	2200 Lbs.	900 Lbs.		3100 Lbs.	950 Lbs.			950 Lbs.
Compeas	75 Bu.		75 Bu.					75 Bu.	75 Bu.		
Soybeans	172 Bu.		172 Bu.					172 Bu.	172 Bu.		
Corn	178 Bu.		178 Bu.					178 Bu.		178 Bu.	
Brn. Top Millet	100 Lbs.		100 Lbs.					100 Lbs.	100 Lbs.		
Germ. (P) Millet	50 Lbs.		50 Lbs.					50 Lbs.	50 Lbs.		
Milo	25 Lbs.		25 Lbs.					25 Lbs.	25 Lbs.		
Seed (Corn)		4 Bu's.	4 Bu's.		4 Bu's.		4 Bu's.				

(8) Indicate shipping or collection points Refuge Headquarters

(9) Grain is stored at Corn stored at Martin's Lake

(10) Remarks \_\_\_\_\_

\*See instructions on back.

## 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 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. 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 break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.