

CAROLINA SANDHILLS NATIONAL WILDLIFE REFUGE

McBEE, SOUTH CAROLINA

NARRATIVE REPORT

January 1, 1965 to December 31, 1965

Personnel

Ernest F. Holland	Refuge Manager
* Earl R. Cunningham	Assistant Refuge Manager
Clyde A. Stewart	Forester
Roy F. Rogers	Biological Technician (Wildlife)
Mark A. Brown	Clerk
Olin Morrison	Maintenanceman

* Transferred to the Job Corps on April 12, 1965.

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ANNUAL REFUGE NARRATIVE REPORT
CAROLINA SANDHILLS NATIONAL WILDLIFE REFUGE

JANUARY - DECEMBER 1965

I. GENERAL

A. Weather Conditions:

Precipitation

	<u>This Month</u>	<u>Normal</u>	<u>Maximum Temperature</u>	<u>Minimum Temperature</u>
January	1.52	3.26	74	15
February	5.14	3.25	77	15
March	7.92	3.95	76	24
April	2.54	3.80	90	32
May	1.11	3.32	94	48
June	7.76	3.86	95	52
July	6.98	5.40	94	60
August	6.84	5.36	96	48
September	2.96	4.14	91	50
October	2.25	2.46	83	24
November	2.25	2.80	78	25
December	<u>.69</u>	<u>3.46</u>	71	20
Totals:	47.96	45.06		

Precipitation during the first quarter from January to March was above normal with an excess of four inches of rain. Temperatures varied from a maximum of seventy-seven to a minimum of fifteen. Four inches of snow fell on January sixteen. On February twenty-fifth we experienced a high wind of fifty to sixty miles per hour. Rainfall during April and May was below normal. During June we received a flash flood of over three inches of rain which flooded the refuge headquarters on the eight. During July to September rainfall was above normal. October to December rainfall was below normal with very dry conditions prevailing. Temperatures from April to December were normal. The first frost of the year occurred on October twenty-fifth and the last frost of the season occurred on April third.

B. Habitat Conditions:

1. Water

As called for in the 1965 water management plan, five lakes were completely drained and two additional lakes were lowered to $\frac{1}{2}$ capacity. This phase of management permits the growth of desirable vegetation upon the lake beds and shore line and also aids in controlling watermilfoil and white waterlily. Eight lakes were held at full pool to provide public fishing and brood rearing areas for wood ducks. Eleven new impoundments (156 acres) which were constructed under the Accelerated Public Works Program during 1964 were managed as green-tree reservoirs.

2. Food and Cover

Natural foods have increased during the past few years as a result of the prescribed burning program presently being carried out on the refuge. The acorn crop was the best that we have seen in several years. Refuge grainfields provided an excess of corn for wintering waterfowl. Cover has been reduced during the past four years due to the extensive scrub oak eradication program carried out by the South Carolina Commission of Forestry. This project was completed in 1965. Within a few years habitat and cover will be greatly improved as a result of this operation.

II WILDLIFE

A. Migratory Birds:

A sharp increase in migratory bird use of the refuge was evident during 1965. Wood ducks accounted for the greatest increase in duck use. At least 750 wood ducks were present at the end of the year as compared to 200 in 1964. We feel sure that this sharp increase is due to the improved habitat created by 11 new green-tree reservoirs. Resident wood ducks also increased in number and readily accepted the predator proof nesting boxes erected during the winter of 1964-65. At present 3,780 ducks are using the refuge as compared to 3,015 for the same period last year. Duck use days in 1965 were 276,178 as compared to 191,702 in 1964. Canada geese decreased in number; however, we believe that this may be due to geese (approximately 300) wintering at the Cheraw National Fish Hatchery near the refuge. At present 840 geese are using the refuge as compared to 1,100 for the same period last year. Goose use days in 1965 were 111,391 as compared to 110,825 in 1964.

Duck banding has been relatively successful this year. A total of 268 ducks have been banded thus far as compared to a total of 144 for 1960-64. Pre-season banding resulted in 47 wood duck residents being banded. Of this number 33 were immatures.

Wading birds were not abundant this period; however, at least 51 were present during July and August. Little blue herons and American egrets accounted for most of these birds. A brood of 5 pied-billed grebes were observed on Lake Bee on May 24, 1965. This is the first brood ever observed on this area.

Mourning doves increased greatly in number this year. A peak of 7,000 doves were present in 1965 as compared to 4,500 in 1964. Dove use days in 1965 were 1,532,000 as compared to 984,500 in 1964. Dove banding was highly successful this year. A total of 2,117 doves were banded from June 14 - August 31, 1965 as compared to 300 in 1964. As far as we know, ground doves have never been seen on the refuge until this year - the banding program netted 2 of these pretty birds. A breakdown of age and sex for doves banded are: Immature, sex unknown 63%; Adult female 14%; Adult male 22% and Adult, sex unknown 1%. Refuge Forester Clyde A. Stewart operated the banding program and was relieved for two weeks annual leave by Refuge Maintenance man, Olin Morrison.

B. Upland Game Birds:

Prior to this year, the Eastern wild turkey population has declined; however, this year has shown a marked increase in these birds. The estimated number using the refuge increased from 80 in 1964 to 150 in 1965. Turkey observations

by refuge personnel for this reporting period totaled 84 as compared to 28 during 1964. Of the 84 turkeys seen, 36 were young birds.

The bob-white quail population is still on the increase. These birds are well dispersed over the entire area. On August 30, 1965, 16 quail were released from 1 dove trap. We feel that the prescribed burning program at this station has greatly influenced the quail and turkey build-up.

C. Big-Game Animals:

White tailed deer killed during the two week managed-hunt were in excellent condition. The bumper crop of acorns and abundant deer browse in the prescribed burned areas have provided plenty of food. Observations by refuge personnel reveals the population remains about the same as last year (1,650 peak). Due to heavy shooting pressure by local hunting clubs and increased participation in the two week managed hunt on the refuge the deer herd should continue to remain in a healthy and vigorous state.

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

The beaver population continues to increase in the Sandhills. They have improved duck habitat on some of our streams by creating beaver ponds; however, the advantages brought about by these animals are certainly offset by the disadvantages. The greatest problem created by the beavers is during the duck banding season when they enter the traps for grain. After a beaver enters a duck trap the trap has to be repaired.

The squirrel and rabbit population seem to have increased somewhat during the past year; however, they continue to remain at a relatively low level.

Bobcat, skunk, raccoon and fox numbers are still increasing. A trapping program is now being initiated. We feel that this is necessary if the turkey population is to continue to increase.

E. Hawks, Eagles, Owls, Crows, Ravens, and Magpies:

Red-tailed hawks proved to be a nuisance during the 1965 dove and duck banding season. Several doves and four ducks were killed in traps. One red-tailed hawk entered a trap through the funnel, killed two doves and was unable to escape. Marsh hawks have been observed by refuge personnel; however, the number of these hawks using the refuge continues to remain small.

No eagles have been seen during this period.

No sharp increase or decrease has been observed in crow or owl numbers. Depredation by crows to refuge and cooperative farmers crops is insignificant.

F. Other Birds:

The dove banding program during 1965 revealed that ground doves were present on the refuge. Two were caught in dove traps. This bird had never been reported seen on the area prior to 1965.

Red-headed woodpeckers were abundant during the spring of 1965. Several of these beautiful birds nested in cavities of longleaf pine trees in the

headquarters area. Liberal numbers of red-cockaded woodpeckers were also present during 1965. Numerous trees suitable for nesting areas are being left by timber markers to insure excellent nesting habitat for these birds.

G. Fish:

Three lakes were open to fishing this year. Fishing success was rather poor; however, several nice largemouth bass fell prey to fishermen. One bass was checked out at refuge headquarters that weighed 9 lbs. and measured 27 inches in length. Lake Bee, adjacent to the recreation area was stocked with largemouth bass on May 10, 1965. This lake will be open to fishing in 1966 and should provide some excellent fishing.

H. Reptiles:

The cottontooth moccasin and the canebrake rattlesnake continue to be the most common of our poisonous snakes. Several of these snakes have been killed by refuge personnel this year. One fisherman reported having seen a snake swimming with a fish in it's mouth. The snake released the fish after being hit and the fish swam away.

I. Disease:

Nothing to report for this period.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development:

Six acres of land were cleared at Pool L (44 acre green-tree reservoir) on Skipper Creek. A portion of the cleared area was planted to Jap millet and buckwheat to provide grain for waterfowl. As a result of this operation ducks using this impoundment increased considerably in number.

The new residence (Quarters No. 5) at Lake Bee required considerable work on the grounds. About 350 cubic yards of topsoil were used to level the area. The grounds were immediately seeded to carpet grass. A pump house was also built at this residence in 1965.

Eight nice picnic tables were built for the picnic shelters at the Lake Bee recreation area.

Fifty additional wood duck boxes were built and are presently being erected. This will give us a total of 96 predator proof boxes erected in 1964-65.

B. Plantings:

1. Aquatics and Marsh Plants:

None

2. Trees and Shrubs:

The South Carolina Commission of Forestry personnel planted 3,506 acres to

pine during 1965. These pines were planted on land which had been cleared of poorly stocked pine timber and scrub oak. Longleaf pine (*Pinus palustris*) seedlings were planted on 3,000 acres and slash pine (*Pinus elliottii*) was planted on 506 acres. During the planting operation the better sites were picked for slash plantings.

3. Upland Herbaceous Plants:

None

4. Cultivated Crops:

Refuge personnel cultivated 384 acres. The crops are as follows:

<u>Crop</u>	<u>Acres</u>	<u>Crop</u>	<u>Acres</u>
Corn	34	L. Bicolor	12
Wheat (Browse)	32	Pensacola Bahia Grass	165
Wheat (Grain)	10	Peas	15
Buckwheat	26	Crotalaria	34
Sesame	3	Japanese Millet	5
L. Sericea	48		

Corn yields averaged 40 bushels per acre.

Twenty-four cooperative farmers cultivated 1,789 acres of refuge land. Their operations are as follows:

<u>Crop</u>	<u>Acres</u>	<u>Crop</u>	<u>Acres</u>
Corn	115	Watermelons	1,133
L. Bicolor	45	Crotalaria	77
Rye (abruzzi)	268	Pensacola Bahia Grass	89
Soybeans	62		

The watermelons were planted on land which has been cleared of understocked pine and scrub oak. Total revenue received as rental for this land was \$8,455. Revenue received by farmers for their melons was in excess of \$167,000. This latter figure would have been much greater had not the melons been damaged by a disease known as anthracnose. Following the melon crop these small but numerous clearings will be planted to pine. This type of operation serves a multiple use purpose: it improves public relations by increasing the local economy, improves condition and fertility of the soil, brings understocked timber land back into production, and provides some food for wildlife.

Wildlife and insect damage to the above crops was practically nil.

C. Collections and Receipts:

1. Seed or other Propagules:

The refuge farming program yielded 60 bushels of unhulled sericea lespedeza, 225 bushels of wheat and 45 bushels of crotalaria. Collections from cooperative farmers are: 1,100 lbs. of bicolor lespedeza, 110 bushels of corn and 20 bushels of grain sorghum.

2. Specimens:

None

D. Control of Vegetation:

None

E. Planned Burning:

1. General:

Prescribed burning is an important phase of our management program. The purpose of this type burning is to remove a heavy accumulation of pine litter which prevents the growth of herbaceous vegetation. This burning also opens up the understory, thus improving deer, turkey, quail and wildlife habitat. A total of 1,898 acres were subjected to this treatment at a cost of \$.21 per acre.

2. Conditions prior to burning:

Prescribed burning is being restricted to the better sites on the refuge. These areas have the greatest potential for producing food once the heavy accumulation of pine litter has been removed. It is also on these areas where competition by undesirable vegetation is the highest.

3. Conditions following burning:

The prescribed burning program at this refuge has been highly successful in improving deer, turkey, and bob-white quail habitat. Not only does this phase of management provide more food for wildlife but it also reduces the hazard of wildfire. We have incurred no damage to the forest as a result of this operation. The prescribed burning program is set up on a three year burning cycle.

F. Fires:

Damage resulting from wildfire during this reporting period was negligible. We had four fires which burned a total of 70 acres. Two fires were set by lightning, one fire resulted from a timber harvesting operation, and the other fire was caused by burning leaves being blown across a firebreak while refuge personnel were burning off an old wildlife food strip.

IV. RESOURCE MANAGEMENT

A. Grazing:

Seven acres of land is being rented to a cooperative farmer on an annual cash basis of \$5.00 per acre.

B. Haying:

None

C. Fur Harvest:

None

D. Timber Removal:

Timber sales made by the South Carolina Commission of Forestry during this reporting period are reported in the following table: (Attached to this page and numbered as page (7a)).

E. Commercial Fishing:

None.

F. Other Uses:

None.

V. FIELD INVESTIGATION OR APPLIED RESEARCH

A. Progress Report:

Three projects are currently under study at this refuge. They are as follows:

1. Fomes Annosus Evaluation Study:

This study is being made by U. S. Forest Service personnel. Fifty-two 1/10 acre plots have been set up in a 28 year old slash pine (Pinus elliotii) plantation to determine the effect and rate of spread of this disease.

2. Control Burn Study:

This study is currently being carried out by the refuge forester. Thirty-eight plots have been set up and are being evaluated to gain information concerning vegetative trends following control burns.

3. Oak Plantings:

This refuge is in need of additional mast producing oaks to provide food for wildlife. Several fields have been planted to live oak (Quercus virginiana) and sawtooth oak (Quercus acutissima) seedlings to evaluate their potential for this area. These oaks are presently growing well on the better sandy sites.

D. Timber Removal:

COMPARTMENT	SALE NO.	PURPOSE OF SALE	SAWTIMBER (BD. FT.)	PULPWOOD (STD. CDS.)	ACRES	REVENUE RECEIVED
6	1	Improvement Cut	380,504	362	294	\$20,122.68
6	2	Improvement Cut	135,535	304	123	8,110.23
6	3	Improvement Cut	259,818	568	180	16,100.00
Green-tree Reservoirs	1	Pine Removal	135,000	312	120	5,650.00
Green-tree Reservoirs	2	Hardwood Thinning		54		75.00
5	1	Improvement Cut	158,191	294	130	9,126.00
6	4	Improvement Cut	245,760	385	245	13,230.00
6	5	Plantation Thinning		174	16	2,480.68
6	6	Improvement Cut	228,433	284	192	12,126.00
7	1	Salvage Cut		48	24	112.40
7	2	Salvage Cut		4.83	1	33.79
7	3	Salvage Cut		46.33	46	157.30
TOTAL:			1,543,241	2,836.16	1,371	\$87,324.08

Timber removal from refuge this period is considerable less due to increased sales on the Sandhills State Forest.

VI. PUBLIC RELATIONS

A. Recreational Uses:

This refuge experienced a considerable increase in public use this period. The total visits by campers, hunters, sightseers, fishermen, and picnics increased from 12,005 during 1964 to 52,154 in 1965. This increase was primarily a result of the public becoming informed of the nice Lake Bee recreation area. More than 800 picnics used the recreation area from June 28 - July 5, 1965. Greater numbers of hunters are also participating in the annual deer hunt. Improved roads have also played a major role in increased public use.

B. Refuge Visitors:

Mr. Eugene M. Smith Jr., Branch of Engineering, Jan. 5, 1965 (Atlanta, Ga.)
 Mr. Henry P. Joyner, Branch of Engineering, Jan. 5, 1965 (Atlanta, Ga.)
 Mr. James R. Dawsey, Branch of Engineering, Jan. 5, 1965 (Atlanta, Ga.)
 Mr. William A. Reid, Branch of Realty, Jan. 19 (Atlanta, Ga.)
 Mr. Ridley D. Duncan, U.S. Game Management Agent, Columbia, S.C. 1/20/65
 Mr. Rombert Jones, S. C. Division of Game Enforcement, Chesterfield, SC 2/3/65
 Mr. Victor W. Kay, Asst. Regional Supervisor, Atlanta, Ga. 2/3/65
 Mr. Verlon E. Carter, Forester, Branch of Refuges, Atlanta, Ga. 2/3/65
 Mr. Gene Watson, S.C. Division of Game Enforcement, Chesterfield, SC 2/16/65
 Mr. Charles S. Cook, Branch of Engineering, Atlanta, Ga. 3/4/65
 Mr. R. M. Schiele, Schiele Museum, Gastonia, N.C. 3/15/65
 Mr. M. R. Roberts, Dorchester, S. C. 4/2/65
 Mr. Fred W. Horn, S. C. Forestry Commission, Columbia, S.C. 4/27/65
 Mr. Lloyd W. Swift, Executive Director, Wildlife Fund, Wash., D.C. 4/28/65
 Mr. Richard N. Smith, Branch of Predator & Rodent Control, Columbia, S.C. 4/29/65
 Mr. Victor A. Johnson, GSA, Ft. Bragg, N. C. 5/5/65
 Mr. Joe Mills, S.C. Forestry Commission, Patrick, S. C. 5/6/65
 Mr. Pete Spearman, S.C. Forestry Commission, Patrick, S. C. 5/6/65
 Mr. William Kean, Kean Construction Co., Columbia, S.C. 5/10/65
 Colonel Harry R. Turkel, Washington, D. C. 5/13/65
 Mr. Lawrence S. Givens, Regional Supervisor, Br. of Refuges, Atlanta, Ga. 5/26/65
 Mr. Roger Hagwood, Director Sandhills State Forest, Patrick, S.C. 5/27/65
 Mr. John R. Tiller, State Forester, Columbia, S. C. 5/27/65
 Mr. E. C. Pickens, S.C. Forestry Commission, Columbia, S.C. 5/27/65
 Mr. Howard Scott, S. C. Forestry Commission, Columbia, S.C. 5/27/65
 Mr. H. W. Rodebaugh, GSA, Atlanta, Ga. 6/17/65
 Mr. James R. Fielding, Chief, Division of Sport Fisheries, Atlanta, Ga. 6/17/65
 Mr. James H. Carson, Br. of River Basin Studies, Pittsburg, Pa. 6/22/65
 Mr. E. H. Mims, U.S. Civil Service Commission, Charlotte, N.C. 6/25/65
 Mr. Larry Barr, S.C. Forestry Commission, Columbia, S.C. 7/7/65
 Mr. C. D. Griggs, Pee Dee N/W Refuge, Wadesboro, N.C. 7/7/65
 Mr. George R. Garriss, Piedmont N/W Refuge 7/13/65
 Mr. Jack W. West, Branch of Fish Hatcheries, Atlanta, Ga. 8/16/65
 Mr. Danny M. Regan, Branch of Fish Hatcheries, Atlanta, Ga. 8/16/65
 Mr. Jack Sheridan, Fishery Services, Pisgah Forest, N.C. 8/16/65
 Mr. Roy S. Alford, Columbia, S. C. 8/17/65
 Mr. Philip A. DuMont, Washington, D. C. 9/13/65
 Mr. W. W. Burns, Savannah N/W Refuge 9/14/65
 Mr. George E. Siple, U. S. Geological Survey, Columbia, S.C. 9/16/65
 Mr. W. D. Puradises, U. S. Geological Survey, Columbia, S. C. 9/16/65
 Mr. Earl R. Cunningham, Atlanta, Ga. 9/20/65
 Mr. James A. Taylor, Branch of Engineering, Atlanta, Ga. 9/20/65

Mr. Otis G. Pauley, Branch of Engineering, Atlanta, Ga. 9/20/65
 Mr. H. P. McClemon, Hartsville Jr. High, Hartsville, S.C. 9/22/65
 Mr. James H. Roberts, Presquile N/W Refuge, Hopewell, Va. 9/6/65
 Mr. Jim Lankford, Soil Conservationist, Atlanta, Ga. 10/11/65
 Mr. W. H. Julian, Piedmont N/W Refuge, Round Oak, Ga. 10/11/65
 Mr. Leroy Harris, Piedmont N/W Refuge, Round Oak, Ga. 10/11/65
 Mr. H. L. Lee Jr., S.C. Wildlife Resources Dept., Columbia, S.C. 10/18/65
 Mr. B. A. Gregg, S. C. Wildlife Resources Dept., Columbia, S.C. 10/18/65
 Mr. Clyde Ward, S. C. Wildlife Res. Dept., Columbia, S. C. 10/20/65
 Mr. R. G. Newton, S. C. Wildlife Res. Dept., Columbia, S. C. 10/20/65
 Mr. Eddie W. Fentress, Fish Hatchery, U. S., Cheraw, S. C. 10/20/65
 Mr. G. L. Harmon, Soil Conservation Service, Chesterfield, S.C. 12/14/65

C. Refuge Participation:

On May 27 members of the South Carolina Commission of Forestry and Bureau personnel met at the Lake Bee recreation area to discuss management activities to be carried out during fiscal year 1966. Representing the Commission were State Forester John Tiller, Assistant State Forester E. C. Pickens, Administration Forester Howard Scott, Management Forester Fred Horn, Sardsills State Forest Director Rodger Hagwood and Project Forester Joe Mills. Representing the Bureau were Messrs. Givens and Carter of the Regional office and Messrs. Holland and Stewart of the refuge staff. Following this meeting the group observed management operations in the field.

Refuge Forester Clyde Stewart met with Soil Conservation Service Technician G. L. Harmon several times during this period. As a result of these meetings a Soil and Water Conservation Plan was prepared by the Soil Conservation Service for the Oxpen Management unit (780 acres). This unit is one of the prime waterfowl feeding areas on the refuge.

On January 19, the Assistant Manager Earl R. Cunningham presented a slide talk to the Cheraw Garden Club. This presentation was oriented around "The Beauty of Nature."

On June 7 seven Junior Conservation Campers sponsored by the Garden Clubs of South Carolina and Mr. Dick Smith (Division of Wildlife Services) visited the refuge to observe beaver and their activities. The group was carried to Lake 16 where a beaver and beaver cuttings were seen.

Refuge Forester, Clyde Stewart presented a slide talk to the Hartsville, S. C. Chapter of Young Farmers of America. This talk dealt with wildlife and timber management as carried out on the refuge. This group was also given information for improving wildlife habitat on private land.

D. Hunting:

The third annual deer hunt was held on the refuge from October 18 to October 30. A total of 1,773 permits were issued as compared to 1,193 in 1964. Approximately 1500 hunters participated in this hunt. Thirty-five bucks averaging 131 lbs. each were checked out at refuge headquarters. The same number of bucks were checked out during the 1964 hunt. Three hunters were caught during the hunt with a doe deer each. Hunting on private land adjacent to the refuge has been relatively good. Two hunters reported killing their limit of five bucks each.

The Sandhills State Forest was opened for dove, quail and squirrel hunting during 1965. Dove hunters success was down somewhat over last year. During the first season (Sept. 13 - Oct. 9) 950 dove permits were issued. There have been 110 squirrel permits and 280 quail permits issued thus far.

E. Violations:

The following violations and dispositions for this period are:

<u>DATE</u>	<u>VIOLATOR</u>	<u>ADDRESS</u>	<u>VIOLATION</u>	<u>DISPOSITION</u>	<u>WHERE DISPOSED</u>
10/5	Everett Smith	P.O.Box 95 Chesterfield, S. C.	Trespass	Fined \$13.00	Magistrate Court, Patrick, S. C.
10/19	Amos Smith	908 Patrick Rd., Hartsville, S. C.	Killing doe deer	Fined \$25.00	Magistrate Court, McBee, S. C.
10/19	W.K.Huggins	1552 Marlboro Rd., Hartsville, S. C.	Killing doe deer	Fined \$25.00	Magistrate Court, McBee, S. C.
10/19	C.L. Oliver	Rt. 3 Hartsville, S. C.	Killing doe deer	Fined \$25.00	Magistrate Court, McBee, S. C.

F. Safety:

We are proud of our safety record for 1965. No lost time accident occurred. The safety committee met 6 times and the regular monthly safety meeting was held 12 times during this period. Among the topics discussed at the meeting were lifting, motor vehicle operation, use of power tools, electricity, artificial respiration, treatments for shock, snake bite and heat stroke, use of hand tools, fire, lightning and numerous other topics. Personnel of the Carolina Sandhills National Wildlife Refuge have worked more than 49,826 hours since the last lost time accident.

VII OTHER ITEMS

A. Items of Interest:

Mr. Ernest F. Holland, refuge manager at this station for several years retired on December 30, 1965. He spent 26 years of his life working for the Service, most of these years were spent developing this refuge. In honor of his service, Mr. and Mrs. Holland were surprised by a dinner held for him at Johnson's Restaurant in Hartsville, S. C. This dinner was attended by 29 people, several being old acquaintances of his. Following the dinner Mr. Holland received numerous nice gifts and a bound volume of letters (to him from Bureau personnel) was presented by Mr. Givens. The Regional office was represented by Messrs. Lawrence S. Givens and Crayton J. Lankford.

Mr. Holland was replaced by Manager George R. Garris. Prior to this assignment Manager Garris was assistant manager at the Piedmont National Wildlife Refuge where he did an outstanding job. We welcome George, his wife Mary Lou and their five children to the Sandhills.

Assistant refuge manager Cunningham transferred to the Job Corps on April 12, 1965. However, we are happy to report that Earl is now back in Region 4 and is manager of the Yazoo National Wildlife Refuge. Since Earl's departure Mr. Stewart has been working in the capacity of assistant refuge manager and forester at the Carolina Sandhills Refuge.

This report was prepared by Refuge Forester Clyde A. Stewart who was assisted by Refuge Clerk Mark A. Brown.

B. Photographs:

Some of the management operations carried out during 1965 are depicted in the following photographs.



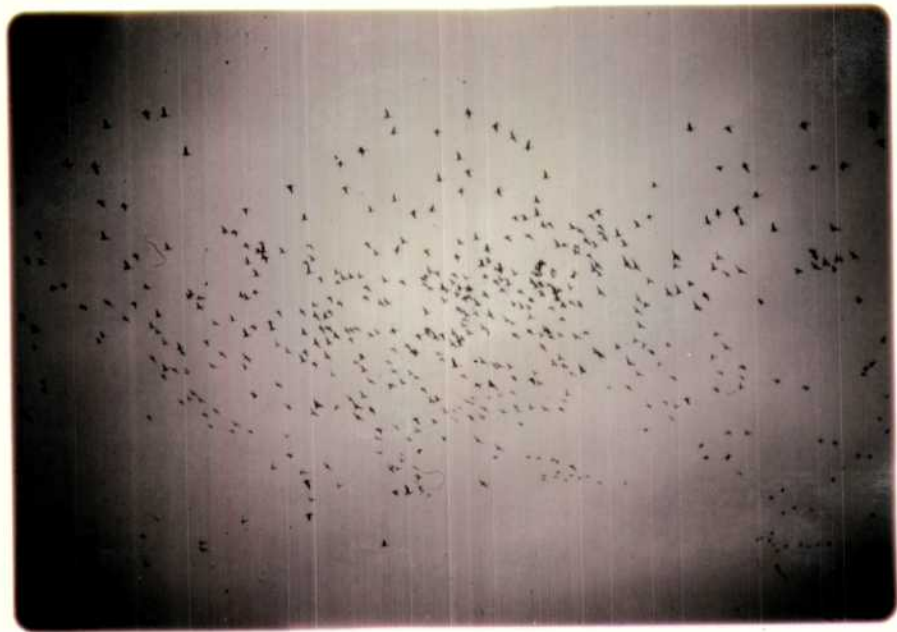
ERNEST F. HOLLAND,
Refuge Manager.

SUBMITTED: _____.

APPROVED: (srd) Victor W. _____

Acting Regional Supervisor

FEB 17 1966



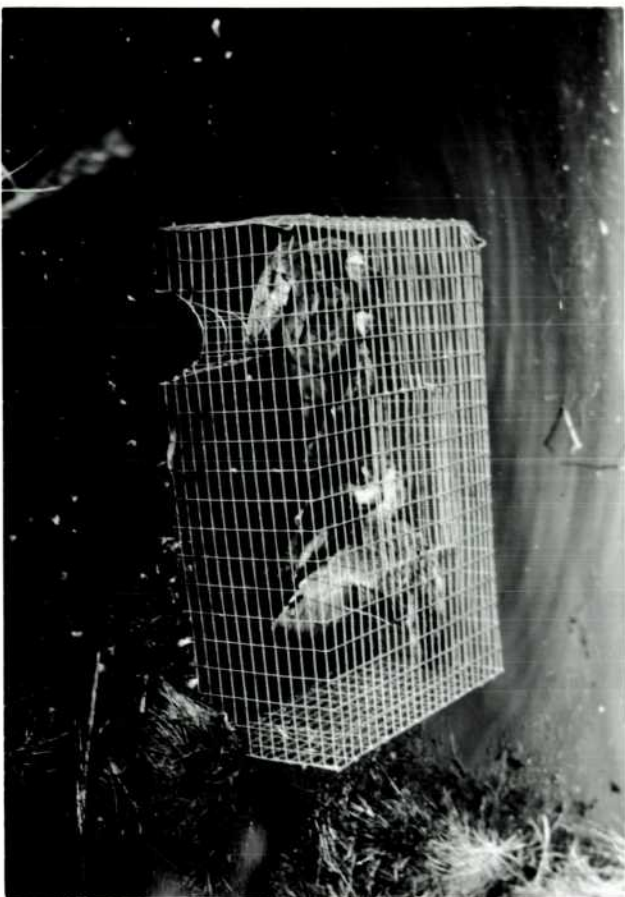
Canadian geese over Martin Lake in February 1965. No. 1 and 2



Pool G (green-tree reservoir) on Lightwood Log Branch. Numerous woodducks have been observed feeding in this impoundment. Woodducks increased in number from 200 in 1964 to 750 in 1965. We feel sure that the 11 new green-tree reservoirs played a vital role. No. 3

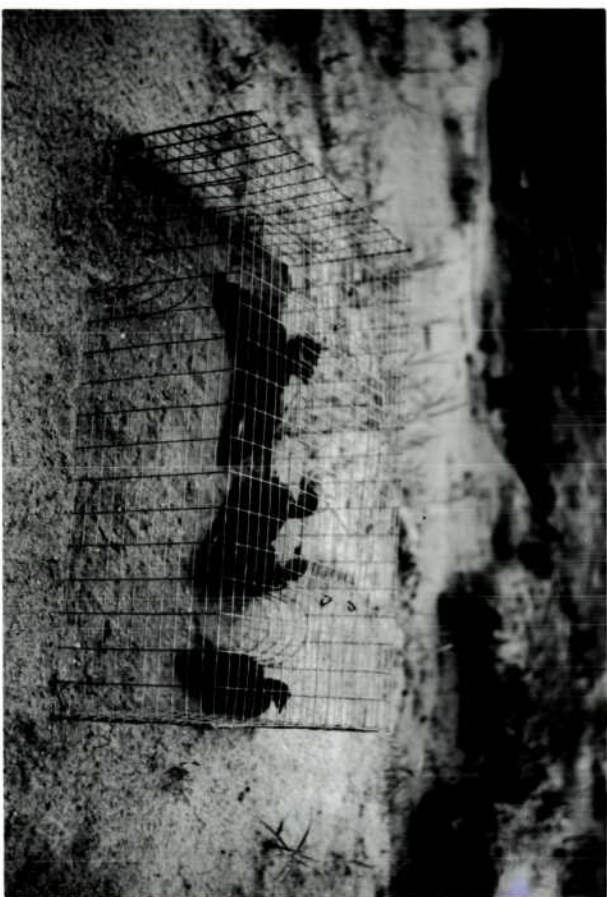


Woodducks trapped during banding program. Thus far, 137 woodducks have been banded during this banding-period as compared to a total of 127 from 1960-64. No. 4



JAN • 66

Black ducks trapped at Martin Lake. Banding operations have netted 101 blacks. No. 5



JAN • 66

Six woodducks trapped at Middle Triple Lake. This type trap proved to be practically predator proof at this station.



JAN . 66

Mourning doves caught during banding program. A total of 2,117 doves were banded from June 14 - August 31, 1965. This trap is also used for trapping ducks. No. 7



JAN . 66

Predator proof woodduck box erected during winter of 1964-65. This box was checked April 9 and 14 of 17 eggs had hatched. It was checked again on August 3 and a new nest was found - 10 eggs hatched this time. Fifty new predator proof boxes are being erected this winter. No. 8

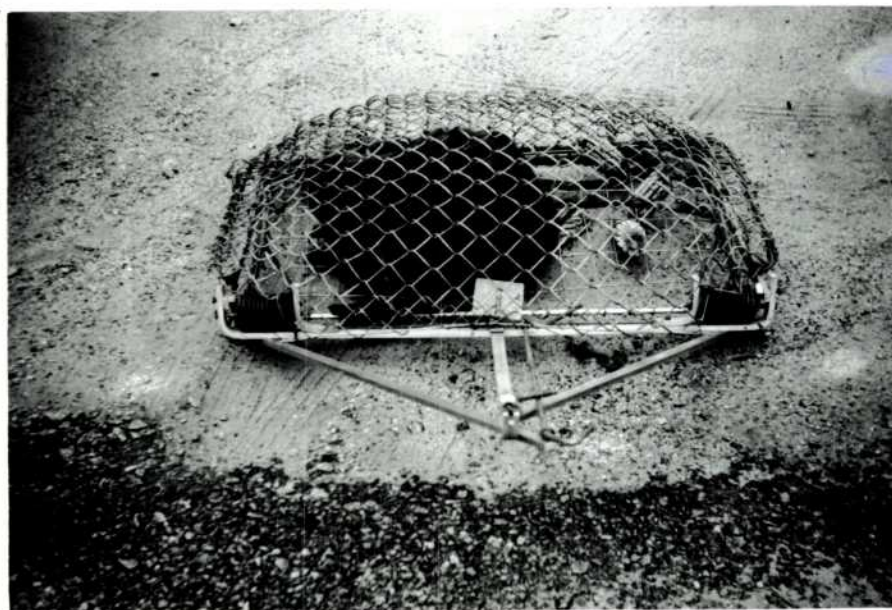


Picnicers enjoying the nice Lake Bee Recreation Area.
 Recreation use days for this period exceeded 39,000.
 Public use increased more than 400% over 1964. No. 9 and 10



JAN • 66

Conservation group sponsored by various Garden Clubs in South Carolina. Mr. Dick Smith (Division of Wildlife Services) is holding the beaver trap. No. 11



JAN • 66

Beaver caught by above group. No. 12



JAN • 66

Deer hunters camping at the Lake Bee Recreation Area during annual managed deer hunt. No. 13



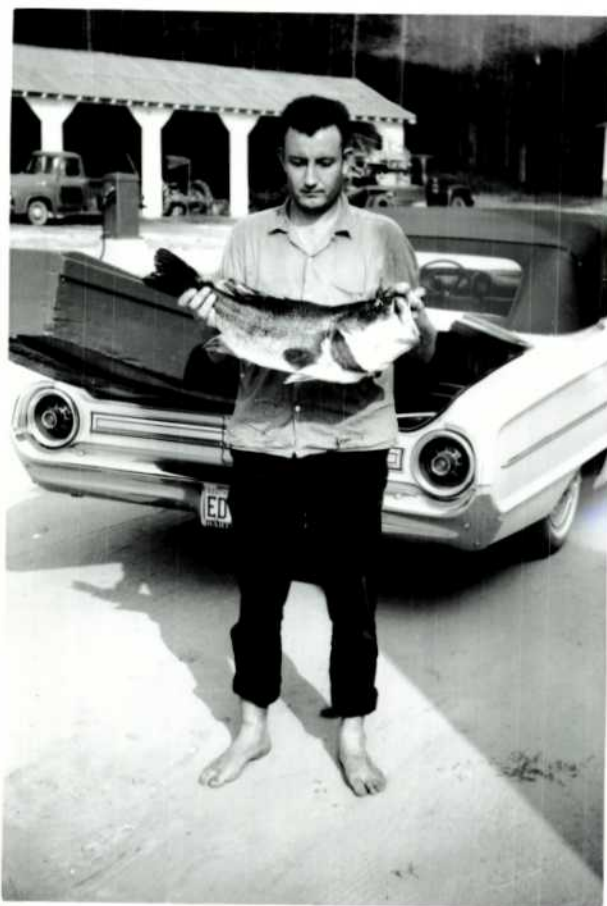
JAN • 66

Manager Holland weighing a nice 8 point buck killed during the hunt. No. 14



Another nice buck and a proud
hunter. No. 15

JAN • 66



Largemouth bass caught at
Martin Lake on July 23, 1965.
This bass weighed 9 lbs. and
measured 27 ins. in length.
No. 16

JAN • 66



JAN • 66

On May 27 personnel from the regional office, South Carolina Commission of Forestry, and refuge met at the Lake Bee Recreation Area to discuss the F. Y. 1966 management program.
No. 17



JAN • 66

Lake Bee was stocked with largemouth bass on May 10. This lake should provide excellent fishing at the recreation area.
No. 18



This land at Pool L (44 acre green-tree reservior) was cleared this period and planted to Jap millet and buckwheat. No. 19



Same area as above. Buckwheat in foreground and millet in background. Millet was flooded in fall when water was raised. This area provided excellent duck habitat and received considerable use. No. 20



Refuge permittee harvesting rye (abruzzi) at Oxpen Lake. This rye (156 acres) provided abundant browse for geese and deer during the winter. Doves flocked to the area by the thousands following rye harvest in June. No. 21



Refuge personnel planting corn at Oxpen. This area received heavy waterfowl use during the fall and winter. No. 22



JAN • 66



JAN • 66

Part of the refuge farming operation. This wheat produced 25 Bu. per acre and was utilized by two refuges during dove and duck banding operations. No. 23 and 24



JAN • 66



JAN • 66

Cooperative farming on the refuge. Permittee planting corn in above picture - plowing and fertilizing watermelons in lower photo. No. 25 and 26



JAN • 66

Refuge permittee harvesting watermelons. No. 27



JAN • 66

Melons left following harvesting operations. The Bureau received \$8,455.00 as rental for watermelon land. Revenue received by local farmers for their melons was in excess of \$167,000.00 . No. 28



Control burn Study Plot No. 29 prior to prescribed burn.
Picture taken on June 4, 1964. No. 29



Same plot as above following a winter burn. Competition
from undesirable vegetation in understory has been reduced
as a result of this operation. Picture taken on June 4, 1965.
No. 30



JAN • 66

Leveling grounds at the new residence adjacent to the Lake Bee Recreation Area. No. 31



JAN • 66

Refuge Manager Holland and a good neighbor Mr. May Johnson. Mr. Holland retired from the Service on Dec. 30, 1965. No. 32

3-1750
Form NR-1
(Rev. March 1953)

W A T E R F O W L

REFUGE Carolina Sandhills National Wildlife Refuge

MONTHS OF January TO April, 19 65.

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	1100	1100	1100	1100	1100	1100	1100	1100	1100	105
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	1450	1450	1450	1500	1000	950	300	300		
Black	1050	1050	1050	1100	800	750	100	50	10	2
Gadwall										1
Baldpate										
Pintail									5	8
Green-winged teal										
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood	200	200	200	150	150	150	100	75	75	75
Redhead										
Ring-necked	50	100	100	50	25	25	15	15	25	25
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
American Widgeon	200	200	200	200	150	150	300	100	250	200
Necked Merganser	15	15	15	15	15	15	10	10		

WATERFOWL
(Continuation Sheet)

REFUGE: **Carolina Sandhills National Wildlife Refuge**

MONTHS OF **January** TO **April**, 19 **65**.

(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	6	6	11	11					70,273			
Cackling												
Brant												
White-fronted												
Snow												
Blue												
Other												
Ducks:												
Mallard									57,400			
Black			2						43,748			
Gadwall									7			
Baldpate												
Pintail	15	10		3					483			
Green-winged teal												
Blue-winged teal												
Cinnamon teal												
Shoveler												
Wood	75	50	50	50					11,200	2	75	
Redhead												
Ring-necked	8	10	15	15					3,246			
Canvasback												
Scaup												
Goldeneye												
Bufflehead												
Ruddy												
Other												
American Widgeon	60	40	40	40					14,910			
Coot:												
Wooded Merganser									770			
					(Over)							

	(5)	(6)	(7)	
	<u>Total Days Use</u>	<u>Peak Number</u>	<u>Total Production</u>	<u>SUMMARY</u>
Swans	_____	_____	_____	Principal feeding areas <u>_____</u>
Geese	<u>70,273</u>	<u>1100</u>	_____	_____
Ducks	<u>125,864</u>	<u>3015</u>	<u>75</u>	Principal nesting areas <u>_____</u>
Coots	_____	_____	_____	_____
				Reported by _____
				<u>Ernest F. Holland, Refuge Manager.</u>

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).

3-1750

Form. NR-1

(Rev. March 1953)

WATERFOWL

REFUGE Carolina Sandhills National Wildlife Refuge

MONTHS OF May TO August, 19 65.

[illegible]

3 -1750a

Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Carolina Sandhills National Wildlife Refuge

MONTHS OF May TO August, 19 65

(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	2	2	2	2	2	2	2	2	238		
Cinnamon teal											
Shoveler											
Wood	80	80	90	90	95	115	125	125	10,080	5	50
Redhead											
Ring-necked											
Canvasback											
Scaup											
Goldeneye											
Bufflehead											
Ruddy											
Other											
Coot:											
				(over)							

	(5)	(6)	(7)
	<u>Total Days Use</u>	<u>Peak Number</u>	<u>Total Production</u>
Swans			
Geese			
Ducks	<u>10,318</u>	<u>127</u>	<u>50</u>
Coots			

SUMMARY
Principal feeding areas <u>Martin Lake</u>
Principal nesting areas <u>Martin Lake and Lake 16</u>

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).

3-1750

Form NR-1

(Rev. March 1953)

WATERFOWL

REFUGE Carolina Sandhills National Wildlife

MONTHS OF September TO December, 1965.

[illegible]

3-1750a
 Cont. NR-1
 (Rev. March 1953)

WATERFOWL
 (Continuation Sheet)

REFUGE **Carolina Sandhills National Wildlife**

MONTHS OF September TO December, 19 65.

(1) Species	(2) Weeks of reporting period								(3) Estimated: waterfowl: days use	(4) Production: Broods: seen	(4) Estimated: total
	11	12	13	14	15	16	17	18			
<u>Swans:</u>											
Whistling											
Trumpeter											
<u>Geese:</u>											
Canada	359	384	453	533	625	700	750	750	41,090		
Cackling											
Brant											
White-fronted											
Snow											
Blue									28		
Other											
<u>Ducks:</u>											
Mallard	350	425	425	520	800	850	850	800	40,166		
Black	300	375	400	425	650	775	775	750	35,364		
Gadwall											
Baldpate		85	75	75	175	175	200	200	6,395		
Pintail											
Green-winged teal											
Blue-winged teal									1,715		
Cinnamon teal											
Shoveler											
Wood	450	400	400	525	720	750	750	750	47,565		
Redhead											
Ring-necked	30	100	35	40	50	25	50	50	3,220		
Canvasback											
Scaup											
Goldeneye											
Bufflehead								1	21		
Ruddy											
Other: Hooded	10	9	11	15	20	25	25	25	1,050		
Merganser											
<u>Coot: (American)</u>	10	8							266		
					(Over)						

	(5) Total Days Use	:	(6) Peak Number	:	(7) Total Production		SUMMARY
Swans		:		:		Principal feeding areas	<u>Open and Martin Lakes</u>
Geese	<u>41,118</u>	:	<u>750</u>	:			
Ducks	<u>135,976</u>	:	<u>2,650</u>	:		Principal nesting areas	
Coots	<u>266</u>	:	<u>10</u>	:			
						Reported by	<u>Clyde A. Stewart,</u> <u>Creator.</u>

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
(Aug. 1952)

MIGRATORY BIRDS
(Other than Waterfowl)

Refuge Carolina Sandhills N/W

Months of January

to April

19 65

(1) Species		(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total
Common Name		Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Use
I. <u>Water and Marsh Birds:</u>											
Great Blue Heron		2	April	4	April	4	April				100
Green Heron		4	March	8	April	8	April				372
Pied Billed Grebe		2	March	4	April	4	April		1	5	182
II. <u>Shorebirds, Gulls, and Terns:</u>											
Spotted sandpiper		12	March	75	April	75	April				2622

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove	3500 Jan.	3500 Jan.	1500 April	600 1200	329,000
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow	500 Jan.	1500 April	1500 April	200 500	149,000

Reported by Ernest F. Halland, Ref. Mgr.

INSTRUCTIONS (See Sec. 7532, Wildlife Refuges Field Manual)

- (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 migration record for the species for the reporting period.
- (3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.
- (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 species days use (average population X no. days present) of refuge during the reporting period.

3-1751
Form NR-1A
(Aug. 1952)

MIGRATORY BIRDS
(Other than Waterfowl)

Refuge Carolina Sandhills National Wildlife Months of May to August 19 65.

(1) Species		(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total
Common Name		Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Use
I. <u>Water and Marsh Birds:</u>											
Little Blue Heron		3	July	20	July 22-31	6	Aug.				1200
American Egrets		4	June	16	July 19-25	2	Aug.				700
Pied Bill Grebes		2	May 1	10	June 16-25	2	Aug. 31		2	6	600
Great Blue Heron		1	June	5	Aug.	2					300
II. <u>Shorebirds, Gulls,</u> <u>and Terns:</u>											

(over)

(1)	(2)	(3)	(4)	(5)	(6)				
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove	2,500	May	5,500	Aug.	5,000	Aug.		3,500	492,000
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow	1,000	May	1,000	Aug.	1,000	Aug.		400	123,000

Reported by Ernest F. Holland, Ref. Mgr.

INSTRUCTIONS (See Sec. 7532, Wildlife Refuges Field Manual)

- (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 migration record for the species for the reporting period.
- (3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.
- (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 species days use (average population X no. days present) of refuge during the reporting period.

3-1751
Form NR-1A
(Aug. 1952)

MIGRATORY BIRDS
(Other than Waterfowl)

Refuge Carolina Sandhills National Wildlife Months of September to December 19 65.

(1) Species Common Name	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total
	Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Use
I. <u>Water and Marsh Birds:</u>										
Great Blue Heron	2	Oct. 11	2	Oct. 11-Dec. 1	1	Dec. 12				115
Pied Bill Grebe	2	Sept. 1	7	Nov. 1-Dec. 31	7	Dec. 31				549
Little Blue Heron	5	Sept. 1	5	Sept. 1-25	1	Dec. 31				222
II. <u>Shorebirds, Gulls, and Terns:</u>										

(over)

(1)	(2)		(3)	(4)		(5)		(6)
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove	5,500	Sept. 1	7,000	Sept. 15- Oct. 31	5,000	Dec. 31		711,000
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow	1,000	Sept. 1	1,500	Oct. 1-31	1,250	Dec. 31		152,750

Reported by

INSTRUCTIONS (See Sec. 7532, Wildlife Refuges Field Manual)

- (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 migration record for the species for the reporting period.
- (3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.
- (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 species days use (average population X no. days present) of refuge during the reporting period.

3-1750b
Form NR-1B
(Rev. Nov. 1957)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Carolina Sandhills MNR

For 12-month period ending August 31, 19 65.

Reported by Ernest F. Holland

Title Refuge Manager

(1) Area or Unit Designation		(2) Habitat Type Acreage		(3) Use-days	(4) Breeding Population	(5) Production
NORTHERN ZONE		Crops	317	Ducks	800	6
		Upland	11773	Geese	4	
		Marsh		Swans		
		Water	80	Coots		
		Total	12,170	Total	800	6
CENTRAL ZONE		Crops	1829	Ducks	227,944	60
		Upland	18891	Geese	119,998	
		Marsh		Swans		
		Water	150	Coots		
		Total	20,870	Total	347,942	60
SOUTHERN ZONE		Crops	133	Ducks	7,000	6
		Upland	11,744	Geese	4	
		Marsh		Swans		
		Water	10	Coots		
		Total	11,887	Total	7,000	6
<u>GRAND TOTALS:</u>	*	Crops	2,279	Ducks	295,744	72
		Upland	42,408	Geese	119,998	
		Marsh		Swans		
	**	Water	240	Coots		
		Total	44,927	Total	355,742	72
		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)
* This includes 1,133 acres planted to watermelons by watermelon producers.
** This figure does not include 156 acres in green-tree reservoirs.

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 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.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge ~~Carolina Sandhills N/W Refuge~~ Months of ~~January~~ to ~~April~~, 19 ~~65~~.

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs.'v'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specificoally requested. List introductions here.
Bob white quail	44,000	44	0	0	55% 45%				1500	
Eastern wild turkey	44,000	700	0	0	65% 35%				65	

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.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Carolina Sandhills NWR

Months of May

to August, 19 65.

(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	No. broods obs'v'd.	Estimat- ed Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Wild Turkey	44,000	440	1	50	55 / 45 M F	N	O	N E	100	
Bob-White Quail	44,000	14	25	1830	50 / 50 M F	N	O	N E	3,200	

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.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Carolina Sandhills NWR Months of September to December, 19 65.

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Eastern Wild Turkey	44,000	293	2		50M/50F	N	O	N	150	30 turkeys were seen in one flock on Oct. 22, 1965.
Bob-white quail	44,000	14			50M/50F	N	O	N	3,200	

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

Calendar Year 1965

(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	45,000	575	225						125*			1,650	1,300	40M/60F

Remarks:

* Natural Mortality

Reported by _____

INSTRUCTIONS

Form NR-3 - BIG GAME

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

3-1754

Form NR-4

(June 1945)

SMALL MAMMALS

Refuge Carolina Sandhills N/W RefugeYear ending April 30, 1965.

(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				
Raccoon	44,000	30												1500
Beaver	4,000	13												325
Mink	4,000	200												25
Otter	4,000	100												45
Muskrat	4,000	200												25
Opussum	44,000	220												200
Skunk (Stripped)	44,000	150												300
Gray squirrel	44,000	100												450
Fox squirrel	44,000	50												900
Gray fox	44,000	175												250
Red fox	44,000	200												250
Bob cat	44,000	220												200

* List removals by Predator Animal Hunter

* List removals by Predator Animal Hunter

REMARKS:

Reported by Ernest F. Holland, Refuge Manager.

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 Carolina Sandhills National WildlifeYear 1964 1965.

Botulism

Lead Poisoning or other Disease

Period of outbreak _____

Period of heaviest losses _____

Losses:

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

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

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

Areas affected (location and approximate acreage) _____

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

Condition of vegetation and invertebrate life _____

Remarks Nothing to report.

Kind of disease _____

Species affected _____

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

Number Recovered _____

Number lost _____

Source of infection _____

Water conditions _____

Food conditions _____

Remarks Nothing to report.

PUBLIC RELATIONS

(See Instructions on Reverse Side)

Refuge Carolina Sandhills National Wildlife RefugeCalendar Year 1965

1. Visits

a. Hunting 1500 b. Fishing 900 c. Miscellaneous 49,754 d. TOTAL VISITS 52,154

1a. Hunting (on refuge lands).

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl			
Upland Game			
Big Game	1500	45,000	Refuge
Other			

Number of permanent blinds _____

Man-days of bow hunting included above _____

Estimated man-days of hunting on lands adjacent to
refuge 10,021*

1b. Fishing (area open to fishing on refuge lands)

TYPE OF AREA	ACRES	MILES
Ponds or Lakes	64	
Streams and Shores		

1c. Miscellaneous Visits

Recreation 39,569 Official 125Economic Use 10,060 Industrial _____

2. Refuge Participation (groups)

TYPE OF ORGANIZATION	On Refuge		Off Refuge	
	NO. OF GROUPS	NUMBER IN GROUPS	NO. OF GROUPS	NUMBER IN GROUPS
Sportsmen Clubs				
Bird and Garden Clubs	1	20	1	25
Schools	1	10		
Service Clubs	1	30		
Youth Groups	2	45		
Professional-Scientific			1	20
Religious Groups				
State or Federal Govt.	1	8		
Other	1	12		

3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Daily Press Releases	6	Radio Presentations	23
Newspapers Wkly. (P.R.'s sent to)	150	Exhibits	
TV Presentations		Est. Exhibit Viewers	

INSTRUCTIONS

Item 1: Total of a, b, and c, equal d.

* "Visit" - definition. Any person who is on refuge lands or waters during a day or part thereof for the purpose of: hunting, fishing, bird-watching, recreation, business or economic use, official visit, or similar interest. INCLUDE - those who stop within the refuge while traveling on a public highway because of an interest in the area. EXCLUDE - persons engaged in oil or other industry not directly related to the refuge, persons using refuge as most direct route or principal avenue of traffic, and those boating on navigable rivers or the Intercoastal Canal, unless they stop to observe wildlife on the refuge.

Computing visits. Where actual counts are impractical, "sampling" is used with midweek and week-end samples varied by season or weather. A conversion factor of 3.5 (of passengers per car) is used when accurate figures are not available. Each refuge will develop a conversion factor for boats based on range of usage. Count a camper once for each 24-hour period or fraction thereof.

Item 1a: Acres - of refuge open for each type of hunting.

Managed hunts require check in and out of hunters, issuance of permits, or assignment of blinds.

Other - INCLUDE crow, fox, and similar hunting.

Lands adjacent to refuge. Normally considered within 1 mile or less of boundary, unless established sampling procedures cover a wider area. For big game hunting, the distance may be greater.

Item 1b: Acres of streams open to fishing, if practical; otherwise just miles open. Information on "shores" is primarily for coastal fishing.

Item 1c: Recreation. INCLUDE photography, observing wildlife, picnicking, swimming, boating, camping, visitor center use, tours, etc. TOTAL Recreation, Official, and Economic Use visits under Item 1.

Industrial. INCLUDE persons engaged in industry, i.e., oil industry or factories. EXCLUDE these from Item 1.

Item 2: INCLUDE the "On Refuge" groups in Items 1c and 1. In "Off Refuge" column include only those group meetings in which refuge employees actually participate. EXCLUDE these from Items 1c and 1.

Item 3: Exhibits - INCLUDE displays, fairs, parades, and exhibits OFF the refuge; EXCLUDE those ON.

Refuge Carolina Sandhills National
Wildlife

Calendar Year 1965.

Facilities

Picnic areas 1 tables 40 fireplaces 27 toilets 2
areas: * drinking water 3 shelters 3

Swimming: designated areas _____ bathhouses _____

Boating: launching sites 1 rental facilities _____
service facilities _____
are motors allowed No maximum horsepower _____

Camping: * permitted Yes or not permitted _____
tent camps _____ total capacity 60 acres
group camps _____ total capacity _____
hunter camps 1 total capacity _____
trailer camps _____
lodges _____ capacity _____
cabins _____ motels _____ total units _____

Tours: * Season All frequency By appointment
self-guided nature trails _____ is trail leaflet available? No
self-guided auto tour route _____ is tour leaflet available? No

Access estimate number in public use 3
points:

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

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 **.

PLANTINGS
(Marsh - Aquatic - Upland)

Refuge Carolina Sandhills National WildlifeYear 1965.

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
Longleaf Pine (<u>Pinus palustris</u>)	Compartments 3,5,8,10	1000 seedlings/ac	3,000 acres	3,000,000	Jan.- Feb.- Mar.	75%	Dry weather	Planted by S.C. Commission of Forestry
Slash Pine (<u>Pinus elliottii</u>)	Compartments 1,5,6,8	350 seedlings/ac.	506 acres	430,000	Dec.	80%	Dry weather	Planted by S.C. Commission of Forestry

TOTAL ACREAGE PLANTED:

Marsh and aquatic _____
Hedgerows, cover patches _____
Food strips, food patches _____
Forest plantings 3,506 acres

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

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Carolina Sandhills National Wildlife 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				
			Acres	Bu./Tons	Acres	Bu./Tons			
Corn	115	2,875 Bu.			34✓	1,360 Bu.	149		
Wheat			10	225 Bu.	32✓	*210 Tons	42	Crotalaria-green manure	111
Buckwheat					26✓	208 Bu.	26		
Sesame					3✓	10 Bu.	3	*Rye - waterfowl	268
Lespedeza Sericea(Unhulled)			10	44 Bu.	38		48	browse	
Lespedeza Bicolor	33	3,300 Lbs.	12	1100 Lbs.	12	o	57	*Wheat - waterfowl	42
Soybeans	62	744 Bu.					62	browse	
Pensacola Bahia grass					254		254		
Rye (abruzzi)	268	4,464 Bu.				*1,608Tons	268		
Watermelons	1133	8,370 Tons					1133		
Peas					15	60 Bu.	15		
Crotalaria	77	200 Bu.	10	45 Bu.	24		111		
Millet (Jap.)	<u>1,688</u>				5	15 Bu.	5		
								Fallow Ag. Land	** 316

No. of Permittees: Agricultural Operations 24 Haying Operations _____ Grazing Operations 1

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle	7	84	\$35.00	7
				2. Other				
				1. Total Refuge Acreage Under Cultivation				2,173 Acres
Hay - Wild				2. Acreage Cultivated as Service Operation				384 Acres

** This land is kept open for upland game use.

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 WildlifeMonths of January through December, 19 65.

(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
Bicolor, Lespedeza	295#	1100#	1395#	94#	201#		295#	1100#	1100#		
Corn	100 Bu.	110 Bu.	210 Bu.	60 Bu.		30 Bu.	90 Bu.	120 Bu.		120 Bu.	
Corn, seed		6 Bu.	6 Bu.		3½ Bu.		3½ Bu.	2½ Bu.	2½ Bu.		
Wheat		225 Bu.	225 Bu.	25 Bu.	75 Bu.	125 Bu.	225 Bu.				
Sericea, Lespedeza	90 Bu.	60 Bu.	150 Bu.			20 Bu.	20 Bu.	150 Bu.	150 Bu.		
Sorghum, grain		20 Bu.	20 Bu.								
Sesame	150#		150#		100#		100#	50#		50#	
Fescue	4 Bu.		4 Bu.					4 Bu.	4 Bu.		
Rye	14 Bu.		14 Bu.			14 Bu.	14 Bu.				
Lovegrass	150#		150#					150#	150#		
Crotalaria	15 Bu.	45 Bu.	60 Bu.		10 Bu.		10 Bu.	50 Bu.	50 Bu.		
Bahia grass		1200#	1200#		1200#		1200#				
Cowpeas		1½ Bu.	1½ Bu.		1½ Bu.		1½ Bu.				
Carpet grass		4 Bu.	4 Bu.		4 Bu.		4 Bu.				
Buckwheat		31 Bu.	31 Bu.		23 Bu.		23 Bu.	8 Bu.	8 Bu.		
Japanese Millet		3 Bu.	3 Bu.		3 Bu.		3 Bu.				
Rye grass		42 Bu.	42 Bu.		42 Bu.		42 Bu.				

(8) Indicate shipping or collection points _____

(9) Grain is stored at Refuge headquarters, corn is stored at Martins pond storage shed.(10) Remarks Corn and wheat transferred to Cape Romain National Wildlife Refuge. Bicolor to Sandhills State Forest,

*See instructions on back. Patrick, S. C. Grain listed as "fed" was damaged by insects and becoming old.

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 CK
(Seeds, rootstocks, trees, shrubs)Refuge Carolina Sandhills National WildlifeYear ~~1955~~ 1965.

Species	Collections				Receipts		Total Amounts on Hand	Amount Surplus
	Amount	Date or Period or Collection	Method	Unit Cost	Amount	Source		
Wheat	225 Bu.	June 21	Refuge Harvest					
Lespedeza, sericea (unhulled)	60 Bu.	Dec. 22	Refuge Harvest				150 Bu.	
Lespedeza, bicolor		November			1,100 Lbs.	Cooperator	1,100 Lbs.	
Grain sorghum		September 21			20 Bu.	Cooperator		
Corn		January 3			110 Bu.	Cooperator	120 Bu.	
Crotalaria	45 Bu.	December	Refuge Harv- est				50 Bu.	

TIMBER REMOVAL

Refuge Carolina Sandhills National WildlifeYear 1965.

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
<p>Timber removed by South Carolina Commission of Forestry.</p> <p>See "Forestry" part D, Resources Management, this report.</p>								

Total acreage cut over _____

Total income _____

No. of units removed B. F. _____

Cords _____

Ties _____

Method of slash disposal _____

Refuge

Carolina Sandhills National
Wildlife Refuge, McBee, S. C.

Proposal Number	
-----------------	--

Reporting Year

1965.

INSTRUCTIONS: Wildlife Refuges Manual, Secs. 5202a, 5202b and 5203.								
Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<u>NO APPLICATION OF HERBICIDES OR PESTICIDES MADE ON THE REFUGE DURING 1965.</u>								

10. Summary of results (continue on reverse side, if necessary)

ANNUAL REPORT OF PERSTICIDE APPLICATION

Proposal Number	Reporting Year
1-65	1965.

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
May 25-June 31	Weed trees mainly turkey oak (<i>Quercus laevis</i>)	Comp. 15, Stand 4, 8, 10, and 15	468.4	2,4,5-T (low volital ester) 4 lbs. acid/gal.	754.1 lbs. acid	1.61 lbs. acid per acre	1 pt. 2,4,5T & 1 pt. diesel fuel & 6 pt. H ₂ O	Model #32 Hurricane mist blower mounted on Ford 5000 Super Major tractor.
June 23-July 9	"	Comp. 18, Stand 39, 41, 42, 54, 57	210.6	"	339.1 lbs. acid	"	"	"
July 6-July 29	"	Comp. 19, Stand 2, 5, 11, 21, 22, 27, 29, 31, 32, 55	316.6	"	509.7 lbs. acid	"	"	"
June 18-July 20	"	Comp. 20, Stand 8, 15, 18, 20, 28, 39 & 55	452	"	727.7 lbs. acid	"	"	"
July 12, 13	"	Comp. 21, Stand 10	32.8	"	52.8 lbs. acid	"	"	"

10. Summary of results (continue on reverse side, if necessary)

Excellent results were obtained. No adverse effects after treating; little to no drift. No damage claims have been submitted. This treatment definately enhances game habitat for birds and smaller fur animals. Food plants increased because of reduction of competition.

ANNUAL REPORT OF PERSTICIDE APPLICATION

Refuge

Carolina Sandhills Wildlife
Management Area (State Forest)

Proposal Number

1-64

Reporting Year

1965

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
May 25, 31	Weed Trees— Mainly turkey oak (<u>Quercus</u> <u>laevis</u>)	Compartment 14, stand 68, 70	60.2	2,4,5-T (low volital ester)	96.9 lbs. acid	1.61 lbs acid per acre	1 pt 2,4,5T & 1 pt. diesel fuel & 6 pt. H ₂ O	Model #32 Hurricane mist blow- er mounted on Ford 5000 Super Major tractor.

10. Summary of results (continue on reverse side, if necessary)

Excellent results were obtained. No adverse effects after treating; little to no drift.
No damage claims have been submitted. This treatment definately enhances game habitat for birds and smaller fur
animals. Food plants increased because of reduction of competition.