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REFUGE NARRATIVE REPORT
CAROLINA SANDHILLS NATIONAL WILDLIFE REFUGE

SEPTEMBER TO DECEMBER 1963

I. GENERAL

A. WEATHER CONDITIONS:

| MONTH | PRECIPITATION | NORMAL | MAXIMUM TEMPERATURE | MINIMUM TEMPERATURE |
|-----------|---------------|--------------|---------------------|---------------------|
| SEPTEMBER | 4.55 | 4.14 | 95 (4th) | 44 (24th) |
| OCTOBER | .23 | 2.46 | 87 (8th) | 34 (31st) |
| NOVEMBER | 6.44 | 2.80 | 77 (19th & 20th) | 31 (14th & 15th) |
| DECEMBER | 3.75 | 3.46 | 64 (26th) | 14 (19th) |
| TOTAL: | <u>14.97</u> | <u>12.86</u> | | |

The late summer drought which prevailed through the month of August continued through most of September with only minor showers occurring until the 28th when a 3 inch rain brought a much needed relief to the thirsty land. October however brought a still dryer situation with less than a quarter inch of precipitation during the entire month. November was a wet month with a 3.64 inch excess. December was near normal precipitation wise but temperatures ranged slightly below normal most of the month. The first frost occurred on October 30 with a heavy killing frost following on the 31st.

B. HABITAT CONDITIONS:

1. Water: The lower triple lake was raised to full pool in September to facilitate the pouring of concrete picnic tables under the APW program. The lake had previously been drawn down and planted to Japanese millet - the millet was a complete failure, however and consequently there was no delay in bringing up the water level. This was also true of the Upper Triple Lake. Lake 12 and Upper Twin Lake, also seeded to millet were raised slowly during the months of October and November to facilitate duck usage and at present remain some $\frac{1}{2}$ below full pool. Lake Martin was raised to full pool in October prior to the influx of the Canada goose flock. All other refuge lakes remained at full pool throughout the period.

2. Food and Cover: Winter browse was relatively poor this year, but the total acreage has provided more than ample forage for the goose flock as well as upland game. The excellent stand of buckwheat at both Ox Pen and Martin Lakes was ravished by waterfowl until the frost of late October. Following this, the rye-grass which had been planted with the buckwheat has provided ample browse and more than enough corn is available in the waterfowl areas. The impact on upland game of the more than 5,000 acres of land cleared this calendar year through the Scrub Oak Eradication Program with regard to reduction of cover is yet to be realized or evaluated. It will undoubtedly reduce the availability of nesting and denning sites to flying squirrels, gray and fox squirrels, various woodpeckers and other

songbirds and small game, while on the other hand, will provide new browse and bugging areas for deer, turkey and quail.

II WILDLIFE

A. MIGRATORY BIRDS:

The trapping efforts of August and September resulted in the banding of 37 woodducks. Banding was discontinued on September 23 when incidence of recapture was almost 100%.

The first flight of Canada geese appeared on Martin Lake on September 23rd. These 37 were joined on the 24th by 27 more and the numbers built up slowly to only 300 by early November. By December 20 the flock had reached 900 where it stands at the end of this reporting period and although this is a precarious number, it is 50% higher than at the same date last year. The ducks began to show up about October 20 and have built up to the present to more than 2000 birds, mostly mallards and blacks. This number compares with only 600 for the same period last year.

There were only a few wading birds observed in the area in early September and these (mostly egrets) left well in advance of the first frost.

B. UPLAND GAME BIRDS:

The quail population was down some 20% over last year. We believe this is due mainly to wet weather during the early nesting season.

Apparently the turkey nesting success was relatively poor this year judging from the lack of young birds observed. Hunt questionnaires returned from the October deer hunt indicate that 56 turkeys, 37 toms and 19 hens were observed during the 12 days of hunting. This tends to substantiate the estimated 60M-40F sex ratio and an undesirable condition in the age composition of the flock.

C. BIG GAME ANIMALS:

The first managed deer hunt in the history of the refuge was conducted during this period. The hunt was in most respects a success although only 22 deer were reported killed. The herd is from all indications healthy and continuing to grow. However, the hunting pressure from increasing numbers of gun clubs in and around the refuge is taking a significant toll of the annual increment. This year it is known that at least a hundred animals were taken and estimated that the actual kill is considerably higher since many of the local hunters are reluctant to report accurately the success of the clubs. A detailed account of the managed hunt will be given under "Hunting" in section VI of this report.

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

Animal depredations to refuge crops have been insignificant this period. Beavers destroyed most of the millet crop in the Upper Twin Lake - the maturing plants were pulled up by the roots and used to clog the drain. Complaints from residents throughout Chesterfield County indicate that beavers are radiating

from the refuge in all directions and at an increasing rate. Raccoons and fox populations are undergoing a lull in numbers while bobcats and skunks are enjoying a population high.

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

No eagles or ospreys were observed during the period. Crows are abundant in the farm areas but present no major problems.

F. OTHER BIRDS:

Winter is officially here with the coming of the slate colored junco. Literally hundreds of them are to be seen along the highways and truck trails.

G. FISH:

Fishing had dropped off considerably near the end of the open season when the lakes closed in October and November. Fair catches of bass and bream were reported but no large fish were taken.

H. REPTILES:

We were proud to present to the Gaston Museum of Natural History of Gastonia, N. C. 2 Cottonmouth Moccasins in early October. One of the specimens was in bad condition, having been smashed on the head, but the other was mounted by the museum curator, Mr. R. M. Schiele, and placed on display.

I. DISEASE:

Nothing to report.

III REFUGE DEVELOPMENT AND MAINTENANCE

A. PHYSICAL DEVELOPMENT:

The current Accelerated Public Works Program has climaxed during this reporting period with a peak employment of 64 men the week of November 13. Some 86.4 miles of refuge boundary was painted and marked and a permanent type 12 foot fire break was constructed around more than 20 miles of the refuge exterior boundary. Thirty three concrete picnic tables were cast for placement in the Lake Bee Forest Recreation Area - 29 of these have been placed in the area. A road right-of-way and parking area has been cleared in the area and stumps, debris and unfavorable trees have been removed from the 22 acre site. With 3 weeks remaining in the Program, the unfinished tasks include installation of campstoves, landscaping, and seeding. As work projects have terminated, the work force has been reduced accordingly and now stands at 29 men. Invitations to bid on the proposed roads, and trails, Lake Bee spillway, recreation facilities, and a water system have been let by Engineering Services and it is anticipated that by January 31, all the loose ends will have culminated into a well rounded and balanced project of which we can be truly thankful and proud.

B. PLANTINGS:

1. Aquatics and Marsh Plants.

None to report.

2. Trees and Shrubs:

See "Forestry" under Resource Management, this report.

3. Upland Herbaceous Plants:

None.

4. Cultivated Crops:

The chufa harvest in late September yielded 45 bushels from 7.3 acres. The nuts were small, but the total volume was better than we had anticipated in view of the droughty conditions existing throughout the growing season. For the most part, the refuge farming activities for the entire period consisted of land preparation and planting of winter browse. A total of 472 acres were planted to browse in the following proportions- equal parts of wheat and rye, 60 acres; all wheat, 158 acres; 80% rye and 20% wheat, 241 acres; 80% wheat and 20% rye, 13 acres. The grain was sown at the rate of 1 to 2 bushels/acre and the crop success ranges from poor to fair with some few stands being excellent. One hundred ninety five acres received an application of lime in October at the rate of one ton/acre - 131 of these acres received the lime as a soil amendment practice under the SSM Conservation plan, the remaining 64 acres were treated as an OSM function.

G. COLLECTION AND RECEIPTS:

1. Seed or other Propagules:

Received from cooperating farmers during the period were 105 bushels of shelled corn and 750 lbs. (12 bu.) of soybeans. The 45 bushels of chufa previously mentioned were harvested by the refuge staff, dried and stored at refuge headquarters.

2. Specimens:

None.

D. CONTROL OF VEGETATION:

No chemical vegetative controls have been exercised this period. However, the refuge farm crew has spent the last 2 weeks of the period mechanically clearing coppice and brush from the Ox Pen waterfowl area. The clearing is concentrated in the branch heads and seep areas where the wet, boggy condition of the soil prevents the use of machinery.

E. PLANNED BURNING:

The control burning program has suffered this period from adverse weather conditions and the preoccupation of the staff with the APW program. However we plan to attack the problem soon and accomplish as much as possible before the onset of spring.

F. FIBERS:

(See forestry under Resource Management, Part D)

IV RESOURCE MANAGEMENT

A. GRAZING:

The cooperative agreement existing between the Bureau and Mr. Gus Catoe involving some 360 acres of fenced pasture adjacent to the Ox Pen waterfowl area has terminated as of December 31, 1963, and will not be renewed. Mr. Catoe is approaching retirement age and has expressed his wish to gradually reduce his cattle herd and work out of the business. This fact, in addition to the recently neglected condition of the range has led us to feel that it would be in the best interest of the refuge objective if we do not renew the contract. Therefore, Mr. Catoe has been asked to remove his cattle and barn and has been given ample time to do so. Following this, the portion of the 360 acres requiring brush control will receive it and the tract will be brought into the S&W Conservation plan for FY 1965.

B. HAYING:

None.

C. FUR HARVEST:

None.

D. FORESTRY:

Timber sales made by the South Carolina Commission of Forestry for this reporting period are listed in the following table:

| COMPARTMENT | SALE NO. | PURPOSE OF SALE | SAWTIMBER (BD. FT.) | PULPWOOD (STD. CDS.) | ACRES | REVENUE RECEIVED |
|-------------|----------|-----------------|---------------------|----------------------|-------|------------------|
| 3 | 2 | *S.O.E.P. | 162,303 | 518 | 501 | \$8,048.00 |
| 2 | 3 | S.O.E.P. | 192,070 | 558 | 527 | 9,690.38 |
| 2 | 4 | S.O.E.P. | 64,596 | 349 | 348 | 4,161.00 |
| 1 | 1 | S. O. E. P. | 200,359 | 537 | 614 | 9,501.00 |
| TOTAL: | | | 619,328 | 1,962 | 1,990 | \$31,400.38 |

* Scrub Oak Eradication Program

Timber Stand Improvement:

The T.S.I. program has progressed at a favorable rate with 605 acres treated to date. We feel that our timber stands will be more productive and enhanced to wildlife by carrying out this operation.

Seedlings:

During the latter part of November, several days were devoted to digging water oak (Quercus nigra), laurel oak (Quercus laurifolia), and live oak (Quercus virginiana) seedlings. These seedlings (approximately 8,400) were stored and set out around lakes and in abandoned fields and openings in December and January. Also some 400 sawtooth (Quercus acutissima) and 200 swamp chestnut oak (Quercus prinus) seedlings were transplanted, from our nursery. Two to three rows of oak seedlings (primarily water oak) were transplanted at Lake's 12, 16, 17, Middle and Upper Triple Lakes and Lake Bee. The first row of seedlings was set out very close to the water line so that this will permit the acorns to fall into the water when the trees begin to produce. We feel sure that the oaks will make our lakes more attractive to waterfowl. We only hope that the beaver can see fit to live and let live.

Acorns:

During November, approximately 300 lbs. of live oak acorns were gathered. The faulty acorns were floated off and the remaining 275 lbs. were heat treated to kill weevils inside the acorns. Some of these acorns have already been planted, the remaining acorns are to be direct seeded in abandoned fields or planted in the nursery in early spring. Four new nursery beds (6' X 12') were constructed in November, bringing the total to six beds in our nursery. We hope to have 4,000 to 5,000 seedlings to transplant from this nursery next winter.

Wildfires:

Wildfire presented only a minor problem during this period. We had only one fire which burned 14 acres of scrub oak and sparse pine timber before it was extinguished. Cause of the blaze was attributed to careless deer hunters but the damage was negligible.

Control burns:

The control burning program has been delayed due to adverse weather conditions. A large percentage of the fire breaks have already been prepared and we are awaiting favorable weather conditions to burn. Only one attempt to burn has been made and it was unsuccessful due to rain which began two hours after fire was started.

Pine planting:

To date, the South Carolina Commission of Forestry has set out 1,020,000 pine seedlings. Adverse weather conditions have also inhibited this operation to some extent.

Timber sales (last quarter):

In reading the last narrative, it was noticed that the timber sales for that period were omitted. The following table reveals the timber sales made by the South Carolina Commission of Forestry for that period:

| COMPARTMENT | SALE NO. | PURPOSE of SALE | SANTIMER (BD. FT.) | PULPWOOD (STD. CDS.) | ACRES | REVENUE RECEIVED |
|-------------|----------|----------------------|--------------------|----------------------|-------|------------------|
| 9 | 4 | Improve- ment Cut | 161,700 | 520 | 258 | \$8,875.50 |
| 2 | 1 | Salvage | | 128 | 16 | 1,089.64 |
| 9 | 5 | Improve- ment Cut | 158,907 | 597 | 338 | 9,261.75 |
| 2 | 2 | Salvage | 83,781 | 53 | 41 | 2,510.00 |
| 3 | 1 | *S.O.E.P. | 176,326 | 607 | 658 | 8,951.00 |
| TOTAL: | | | 580,714 | 1,905 | 1,311 | \$30,687.89 |

* Scrub Oak Eradication Program.

E. COMMERCIAL FISHING:

None.

F. OTHER USES:

None.

V FIELD INVESTIGATION OR APPLIED RESEARCH

None to report.

VI PUBLIC RELATIONS

A. RECREATIONAL USES:

The highlight of the period was of course the public deer hunt held in early October. An estimated 300 persons participated for a total of 730 hunter days. In addition to those hunting, many curious or interested observers visited the area to view the situation and check the success of the hunters.

During the earlier part of the period, some fishing participation was observed but markedly little as compared to last year.

B. REFUGE VISITORS:

| | |
|--|---------|
| Mr. Ernest Rauben - University of Georgia | 9/5/63 |
| Mr. Fred Kinard - University of Georgia | 9/5/63 |
| Mr. Jack N. Hendrick - County Assessor, Chesterfield, S. C. | 9/10/63 |
| Mr. W. A. Clark - County Assessor, Chesterfield, S. C. | 9/10/63 |
| Mr. William C. Ward - Branch of Engineering, Atlanta, Ga. | 9/10/63 |
| Mr. Gene Watson - S. C. Commission of Game, Chesterfield, SC | 9/16/63 |

Mr. W. R. Jones - S. C. Commission of Game, Chesterfield, SC 9/16/63
 Mr. E. M. Smith - Branch of Engineering, Atlanta, Ga. 9/16/63
 Mr. W. E. Jackson - S. C. Commission of Game, Sumter, S.C. 9/27/63
 Mr. D. H. Hill - S. C. Commission of Game, Manning, S. C. 9/27/63
 Mr. Billy Joe Craft - S. C. Commission of Game, Manning, S. C. 9/27/63
 Mr. Vernon Cunningham - Predator & Rodent Control, Columbia, S.C. 10/3/63
 Mr. Verlon E. Carter - Regional Forester, Atlanta, Ga. 10/10/63
 Mr. James A. Taylor - Branch of Engineering, Atlanta, Ga. 10/25/63
 Mr. William A. Reid - Branch of Realty, Atlanta, Ga. 10/29/63
 Mr. H. R. Scott - S. C. Commission of Forestry, Columbia, S. C. 10/29/63
 Mr. Lawrence S. Givens - Branch of Wildlife Refuges, Atlanta, Ga. 10/31/63
 Mr. H. S. Huenecke, Washington Office, Washington, D. C. 10/31/63; 1/12/64
 Mr. Edwin W. Ball - Branch of Wildlife Refuges, Atlanta, Ga. 10/31/63
 Mr. Kenneth Marek - Branch of Realty, Atlanta, Ga. 11/4/63
 Mr. James B. Dawsey - Branch of Engineering, Atlanta, Ga. 11/20/63
 Mr. E. C. Pickens - S. C. Commission of Forestry, Columbia, S. C. 11/21/63
 Mr. Crayton J. Lankford - Branch of Wildlife Refuges, Atlanta, Ga. 11/21/63
 Mr. Rodger Hagwood - Director, Sandhills State Forest, Patrick, S.C. 11/21/63
 Mr. J. D. Mills - S. C. Commission of Forestry, Patrick, S. C. 11/21/63
 Mr. M. G. Salley Jr. - S. C. Commission of Forestry, Patrick, S.C. 12/5/63
 Mr. Henry P. Joyner - Branch of Engineering, Atlanta, Ga. 12/10/63
 Mr. Purvis Bedenbaugh Jr. - SCS, Chesterfield, S. C. 1/6/64
 Mr. James Dawsey - Branch of Engineering, Atlanta, Ga. 1/7/64
 Mr. D. P. Dugan - Dixie Pipeline Co., Atlanta, Ga. 1/7/64
 Mr. Harry E. Stiles - Branch of Refuges, Minneapolis, Minn. 1/12/64
 Mr. Forrest Carpenter - Branch of Refuges, Minneapolis, Minn. 1/12/64
 Mr. James W. Salyer - Washington Office, Washington, D. C. 1/12/64
 Mr. Dave Hickok - Russell NW Refuge, Lewistown, Montana 1/12/64
 Mr. Francis C. Gillett - Washington Office, Washington, D. C. 1/12/64
 Mr. Ray C. Erickson - Br. of Wildlife Refuges, Albuquerque, N.Mex. 1/12/64
 Mr. Noble S. Buell - Br. of Wildlife Refuges - Wash. D. C. 1/12/64
 Mr. John Kadie - Washington Office, Washington, D. C. 1/12/64

C. REFUGE PARTICIPATION:

On October 12, Assistant Refuge Manager Earl R. Cunningham gave a slide talk on the refuge system and activities at a dinner meeting of the Lion's Club of Lake City, S. C.

At the request of Mrs. Ernest F. Holland, Conservation Committee Chairman of the McBee Garden Club, Mr. Cunningham gave an Arbor Day slide talk to the Elementary School of McBee. Following the talk, some 300 youngsters watched as members of the Garden Club planted and dedicated a water oak tree in the school yard.

D. HUNTING:

The first organized deer hunt of the refuge was held September 30 through October 12, this period. Permits were mailed upon request to anyone wishing to participate - 954 in all, of which 28 were non-resident permittees. An estimated 300 hunters, or approximately 1/3 of those receiving permits, actually hunted. At least 8 of the out of state permittees are known to

have participated - 5 from North Carolina, 2 from Georgia and 1 from Kentucky. Of those participating 120 returned the questionnaire as requested on the hunt permit. Based upon these returns, the following data can be abstracted: of the hunters participating 36% were local, 34% were from adjoining counties, 7% were from out of state, and the remaining 23% came from throughout the state from distances ranging up to 150 miles and a mean distance of 40 miles. On the average, these participating hunted 21.65 hours during which time they saw 7 deer - 2 bucks, 4 does, and one which could not be identified as to sex. Hunter success was low - 7%. A total of 22 deer were checked out and at least 2 other (does) were known killed and left in the field. The reasons for such a low kill are many, primarily though, it may be attributed to 2 factors. First, 90% of those participating were wholly unfamiliar with stalk and still hunting and the relatively few hunters for such a large area. But almost all of those participating expressed a sincere interest in the program, stated that they thoroughly enjoyed it, and look forward to another hunt next year.

Organized quail hunting has been permitted this season on the Wildlife Management Area administered by the State of S. C. Commission of Forestry. The area has been opened on Wednesdays and Saturdays beginning on November 30 and will last through the quail season until February 15. Participation has been rather low with only 86 permits having been issued to date. Hunting success has been fair to good with birds bagged being almost directly proportioned to the familiarity of the hunter with the sandhills type hunting. One hunter (your narrator) found 14 coveys in a day's hunt but declines to comment on the number of shots fired per bird bagged.

E. VIOLATIONS:

Graham Moore of Rock Hill, S. C. and Johnny Millsop Jr., Patrick, S. C. each shot and killed a doe deer during the refuge hunt on October 4 and October 2 respectively. Both pleaded guilty to the charge, deposited and forfeited \$25 bonds with local authorities.

Duland L. Crowley and Thomas H. Davis both of Patrick, S. C. were apprehended on refuge property at 9:30 PM of September 20 with a 22 calibre rifle and a 5 cell flashlight. They were charged with possession of firearms on refuge lands and fined \$25 each in local court.

Ealey Clark and Hoyt Clark both of Angelus, S. C. were apprehended on the evening of Sept. 20 at 8:30 PM driving across refuge lands with loaded guns. Both were charged with possession of firearms on refuge lands and fined \$25 each, before the local magistrate. Because the men own property adjacent to the refuge and frequently use the truck trail for access, half the fine was waived.

On September 13 at 9:45 AM Arthur Bullard of Chesterfield, S. C. was encountered on an abandoned truck trail within the refuge with a female companion. After assisting the man in starting his automobile, Asst. Refuge Manager Cunningham asked the man to identify himself and state his business on Government property, whereupon the indignant man drew a 38 calibre revolver and pointed it at the baffled investigator. Picked up by the County Sheriff,

Ballard pleaded guilty to multiple charges. The charge of trespass was dropped but he was fined \$100 for pointing a gun at a person, \$50 for carrying a concealed weapon, and \$50 for possession of firearms within the refuge.

F. SAFETY:

Five safety meetings were held during the period. APW employees as well as regular station personnel were in attendance for these meetings. In addition to these regular meetings, several impromptu safety talks and reminders were held in the field with APW personnel during the period. We are proud of our safety record since the inception of the APW program. Since early August we have maintained a work force ranging from 26 to 65 men and have sustained only 3 minor accidents (with no loss of time) and one lost time accident. The latter was a freak situation in which an APW employee's knee cap was thrown out of place through no carelessness on his part. A blood vessel burst in the knee during the incident and minor surgery was required. He still remains out of work and although the accident wasn't a serious one, it did ruin a rather handsome record of 52,350 man hours of work since the last lost-time accident.

VII OTHER ITEMS

ITEMS OF INTEREST:

We are glad to welcome Mr. Clyde Stewart, forester to our staff. Clyde replaced Mr. Russell Tyre who resigned to accept a position in industry on September 7. Clyde with wife Sue moved to the Sandhills from Piedmont Refuge on October 1 and assumed his duties immediately thereafter. He shows a sincere interest in his work and we feel that he will contribute greatly to our forest management program. The "Forestry" section of this report was prepared by Mr. Stewart.

PHOTOGRAPHS:

A portion of refuge activities for the period are depicted in the attached photographs.

ACKNOWLEDGEMENT:

The Refuge Manager acknowledges his able assistant Mr. Earl Cunningham for the fine job he has done in preparing this report.

SUBMITTED: January 16, 1964.

Approved: _____

Victor W. Key
Acting Regional Refuge Supervisor
JAN 16 1964

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



Harvesting chufas in the Ox Pen Waterfowl area. The soil was so dry and dusty the perspiring crew bore a striking similarity to coal miners at the day's end.



195 acres received lime during the period at the rate of a ton/acre. The producer delivers and spreads the lime at a nominal \$6.75/ton.



Happy and bright eyed hunting party from Myrtle Beach Air Force Base with the first deer of the hunt on September 30. This 10 pointer weighed 189 lbs. - largest buck killed weighed 211 lbs.



Remains of a doe a not quite so proud hunter left to decay in the woods. A second dead doe was found not long after this one.



Another trophy 8 pointer which weighed in at 201½ lbs.



Four new 6' X 12' seed beds were added to the nursery this period. Note 24-30" Saw-tooth oak seedlings at one year of age in upper left bed.



Some impatient vandal couldn't wait until the public facilities were installed in the Lake Bee Recreation Area - he started on our APW sign. Apparently he felt that the project wasn't intended for "all of " U. S.



This old "privy" installed at Lake Bee by the Works Project Administration in the mid 1930's is removed soon to be replaced by new modern toilets to be constructed through contractual services.

The following 5 photographs tell the story of our picnic tables for the Lake Bee Recreation Area.



This site immediately adjacent to the Lower Triple Lake was selected for its relatively flat topography and abundant water supply. The 2 acres were cleared of all trees and stumps, dragged and smoothed.



When site preparation was complete, gravel and sand were delivered and the lake was brought to full pool.



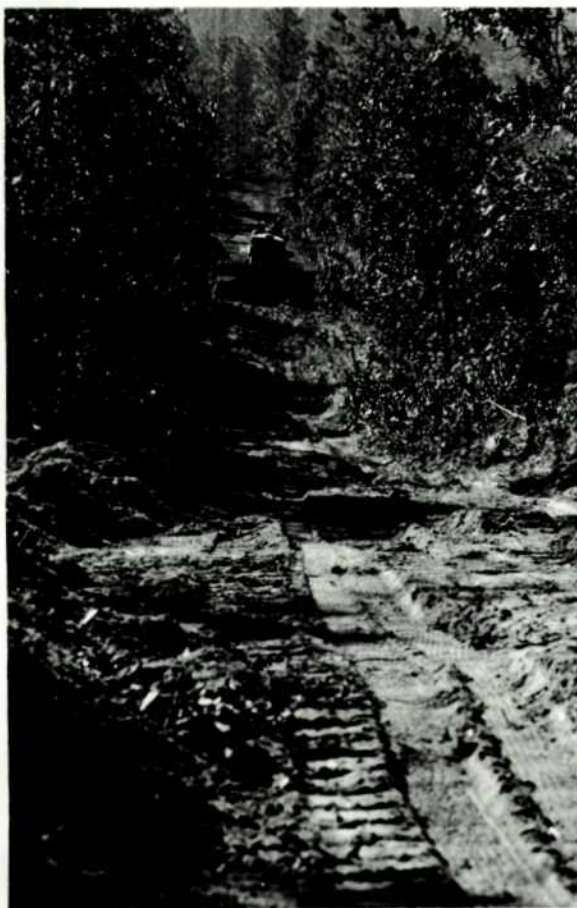
A concrete mixer was brought to the site, molds were built, and the tables were cast.



Tables were then transported via truck to the recreation area, assembled, and set in place. Gravel bed (10' X 14') foundations were placed and approximately 1½ tons of gravel were poured around each table.



And 33 of these tables, the finished product, await water in the lake,
and people.....all of U. S.



More than 20 miles of firebreaks were constructed around our exterior boundary through contractual services. The machine, a D-7 Caterpillar, was contracted for 200 hours at \$12.50/hr.



New road rights-of-way were opened into Lakes 12 and 16. It is hoped that completion of these access roads can be accomplished before the APW project terminates.

W A T E R F O W L

REFUGE CAROLINA SANDHILLS NATIONAL WILDLIFE REFUGE

MONTHS OF SEPTEMBER TO DECEMBER, 19 63.

| (1) Species | (2) Weeks of reporting period | | | | | | | | | |
|-------------------------|----------------------------------|----|----|----|----|-----|-----|-----|-----|-----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Swans: | | | | | | | | | | |
| Whistling Trumpeter | | | | | | | | | | |
| Geese: | | | | | | | | | | |
| Canada | | | | 63 | 75 | 105 | 150 | 160 | 275 | 275 |
| Cackling | | | | | | | | | | |
| Brant | | | | | | | | | | |
| White-fronted | | | | | | | | | | |
| Snow | | | | | | | | | | |
| Blue | | | | | | | | | | |
| Other | | | | | | | | | | |
| Ducks: | | | | | | | | | | |
| Mallard | | | | | | | 6 | 10 | 150 | 200 |
| Black | | | | 4 | | | 6 | 12 | 100 | 100 |
| Gadwall | | | | | | | | | | |
| Baldpate | | | | | | | | | | |
| Pintail | | | | | | | | | | |
| Green-winged teal | | | | | | | | | | |
| Blue-winged teal | | | | | | | | | | |
| Cinnamon teal | | | | | | | | | | |
| Shoveler | | | | | | | | | | |
| Wood | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 75 | 75 |
| Redhead | | | | | | | | | | |
| Ring-necked | | | | | | | | | 25 | 25 |
| Canvasback | | | | | | | | | | |
| Scaup | | | | | | | | | | |
| Goldeneye | | | | | | | | | | |
| Bufflehead | | | | | | | | | | |
| Ruddy | | | | | | | | | | |
| Other | | | | | | | | | | |
| Hooded Merganser | | | | | | | | | 5 | 5 |
| Coot: | | | | | | | | | | 11 |

WATERFOWL
 (Continuation Sheet)

REFUGE CAROLINA SANDHILLS NATIONAL WILDLIFE REFUGE

MONTHS OF SEPTEMBER TO DECEMBER, 1963

| (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 | 350 | 400 | 440 | 440 | 575 | 745 | 900 | 900 | 37,371 | | |
| Cackling | | | | | | | | | | | |
| Brant | | | | | | | | | | | |
| White-fronted | | | | | | | | | | | |
| Snow | | | | | | | | | | | |
| Blue | | | | | | | | | | | |
| Other | | | | | | | | | | | |
| Ducks: | | | | | | | | | | | |
| Mallard | 200 | 250 | 300 | 300 | 450 | 1000 | 1100 | 1100 | 35,464 | | |
| Black | 200 | 250 | 300 | 300 | 400 | 700 | 800 | 800 | 27,804 | | |
| Gadwall | | | | | | | | | | | |
| Baldpate | | | | | | | | | | | |
| Pintail | | | | | | | | | | | |
| Green-winged teal | | | | | | | | | | | |
| Blue-winged teal | | | | | | | | | | | |
| Cinnamon teal | | | | | | | | | | | |
| Shoveler | | | | | | | | | | | |
| Wood | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 8,050 | | |
| Redhead | | | | | | | | | | | |
| Ring-necked | 25 | 25 | 15 | 15 | 25 | 25 | 25 | 25 | 1,610 | | |
| Canvasback | | | | | | | | | | | |
| Scaup | | | | | | | | | | | |
| Goldeneye | | | | | | | | | | | |
| Bufflehead | | | | | | | | | | | |
| Ruddy | | | | | | | | | | | |
| Other | | | | | | | | | | | |
| Hooded Merganser | 10 | 10 | 10 | 10 | 15 | 15 | 15 | 15 | 770 | | |
| Coot: | | | | | | | | | 22 | | |
| | | | | | (over) | | | | | | |

| | (5) Total Days Use | (6) Peak Number | (7) Total Production | SUMMARY |
|-------|-----------------------|--------------------|-------------------------|---|
| Swans | : | : | : | Principal feeding areas <u>Martin and Cox Pen Lakes</u> |
| Geese | <u>37,371</u> | <u>900</u> | : | |
| Ducks | <u>73,712</u> | <u>2015</u> | : | Principal nesting areas _____ |
| Coots | <u>22</u> | <u>11</u> | : | |

Reported by BILL R. CUNNINGHAM, Asst. 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 WILD-LIFE Months of SEPTEMBER to DECEMBER 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> | | | | | | | | | | |
| Pied bill grebe | 4 | Sept 30 | 6 | Oct. | 6 | Oct. | | | | 6 |
| Great Blue Heron | 4 | Sept 1 | 4 | Sept. | 2 | Oct. | | | | 4 |
| Green Heron | 10 | Sept 1 | 10 | Sept. | 6 | Sept. | | | | 10 |
| Little Blue Heron | 3 | Sept | 5 | Sept. | 3 | Sept. | | | | 5 |
| American Egret | 2 | Sept | 2 | Sept. | 2 | Sept. | | | | 2 |
| II. <u>Shorebirds, Gulls and Terns:</u> | | | | | | | | | | |

(over)

| (1) | (2) | | (3) | | (4) | | (5) | | | (6) |
|---------------------------------|------|-------|------|-------|------|---|-----|--|--|-------|
| III. <u>Doves and Pigeons</u> : | | | | | | | | | | |
| Mourning dove | 2000 | Sept. | 3000 | Oct. | 2000 | Dec. | | | | 3,000 |
| White-winged dove | | | | | | | | | | |
| IV. <u>Predaceous Birds</u> : | | | | | | | | | | |
| Golden eagle | | | | | | | | | | |
| Duck hawk | | | | | | | | | | |
| Horned owl | | | | | | | | | | |
| Magpie | | | | | | | | | | |
| Raven | | | | | | | | | | |
| Crow | 1000 | Sept. | 1000 | Sept. | 800 | Dec. | | | | 1,000 |
| Reported by | | | | | | EARL R. CHAMBERS, Asst. 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 Months of September to December, 19 63.

| (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 | 2 | 30 | 65M/35F | | | | 100 | |
| Bob white quail | 40,000 | 25 | | | 50M/50F | | | | 1600 | |

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 NATIONAL WILDLIFE Calendar Year 1963.

| (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 | 600 | 150 22 | | | | | | 150* | | | 1600 | 1400 | 45M/55F |

Remarks:

* Natural mortality

Reported by EARL E. CUNNINGHAM, Asst. 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.

DISEASE

Refuge CAROLINA SANDHILLS NATIONAL WILDLIFE Year 19 63.

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 | _____ | _____ |

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 _____

PUBLIC RELATIONS

(See Instructions on Reverse Side)

Refuge CAROLINA SANDHILLS NATIONAL WILDLIFECalendar Year 1963.

1. Visits

a. Hunting 730 b. Fishing 1300 c. Miscellaneous 5,000 d. TOTAL VISITS 7,030

1a. Hunting (on refuge lands)

| TYPE | HUNTERS | ACRES | MANAGED BY |
|---------------------|---------|--------|------------------------|
| Waterfowl | | | |
| * Upland Game Quail | 83 | 40,000 | S.C. Comm. of Forestry |
| Big Game | 730 | 45,000 | F.W.S. |
| * Other (Dove) | 747 | 5,000 | S.C. Comm. of Forestry |

560

Number of permanent blinds _____

Man-days of bow hunting included above _____

Estimated man-days of hunting on lands adjacent to
refuge 6,000

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

| TYPE OF AREA | ACRES | MILES |
|--------------------|-------|-------|
| Ponds or Lakes | 65 | |
| Streams and Shores | | |

1c. Miscellaneous Visits

Recreation 500 Official 100

Economic Use 4,400 Industrial _____

2. Refuge Participation (groups)

ON REFUGE

OFF REFUGE

| TYPE OF ORGANIZATION | NO. OF GROUPS | NUMBER IN GROUPS | NO. OF GROUPS | NUMBER IN GROUPS |
|-------------------------|---------------|------------------|---------------|------------------|
| Sportsmen Clubs | | | | |
| Bird and Garden Clubs | 1 | 30 | 1 | 30 |
| Schools | 1 | 40 | 3 | 315 |
| Service Clubs | | | | |
| Youth Groups | 1 | 25 | | |
| Professional-Scientific | 4 | 10 | | |
| Religious Groups | | | | |
| State or Federal Govt. | | | | |
| Other | | | 2 | 65 |

3. Other Activities

| TYPE | NUMBER | TYPE | NUMBER |
|--------------------------------|--------|----------------------|--------|
| Press Releases | | Radio Presentations | |
| Newspapers (P.R.'s sent to) | 25 | 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 SandhillsCalendar Year 1963.Facilities

Picnic areas 1 tables 1 fireplaces 1 toilets 0
drinking water _____ shelters 1

Swimming: designated areas None bathhouses None

Boating: launching sites _____ rental facilities _____
service facilities None
are motors allowed No maximum horsepower _____

Camping: permitted Yes or not permitted _____
tent camps 0 total capacity _____
group camps 1 total capacity 40 acres
hunter camps 1 total capacity 40 acres
trailer camps 0
lodges 0 capacity _____
cabins 0 motels 0 total units 0

Tours: Season _____ frequency _____
self-guided nature trails 0 is trail leaflet available? No
self-guided auto tour route 0 is tour leaflet available? No

Access estimate number in public use _____
points:

General - Brief statement of two to five lines on recreational opportunities available on refuge (suitable for inclusion in refuge leaflets or briefing reports). Refuge lakes are open to sport fishing from Feb. 15 to Nov. 30 at no charge. Nature study, bird watching, wildlife observation and photography are permitted and refuge personnel are on hand to provide tours and information. A public recreation area now under construction will provide 3 picnic shelters, 2 modern toilets, 33 tables complete with camp stoves and clean drinking water. A lake within the recreation area (Over) will provide fishing and boating.

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 WILDLIFE REFUGE Year 1961 1963

| 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 |
|---|--|--|--|-------------------------------|----------------------------|----------|---------------|--|
| Laurel Oak (<u>Quercus laurifolia</u>) | Fields 9-4, 9-5 | Spacing 10X10 and 20X20 in fields - | Fields 31 acres | (Seedlings) 1,500 | November and December 1963 | | | Seedlings mixed in planting exact acreage by species not specified |
| Live Oak (<u>Q. virginiana</u>) | Food strip along Alligator Branch Comp. #9 | 5 to 10 feet in food strips random spacing | Lake shoreline 2 1/2 miles Food strips 2.4 miles | 2,000 | | | | |
| Water Oak (<u>Q. nigra</u>) | Shorelines of Lower & Middle Triple Lakes | around Lakes. | | 4,900 | | | | |
| Chestnut Oak (<u>Q. montana</u>) | | | | 200 | | | | |
| Sawtooth Oak (<u>Q. acutissima</u>) | Lakes 12, 16 & 17 | | | 400 | | | | |

TOTAL ACREAGE PLANTED:

Marsh and aquatic _____
Hedgerows, cover patches _____
Food strips, food patches _____
Forest plantings 31 acres, 4.9 mi.

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 | | | |
| Soybeans | 9 | 36 Bu. | 3 | 12 Bu. | | | 12 | | 12 |
| Corn | 38 | 340 Bu. 40 Bu. | 10 | 105 Bu. 15 Bu. | 3 | 24 Bu. | 51 | | 51 |
| Lespedeza bicolor | 33 | 2500 Lbs. | 8 | 600 Lbs. | | | 41 | | 41 |
| Lespedeza sericea | 14 | (No seeds harvested) | | | | | 14 | | 14 |
| Brown top millet | 68 162 | 250 Bu. 11,200 Lbs. | 18 | 2,800 Lbs. | | | 86 | | 86 |
| Rye (abruzzi) | 30 | 300 Bu. | 8 | 80 Bu. | | | 38 | | 38 241 |
| | | | | | | | | Fallow Ag. Land | 17 |

No. of Permittees: Agricultural Operations 2 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 | 150 | 1800 | | 366 |
| | | | | 2. Other | | | | |
| | | | | 1. Total Refuge Acreage Under Cultivation | | | | 1513 |
| Hay - Wild | | | | 2. Acreage Cultivated as Service Operation | | | | 873 |

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 _____

Months of _____ through _____, 195_____

| 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 SHOWN USE | | |
|----------------------------------|--|-------------------------------------|--------------|--------------------------|-----------|-------|-----------|------------------------------------|------------------------------|------|------------|
| | | | | Transferred | Seeded | Fed | Total | | Seed | Feed | Surplus |
| LESPEDeza bicolor | 2490 lbs. | | 2490 | 200 | | | 200 | 2290 lbs. | 1000 | | 1290 lbs. |
| LESPEDeza sericea (cleaned) | 1180 lbs. | | 1180 | 300 | | | 300 | 880 lbs. | 880 lbs. | | |
| LESPEDeza sericea (uncleaned) | 1898 lbs. | | 1898 | | | | | 1898 | | | 1898 lbs. |
| Soybeans | 135 Bu. | 12 Bu. | 137 Bu. | | 135 Bu. | | 135 Bu. | 12 Bu. | 12 Bu. | | |
| Ryegrass | 315 lbs. | 700 lbs. | 1015 lbs. | | 1015 lbs. | | 1015 lbs. | | | | |
| Fescue | 158 lbs. | | 158 lbs. | | 58 lbs. | | 58 lbs. | 100 lbs. | 100 lbs. | | |
| Wheat | 2,299 lbs. | 12,500 | 14,799 lbs. | | 13,500 | | 13,500 | 1,299 lbs. | | | 1,299 lbs. |
| Br. Top Millet | 500 lbs. | | 500 lbs. | | 200 lbs. | | 200 lbs. | 300 lbs. | | | 300 lbs. |
| Corn | 133 Bu. | 105 Bu. | 238 Bu. | | | 8 Bu. | 8 Bu. | 230 Bu. | | | 230 Bu. |
| Crotalaria | 900 lbs. | | 900 lbs. | | 900 lbs. | | 900 lbs. | | | | |
| Chufa | 1225 lbs. | 1833 lbs. | 3058 lbs. | 325 lbs. | | | 325 lbs. | 1833 lbs. | 1000 lbs. | | 833 lbs. |
| Rye | | 280 Bu. | 280 Bu. | | 280 Bu. | | 280 Bu. | 0 | | | |
| Bahia grass | | 2000 lbs. | 2000 lbs. | | | | | 2000 lbs. | 2000 lbs. | | |

(8) Indicate shipping or collection points _____

(9) Grain is stored at _____ Refuge Headquarters and Martins Lake

(10) Remarks _____

*See instructions on back.

This report covers May thru December 1963 since May to August erroneously omitted from the May to August narrative report.

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.

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

 Refuge CAROLINA SANDHILLS NATIONAL WILDLIFE REFUGE

 Year ¹⁹⁵~~1952~~ **1963.**

| Species | Collections | | | | Receipts | | Total Amounts on Hand | Amount Surplus |
|-------------------|-------------|------------------------------------|---------------|------------|----------|--------|-----------------------------|-------------------|
| | Amount | Date or Period or Collection | Method | Unit Cost | Amount | Source | | |
| Live Oak Acorns | 300 Lbs. | October | Hand gathered | \$1.50 lb. | | | 300 Lbs. | |
| Brown Top Millet | 500 Lbs. | Jan. 11 | Transfer | | | | 500 Lbs. | |
| Lespedeza bicolor | 600 Lbs. | Jan. 6 | Coop farmer | | | | 600 Lbs. | |
| Wheat | 12,500 Lbs. | July 3 | Combined | \$2.00/bu. | | | 12,500 Lbs. | |
| rye(abruzzii) | 80 bu. | July 25 | Coop farmer | \$2.00/bu. | | | | |
| Chufa | 45 bu. | Oct. 10 | Harvested | | | | 45 bu. | |
| Corn | 105 bu. | Nov. 6 | Coop farmer | | | | 105 bu. | 105 bu. |
| Soybeans | 12 bu. | Dec. 31 | Coop farmer | | | | 12 bu. | |

TIMBER REMOVAL

Refuge CAROLINA SANDHILLS NATIONAL WILDLIFE REFUGE Year 1961.

| 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 |
|--|------------|------------------|---------|--|----------------|--------------|-------------------------------------|-------------|
| TIMBER REMOVED BY SOUTH CAROLINA COMMISSION OF FORESTRY PER COOPERATIVE AGREEMENT SEE "FORESTRY" PART D, RESOURCE MANAGEMENT THIS REPORT. | | | | | | | | |

Total acreage cut over _____

Total income _____

No. of units removed B. F. _____

Cords _____

Ties _____

Method of slash disposal _____

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REFUGE NARRATIVE REPORT
CAROLINA SANDHILLS NATIONAL WILDLIFE REFUGE

MAY TO AUGUST 1963

I. GENERAL

A. WEATHER CONDITIONS:

| MONTH | PRECIPITATION | NORMAL | MAXIMUM TEMPERATURE | MINIMUM TEMPERATURE | MEAN TEMPERATURE |
|--------|---------------|--------------|---------------------|---------------------|------------------|
| MAY | 4.02 | 3.32 | 94(9th-12th) | 37 (2nd) | 69.37 |
| JUNE | 5.94 | 3.86 | 101(10th) | 43(2 & 3rd) | 74.27 |
| JULY | 5.93 | 5.40 | 97(22nd) | 54(10th) | 78.71 |
| AUGUST | 1.17 | 5.36 | 100(3rd & 7th) | 57(18 & 19th) | 78.79 |
| | <u>17.06</u> | <u>17.94</u> | | | |

Perhaps the most descriptive adjective for the weather during this reporting period is "eratic." Entering the period in the climax of a drought condition prevalent since early April, late May sustained a prolonged period of precipitation sufficient to register a surplus for the month. Although the temperature was 37 degrees at the station headquarters, a killing frost was evident in many low lying areas on May 2nd; crops in general were not damaged appreciably, however. Early June was again dry but the latter part of the month again registered a surplus of rain. July precipitation was near normal with a slight surplus but August was extremely dry and a 4.19 inch moisture deficit resulted in drought conditions - hence a marked reduction crop yields (particularly corn and chufas). Temperatures ranged well below normal through July and near normal during August.

B. HABITAT CONDITIONS:

1. Water: Lake levels have varied considerably during the period. The Upper and Lower Triple Lakes, Upper Twin Lake, and Lake 12 were drained the latter part of June as the initial steps of a water manipulation plan to inhibit obnoxious pest plants and promote desirable food plants as well as enhance fishing conditions. Lake Martin was drawn to some 3½ to 4 feet below full pool in late June and held fairly constant throughout the period. Lake 16 level fell some 6-8" during August as the result of drought conditions, but late August rains restored it to full pool. All other refuge lakes were maintained at full pool throughout the period.

2. Food and Cover: Native forage was ample to the needs of most wildlife species through most of the period but August brought the deer and squirrels into the corn fields - a matter of choice, however, rather than necessity. Bicolor lespedeza was browsed rather heavily by deer throughout the period and turkeys were observed in open areas - probably "bugging."

II WILDLIFE

A. MIGRATORY BIRDS:

Twenty five green wing teals were observed on the area on August 29th but apparently only rested and moved on since they were not seen again. Woodducks were, of course, only resident waterfowl on the area during the period and numbers seem to be unchanged, for the most part from last year. Only 2 broods of young were observed, 5 and 7 young respectively. A trap site was selected and baited for 4 weeks prior to setting of the trap on August 12 (at which time 22 ducks were taking the bait). Eleven of the 22 have been banded to date and one recapture from last Year's banding was taken. It is probable that these 22 ducks represent at least 50% of the total resident population.

The availability of a ready food source as the result of draw-down of several lakes has brought about an appreciable increase of wading birds in late June through August. Peak numbers in July were as follows: 4 great blue herons, 10 little blue herons (8 immatures), 4 American egrets, 12 green herons, one pied bill grebe (on August 26), and 2 immature white ibis.

Dove population on the refuge and in the surrounding areas are definitely up from the same period last year. We realize that this observation is contrary to the analysis as depicted by the dove status survey and the abundance may be attributable to early migration trends or local crop manipulations, but more birds are seen per unit of time afield indicating a most successful nesting season.

B. UPLAND GAME BIRDS:

A very obvious reduction in size of broods (as opposed to last year) leads us to believe that sustained periods of rainfall in both May and June have had a significant effect on survival of young quail during this nesting season. Many mated pairs of birds are still observed regularly without young, however, so it is probable that late nesting and re-nesting will offset the existing disparity from the bumper crop of young birds in evidence during the same period last year.

At least one brood of 12 turkey poults has been observed (mid August). Several observations of lone toms and pairs of toms were made early in the period but with the exception of the aforementioned brood, observations during July and August were practically nil - compounding the evidence that our turkey population is stagnant.

C. BIG GAME ANIMALS:

All evidence tends to indicate that a minimal supply of trophy material will be available to the hunters who participate in our managed deer hunt, now only 4 weeks off. Local enthusiasm is running high and after publication of news releases in area news-media (immediately) we expect to be overcome with requests for hunt permits. A campsite has been prepared in the Lake Bee area and firewood has been provided for campers. Except for minor details all is in readiness.

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

Raccoon depredations to corn have been significant during the period and squirrels are concentrating in the vicinity of our corn fields. Perhaps the most worthy of mention is the increasing abundance of beavers on refuge lakes and streams. Their activities have greatly hampered duck trapping attempts over the past few years and this current period witnessed almost daily clashes through their insatiable determination to clog lake drains - thus flooding young millet plantings and upsetting water levels in baited trap sites. Some form of control should of necessity be exercised soon.

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

No eagles or ospreys were observed during the period. Red tailed hawks were common throughout the summer and sparrow hawks began to appear in numbers about mid August.

F. OTHER BIRDS:

A double-crested cormorant was observed on Lake 12 on May 15 and 16 but was not seen thereafter.

G. FISH:

Public fishing in refuge lakes has been about normal during the period. At least 5 largemouth bass in excess of 11 lbs. were taken from Martin Lake - the largest, 13 lbs. 2 oz.

We were baffled to find hardly any eating size fish in either the Upper or Lower Triple lakes when they were drawn down in June. Upper Twin Lake had only about 25 lbs of fish (all species). We are reluctant to advance any conclusions as to why this condition was so since all 3 of these lakes had been stocked for a number of years. The stream channel in Lake 12 was large enough to contain most of the fish in the lake and it appeared that an acute shortage of all species was evident, even though a 22 3/4 ounce bluegill bream was picked up when it floundered from the stream channel. Consistent catches of small to medium size bass were taken from Lake 16 and nice strings of bluegill and warmouth were taken at Martin Lake.

H. REPTILES:

It would appear that we are witnessing a "bloom" in cottonmouth snake populations. At least 13 have been observed during the period and of the 4 which were killed, one was almost 4 feet in length. Refuge records do not make mention of any previous population trends - in fact no mention is made at all of this particular species. It is likely, however, that this particular snake has been here all along and this is a normal fluctuation pattern in its population cycle.

Two canebrake rattlers were killed and several others seen during the period.

I. DISEASE:

Nothing significant to report.

III REFUGE DEVELOPEMENT AND MAINTENANCE

A. PHYSICAL DEVELOPEMENT:

No major work projects were in progress during this reporting period, as a function of Operations and Maintenance activity. However, our station has been allotted a total of \$300,000 in Accelerated Public Works Funds and as a consequence of this action several projects were initiated during August.

The major projects proposed are as follows:

Roads and trail construction and renovation, Timber Stand Improvement. Construction of a Forest Recreation Area, Installation of a Telephone Line and Posting. Progress thus far is quite limited but much of the initial planning, engineering, and clearing has been accomplished. As of the end of the period engineering services has been engaged to survey the roads and trails, and 29 men employed to carry out the work projects. Thus far some 200 acres have received T.S.I. treatments, 45 acres have been thinned and brushed for recreation and camping sites, and 1.75 miles of boundary have been cleared and posted.

B. PLANTINGS:

1. Aquatics and Marsh Plants.

Japanese millet was sown in the lake beds of the Upper and Lower Triple lakes, Upper Twin Lake and Lake 12 during the third week of July. Germination was excellent in all four instances, but growth was retarded after a week or 10 days in the Triple lakes and a complete failure resulted. However, Lake 12 yielded a fair stand which is presently heading (although it appears that the heads will be comparatively small) The Upper Twin Lake after 5 weeks was boasting a luxuriant stand of 3-4 feet stems and heads 5 inches in length. There is a black chapter to this story, however. The beaver have taken a fancy to the millet and they come in numbers nightly to feast upon it. And, as if this depredation weren't trouble enough, they proceed to pull up the stems and clog the drain pipe nightly - making it necessary to clean out every day or two lest the rising water cover the maturing millet before it has a chance to ripen sufficiently. We have a special on beavers this month if anyone is interested!!!

2. Trees and Shrubs:

None.

3. Upland Herbaceous Plants.

None

4. Cultivated Crops:

Although drought conditions during this period were definitely reflected in

reduced crop production, the 45 acres of refuge corn could safely be classified as fair, however, most of 128 acres of crotonaria was poor with only a few stands being fair.

A total of 7.3 acres of chufas planted the latter part of last period and early this period are ready for harvest but yields are expected to be poor. Indications are that the nuts are too small and too few. The 12.4 acres of refuge seed wheat was harvested in early July with yields of 16.7 bu/acre. In early July also 16 acres of cowpeas were planted as a row crop near headquarters and although stands are excellent, the deer are browsing them heavily. Four additional acres of peas were hand sown but germination was less than 50%. Although planting was delayed because of insufficient moisture, we were finally blessed with rain the last week of the period and 5 acres of buckwheat was planted at Ox Pen Lake. Combinations of buckwheat and ryegrass were planted at Martin Lake (11 Acres) and buckwheat and brown-top millet were sown on 4 acres around the lake edge. At the time of this writing land preparation has begun for fall planting of winter browse in both Operation and Maintenance and Soil and Moisture activities.

Cooperating farmers report that 55 acres of corn, 17 acres of peas, and 86 acres of brown-top millet are fair to good and 41 acres of lespedeza bicolor are expected to yield excellently making allowance for deer damage.

C. COLLECTIONS AND RECEIPTS.

1. Seed or other Propagules:

Thirty nine bags (80 bu.) of Abruzzi rye were delivered to the station headquarters on July 25 by Mr. Gus Gate, cooperating farmer. Refuge wheat (200 bu.) was harvested and stored.

2. Specimens:

None.

D. CONTROL OF VEGETATION:

Chemical control of coppice around the lake edge of Martin and Ox Pen lakes was attempted during the period. Eradication of brush and weeds in several marshy areas in the Ox Pen area was begun, but results indicate that more intensive attention will be required to accomplish the task.

E. PLANNED BURNING:

None.

F. FIRES:

(See Forestry under Resource Management, part D.)

IV RESOURCE MANAGEMENT

A. GRAZING:

A recent survey has shown that a serious scrub oak encroachment is evident in much of the 360 acres under pasture lease through a cooperative agreement. The current agreement will terminate this calendar year and this problem should certainly receive priority consideration in the event a new agreement is entered into.

B. HAYING:

None.

C. FUR HARVEST:

None.

D. TIMBER REMOVAL:

Refuge timber sales were down considerably during this reporting period. State foresters completed the proposed Improvement cut for Compartment 9 and moved on the adjacent Sand Hills State Forest to continue marking for the Scrub Oak Eradication Program.

Two fires were reported during the month of August. Refuge fire No. 6 destroyed 9 acres in the vicinity of Middle Triple Lake. This fire received inadequate mop-up action when brought under control and as a result came to life 13 days later and swept over an additional 35 acres. Salvage operations will commence in the near future.

The highlight of the reporting period was the augmentation of a full-scale TSI program under the Accelerated Public Works Program. Stand improvement is aimed primarily at increasing the wildlife value of certain hardwood areas by releasing better species of mast producers. Some 200 acres have been completed to date.

Sawtooth Oak (Quercus acutissima) acorns Nursery planted in the fall of 1962 are doing quite well. The survival is now estimated at 80% with some specimens reaching 24" in height. Plans are being made to transplant these seedlings to the field this winter.

E. COMMERCIAL FISHING:

None.

F. OTHER USES:

None.

V FIELD INVESTIGATION OR APPLIED RESEARCH

PROGRESS REPORT:

Although the investigation has not been set up as a research project, Biologist Webster and the refuge staff have initiated an investigational type plan to determine what measures can be taken (if any) to replace the obnoxious pest plants (now so prevalent in our lakes) with desirable waterfowl food plants. During last period Mr. Webster took water samples for chemical analysis and in June of this period bottom samples were taken from 4 lakes which were subsequently drained as the next step in the water manipulation plan.

VI PUBLIC RELATIONS

A. RECREATIONAL USES:

Public participation for the period was limited to fishing and a very limited amount of wildlife observation groups (families out for a Sunday afternoon drive).

B. REFUGE VISITORS:

Mr. Cunningham was host to a young man who was interested in completing the requirements for an Eagle Scout merit badge by observing some beaver activities.

A youth conservation group composed of teenagers from all over the state were treated again this year to a tour of the refuge and a brief resume of refuge policies and activities. Mr. Brown was host, on May 14 to a vocational agricultural student group from Hartsville, S. C.

Mr. Lester Scherer - Administrative Officer, Atlanta, Ga. 5/3/63
 Mr. Clark G. Webster - Wildlife Management Biologist, Hardeeville, S.C. 5/13/63
 Mr. Verlen E. Carter - Forester, Atlanta, Ga. 5/14/63; 5/15/63; 8/13/63
 Mr. Royston R. Rudolph - Asst. Reg. Supervisor, Atlanta, Ga. 5/14/63; 5/16/63
 Mr. W. R. Jones - S. C. Wildlife Resources Comm. - Chesterfield, S.C. 6/6/63; 7/1/63
 Mr. H. P. Lee - S.C. Wildlife Res. Comm. - Chesterfield, S. C. 6/6/63
 Mr. Charles Flory - S. C. State Forester, Columbia, S. C. 5/16/63
 Mr. E. C. Pickens - Asst. State Forester, Columbia, S. C. 5/16/63
 Mr. Howard Scott - Management Asst. S.C. Forestry Comm., Col. S.C. 5/16/63
 Mr. R. B. Lee - Director, Sandhills State Forest, Patrick, S.C. 5/16/63
 Mr. Joe Mills - Forester, Sandhills State Forest, Patrick, S. C. 5/16/63
 Mr. Purvis H. Bedenbough Jr., SCS, Chesterfield, S. C. 5/16/63
 Mr. Crayton J. Lankford - Soil Conservationist, Atlanta, Ga. 5/28/63
 Mr. Robert N. McCombs - S.C. Commission of Forestry, Col., S.C. 5/28/63
 Mr. A. C. Fuller - Asst. Reg. Supervisor, Atlanta, Ga. 6/6/63
 Mr. Lynn H. Hutchens - BSW, Washington, D. C. 6/6/63
 Mr. W. C. Lehmann - U.S. Game Management Agent, N. Chas., S.C. 6/6/63
 Mr. John Kadie - Santee N/W Refuge, Summerton, S. C. 6/25/63
 Mr. Tom Martin - Santee N/W Refuge, Summerton, S. C. 6/25/63
 Mr. J. Clyde Quick - S.C. Wildlife Res. Comm., Bennettsville, S.C. 7/1/63
 Mr. & Mrs. Schiele - Museum of Natural History, Gastonia, N.C. 7/8/63
 Mr. John W. Piffle - S.C. State Forestry Comm., Col., S.C. 7/12/63
 Mr. Harold M. Steele - U. S. Game Management Agent, Col., S.C. 7/22/63

Mr. Richard M. Kramer - U. S. Army (Swift Strike Command) 8/7/63
 Mr. William F. Novak - U. S. Army (Swift Strike Command) 8/7/63
 Mr. James A. Taylor - Gen. Engineer, Atlanta, Ga. 8/13/63
 Mr. Joseph Mills - Forester - Sandhills State Forest, Patrick, S.C. 8/13/63
 Mr. H. N. Heckle - State Highway Dept., Columbia, S. C. 8/13/63
 Capt. C. E. Pickerson - U.S. Army (Swift Strike Command) 8/16/63
 Mr. W. H. Banks - State Highway Dept., Chester, S. C. 8/19/63
 Mr. Albert J. Resaman - BSW, Washington, D. C. 8/27/63
 Mr. Robert Lines - Reg. Supervisor, Br. of Realty, Atlanta, Ga. 8/27/63

C. REFUGE PARTICIPATION:

On May 16 our staff was host to members of the South Carolina Commission of Forestry and 2 Regional Office personnel, meeting jointly to discuss forest management and hunting plans for Fiscal Year 1964. Other important issues under consideration were enforcement and surveying and posting of boundary lines on the State side of the Management Area. Representing the Bureau were Messrs. Rudolph and Carter from the Regional Office and Messrs. Holland, Cunningham and Tyre, the refuge staff. Representing the State were Messrs. Flory, Pickens, Scott, Lee and Mills.

D. HUNTING:

None.

E. VIOLATIONS:

None.

F. SAFETY:

Four regular monthly safety meetings and 2 special safety meetings were held during the period. Safety aspects under discussion were: driving, boating, lightning, snake bites, first aid, fires, lifting, equipment operations, and particularly for the benefit of the new APW employees, use of hand tools and proper techniques in filing. Mr. Dixon gave a first hand account of his automobile accident in July and although he was technically in no fault, the incident pointed up the importance of defensive, alert driving - both on and off the job. At this writing we have enjoyed 45,562 lost-time accident free working hours.

VII OTHER ITEMS

A. ITEMS OF INTEREST:

Mr. Russell L. Tyre, refuge forester, has resigned his position here, effective September 7. Mr. Tyre's tenure here has done much to improve our relations with the State Forestry Commission in our joint efforts of forest management. We understand that he has accepted a sales position with a hydraulic equipment firm in Atlanta, Georgia and we wish him well as he delves into the world of higher finances.

On July 23 it was discovered that 2 men (from tracks in sand) had siphoned from at least 4 vehicles parked under one of the vehicle sheds a total of some 30 gallons of gasoline. Local authorities were notified and a thorough

(9)

investigation ensued, no solution, however, has yet been uncovered.

B. PHOTOGRAPHS:

Some of the refuge activities for the period are portrayed in the attached photographs....guess who has the new camera????

*Complete list of photos
by C. C. Brown for
Ref. mgr.*

[Signature]
ERNEST F. HOLLAND,
Refuge Manager.

SUBMITTED: September 10, 1963.

[Signature]
APPROVED: _____

Acting REGIONAL MANAGER
SEP 16 1963



As a part of the long range Soil and Moisture Plan, all refuge farm fields have been numbered....Compartment 6, field #12, containing 17 acres.



Olin Morrison, Laborer, farm (employed July 1) overhauls ancient 1941 road grader. Mr. Morrison's efforts have already taken several pieces of ailing equipment off the sick list.



In latter July, the Upper and Lower Triple Lakes, Upper Twin Lake, and Lake 12 were sewn to Japanese millet using a hand type cyclone seeder.



After 6 weeks the Upper and Lower Triple Lakes (having received the application at the rate of 15 lbs/acre) exhibited a complete failure.



Lake 12 after 6 weeks (application 25 lbs/acre) millet is heading at 12" to 15" and the stand is quite lush.



Upper Twin Lake after 6 weeks (application 25 lbs/acre) an excellent stand 3-4 feet high with heads as long as 5".



Taking advantage of the lowered water in Lake Martin, coppice and brush were cleared between the lake edge and an existing farm field near the head of the lake. After clearing (below) the newground will be sodded to enhance the farm area for waterfowl use.





Lake Martin drawn down some 3½' on June 30. It is hoped that this manipulation of the water level will provide some hint to the control of water hyacinth and white water lily. Except for stream flow, entire surface is covered with a lush profusion of these pests.



After 5 collisions of motor vehicles with deer along highway 145 last winter, the state highway dept. consented (at our request) to put 6 warning signs along the right-of-way on May 21. Yet on August 26 an unattentive motorist struck an 8 point buck near Lake Bee. The animal was killed, authorities estimated damage to the vehicle at \$200.00.



This land was prepared for buckwheat and lay in readiness for 3 weeks.... planting was delayed pending sufficient rainfall to insure germination. Dust cloud accentuates drought conditions prevalent throughout July and August. Although several inches of rain fell at refuge headquarters, only a trace was evident in the Martin and Ox Pen lake areas.



Accelerated Public Works crew clearing understory and scrub oak from proposed picnic area near Lake Bee.



A temporary tool and materials shed is prefabricated by APW crew at field work station.



APW Crew takes time out to discuss safety and proper techniques in using hand tools.

WATERFOWL

REFUGE Carolina Sandhills National Wildlife Refuge

MONTHS OF May TO August, 1963.

| (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 | 30 | 30 | 30 | 35 | 35 | 35 | 35 | 42 | 40 | 40 |
| Redhead | | | | | | | | | | |
| Ring-necked | | | | | | | | | | |
| Canvasback | | | | | | | | | | |
| Scaup | | | | | | | | | | |
| Goldeneye | | | | | | | | | | |
| Bufflehead | | | | | | | | | | |
| Ruddy | | | | | | | | | | |
| Other | | | | | | | | | | |
| <u>Coot:</u> | | | | | | | | | | |

WATERFOWL
 (Continuation Sheet)

REFUGE Carolina Sandhills National Wildlife Refuge

MONTHS OF May TO August, 19 69

| (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 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 1,891 | 2 | 20 |
| 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>4,894</u> | <u>15</u> | <u>20</u> |
| Coots | _____ | _____ | _____ |

| <u>SUMMARY</u> |
|--|
| Principal feeding areas <u>Martin Lake and Middle Triple</u> |
| <u>Lake.</u> |
| Principal nesting areas <u>Martin Lake and Ham Branch</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).

(Nov. 1945)

(other than waterfowl)

Months of May to August 1963 NOA

(over)

| (1) | (2) | | (3) | | (4) | | (5) | | (6) |
|--------------------------------|---|-----|------|--------|------|------------------|-----|------|-------|
| III. <u>Doves and Pigeons:</u> | | | | | | | | | |
| Mourning dove | 1000 | May | 3000 | August | 3000 | August | | 2000 | 3,000 |
| White-winged dove | | | | | | | | | |
| IV. <u>Predaceous Birds:</u> | | | | | | | | | |
| Golden eagle | | | | | | | | | |
| Duck hawk | | | | | | | | | |
| Horned owl | | | | | | | | | |
| Magpie | No observations, but this species heard on several occasions...insufficient data to list nos. | | | | | | | | |
| Raven | | | | | | | | | |
| Crow | 500 | May | 1000 | July | 1000 | August | | 300 | 1,000 |
| | | | | | | Reported by..... | | | |

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.

3-1750b
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

For 12-month period ending August 31, 1963.

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 | | 0 | Ducks | 1,000 | 4 |
| | Upland | | 12,090 | Geese | | |
| | Marsh | | | Swans | | |
| | Water | | 80 | Coots | | |
| | Total | | 12,170 | Total | 1,000 | 4 |
| Central Zone | Crops | | 1055 | Ducks | 79,500 | 16 |
| | Upland | | 19,665 | Geese | 80,240 | 20 |
| | Marsh | | | Swans | | |
| | Water | | 150 | Coots | | |
| | Total | | 20,870 | Total | 159,740 | 16 |
| Southern Zone | Crops | | 136 | Ducks | 2,116 | 5 |
| | Upland | | 11,741 | Geese | | 0 |
| | Marsh | | | Swans | | |
| | Water | | 10 | Coots | | |
| | Total | | 11,887 | Total | 2,116 | 5 |
| TOTALS | Crops | | 44,927 | Ducks | 162,856 | 25 |
| | Upland | | | Geese | | 20 |
| | 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 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 Months of May to August, 19 63

| (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. |
| Wild Turkey | 40,000 | 360 | 2 | 45 | 60/40 M/F | NONE | | | 110 | |
| Bob-white quail | 40,000 | 20 | 15 | 1000 | 50/50 M/F | NONE | | | 2000 | |

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 1963

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, Laborer(Farm) | (Uncl.) |
| Roosevelt Blackwell (Laborer) | (Uncl.) |
| Barnell Hammonds (Laborer) | (Uncl.) |
| Scott Murphy (Laborer) | (Uncl.) |

I. GENERAL

A. WEATHER CONDITIONS:

| <u>MONTH</u> | <u>RAINFALL</u> | <u>NORMAL</u> | <u>MEAN MAX. TEMP.</u> | <u>MEAN MIN. TEMP.</u> |
|--------------|-----------------|---------------|------------------------|------------------------|
| January | 5.69 | 3.26 | 50.00 | 29.93 |
| February | 3.05 | 3.25 | 51.36 | 29.32 |
| March | 5.24 | 3.95 | 70.16 | 50.54 |
| April | 2.22 | 3.80 | 75.30 | 50.93 |
| | <u>16.20</u> | <u>14.26</u> | | |

High temperatures for the period occurred on April 21 and 22 when 91 degrees was recorded. Lows occurred on January 24 and February when the temperature dipped to 12 and 11 degrees respectively. Rainfall was normal for January and March and normal for February. April reflected a deficiency of 1.58 inches culminating in a 3 week period during which no rain fell. Accompanying persistent high winds throughout most of March and April resulted in extremely hazardous burning conditions. Incendiary fires carried by these high winds swept over 1380 acres of refuge forests during the period. The only snow of the winter fell on February 26. Depth ranged from 1 to 2 inches and only lasted 1 day.

B. HABITAT CONDITIONS:

1. Water

Water levels were normal for the period. The supporting timber for the gauge in the Martin Lake had rotted away and was replaced by Clerk Brown in March.

2. Food and Cover

The refuge corn crop was more than adequate to feed the wintering waterfowl - some 5 acres were left unused and standing. Winter browse (wheat) received marked usage by turkey, deer, and quail but waterfowl usage was limited primarily to lounging, and actual browsing was but little evident.

Turkeys and quail continued to use the Bahia grass in the Dixie Pipeline right-of-way during late winter.

II. WILDLIFE

A. MIGRATORY BIRDS:

Waterfowl numbers were despairingly low this winter. Canada goose numbers dropped from 1500 to 800 and ducks from 1100 to 800. Some 200 geese wintered at the U.S. FWS Cheraw Hatchery 25 miles northeast of the refuge and it is believed that they are part of the Sandhills flock; nevertheless, the flock is down and we advance no theory to appease our qualms over the matter. Both duck and geese began to leave about the last week of February and on March 19th the last goose left us. Four other geese, presumed to be transient, came in and out on March 29. On March 17th 13 Redhead ducks dropped in on Martin Lake but the next morning they were gone. As yet no broods of wood ducks have been observed although several pairs of adult birds are using the refuge. On April 22, two curlews (presumed to be Hudsonian) were observed at Ox Pen Lake. Participation in the mid-winter snipe survey revealed that snipe populations are extremely low only one bird was flushed during 8 hours in the field.

B. UPLAND GAME BIRDS:

Quail numbers remained surprisingly high through most of the winter. On January 24, two covies with 18 birds each were observed. On January 31, 5 covies of birds were flushed in a 65 chain strip (Covey size averaged 13 birds). Indications are that nesting is well underway - whistling cocks were heard as early as March 29.

Turkey observations throughout the period were numerous. However, most of these observations occurred repeated in the same general areas and were probably repeated observations of the same birds. Track counts made on January 14 revealed that turkeys are not using the northern portion of the refuge, and that most of the birds are concentrated in the lower third with populations waning toward the upper reaches of the middle third of the area.

C. UPLAND GAME ANIMALS:

Detailed plans for a controlled deer hunt this fall are forthcoming in accordance with the recent approval of an amendment to our refuge hunting plan. We feel that this hunt is rather timely in view of the recent build up in the refuge deer herd. At least 5 accidents involving clashes with deer have been reported to have occurred along state highway 145 between

Lake Bee and Ruby Tower - the last of which involved 2 deer, a buck and a doe. Your narrator himself was the victim of a startled doe which bounded out of a field into the side of his private automobile on TT 9 on the evening of March 11. The impressiveness of the incident to the awed boy scouts viewing the excitement from within, was surpassed only by the shock which accompanied the repair bill!

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

An attempt has been made to scrutinize annual refuge trapping records to ascertain a more thorough understanding of the general ecology of refuge wildlife. Unfortunately, most of the population figures available are not comprehensive enough to provide a basis for valid conclusions. Some facts are readily evident, however, and provide much food for thought.

Although standardized procedures have not been followed per se, trapping methods and trap locations have been essentially unchanged over the years since all trapping has been done by one man. Too, time of trapping has been rather constant-usually beginning about the second week of January and ending in the last week of February. When trapping results are plotted graphically, a very definite trend is evident. All predator populations apparently were comparatively low in the early 1950's. A rather rapid build-up followed and peaks were reached for raccoons, and red and gray foxes in 1957, followed by opossums and wildcats in 1958. A sharp decline in predator populations followed and 1963 results reflect lower populations than have been noted since 1952. By coincidence, trapping dates for the peak year of 1957 and the current low in 1963 coincided - beginning January 8 and ending February 20. Results are as follows:

Animals Taken

| <u>Species</u> | <u>1957</u> | <u>1963</u> |
|----------------|-------------|-------------|
| Raccoon | 96 | 26 |
| Red fox | 80 | 5 |
| Gray fox | 49 | 4 |
| Opossum | 10 | 2 |
| Skunk | 16 | 13 |
| Wildcat | 14 | 14 |

With the exception of wildcats, predator populations have taken plunges - many obviously very drastic. It may be reasoned that the decline is due to the effectiveness of the predator control program. However, we are more inclined to surmise that, because of the relatively small number of animals removed through the trapping effort in relation to the refuge populations as a whole, the decline in predators is simply a phase of population dynamics. It should be interesting to note the consequences of these predator laws upon the upland game and bird species on the refuge.

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

An osprey has been noted on various occasions at Martin Lake during March and April. On January 25 and 27, 2 gray kingbirds were observed at Lake 12 and near headquarters - far enough removed that they were obviously 2

different birds. A horned grebe calmly cooled himself on the ice on Lower Triple lake on January 26. We are pleased to have at least 3 pairs of blue birds in the headquarters area. One clutch, hatched on or about April 28 was frozen by a cold snap some 2 or 3 days later. The adult birds have re-nested, however, and a second clutch is anticipated.

G. FISH:

Twin Lakes; Triple Lakes, Lakes 12, 16 and 17 were opened to fishing February 15 and Martin Lake was opened March 15. Public participation has been nominal but fishing success has been only meager.

III REFUGE DEVELOPEMENT AND MAINTENANCE

A. PHYSICAL DEVELOPEMENT:

Informal contractual services were acquired for minor repairs to quarters #1, 2 and 3 and the headquarters office building in late March and early April. Repairs to quarters 2 included patching of eaves, porches and floors, installation of light fixtures, tiling of the bathroom walls, and interior painting throughout. (A central heating unit is planned for installation during the next reporting period). Quarters 1 received porch and floor repairs, bathroom tile, painting of exterior trim and renovation of kitchen plumbing. A back porch was refloored at quarters 3 and the refuge office was painted. A hot water heater was installed to complement the new bathroom fixtures installed in the office building last summer.

B. PLANTINGS:

1. Aquatics and Marsh Plants

None

2. Trees and Shrubs

None

3. Upland Herbaceous Plants

None

4. Cultivated Crops

Only 2 cooperative farming agreements have been awarded this period. A total of 274 acres have been or are being planted as follows:

| | Acres |
|-------------------|-------|
| Lespedeza bicolor | 41 |
| Lespedeza sericea | 14 |
| Brown top millet | 86 |
| Peas | 17 |
| Corn | 63 |
| Rye | 38 |
| Soybeans | 15 |

The refuge farm program is clipping along at a satisfactory pace with no major difficulties to report. Crops planted to date or planned include:

| | Acres |
|---------------------------------|-------|
| Corn | 45 |
| Crotalaria | 128 |
| Wheat (seed) | 12 |
| Lespedeza bicolor | 11 |
| Lespedeza sericea | 142 |
| Clover, vetch, fescue, ryegrass | 11 |
| Chufa | 2 |
| | <hr/> |
| Refuge | 351 |
| Cooperative | 274 |
| | <hr/> |
| Total | 625 |

When corn shoots are about 3.4 inches high they seem to be particularly attractive to the 21 decoy Canada geese at Martin Lake. Corn from the crib has been strewn along the shore line to divert their interest - still it will be necessary to replant several rows already taken by them. Anybody want 21 decoy geese?????

C. COLLECTION AND RECEIPTS:

On January 11 we received 500 pounds of Brown top millet given us complimentary by the South Carolina Commission of Forestry.

Six hundred (600) pounds of Lespedeza bicolor seeds were delivered to refuge headquarters by a cooperating farmer on January 6. Seed seem to be in good condition, but germination has not been determined.

D. CONTROL OF VEGETATION:

None

E. PLANNED BURNING:

See "Forestry"

F. FIRES:

See "Forestry"

IV. RESOURCE MANAGEMENT

A. GRAZING:

Only one grazing agreement exists on the refuge. Approximately 366 acres of permanent sod are under fence with some 200 beef cattle being carried throughout the year. Sod is primarily coastal bermuda with some Lespedeza sericea and weeping love grass on steep slopes and washes. In general the range is in good condition but encroachment of scruboak is rapidly increasing. The contract will expire in December of this year, at which time it will be necessary to write renovation prescriptions if a renewal of the contract is in order.

B. HAYING:

None

C. FUR HARVEST:

None

D. TIMBER REMOVAL:

See "Forestry" below

E. COMMERCIAL FISHING:

None

F. FORESTRY:Timber Removal

South Carolina Commission of Forestry timber sales were quite active during the reporting period. The following table reveals information on all timber sales conducted on the refuge since January 1.

| TIMBER SALES - 1963 | | | | | |
|---------------------|-----------|-----------------|-------------------|--------------------|-------|
| PURPOSE | | | | | |
| COMPARTMENT | SALES NO. | OF SALE | SAWTIMBER(BD.FT.) | PULPWOOD(STD.CDS.) | ACRES |
| 10 | 4 | SOEP* | 208,935 | 321 | 286 |
| 5 | 1 | SOEP | 197,403 | 311 | 339 |
| | 2 | SOEP | 123,911 | 298 | 332 |
| | 3 | SOEP | 150,571 | 285 | 304 |
| | 4 | SOEP | 200,357 | 609 | 469 |
| 9 | 1 | IMPROVEMENT CUT | | 323** | 59 |
| | 2 | IMPROVEMENT CUT | 232,023 | 662 | 407 |
| | 3 | IMPROVEMENT CUT | 246,898 | 316 | 276 |
| TOTALS: | | | 1,360,098 | 3,125 | 2,472 |

* Scrub Oak Eradication Program

** 25 year old slash pine plantation

As mentioned in previous narratives, the Scrub Oak Eradication Program involves the clearcutting of areas irregularly stocked with pine (usually less than 40%). Dense stands of scrub oak remaining on the area are then cleared. The following fall prior to planting, all clearings are deep-plowed with heavy bush and bog type disks. Tractor-drawn planters then plant 1-0 longleaf pine seedling stock, (6' X 8' spacing).

State clearing crews moved into Compartment 9 in January and to date have cleared approximately 600 acres of a proposed 891. Refuge clearing operations will move to Compartments 10, 5, 4, 3, 2 and 1 respectively.

Wildfires presented a problem during this period as might be expected. Five refuge fires swept over 1390 acres. The three largest fires, 559, 430 and 378 acres respectively, were incendiary fires. Salvage operations in these areas are pending insect damage. We are thankful for the excellent cooperation of the South Carolina Commission of Forestry in detecting and suppressing these fires. They are to be commended for an outstanding job.

Control burning activities were completed in early February. Refuge personnel burned 942 acres during the winter of 1962-1963. Recent examination has shown that this burn was very effective in removing considerable amounts of litter accumulation and, in some areas, retarding the growth of dense stands of scrub oak. It is our feeling that an annual controlled burning program at Carolina Sandhills will contribute much toward habitat improvement.

V. FIELD INVESTIGATIONS OR APPLIED RESEARCH

A. PROGRESS REPORT:

An investigational type study was initiated in 1962 to determine adaptability of certain oak species to the sandhills habitat. The planting of acorns was discussed in the "Tree and Shrubs" section of the September - December 1962 narrative report. Germination and growth of those acorns planted in nursery beds is very gratifying but to date germination success of direct seeded acorns is precarious. A detailed report is forthcoming.

VI. PUBLIC RELATIONS

A. RECREATIONAL USES:

Fishing activities have been curtailed by intermittent cold weather during the latter part of the period. Forester Tyre was host to the Florence Bird Club on April 28, and Assistant Manager Cunningham took his boy scout troop on 2 refuge hikes to observe wildlife and other items of interest.

B. REFUGE VISITORS:

Mr. Olin G. Campbell - S. C. Wildlife Resources Dept., Chesterfield, S.C. 1/7/63
 Mr. W. R. Jones - S.C. Wildlife Resources Dept., Chesterfield, S. C. 1/7/63
 Mr. Wm. A. Reid - Branch of Realty - US FWS-Atlanta, Ga. 1/8/63
 Mr. Ken Marek - Branch of Realty - US FWS-Atlanta, Ga. 1/8/63
 Mr. Archie Barrow - Eastern Springs Wildlife Refuge (State), Manning, SC 1/10/63

Mr. J. C. Willis - County Agent, Chesterfield, S. C. 1/14/63
 Mr. Victor A. Johnson, GSA, Fort Bragg, N. C. 1/15/63
 Mr. W. F. Hunnicutt, Cape Romain N/W Refuge, McClellanville, S.C. 1/21/63
 Mr. Danny Holland, Cape Romain N/W Refuge, McClellanville, S. C. 1/21/63
 Mr. Donald J. Hankla-W/Life Mgt. Biologist-Atlanta, Ga. 2/4/63
 Mr. K. Duane Norman-Regional Office, Atlanta, Ga. 2/4/63
 Mr. Harvey Belser - U. S. Marshal, Charleston, S. C. 3/19/63
 Mr. R. E. Corthell - Br. of Realty - Atlanta, Ga. 4/1/63
 Mr. Wm. J. Venema - Forester - Atlanta, Ga. 4/1/63
 Mr. W. T. Floyd - Ft. Jackson, Columbia, S. C. 4/2/63
 Mr. Leonard Graham - Ft. Jackson, Columbia, S. C. 4/2/63
 Mr. Jim Lankford - Soil Conservationist-Atlanta, Ga. 4/2/63
 Mr. M. Wayne Chapman - SCS, Chesterfield, S. C. 4/30/63
 Mr. James H. Allen - SCS, Chesterfield, S. C. 4/30/63
 Mr. Lester E. Scherer-Adm. Officer, Atlanta, Ga. 5/3/63

C. REFUGE PARTICIPATION:

On January 11 Forester Tyre gave a talk concerning the scope of the refuge system to a Vocational Agriculture class of Hartsville High School, Hartsville, S. C.

Assistant Manager Cunningham presented a waterfowl slide talk to district meeting of scout-masters in Cheraw on the evening of February 12, and addressed the "Four Winds" garden club of Cheraw on April 16. The topic of discussion was "The Role of U. S. Fish and Wildlife Service in Migratory Bird Management."

During this reporting period we were privileged to show "The Woodcock" and "Behind The Flyways" to the McBee boy scouts and "Behind The Flyways" was also shown to McBee High School. In a cooperative endeavor with the Chesterfield County Forest Ranger, "Shooting Ducks with Bow and Arrow" was shown to several FHA chapters throughout the county.

D. HUNTING:

None

E. VIOLATIONS:

On November 3, 1962 R. L. Lynch and William Robert Perdue both of Hartsville, S. C. were apprehended on the refuge by S. C. Game Wardens W. R. Jones and Olin G. Campbell and charged with "Transport of firearms within a National Wildlife Refuge illegally." They pleaded guilty before U. S. Commissioner H. Kirkland at Columbia, S. C. on April 18 and received fines of \$100 and \$50 respectively.

F. SAFETY:

Our safety record received a minor blemish on January 11 when 2nd degree burns were inflicted on the face and arms of (Farm) laborer Brock Dixon by hot water which surged from the radiator when he removed the radiator cap of an HD-14 crawler tractor. Mr. Dixon was taken immediately to Byerly

Hospital in Hartsville, S. C. where he was treated and released. No loss of time resulted from the mishap and complete recovery was enjoyed within 2 weeks. A thorough reiteration of the accident, it's causes and cures were exhausted at subsequent safety meetings.

Four safety meetings were held during the period. Topics of discussion included fire extinguishers, physical fitness, employment of safety measures in equipment operation, boating, driving and lifting.

We have enjoyed 943 days and 37,183 employee hours since the last lost time accident.

VII. OTHER ITEMS

A. ITEMS OF INTEREST:

At the time of this writing vacationing Refuge Manager Ernest F. Holland is basking in the Louisiana sunshine. We trust he will return, well and rested, to resume his post next week.

Credit is due Forester Russell L. Tyre for preparation of the "Forestry" section of this report.

B. PHOTOGRAPHS:

Some items of interest are depicted in the accompanying photographs.

SUBMITTED: May 10, 1963

APPROVED: _____

Earl R. Cunningham

MAY 13 1963

Earl R. Cunningham
EARL R. CUNNINGHAM,
Acting Refuge Manager.

W A T E R F O W L

REFUGE Carolina Sandhills National Wildlife

MONTHS OF January TO April, 19 63

| (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 | 600 | 800 | 800 | 800 | 800 | 800 | 800 | 800 | 800 | 800 |
| Cackling | | | | | | | | | | |
| Brant | | | | | | | | | | |
| White-fronted | | | | | | | | | | |
| Snow | | | | | | | | | | |
| Blue | | | | | | | | | | |
| Other | | | | | | | | | | |
| <u>Ducks:</u> | | | | | | | | | | |
| Mallard | 220 | 300 | 300 | 300 | 300 | 300 | 175 | 100 | 125 | 150 |
| Black | 250 | 250 | 350 | 350 | 350 | 350 | 200 | 100 | 125 | 125 |
| Gadwall | | | | | | | | | | |
| Baldpate | | | | | | | | | 6 | 6 |
| Pintail | | | | | | | | | | |
| Green-winged teal | | | | | | | | | | |
| Blue-winged teal | | | | | | | | | | |
| Cinnamon teal | | | | | | | | | | |
| Shoveler | | | | | | | | | | |
| Wood | 50 | 75 | 75 | 75 | 75 | 50 | 50 | 50 | 50 | 75 |
| Redhead | | | | | | | | | | |
| Ring-necked | 100 | 100 | 100 | 100 | 25 | 25 | 25 | 25 | 20 | 25 |
| Canvasback | | | | | | | | | | |
| Scaup | | 10 | 10 | 10 | 10 | | | | | |
| Goldeneye | | | | | | | | | | |
| Bufflehead | | | | | | | | | | |
| Ruddy | | | | | | | | | | |
| Other | | | | | | | | | | |
| Hooded Merganser | 30 | 30 | 30 | 30 | | 5 | | 20 | 20 | 20 |
| <u>Coot:</u> | | | | | | | | | | |

WATERFOWL
 (Continuation Sheet)

REFUGE Carolina Sandhills National Wildlife MONTHS OF January TO April, 19 63.

| (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 | 266 | | | | | | | | 55,262 | | |
| Cackling | | | | | | | | | | | |
| Brant | | | | | | | | | | | |
| White-fronted | | | | | | | | | | | |
| Snow | | | | | | | | | | | |
| Blue | | | | | | | | | | | |
| Other | | | | | | | | | | | |
| Ducks: | | | | | | | | | | | |
| Mallard | 150 | 25 | | | | | | | 17,065 | | |
| Black | 150 | 20 | | | | | | | 17,540 | | |
| Gadwall | | | | | | | | | | | |
| Baldpate | | 5 | | | | | | | 119 | | |
| Pintail | | | | | | | | | | | |
| Green-winged teal | | | | | | | | | | | |
| Blue-winged teal | | | | | | | | | | | |
| Cinnamon teal | | | | | | | | | | | |
| Shoveler | | | | | | | | | | | |
| Wood | 75 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 7,350 | | |
| Redhead | | 13 | | | | | | | 13 | | |
| Ring-necked | 15 | 6 | | | | | | | 3962 | | |
| Canvasback | | | | | | | | | | | |
| Scaup | 8 | | | | | | | | 336 | | |
| Goldeneye | | | | | | | | | | | |
| Bufflehead | | | | | | | | | | | |
| Ruddy | | | | | | | | | | | |
| Other | | | | | | | | | | | |
| Hooded Merganser | | 7 | | | | | | | 1,344 | | |
| Coot: | | | | | | | | | | | |
| | | | | (over) | | | | | | | |

| | (5) | (6) | (7) |
|-------|-----------------------|--------------------|-------------------------|
| | <u>Total Days Use</u> | <u>Peak Number</u> | <u>Total Production</u> |
| Swans | | | |
| Geese | 99,999 | 999 | 9 |
| Ducks | 99,999 | 999 | 9 |
| Coots | | | |

SUMMARY

Principal feeding areas Clinton Lake, Lake Umbagog

Principal nesting areas _____

Reported by Earl R. Cunningham
Earl R. Cunningham, Acting Chief, Wildlife Division

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 Wildlife~~ Months of ~~January~~ to ~~April~~ ~~1951~~ 1963.
life

| (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 | March 27 | 2 | March- April | 1 | April 22 | | | | 2 |
| Pied Bill grebe | 3 | March 15 | 8 | March | 2 | April 26 | | | | 8 |
| Horned grebe | 1 | Jan. 4 | 1 | Jan. | 1 | Jan. 4 | | | | 1 |
| Green Heron | 1 | April 23 | 1 | April | 1 | April 23 | | | | 1 |
| II. <u>Shorebirds, Gulls and Terns:</u> | | | | | | | | | | |
| Curlew (Hudsonian)? | 2 | April 22 | 2 | April 22 | 2 | April 22 | | | | 2 |
| Spotted sandpiper | 1 | April 23 | 1 | April 23 | 1 | April 23 | | | | 1 |

(over)

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Carolina Sandhills N/Wildlife Months of January to April, 19 63.

| (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) | 44,000 | 20 | 0 | 0 | 50M 50F | 0 | 0 | 0 | 2200 | |
| E. Wild Turkey | 44,000 | 440 | 0 | 0 | 60M 40F | 0 | 0 | 0 | 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 Carolina Sandhills National Wildlife Year ending April 30, 1963

| (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 | 44,000 | 25 | | | 26 | | | | | | | | | 1750 |
| aver | 4,000 | 15 | | | | | | | | | | | | 275 |
| nk | 4,000 | 200 | | | | | | | | | | | | 20 |
| ter | 4,000 | 125 | | | | | | | | | | | | 32 |
| skrat | 4,000 | 120 | | | | | | | | | | | | 34 |
| possum | 44,000 | 200 | | | 2 | | | | | | | | | 225 |
| unk(striped) | 44,000 | 125 | | | 13 | | | | | | | | | 350 |
| ay Squirrel | 44,000 | 100 | | | | | | | | | | | | 440 |
| k squirrel | 44,000 | 50 | | | | | | | | | | | | 875 |
| ay fox | 44,000 | 90 | | | 4 | | | | | | | | | 500 |
| d fox | 44,000 | 90 | | | 5 | | | | | | | | | 500 |
| b Cat | 44,000 | 200 | | | 14 | | | | | | | | | 225 |

* List removals by Predator Animal Hunter

* List removals by Predator Animal Hunter

REMARKS:

Change of habitat acreages from previous reports due to recent re-evaluation of habitat.

Reported by

Carl R. Cunningham

INSTRUCTIONS

Form NR-1 - 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 unprime-ness 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 1963, 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 | 2490 Lbs. | | 2490 Lbs. | | | | | 2490 Lbs. | | | 2490 Lbs. |
| Lespedeza sericea (Cleaned) | 1180 Lbs. | | 1180 Lbs. | | | | | 1180 Lbs. | 1000 Lbs. | | 180 Lbs. |
| Lespedeza sericea (Uncleaned) | 1898 Lbs. | | 1898 Lbs. | | | | | 1898 Lbs. | | | 1898 Lbs. |
| Soybeans | 135 Bu. | | 135 Bu. | | | | | 135 Bu. | | | 135 Bu. |
| Rye/grass | 315 Lbs. | | 315 Lbs. | | | | | 315 Lbs. | 315 Lbs. | | |
| Fescue | 158 Lbs. | | 158 Lbs. | | | | | 158 Lbs. | 158 Lbs. | | |
| Wheat | 2299 Lbs. | | 2299 Lbs. | | | | | 2299 Lbs. | 2000 Lbs. | | 299 Lbs. |
| Brown top millet | 500 Lbs. | | 500 Lbs. | | | | | 500 Lbs. | 500 Lbs. | | |
| Corn (seed) | 4 Bu. | 3 1/2 Bu. | 4 Bu. | | 4 Bu. | | 4 Bu. | | | | |
| Corn (feed) | 138 Bu. | 20 Bu. | 158 Bu. | | | 25 Bu. | 25 Bu. | 133 Bu. | | | 133 Bu. |
| Crotalaria | | 3000 Lbs. | 3000 Lbs. | | 2100 Lbs. | | 2100 Lbs. | 900 Lbs. | 900 Lbs. | | |

(8) Indicate shipping or collection points _____

(9) Grain is stored at Headquarters and Martin Lake Crib.

(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.



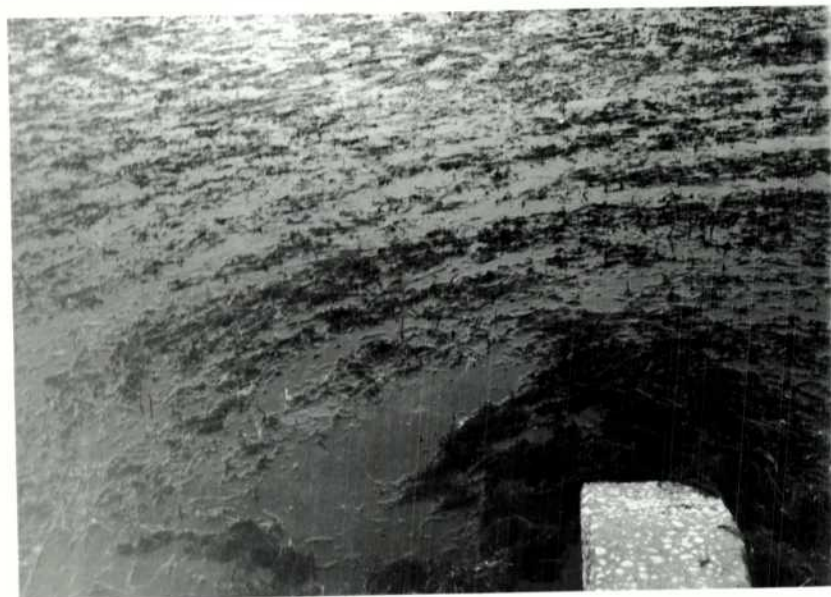
118 acre field in Compartment 4 which has been cleared, dragged and made ready for seeding and sodding in the 1964 Soil and Moisture operation.



Excellent growth of Quercus acutissima seedlings (14") in nursery bed.



Almost all of the water surface of Lake 12 covered by mats of aquatic vegetation. Such a condition offers little to fishermen or waterfowl. Lower photo is close up of emergents (cut by beaver and muskrats) accumulated at water structure.





Some snow scenes taken on February 27.....a frolic in the snow
was enjoyed by all.





Bahia grass on Dixie Pipeline killed back by cold winter. Spring growth resumed more than a month ago in lower area protected from wind (arrow) but reseeding may be necessary on higher sites. Lower photo depicts track of wild turkey which walked through dead Bahia on pipeline right-of-way.

