C O N T E N T S

CAPE ROMAIN NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

JANUARY, FEBRUARY, MARCH AND APRIL 1953

I. GENERAL

A. Weather Conditions

The meteorologist at the Weather Bureau in Charleston, S.C. officially confirms local observations that the weather during a great part of the period was very lousy and exceptionally windy. During the first three months the average temperatures were above normal. In April the temperature dropped to 34 degrees. The date of this killing frost was the latest since 1871. On thirty six days the wind velocity reached 25 miles or more per hour. The meteorologist informs that when the wind velocity reaches 17 or more MPH most folk take note of the excessive winds. On 97 days of a total of 120 in this quarter, the wind reached a velocity of 17 or more miles per hour.

The high winds hindered our project at Cape Island. The lack of rainfall in April was beneficial for Cape but water was needed in Moccasin Pond on Bulls Island.

Precipitation and temperatures are listed below in table form.

Month	Precipitation			Temperature	
	Actual	Dept from Norm.		Max.	Min.
January	1.80	-0.62		71	31
February	5.11	+1.98		76	30
March	4.59	+0.97		83	35
April	1.01	-1.44		81	34
	12.51	+0.87	Extremes	83	30

B. Water Conditions

At Cape Pond water levels were satisfactory throughout the period for feeding waterfowl. It was unnecessary to lower levels at any time.

On the other hand we were less fortunate on Bulls Island.

Lower Summerhouse and House Ponds were dry throughout the period. Summerhouse and Jacks Creek did not have sufficient water to permit feeding of the emergent aquatics. The rains came in February and March after the bulk of the ducks had left this area.

Cape Pond was drained at the end of January. The gauge reading at that time was 5.06. Within several days the water was below the foot of the gauge. As a result of ditching, the pond has dried out better than any time previously.

The Jacks Creek trunk was opened March 17 with the gauge reading at 5.02. Levels reached 2.84 on April 7. A "gate" was attached on the inside of the trunk on April 8 upon completion of which salt water was permitted to enter. Water levels were as high as 4.10 but due to high winds which resulted in excessive evaporation, the present level is 3.98. During the middle of May, another spring tide period is due. This should raise the water levels substantially.

On March 26 with a gauge reading of 3.25 the salinity of Jacks Creek varied from 7.21 to 10.91 per cent sea strength. Another sampling of the water was taken on April 29 with a gauge reading of 3.98. At that time the salinities ranged from 41.54 to 58.26 per cent of sea strength. It is believed that the high salinities in the upper reaches of the impoundment are due to the fact that high winds during the period aided in mixing the fresh and salt water.

Cattail along the edge of the Creek bed are beginning to die. Water levels are not high enough yet to effect those on the flats.

For the first time in over two years, Moccasin Pond reached a level of 6.00 feet. This was ideal for cattail control by underwater cutting. There is plenty of evidence that the banana water lily will make a comeback. At this writing water levels are going down at the rate of one-half inch per day.

II WILDLIFE

A. Migratory Birds

1. Population and Behavior

a. Waterfowl

As reported in the last Narrative Report, waterfowl began growing fewer in numbers as early as last December. This is

believed to be due chiefly to the lack of water and the resultant inability to obtain food. At this writing a few blue-winged teal and scaup are still present, and only a week ago several blacks and about 75 baldpate were observed.

Thirty-five coots were still present at the end of April. Wood ducks are resident. A few boxes were erected but with the allegators, turtles, snakes, coons, etc any young which might hatch would have a tough time surviving.

During March and April as many as 200 lesser scaup were observed near Cape Island.

Blue-winged teal were observed mating during the second week in April.

At no time were more than 25 Canada geese observed at Cape Pond. Three were seen on the beach of Cape Island on April 7 which is thought to be a late record.

b. Miscellaneous

There has been a heavy migration of shorebirds. Marbled godwits were very numerous during February. Willets and Oyster catchers are present in large numbers. This is also true of the Hudsonian curlew. Brown pelicans returned during the middle of January although individual birds can be observed during every month of the year. There were thousands of the smaller shorebirds and sandpipers.

On March 3 about 100 Jack snipe were observed in the Cape Island impoundment.

Black-necked stilts were noted at Cape on April 22. Last year was the first time that immature have actually been found although they have been suspected of nesting there a year or two previously.

2. Food and Cover

It is thought that most of the emergents at Cape had been exhausted by the beginning of this period. There was a heavy growth of Eleocharis which was used by waterfowl. It also appeared as if the rootstocks of Scirpus robustus, considerable quantities of which were exposed following the disking, may have been used by geese. At the present time there is evidence of volunteer giant foxtail and wild millet stands. In some areas there is a heavy growth of S. robustus. It has been observed that the growth of this bulrush is not nearly so "robust" in the area which was sprayed last year as in the other areas. Some areas are almost free of cattails.

while others have a heavy regrowth.

Emergent aquatics in all of the impoundments on Bulls Island were not available due to low water levels. Summerhouse had some widgeon grass and Jacks Creek had considerable widgeon grass and some good-sized areas of sago and other pondweeds.

B. Upland Game Birds

1. Population and Behavior

Wild turkeys are numerous. Weather conditions are favorable for a good nesting season. However, we have observed several hens flocking together on a number of occasions. This is not a good sign and may indicate that the nests have been broken up. Raccoons are increasing and may be the vital factor. One "chicken snake" was found with two turkey eggs inside. Snakes may be a more serious factor than is generally supposed.

No sick or diseased birds have been found.

The trapping program was a complete failure. This is believed to have been due to the plentiful native food supply.

While clearing an area for an experimental plot of Chinese "water chestnut" refuge personnel operated a tractor within 10 feet of a turkey nest containing 15 eggs. The hen flushed but contrary to popular belief returned to the nest.

2. Food and Cover

As indicated above there was an almost endless supply of native food, chiefly oak mast. In most previous years the oats which was sown for a winter grazing crop was disked under in spring. Last year it headed out nicely and was relished by the turkeys. This year it again was left to head out. Several plots which were fertilized are producing an especially good yield. Turkeys are feeding on the oats at this time.

In addition several small plots of brown-top millet were sown and more than two acres of chufas.

We are continuing to build up our almost sterile sand dunes. Five acres of crotalaria were sown.

Turkey range on Bulls Island is drastically but steadily being reduced in area. Almost the entire south end is so grown up in wax myrtles and vines of various types that no self-respecting

turkey can be found in this area. It is practically an impossibility to walk across from the salt marsh to the ocean beach. The only practical solution is to put a hot fire through the area provided the necessary precautions are made to contain the fire.

C. Big Game Animals

Deer are increasing. The State of South Carolina started a live-trapping program but started too late to do any good. They had difficulty in finding a bait which the deer would take. It is hoped that they will be more successful next fall when they resume the project.

D. Predators and other Mammals

Raccoons are also increasing. The state live-trapping program was a complete flop. This may have been due to the abundance of food available but also to some extent due to their trapper not being on the ball. When the program is resumed another trapper will take over. If they are unsuccessful this time, we hope that the State of South Carolina will give us permission to eliminate them by other means. Much could be accomplished by use of a good coon dog.

Fox squirrels are all over the place.

No otter have been seen on Bulls Island during the period, although on Cape they are in evidence frequently.

The mortality of raccoons caught was very high. Only thirty survived for transfer. Most of the coons caught were marsh coons. The upland coon was in much better shape.

III REFUGE MAINTENANCE AND DEVELOPMENT

A. Physical Development and Maintenance

The telephone line between Moores Landing and the highway was cleared of brush.

Personnel spent considerable time cutting brush along the fire lanes and around the food plots. Brush was cut around two of the corrals which were used years ago in a deer live-trapping program were removed, and the wire and posts removed.

Another project which was quite time consuming was cattail control in Moccasin Pond. An underwater weed cutter was used. This implement is operated by brute strength and is commonly known

as a scythe. The job was tedious and hard work due to the accumulation of old cattail. It led Mr. Lee, Refuge Clerk, to remark that if all prospective wildlife technicians would cut cattail for six months, they would all change over to another field. (For some six days would be enough). We have been having trouble hiring unskilled labor for the simple reason that the job is too tough. The cattail is cut under water varying in depth from 8-24 inches. Thus far there has been very little regrowth. But the accumulation of cut cattail may produce a terrific algal problem later. Many cattail seedlings have been observed. At present they do not appear to be making much growth but if water levels continue to recede, we may have a tough problem on our hands. A total of 340 hours has been spent to date on this project.

Cattail control on Cape Island is progressing satisfactorily. Some areas have been disked, including an area which was not disked last year. As a result of ditching the pond is drying up satisfactorily. Some areas have no cattail and the overall picture indicates that much less time will be required than last year. Thus far this program has consumed 45 hours of actual disking.

About 2500 feet of ditches were opened up by blasting on Cape Island. Where there was a heavy growth of cattail the results of the blasting was better than where there was no cover. All areas were still saturated with water at the time of blasting.

We have had only minor repair jobs on our boats and automotive equipment. Repairs to the Oliver Cletrac cost about $200. When we started we thought we had only a valve job and repairs to the final drive. But after we tore into it we found such things as a cracked flywheel and warped or bent front idlers.

B. Plantings

1. Aquatic and Marsh Plants

A small marginal planting of Scirpus californicus was made in Moccasin Pond. The plantings made last year are off to a good start.

A small experimental planting was made of rod root and another of Chinese water chestnut.

2. Cultivated Crops

Approximately 5 acres of Crotalaria striata were planted. Also 2 1/4 acres of chufas, 1 1/2 acres of Brown-top millet, 1/3 acre of sunflower seed and 1/4 acre of rice. Additional rice is to be planted later in some of our marsh areas. Three acres of oats are now being harvested by the turkeys.

Several areas which are producing a good crop of crab and other native grasses were left undisturbed.

The bahia and bull grass plots were fertilized early in March.

Our fire lanes and food plots are in better shape than any time in recent years. Of course if it remains as dry as it has been during the month of April we can again predict a crop failure.

IV PUBLIC RELATIONS

A. Recreational Uses of Refuge

During this period 144 visitors used the facilities at the Dominick House. There were 111 fresh water fishermen and 28 salt water fishermen.

Fishing generally was poor although some caught their limit in Jacks Creek and some nice catches were reported in salt water. It is doubtful if more than 300 pounds of fish were caught.

In addition to the above there were approximately 35 man-days of fishing in the salt water on other parts of the refuge.

B. Refuge Visitors

There has been a heavy influx of visitors during the northward migration from Florida. Those arrived during the period when our work load is heaviest. In order not to retard our activities at Cape and in Moccasin Pond, all were referred to Mr. Moffitt.

After a wait of many months, we were finally rewarded with visits by the following Service personnel:

Mr. William P. Baldwin	March 24-25
Mr. Carl Formanich	March 25-26
Dr. Clarence Cottam	March 28-29
Mr. Richard Griffith	March 28-29
Mr. Richard Ditmman	April 9-10
Mr. Ernest Holland	April 21
Mr. William P. Baldwin	April 23

C. Refuge Participation

Refuge personnel continue their attendance to the Wambaw Wildlife Chapter and the McClellanville Exchange Club.

Mr. Clyde Lee is assistant Scoutmaster of the local Boy Scout troop. He assisted in the supervision of the troop on an overnight camping trip to Bulls Island.

Two films: Alaska Sportfishing and Shellfishing were shown to the Wambaw Wildlife Club.

D. Fishing

As indicated under Weather we have had a period of high winds. These tended to mix the salt water with the fresh water in Jacks Creek more rapidly than was anticipated. Due no doubt to the high salinity, more than 175 dead fresh water fish, consisting of bream, crappie and large-mouth bass, were found near the head of the impoundment.

E. Violations

None.

V. FIELD INVESTIGATIONS

Under the supervision of Mr. William P. Baldwin additional experimentation for cattail eradication is being carried on. Mr. Victor Kay, who is carrying out these test, writes as follows:

"Experimental plots for testing Maleix Hydrazide, MH-40, have been set up in House Pond on Bulls Island as per Mr. Baldwin's recommendations. Four concentrations have been tested on two species of cattail - T. latifolia and T. domingensis. The purpose of these test is to determine the effectiveness of underwater cutting versus 2,4-D following the application of MH-40. The experiments were begun on March 30 and as of April 29 no regrowth has appeared on cut plots. 11.2 pounds acid per acre of isopropal ester of 2,4-D was used to accomplish almost 100% kill."

"Plans are being made to repeat the experiment during the flowering stage of cattail should the present series of plots continue to show favorable results."

Respectfully Submitted,

Paul W. Sturm

Approved: C.A.

Date: May 8, 1953

Paul W. Sturm, Refuge Manager
Cape Romain National Wildlife Refuge
McClellanville, South Carolina

May 8, 1953

DITCHING AT CAPE

PLANTING THE DYNAMITE

THE BLAST

THE RESULT

BELOW: CUTTING DOWN A HIGH SAND DUNE IN A FIRE LANE

PHOTOS ON THIS PAGE SHOW LOW
WATER LEVELS AT BULLS ISLAND.
ALL PHOTOS SELF EXPLANATORY.

WATERFOWL

REFUGE Cape Romain MONTHS OF January to April, 19 53

(1) Species	(2) First Migrants Seen		(3) Peak Concentration		(4) Last Migrants Seen		(5) Young Produced		(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Broods Seen	Estimated Total	Estimated for Period
1. Swans:									
Whistling swan									
2. Geese:									
Canada goose			25	January	3	4/7			25
Cackling goose									
Brant									
White-fronted goose									
Snow goose									
Blue goose									
3. Ducks:									
Mallard			455	Feb. 1-15	15	April			600
Black Duck			196	Feb. 1-15	2	April 22			250
Gadwall			146	Jan. 1-15	16	April 15			200
Baldpate			130	Jan. 1-15	75	April 22			200
Pintail			575	Jan. 1-15	15	March 15			750
Green-winged teal			276	Jan. 15-30	6	March 1			300
Blue-winged teal			120	Jan. 15-30	30	April 30			150
Cinnamon teal									
Shoveller			120	Jan. 1-15	25	March 15			150
Wood duck			15	Jan. 1-15	Resident				25
Redhead			1	April					100
Ring-necked duck			70	Jan. 1-15	10	February 15			100
Canvas-back			8	Feb. 15-28					
Scaup			250	Apr. 1-15	75	April 30			400
Golden-eye			30	Jan. 15-30					40
Buffle-head									
Ruddy duck									
4. Coot:			565	Jan. 1-15	35	April 30			585

SUMMARIES

Total Production:

Geese_____

Ducks_____

Coots_____

Total waterfowl usage during period 3525

Peak waterfowl numbers 2780

Areas used by concentrations_____

_____

Principal nesting areas this season_____

_____

Reported by_____

INSTRUCTIONS

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance.

(2) First Seen: The first refuge record for the species during the season concerned in the reporting period, and the number seen. This column does not apply to resident species.

(3) Peak Concentration: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned in the reporting period.

(5) Young Produced: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(6) Total: Estimated total number of the species using the refuge during the period. This figure may or may not be more than that used for peak concentrations, depending upon the nature of the migrational movement.

Note: Only columns applicable to the reporting period should be used. It is desirable that the Summaries receive careful attention since t[illegible]e data are necessarily based o[illegible]n analysis of the rest of the form.

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

MIGRATORY BIRDS
(Other than Waterfowl)

Refuge Cape Romain Months of January to April 1958

(1) Species	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Use
I. Water and Marsh Birds:										
Horned Grebes			1000	Jan.-Mar.	6	4/30				1500
Brown Pelican	Resident		600	April						600
D. Crested Cormorant			600	Jan.-Mar.						600
Great Blue Heron			56	February						50
American Egret			35	March						50
Snowy Egret			125	April						150
Louisiana Heron			150	April						175
Little Blue Heron			50	April						60
Wood Ibis	1	Mar. 30	10	April						10
Florida Gallinule			25	April						25
Clapper Rail			2000	April						2000
Sora			50	April						50
Jack Snipe			100	March						100
II. Shorebirds, Gulls and Terns:										
Oyster Catcher			300	Jan.-Apr.						350
Marbled Godwit			350	February						400
Hudsonian Curlew			500	April						650
Herring Gull			250	Jan.-Mar.						300
Ring-billed Gull			200	March						200
Laughing Gull			200	April						250
Black Skimmer			150	April						200
Common Tern			75	April						75
Least Tern			100	April						100
Royal Tern			750	April						900
Yellowlegs			100	April						125
Willets			500	April						600
Miscellaneous			3000	Mar.-Apr.						4000

(over)

(1)	(2)	(3)		(4)	(5)	(6)
III. Doves and Pigeons:						
Mourning dove		25	March			25
White-winged dove						
IV. Predaceous Birds:						
Golden eagle						
Duck hawk		5	Jan.-Mar.			5
Horned owl		10	Jan.-Mar.			10
Magpie						
Raven						
Crow		75	Jan.-Mar.			75

Reported by.....

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

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first migration record for the species for the reporting period.

(3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated species days use (average population X no. days present) of refuge during the reporting period.

Interior—Duplicating Section, Washington, D. C.

26014

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Cape Romain Months of January to April, 1943

(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	2000 acres of pine-oak-palmetto forests, sand dunes, wax myrtles, pond edges, and high salt water edge	22	---			---	---	---	90	

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.

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Cape Romain Year ending April 30, 1952

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5)
								Share Trapping						
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	Total Population
Raccoon	36,000 A. mostly salt marsh with 2,000 acres of ponds, forests, and dunes.	36				30								1000
Otter	800 A. fresh water ponds	60												15
Fox Squirrel	1500 A. of woodlands	12												125

* List removals by Predator Animal Hunter

REMARKS:

Reported by _____

INSTRUCTIONS

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

(1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)

(2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headingslisted.

(4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.

(5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.

REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

116007

3-1570
NR-8a

REFUGE GRAIN REPORT

Refuge Cape Romain Months of January through April, 1943

(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
Oats	5 Bu.	--	5 Bu.	--	--	5 Bu.	5 Bu.	None			
Wheat	3 Bu.	--	3 Bu.	--	--	3 Bu.	3 Bu.	None			
Millet, Brown-top	--	1 Bu.	1 Bu.	--	1 Bu.	--	1 Bu.	None			
Rice	--	16 Bu.	16 Bu.	--	1 Bu.	--	1 Bu.	15 Bu.	15 Bu.	--	--
Millet, Proso	--	1/2 Bu.	1/2 Bu.	--	--	--	--	1/2 Bu.	1/2 Bu.		
Chufas	--	4 Bu.	4 Bu.	--	3 Bu.	--	3 Bu.	1 Bu.	1 Bu.		

(8) Indicate shipping or collection points

(9) Grain is stored at

(10) Remarks

*See instructions on back.

16—61482-1

NR-8a

REFUGE GRAIN REPORT

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

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 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.

16—61482-1 U. S. GOVERNMENT PRINTING OFFICE

C O N T E N T S

CAPE ROMAIN NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

MAY, JUNE, JULY AND AUGUST 1953

I. GENERAL

A. Weather Conditions

We were fortunate in having a few good working days at the beginning and end of this report period. For the greater part of the time the weather was a prelude to certain zones of the hereafter.

Weather conditions such as those when the thermometer reads 90 degrees with 98% humidity or vice versa are not conducive to obtaining the best results from field laborers.

The data listed in the table below tells only part of the story. We have no rain gauge on the refuge. Precipitation may vary greatly from that listed. Showers were mostly of a local nature with the barrier islands again suffering a severe drought while many areas on the mainland received rain. The data was received from the Weather Bureau in Charleston, S. C.

Practically no rain fell until the middle of July. From that time until almost the end of the period, there was sufficient precipitation.

Precipitation and temperatures are listed below in table form.

Month	Precipitation		Temperature	
	Actual	Dept from Norm.	Max.	Min.
May	0.95	-2.41	99	68
June	3.98	- .74	98	56
July	4.36	-3.68	97	68
August				

B. Water Conditions

As is evidenced by the photo at the end of the report, Cape

Pond was as dry as we can ever expect to see it. This was due to the drought and to ditching during the previous period which permitted better drainage. On August 5 water levels were up to 4.20 feet due to a very heavy local rain and in spite of the fact that the gate of the trunk was open wide. We regretted that we could not hold this water but it came too early in the season. The gate was closed on August 20 with a gauge reading of 3.76 feet.

On Bulls Island all ponds - House, Lower Summerhouse, Moccasin and Big Ponds - were dry until near the end of the period. Summerhouse had a reading of 6.10 at the beginning of the period, with 6.00 at the end and a low of 5.35 on July 20. An elevation of 7.00 is desired during the summer. Salinity is still over 50% of sea strength.

Jacks Creek fluctuated during the period but the general trend was upward. You will recall that we are taking in salt water in this impoundment in order to control cattail. The gauge reading was 4.12 on May 8. On August 24 it was 5.26. Usually the tides do not run very high in summer but the last spring tide was given impetus by a northeaster. Also rainfall added raised water levels. A decrease in salinity was immediately to be noticed.

Weekly water samples and tests were made during a part of the period. The graph at the end of this report shows the increase in salinity until July 20 with the subsequent decrease thereafter.

II. WILDLIFE

A. Migratory Birds

1. Population and Behavior

a. Waterfowl

As noted in the last report a few blue-winged teal, scaup and coots were still on the refuge at the end of that period. Most of them departed during the first few weeks of May. However, a few birds were observed throughout the period, such as, May 12 - 25 scaup, May 18 - 3 blue-winged teal, June 12 - 12 blue-winged teal, June 16 - 1 bluewinged teal and 1 coot, June 30 - 1 scaup, August 13 - 1 coot and August 25 - 1 blue-winged teal. A goodly number of wood ducks were observed on three occassions - June 5 - 13 young and 1 adult, June 16 - 20 immature and adults and June 26 - 15 immature and adults. The immature appeared to be about one-half grown.

b. Miscellaneous

Shorebirds were observed migrating north and south during the past four months. Many of them nest on the refuge, among them the royal terns, brown pelicans, least terns, cabots tern, laughing gulls, willets, oyster catchers, black skimmers, and black-necked stilts. Sandpipers and plovers passed through by the thousands. Hudsonian Curlews disappeared from the scene the latter part of May and reappeared the latter part of June.

2. Food and Cover

Considerable time was again spent this summer in rehabilitation of Cape Pond. Results were fairly satisfactory. Cattail are no longer a real problem. In fact we had more trouble with salt marsh aster than with cattail. We were able to reach most areas with tractor and disk except one which is cut up by innumerable ditches. There was very little regrowth of cattail in the area which was sprayed by plane last year. More regrowth was in evidence in the area which was disked before spraying. It was thought that additional spraying might be needed but when Mr. Ed. Ball, Pilot-biologist, and the manager made a ground survey of the area they could not find any area larger than 1/10 acre overgrown with cattail, and these were few and far between. Consequently no aerial spraying was attempted. Subsequent observations indicate that this was a wise move since cattail growth failed to materialize. It is interesting to note that most of the Spartina alterniflora died out as a result of low water levels but came back after water was again available. We had a tremendous growth of Acnida cannabina and a species of Bacopa. Some authorities consider the former a good duck food.

In regards to our plantings, upland rice did fairly well in some areas but in others had too much competition with native grasses and sedges. Chufas were tried and although 30-40% matured the raccoons got most of them. On one area which was a little higher, we had a 100% failure. Early Fortune millet also was a failure. We tried 25 pounds but did not get the seed back. A hundred pounds of brown-top was sown but it developed into something else. It may be pearl millet. All of the above were on an experimental basis. We are therefore happy to report that over the greater part of the impoundment Japanese Millet is doing fine. One area was sown shortly before a shower which was followed by hot dry weather. It is believed that the seed started to sprout and was then killed by the heat. Or perhaps there is a salinity factor involved. In addition we have considerable stands of wild millet, giant foxtail, smartweeds, spike rushes, and some widgeon grass.

"Rice birds" are making a determined effort to prevent the ducks from getting the millets.

As pointed out in a previous paragraph, Summerhouse had conside

arable water throughout the summer. It withstood the drought better than other impoundments. But again this summer we have had an algal problem. Last summer the pond had the appearence of thick green paint (not Brewster green). This summer it had the appearance of diluted pea soup. The early growth of widgeon grass is no longer in evidence. Along the margins there is a growth of foxtail, wild millet and a little Scirpus robustus.

Most of the cattail in Jack's Creek Impoundment is pretty well burned as a result of flooding by salt water. Some S. robustus is in evidence but the early growth of widgeon grass also decreased drastically as the season and salting progressed. Recent rains which lowered the salinity may help the widgeon grass. Some foxtail is also available.

Both Lower Summerhouse and House have a dense growth of millet, fall panic grass (Panicum dichotomiflorum) and foxtail. Again the growth is so dense that it is doubtful if these areas will be of much value unless we get an abundance of rainfall.

By June 1 Moccasin pond was completely dry. Prior to this every effort was made to cutting cattail on about 2/3 of this area. The cattail cutting program was initiated during the last period. The first cutting involved 56 man-days and was completed on May 7. A total of 18 man-days were required to cut the regrowth twice. At this time it appears that our efforts will be rewarded with a near 100% kill. For a while the seedling growth was of considerable concern. Had conditions been right for them to grow the cause would have been hopeless. An early growth of banana waterlily died out. We have a heavy growth of spike rush, some wild millet, foxtail and panic grass.

B. Upland Game Birds

1. Population and Behavior

A number of broods of wild turkeys were noted. With the exception of one brood which numbered 10, all were small varying from 1-5. Many gobblers can be seen but hens which are more retiring are not as much in evidence. Three lame turkeys were noted but none could be caught for diagnoses.

2. Food and Cover

Luckily the oats that were sown for winter grooms produced a fair crop of grain. This was especially needed since our old stand-by Brown-top millet failed for the second year in a row. With supplemental feeding it is thought that food supplies were sufficient. Several hundred pounds of Japanese millet were sown in the fire lanes

as an experiment and did remarkably well. Turkeys are using the plots at the present time. Cowpeas which started off slowly have made good growth after the rains and will supply food later. Crotalaria which is used as a green manure crop made excellent growth. Chufas were a complete failure. At this time it appears that the acorn crop will be short this fall. This will undoubtly be beneficial to turkey trapping operations.

C. Big Game Animals

Deer appear to be on the increase. They are observed more frequently expecially in the cowpea patches. Food is in sufficient supply. We hope that the State of South Carolina will attempt to remove deer this fall and winter but they are having difficulty finding a trapper.

D. Predators and Other Mammals

Fox squirrels are very numerous. Raccoons are thought to be on the increase. There is no doubt but that intensive efforts must be made soon to control their numbers. The state removed 50 animals from Cape Island and Raccoon Keys but their program on Bull's Island has never been a success. It is believed that they are one of the chief limiting factors in keeping down our turkey population. We definitely know of nests which have the appearance of having been robbed by 'coons. On Cape they are still a threat to Loggerhead turtle nests but not as serious as in previous years.

Otters have been seen on Cape but not at Bulls Island although otter sign is in evidence.

III. REFUGE MAINTENANCE AND DEVELOPMENT

A. Physical Development and Maintenance

The trunk across the Summerhouse road has been installed. This will drain Lower Summerhouse and after ditching also House and perhaps Big Pond. We had to contend with quicksand. A ditch dug one day would be practically filled up again the next. Additional ditching is necessary.

The extension of the dock at Moores Landing, removal of the bulkhead and sloping of the bank has been completed.

Work on pouring the collars around the boathouse piling at headquarters has begun. This is another mean job since work can be carried on only at low tides. In fact on the outer piling it can be done only when tides are extremely low and then only during a period of an hour or two. We are hastening to complete this job

since I know of no one who is willing to wade around up to his navel in water, muck and oyster shells during cold weather. The entire area has filled in badly. One never knows whether he will be able to extricate oneself or sink down another eight or ten feet.

The causeway and T-dock at Bulls Island has not been started as yet. It is impossible to locate a barge for transporting the equipment.

Mr. Charles S. Cook, Engineer from the Regional Office, reestablished a part of the boundary which has been in dispute since 1937. To date the matter has not been settled.

Thirty new boundary posts and signs were put up, with others replaced. We plan to place 20 more before the marsh hen season opens.

The roof of the Dominick House has been repaired.

The ceiling above the gun and government rooms in the Dominick House have been insulated.

Routine repairs and preventive maintenance of vehicles and marine equipment were taken care of. Boats were copper painted. The LCVP was given a complete new paint job - regulation gray.

One might surmise, from quarterly equipment reports since January and the one forth-coming, that our Oliver Cletrac is feeling both its age and the work it has done. Approximately $35 have been spent for parts and does not include numerous hours of labor by refuge personnel.

Faulty wiring was replaced and a leaking water main repaired.

IV. CONCESSION

During the summer such factors as the extreme heat with high humidity, the mosquitoes and other insects and bugs all play a part in keeping visitors from Bulls Island. Mosquitoes have been especially bad. If the mosquitoes are as bad another year, it may be necessary to request the Red Cross to set up a blood dispensing station.

The concessionaire reports no visitors to the Dominick House and only 25 salt water fishermen. Those fellows had lots of fishing but caught practically no fish.

The "Swanquarter" boat has been inoperative for sometime due to the engine being plugged with mud as a result of running through shallow water and mud. Therefore, boat transportation to the Island has not been immediately available at all times.

V. PUBLIC RELATIONS

Refuge personnel have been attending meetings of the Wambaw Wildlife Chapter and the McClellanville Exchange Club.

Among the more important unofficial visitors are the following: Mr. and Mrs. Charles W. White formerly on the secretarial staff of an Indiana Congressman. Mr. White is a writer and wished information regarding the refuge. On July 9 Mr. Green, a representative of the manufacturers making VL-600, visited Bulls Island. Mr. David McCarthy, a reporter of the Charleston Evening Post, visited here on July 30.

Official visitors were as follows:

Mr. Edwin Ball	Pilot-Biologist	May 11
Mr. Wm. P. Baldwin	Biologist	June 4-5 and July 9
Mr. Harold M. Steele	Game Mgmt. Agent	June 9
Mr. Charles S. Cook	Engineer	June 18-25
Mr. Wm. C. Lehmann	Game Mgmt. Agent	June 26
Mr. Howard A. Miller	Refuge Supervisor	July 14-15
Mr. Carl V. Fermanich	Asst. Refuge Super.	July 14-15
Mr. Leland Barrineau		August 11

Violations

We had considerable trouble with loggerhead turtle egg poachers. Most of them were from Georgetown County where eggs were reportedly sold for $1.00-1.25 a dozen.

On May 28 four men were apprehended. One of them had over a bushel - estimated at over 1500 eggs - in a burlap sack. They were fined $100 (with all but $25 suspended) in magistrates court. On subsequent patrol trips we failed to apprehend anyone. It is believed that this pretty well stopped commercial poaching but there is no doubt that there was some on a smaller scale.

Respectfully submitted,

Approved: /s/ C. V. Fermanich

Paul W. Sturm

Paul W. Sturm, Refuge Manager
Cape Romain National Wildlife Refuge
McClellanville, South Carolina

Date: 9/9/53

September 8, 1953

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

WATERFOWL

REFUGE Cape Romain MONTHS OF May TO August, 19 53

(1) Species	(2) Weeks of reporting period: 1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada										
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard										
Black										
Gadwall										
Baldpate										
Pintail										
Green-winged teal										
Blue-winged teal	25	25	9			12	1			
Cinnamon teal										
Shoveler										
Wood	20	20	30	20	30	30	30	30	30	30
Redhead										
Ring-necked										
Canvasback										
Scaup	25	25						1		
Goldeneye										
Bufflehead										
Ruddy										
Other										
Coot:	25	25	26	15			1			

Int. Dup. Sec.,
Wash. D. C.

-3-~~7150a~~ 3--1750a
Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Cape Romain MONTHS OF May TO August, 1953

(1) Species	(2) Weeks of reporting period: 11	12	13	14	15	16	17	18	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada											
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard											
Black											
Gadwall											
Baldpate											
Pintail											
Green-winged teal											
Blue-winged teal							1		425		
Cinnamon teal											
Shoveler											
Wood	30	30	50	30	30	25	25	26	3325	3	15
Redhead											
Ring-necked											
Canvasback											
Scaup									350		
Goldeneye											
Bufflehead											
Ruddy											
Other											
Coot:					1				630		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese			
Ducks	4170	70	15
Coots	630	25	

SUMMARY

Principal feeding areas Fresh water ponds on Cape and Bulls Islands.

Principal nesting areas Bulls Island in vicinity of Moccasin and Jacks Creek Impoundments

Reported by

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).

Interior Duplicating Section, Washington, D. C. 37944
1953

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

MIGRATORY BIRDS
(Other than Waterfowl)

Refuge Cape Romain Months of May to August 1953

(1) Species	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Use
I. Water and Marsh Birds:										
Brown Pelican			1500	July-Aug.			1		900	1000
Black Skimmer			350	"			2		300	350
Wood Ibis			125	"						200
White Ibis			75	"						300
Snowy Egret			600	"			1		50	500
La. Egret			650	"			1		60	500
Little Blue Heron			200	"			1		25	200
American Egret			200	"			1			300
Clapper Rail			2000	"					2	5000
II. Shorebirds, Gulls and Terns:										
Oyster Catcher			300	June-July					150	400
Laughing Gull			600	"					100	600
Royal Tern			5000	July-Aug.					3000	5000
Least Tern			500	"					300	500
Hudsonian Curlew			500	May-July						600
Dowitchers			1000	May-Aug.						1000
Willets			500	June-July					200	500
Sandpipers (all species)			3000	"						5000

(over)

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

Reported by.....

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

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first migration record for the species for the reporting period.

(3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated species days use (average population X no. days present) of refuge during the reporting period.

Interior--Duplicating Section, Washington, D. C.

26014

3-1570
NR-8a

REFUGE GRAIN REPORT

Refuge Cape Romain — Months of May through August, 1953

(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
Oats	---	10 bu.	10 bu.			3 bu.	3 bu.	7 bu.	5 bu.	2 bu.	
Millet, Brown-top	---	100#	100#		100#		100#	none			
Millet, Japanese	---	2500#	2500#		2500#		2500#	none			
Millet, Proso	1/2 bu.	none	1/2 bu.		1/2 bu.		1/2 bu.	none			
Rice	15 bu.	15 bu.	30 bu.		10 bu.	10 bu.	20 bu.	10 bu.		10 bu.	
Chufas	1 bu.	3 bu.	4 bu.		4 bu.		4 bu.	none			
Rye, Abruzzi	---	15 bu.	15 bu.				none	15 bu.	15 bu.		
Cowpeas	---	2 bu.	2 bu.		2 bu.		2 bu.	none			
Crotalaria	---	50#	50#		50#		50#	none			

(8) Indicate shipping or collection points

(9) Grain is stored at

(10) Remarks

*See instructions on back.

16—61482-1

NR-8a

REFUGE GRAIN REPORT

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

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 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.

16—61482-1 U. S. GOVERNMENT PRINTING OFFICE

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Cape Romain Months of May to August, 1943

(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	2500 A. of Pine, oak, palmetto forests with dunes, wax myrtles, pond edge, & salt water edge.	16	12	90	2M:1F				125	

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.

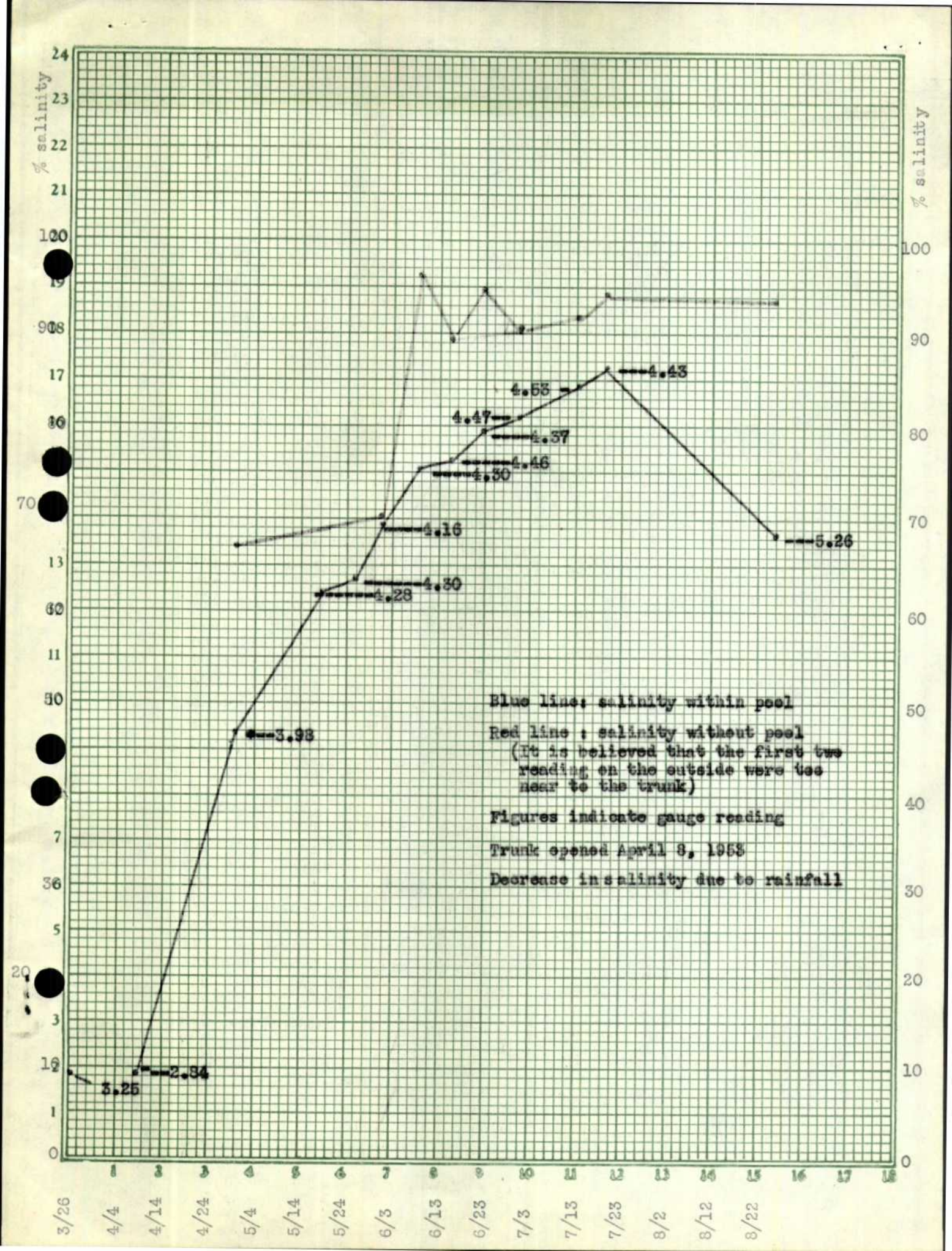
(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(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.

PHOTOGRAPHS

SORRY BUT I HAVE AGAIN BEEN JINXED ON MY PHOTOS. I HAD SOME GOOD KODACHROMES BUT THEY WERE LOST IN THE MAILS. SHOULD THEY STILL SHOW UP, I WILL SEND THEM FOR INCLUSION IN THE REPORT. (WONDER IF OUR BLACK CAT HAS ANYTHING TO DO WITH THIS??)


% salinity
% salinity
3.25
2.84
3.93
4.28
4.30
4.16
4.46
4.30
4.37
4.47
4.55
4.43
5.26
Blue line: salinity within pool
Red line : salinity without pool
(It is believed that the first two reading on the outside were too near to the trunk)
Figures indicate gauge reading
Trunk opened April 8, 1953
Decrease in salinity due to rainfall
3/26
4/4
4/14
4/24
5/4
5/14
5/24
6/3
6/13
6/23
7/3
7/13
7/23
8/2
8/12
8/22

C O N T E N T S

CAPE ROMAIN NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

SEPTEMBER, OCTOBER, NOVEMBER, DECEMBER

1953

I. GENERAL

A. Weather Conditions

We regret that we have no serious gripes about the weather this period. No doubt any caustic thoughts about the exceedingly dry weather at the beginning of the report period are tempered by the more than adequate rainfall which we are receiving at present. The temperature since September has been ideal. Precipitation for the period has been normal while there has been a slight excess of a few inches for the year.

Precipitation and temperatures are listed below in table form:

Month	Precipitation		Temperature	
	Actual	Dept From Norm	Max.	Min.
September	6.94	+ 1.47	90	56
October	0.75	- 1.98	84	39
November	1.60	- 0.45	80	30
December	5.18	+ 2.47	72	16

B. Water Conditions

Water levels in our impoundments began increasing early in the period. But it was not until early October that we had sufficient water at Cape Island to permit feeding in the pond. No doubt this was the reason that the early flight of Blue-winged teal by-passed us. Since that time water levels have been satisfactory.

Jacks Creek, Summerhouse and Moccasin had sufficient water for early arrivals. Lower Summerhouse, House and Big Pond were deficient. At this writting all impoundments have high water levels. In fact there is more water this year than any time in the past four years. Even the low places in the wooded area on Bulls Island are flooded, the low areas in fire lanes and food plots also.

II. WILDLIFE

A. Migratory Birds

1. Population and Behavior

a. Waterfowl

Until November we had practically no waterfowl to speak of. During most of that month we had from 8 - 10 thousand ducks in Cape Pond but less than a thousand at Bulls Island. These ducks consisted chiefly of Blacks, Mallards and Pintails. The pond could not support this number for long. In December as water levels increased on Bulls Island the number of waterfowl also increased. At present about 3000 or perhaps a slightly greater number can be found there. The greatest number of geese (Canadas) was 400 compared with last years 600. A few have frequently been seen on Bulls Island. These have remained for much longer periods than in former years. Although we do not have as many on the refuge, it is believed that the number of Canadas in this area is as great or greater than in previous years. It is difficult to obtain an accurate picture of the waterfowl population from reports here. The Santee Gun Club and Tom Yawkey's South Island report a good population while many of the smaller ducking areas report fewer. Reports have reached this office of ducks having been observed inland in swamps and flooded wooded areas where in many previous years none have been noted.

b. Miscellaneous

Black-bellied plovers were noted in larger numbers. With this exception there is little change in the shore-bird population. Very often large flocks may be observed but are too far away to identify.

Clapper rails are very numerous. During the high tides in October many were killed. Reports have reached this office that an estimated 12,000 were killed in the coastal marshes of South Carolina. It is believed that this figure is much too low.

Nothing is available regarding the Jacksnipe population. The refuge has very few and will have until Cape Pond is drained when we usually have a small number coming in.

2. Food and Cover

Ducks, like people, go where there is an available supply of food and drink. Cape Pond bears this out. On Cape we had a fair to excellent stand of Japanese millet. The borders produced a very

good crop of giant foxtail. Wild millet was found in considerable quantities. A few areas were left undisked and yielded considerable Robustus. In addition we had spike rush, pondweeds and salt marsh hemp. An experimental plot of chufas did well in the low area but waterfowl did not get any use from them. The raccoons got them all. Another experimental plot of cattail millet was not used by waterfowl. It produced heavily and served well as a "buffer" crop holding the blackbirds and keeping them from eating the millet. We also tried rice-growing on Cape with very good results as far as the yield was concerned but the blackbirds got 90% of it. Perhaps instead of only singing "four and twenty blackbirds baked into a pie" this ought to be put into actual practice (multiplied by about a million times). Ricebirds (bobolinks to some of you) too should be included. Rice growers in the vicinity complain seriously and with good reason. If rice growing continues we can expect the problem to increase.

On Bulls Island the situation is somewhat different. In summer Summerhouse Pond starts off with a good growth of widgeon grass. As the summer progresses the growth of unicellular algae together with lowering water levels causes the widgeon grass to die out. The result practically no food in this pool. Jacks Creek is being treated with salt water to kill the cattail. There was some Scirpur robuetus and widgeon grass. In spite of the shortage of foods it is amazing at the number of ducks that use this impoundment.

With Moccasin being dry for the third successive summer, banana water lily has not had a chance. The greater part of the pool is free of cattail and some wild millet and larger quantities of spike rush grew with giant foxtail and millet around the edges. At present water levels are higher than any time in the last several years. Waterfowl have used this pool considerably but not in such numbers as when the banana waterlily was in full growth.

With our Cletrac being used at Cape the central part of the island is growing up in a luxuriant growth of native plants. This area consists of Lower Summerhouse, House and Big Ponds. The chief plant growth is wild millet, foxtail, fall panic grass, cattail and numerous other native grasses. The growth in much of this area is so dense that no self-respecting bird will go into it. With the recent rains and increased water levels this area has been used to a considerable extent by Blacks and Mallards. They have finally succeeded in opening up part of the area. If we had been unfortunate enough not to have had rain during the past two weeks, this area still would have gone unused. With Summerhouse and Jacks Creek in the present condition, I Consider it imperative that we give much greater attention to this central part of the island. Yet it should not be done if Cape Pond is to suffer.

The operation on Cape Island can no longer be considered a full-time cattail control job. At most only 30% of the time can be considered for this purpose. (I might add that we had more difficulty in controlling salt marsh aster than cattail). Overall results were good. Several areas could not be touched as for example a ten-acre borrow pit, areas cut up by ditches and other higher marsh areas where too much grass was intermingled to permit disking.

In Jacks Creek most of the cattail "appears" to be dead. It is thought that within a few months the salt water can be drained and the pond permitted to freshen.

The small patches of cattail in Moccasin have been cut with very little regrowth resulting. The same applies to the larger area in Moccasin.

A summary of cattail control operations follows:

Impoundment	Acreage	Method of Control	Time of Control (in hours)	Results	Cost
*Cape	30	Disking	51 hr.	0 - 30% regrowth Av. less than 5%	$204.00
**J. Creek	587	Water Manipulation	20 hr.	95% kill	55.00
Summerhouse	1	Hand Cutting		95% kill	28.20
Moccasin	20	Hand Cutting	75 hr.	95% kill	93.75

*Time includes tractor time only. Does not include time to and from island, preventive maintenance and greasing or time carry-tractor to and from island. Cost includes tractor and operator only.

**Time included labor needed to improve trunk so as to operate automatically. Cost is that of labor only since no new materials were purchased. Knowing the tolerance of cattail the writter refuses to state positively and definitely that the cattail are dead. The have all the appearance of being dead however.

The above control operations covered all species of cattail. A special report is included covering experimental spraying operations on various species of cattail.

B. Upland Game Birds

1. Population and Behavior

Doves have been noted on both Bulls and Cape Islands on frequent occasions but never many at one time.

Wild turkeys on Bulls Island have had a good year. With a poor mast crop they are frequently seen in comparison to last year when few were noted.

Twenty turkeys have been caught thus far. Four gobblers were given to the Francis Marion Turkey Project (State) in exchange for a like number of gobblers. (These have to date not been received but we hope to get them early next year.) Fifteen birds - 7 hens and 8 gobblers were carried to Blackbeard. One gobbler was reported dead upon arrival and another (sex unknown) was found dead on Blackbeard.

One turkey was caught with a tumurous condition on the neck. The swollen part burst open showing a mass of partly dried matter. This turkey had to be killed. We have at least 15 more gobblers which we hope to dispose of. Some of them have become acquainted with the net trap when we unfortunately had some misfires and may therefore be very difficult to trap. We have found that even with the projection-type trap the turkey is difficult to trap. One day they might walk over the trap and ever thereafter not come within fifty feet of it. Hens which usually give us the most trouble have been easier to catch than gobblers. The writer on one occasion had 17 hens come up to the trap. Since this number was not desired the trap was not sprung until only two remained. Although they were in perfect position and feeding, they nevertheless got out before the trap hit the ground. Black powder has been used most of the time and found satisfactory with the exception that it is impossible to tell what is happening with all the smoke it produces.

2. Food and Cover

Food during the summer and early fall months was plentiful. Acorn and pine mast crops were poor. Winter greens in the form of Abruzzi rye and oats is more than sufficient. Abruzzi rye used for the first time is relished greatly by the turkeys (also deer). Supplemental feeding has been limited since turkeys are not as regular in coming to our baited areas if their stomachs are full and consequently it would effect our trapping program. Magnolias had a fair crop and native grasses produced an abundance of seed.

C. Big Game Animals

Deer are definitely on the increase. A week ago six were seen within an hour and a half. Late in the evenings it is possible to see one or more almost any day. The state has authority to remove some but has not found any bait which they will take.

D. Predators and other Mammals

Raccoons are all over the place. The State of South Carolina has removed with another ten having been killed by refuge personnel. It is not unusual to see them in broad daylight.

The fox squirrel population is high with as many as 25 having been observed on one trip around the island.

Otters are present both at Cape and Bulls Island but no definite figures are available as to their numbers.

E. Predacious Birds

Horned owls are still present but it is impossible to locate them or see one when carrying a gun.

A Bald Eagle was observed with a turkey in its talons.

III. REFUGE MAINTENANCE AND DEVELOPMENT

A. Physical Development and Maintenance

Concrete collars were poured around the piling of the boathouse at McClellanville to prevent a crustacean Limnora limnorum from eating them up completely. This proved to be an irritating and time consuming job due to the fact that work depended on low tides and because the area around the piling was bottomless.

The Lower Summerhouse trunk had to be reinstalled when an unusually high "marsh hen" tide dislocated it.

A different engine was installed in the Swanquarter.

A new engine was installed in the Avocet. Installing a different engine in a boat is always time consuming since it almost always requires many changes in controls.

A base was built and a Navy surplus generator was installed at Bulls Island. This plant has not been connected for use however.

Equipment has been moved to and from Cape Island.

A water main sprung a leak and had to be repaired.

Headquarters water pump had given considerable trouble and required considerable attention

The Oliver Cletrac is being given an overhaul job at the present time.

All outboard motors received varying amounts of attention.

Except for the usual preventive maintenance, our pickups did not require much attention.

The telephone line to Bulls Island was cleared of an accumulation of spanish moss.

Boats were painted as needed.

A Soil Mover was assembled and carried to Bulls Island.

New boat hoist cables were installed in the headquarters boathouse.

Built bench for bench saw and another for drill press.

Moved state trapper's Jeep and traps to Bulls Island.

Kay worked on Jacks Creek vegetation map.

Placed screen over headquarters residence louvers to keep out sparrows and woodpeckers.

Built windshield on "Dumphy" boat and rigged up remote control apparatus.

Installed new brake linings on Jeep pickup.

B. Plantings

Ten acres of winter greens, consisting of oats and Abruzzi rye were sown on Bulls Island. The rye made the better growth and has been used continuously by turkeys and deer.

A ten acre plot was disked and sown to ryegrass on Cape Island. The primary purpose was to determine if Canada Geese would use it. Previous attempts with oats failed to prove attractive to the geese. With the equipment on hand at the time we were not able

to prepare a good seed bed. But since we know that they will use it we plan to do a better job next year.

For soil improvement we seeded a half acre to vetch. At this stage it looks very good.

Fertilizer was added to all of our crops on Bulls Island. Ther is a great improvement over previous years.

Crotalaria was disked under as a green manure crop. It is the one legume which has proven to be successful.

All fire lanes and food plots which were not sown to some crop were either disked or mowed. A rotary mower was tried in Lower Summerhouse but we had to discontinue since the tractor lacked sufficient power to pull it. Results were good. It opened up a part of the pond permitting ducks to use the area. (The same thing could have been accomplished by burning but we have no means to establish protective lanes.)

IV. ECONOMIC USES OF REFUGE

Concession

During October and November 50 visitors used the Dominick House. There were 84 salt-water fishermen.

The concessionaire requested that the contract be terminated as of November 30. He departed December 2.

Operation of the contract netted the service $12.49 for the quarter.

A cursory check of the figures reveals that the gross receipts during the past four years totaled slightly less than $35,000 with the governments share being slightly less than $1,100.

V. FIELD INVESTIGATIONS

A copy of Mr. Keys report covering herbicidal spraying is attached hereto.

VI. PUBLIC RELATIONS

A. Recreational Uses

The waters of the refuge find increased use by boating enthusiasts.

Salt water fishing attracts many. It is believed that an estimate of 200 fisherman days to be very conservative and may run considerably higher.

B. Refuge Visitors

Tourist are always stopping by for information. Some want to see an oyster catcher, others a curlew, still others don't care as long as they see something.

Important refuge visitors were the following:

Dr. George Saunders	FWS	October 16
Mr. Ed Addy	FWS	Do
Mr. Fred Glover	FWS	Do
Mr. Ernest Holland	FWS	October 31
Mr. Wm. P. Baldwin	FWS	Do
Mr. Lester E. Scherer	FWS	December 1 & 2
Mr. James Silver	FWS	December 8
Mr. L. A. Givens	FWS	December 15 & 16
Mr. Fred Sumrell	FWS	December 16
Mr. Harold Steele	FWS	December 30

The following visited the refuge on numerous occasions: Mr. Wm. Lehmann, Game Management Agent, FWS; Mr. Richard M. Berry, Biologist, State Game and Fish Commission; Mr. Herman Holbrook, Project Leader, Francis Marion Turkey Refuge.

Others visiting the refuge were:

Mr. J. M. Eleazer, Information Specialist, Clemson Agricultural College and well-known writer visited us on September 4.

Mr. Alex Sprunt, Jr. Charleston South Carolina, November 25.

Mr. Paul Knight, Entomologist, Washington, D.C. December 23.

Dr. Albert Schwartz, Charleston Museum, December 23.

Again this period, as in many previous periods, many of you were conspicious by your absence.

C. Refuge Participation

Meetings of the Exchange Club, School Improvement Association and Boy Scouts have been attended by Mr. Clyde Lee, Refuge Clerk and the writer.

The writer participated in the Audubon Christmas Bird Count on Bulls Island. There was seven members present and under the direction on Mr. Alex Sprunt, Jr. of Charleston. Slightly more than 100 species was observed.

E. Fishing

Since the refuge has no authority over the fishing industry it is seldom reported that thousands of dollars worth of fish, oysters, and shrimp are removed from refuge waters yearly.

F. Violations

Considerable time was consumed patrolling the area of Cape Island. No violators were apprehended. Patrolling was also in order during the marsh hen tides.

Respectfully Submitted,

Paul W Sturm

Paul W. Sturm, Refuge Manager
Cape Romain National Wildlife Refuge
McClellanville, South Carolina

January 6, 1954

Approved: /s/ C. V. Tennant
Act. Regional Refuge Supervisor

Date: January 11, 1954

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Regional Director, Atlanta August 27, 1953

Refuge Manager, Cape Romain

Experiments on Cattail Eradication - Bulls Island - 1953.

The following information may be of interest to Mr. Edwin W. Ball, Regional Pilot-Biologist.

Experiments on cattail eradication on Bulls Island were carried on following the recommendation and advice of Mr. W. P. Baldwin, Refuge Management Biologist. The experiments involved VL-600, MH-40, Tween-20 and Tergitol #4 with 2,4-D as the herbicide. Plots 1 - 8 and 44 - 49 were in House Pond while the remainder of the plots were in Moccasin Pond. All plots were 10' X 10' with the exception of the MH-40 plots which were 20' X 20'. The 10' X 10' plots were separated by untreated 10' X 10' plots so as to eliminate the influence of drift. Brown's 64-D garden sprayer, 4 gal. capacity, was used for spraying.

Observations were made at least once each week. Visitors who inspected the experiments included Mr. W. P. Baldwin on two occasions and Mr. Green, a representative of the manufacturer of VL-600. Mr. Clyde Lee, Refuge Clerk, assisted in spraying operations; also Mr. Paul W. Sturm, Refuge Manager, observed the experiments and offered advice. The mosquitoes, cottonmouth moccasins and alligators took interest in the operations as indicated by their never failing presence.

Approximately 200 man hours have been devoted to this project, which may appear to be adequate; actually, more time should have been utilized for more complete analysis of results. Although the work was at times carried on under adverse conditions, the project was very enjoyable and interesting.

SERIES I, PLOTS 1 - 8: The purpose of this test was to observe results of MH-40 applications followed by cutting vs. 2,4-D controls. Four rates of application of MH-40 were used. 2,4-D was used at the rate of 12 lbs acid equivalent per acre with 3% tergitol as a wetting agent. The test was duplicated on two species. Plots 1 - 4 contained T. latifolia while plots 5 - 8 were T. domingensis. It was observed that quicker kills were obtained on T. latifolia but the amount of MH-40 apparently had no influence on knock down kill. No conclusive evidence was produced from this series of experiments as the amount of regrowth did not correspond to rate of MH-40 applications; and furthermore, the 2,4-D versus cut control did not result in any significant difference. It is worthy to note that 2,4-D preceding MH-40 gives a slower reaction than when used alone. Although the final results of knock down kill are relatively the same.

All plots had similar water levels. At the time of final observation, June 30, all plots were dry.

(Experiments on Cattail Eradication - Bulls Island - 1953 Cont'd)

SERIES II, PLOTS 22 and 22b: The purpose of this series was to compare MH-40 followed by cutting versus 2,4-D controls and cutting alone versus 2,4-D alone. The experiment was accomplished under complete draw-down which resulted in drought reactions; therefore no conclusive results were obtained as in all cases near 100% kills with no regrowth occurred. Again, it was noted that 2,4-D alone gives quicker results than when preceding MH-40 applications. The test was conducted on T. domingensis in the early flowering stage. Final observation was July 21.

SERIES III, PLOTS 44 - 49: Series III, containing T. domingensis in the flowering stage was treated June 11 as follows:

Plot	Treatment
44	MH-40, 5 lbs. active ingredient per acre
45	Do 10 lbs. Do
46	Do 20 lbs. Do
47	Do 30 lbs. Do
48	No treatment
49	Do

The second treatment, June 24 was as follows:

Plot	Treatment
44	1/2 - 2,4-D at rate of 4 lbs. acid equiv. per acre with 3% tergitol, 1/2 - cut.
45	Do
46	Do
47	Do
48	2,4-D at the rate of 4 lbs. acid equiv. per acre with 3% tergitol
49	Cut

Three hours after the second treatment a hard rain shower was recorded, which may have altered 2,4-D actions. The experiment was begun under complete draw-down conditions, but during the months of July and August plots 44, 45 and 46 had from 1 to 3 inches of standing water. Observations were made on untreated adjacent areas and no differences in plant growth and development were noted due to moisture conditions.

Two weeks following the second treatment, little results were evident; but by July 30 the following notations were made, which is summarized from the information of Table I.

(a) MH-40 followed by 2,4-D gives no significant difference as to the amount of MH-40 applied. The plot treated with 2,4-D alone gave better results, having produced an 80% kill as compared with 30%-60% kill on plots receiving MH-40 treatments.

(b) MH-40 followed by cutting produced favorable evidence that MH-40 reduces regrowth in the order of amounts of applications. Results

were as follows:

Plot	Amount of MH-40	% Regrowth
44	5 lbs. active ingredient per acre	5%
45	10 lbs. Do	5%
46	20 lbs. Do	1%
47	30 lbs. Do	1%
49	No MH-40	20%

(c) There is also slight evidence that MH-40 may prevent heads from maturing in order of amounts applied as the plots receiving 5 and 10 lbs. MH-40 produced some mature heads while plots receiving 20 and 30 lbs. had no mature heads. However, this difference could be attributed to moisture conditions. Another factor which tends to nullify the hypothesis is that the plot receiving 2,4-D alone, produced no mature heads.

See Table I.

SERIES IV, PLOTS 9-15: This series of 10' X 10' plots, containing T. glauca and some T. domingensis both in early flowering stage was treated May 12 using 2,4-D for herbicide at the rate of 4 lbs. acid equivalent per acre with the following wetting agents or adhesives for comparisons:

Plot	Wetting Agent or Adhesive
9	VL-600, 25%
10	Do , 12 1/2%
11	Do , 5%
12	Tergitol, 7 1/2%
13	Do , 3%
14	Do , 1/2%
15	Tween-20, 7 1/2%

The second day after treatment, the following notations were made: VL-600 plots exhibited no evidence of kill; Tergitol plots showed signs of kill in order of concentrated solutions with the 7 1/2% having obtained 100% kill; and the Tween-20 plot was also noted responding to treatment.

Seven days after treatment, the VL-600 plots still showed no evidence of kill, while Tergitol and Tween-20 plots continued to give results. The second week after treatment the VL-600 plots exhibited a faint evidence of kill, but it was also observed that the kill was in reverse order of concentrations, ie. the 5% showed more kill than the 25% etc., which indicated that the VL-600 was inhibiting the action of 2,4-D. At this time all Tergitol and Tween-20 plots had obtained a 100% knock down kill. At the end of the fifth week after treatment, the VL-600 plots obtained the following results: 25% sol. - 80% kill, 12 1/2% sol.-60% kill and 5% sol. - 90% kill. In all plots flowering was retarded. This final result may be due to delayed action of 2,4-D but is believed that it may be attributed to drought conditions as untreated areas exhibited similar

results at the same time.

Two months after treatment, the Tergitol plots showed a 1% regrowth and the Tween-20 having a 5% regrowth. The VL-600 plots had 5%, 2 1/2% and 5% regrowth in order of concentrations.

SERIES V, PLOTS 16-21. Series V, 10' X 10' plots of T. glauca and T. domingensis in early flowering stage, was treated May 12 for the purpose of comparing 12 lbs. acid equivalent per acre of 2,4-D using VL-600 and Tergitol in the same quantities as in series II which was treated with 2,4-D at the rate of 4 lbs. acid equivalent per acre.

The plots received the following treatments:

Plot	Wetting Agent or Adhesive
16	VL-600, 25% Sol.
17	Do , 12 1/2% Sol.
18	Do , 5% Sol.
19	Tergitol, 7 1/2% Sol.
20	Do , 3% Sol.
21	Do , 1/2% Sol.

All Tergitol plots reached 100% kill within one week and showed only 1% regrowth, after 2 months, in the plots treated with the 3% and 1/2% solutions. The VL-600 plots showed no signs of kill whatsoever until the end of the second week after treatment. Again, the results of kill were in reverse order of concentrations of solutions and the results remained the same 6 weeks later which gives evidence of VL-600 inhibiting 2,4-D action. Drought did not produce any striking results on untreated areas in series V and in series IV. It was observed that in the VL-600 plots, flowering matured as follows:

Plot	VL-600	Mature Flowers
16	25% Sol.	10%
17	12 1/2% Sol.	5%
18	5% Sol.	0

SERIES VI, PLOTS 23-28. Series VI was treated May 21 using 10' X 10' plots of T. glauca and some T. domingensis in the flowering stage. Treatments involving Tergitol and VL-600 are a repeat of series IV. 2,4-D at the rate of 4 lbs. acid equivalent per acre was used with Tergitol and VL-600 as follows:

Plot	Wetting Agent or Adhesive
23	VL-600, 25% Sol.
24	Do , 12 1/2% Sol.
25	Do , 5% Sol.
26	Tergitol, 7 1/2% Sol.
27	Do , 3% Sol.
28	Do , 1/2% Sol.

(Experiments on Cattail Eradication - Bulls Island - 1953 Cont'd)

The results of thsi series were not unlike that observed in series IV. Tergitol produced a speedy knock down kill with practically no regrowth. VL-600 showed lethal results in reverse order of concentrations. The final results, which are believed to be altered by drought conditions, exhibited a kill as follows: 25% solution - 70% kill, 12 1/2% solution - 95% kill and 5% solution 99% kill with no mature flowers.

SERIES VII, PLOTS 29-37: In the light of the fact that VL-600 applied with 2,4-D did not produce favorable results, series VII was treated June 9 applying 2,4-D first and then spraying VL-600. Plots of Tergitol and VL-600 with 2,4-D were treated for comparisons. Plots 10' X 10' of T. angustifolia and containing some T. glauca, both in flowering stages, were treated using w,4-D at the rate of 4 lbs. acid equivalent per acre and wetting agent or adhesive as follows:

Plot	Wetting Agent or Adhesive
29	VL-600 - 25% Sol, over 2,4-D
30	Do - 12 1/2% Sol., Do
31	Do - 5% Sol., Do
32	Do - 25% Sol., with 2,4-D
33	Do - 12 1/2% Sol., Do
34	Do - 5% Sol. Do
35	Tergitol - 7 1/2% Sol.
36	Do - 3% Sol.
37	Do - 1/2% Sol.

The two methods of applying VL-600 did not produce any significant difference in results obtained. The Tergitol plots again proved to be superior, however, only the 7 1/2% solution produced a near 100% kill while the 3% and 1/2% solutions reached a 90%kill.

SERIES VIII, PLOTS 38-43: Series VIII was treated June 10, using 10' X 10' plots of T. angustifolia in the flowering stage. Various amounts of Tween-20 was used with 2,4-D at the rates of 4 and 12 lbs. acid equivalent per acre as follows:

Plot	Lbs. 2,4-D acid equivalent per acre	% Sol. Tween-20
38	4	7 1/2%
39	4	3%
40	4	1/2%
41	12	7 1/2%
42	12	3%
43	12	1/2%

The plots treated with 4 lbs. 2,4-D acid equivalent per acre yielded fair results but don not compare with the 12 lbs. 2,4-D, which produced excellent kills, and produces results comparable to Tergitol used with 2,4-D at the rate of 4 lbs. acid equivalent per acre.

(Experiments on Cattail Eradication - Bulls Island - 1953 Cont'd)

See Table II.

CONCLUSIONS AND RECOMMENDATIONS: As in all experimental work, definite conclusions cannot be made from only a few tests. Furthermore, effect of rainfall, evaporation and dropping of water levels make for difficult analysis. The experiments accomplished on Bulls Island should be compared with those of other refuges before any final conclusions are made.

The following conclusions and recommendations are offered based on all test carried out this year on Bulls Island.

1. MH-40 shows evidence of reducing regrowth on areas that are to be cut underwater. 2,4-D following MH-40 does not seem to be as effective as when used alone. This may indicate that MH-40 reduces plant activity to such an extent that 2,4-D is ineffective or at least is retarded. In light of the fact that several factors such as rainfall, stage of growth and water levels were coped with in the test, MH-40 should receive additional experimentation for correlation of regrowth and amounts of application.

2. VL-600 proved to be worthless as compared to other products. Difficulty was encountered in applying an even film on foliage. Even though the film was somewhat splotched, it was continuous, completely covering the vegetation. The trend of all tests showed that the greater the application of VL-600 the less the effects of 2,4-D. This astounding revealation was observed by Mr. W. P. Baldwin, Mr. Paul W. Sturm and Mr. Green a representative of the manufacturer. It was suggested that a wetting agent be added to VL-600, but it seems this would be defeating our purpose as excellent wetting agents, already known, when used with 2,4-D alone give satisfactory results.

3. Wetting agents: Tergitol #4 is the hottest product tested on Bulls Island. In practically all test, excellent results were obtained. When used at the rate of 7 1/2% solution the results of knock down kill are evident in 2-3 days. However, the 3% solution shows excellent final results, being a bit slower. The 1/2% solution in some instances looked good. For all practical purposes a 3% solution with 4 lbs. acid equivalent of 2,4-D per acre seems to be ideal.

Tween-20 shows great promise although it is less effective than Tergitol when used in the same quantities. More comparative test should perhaps be made. The tests made so far indicate that a 7 1/2% solution of VL-600 is comparable to a 3% solution of Tergitol.

Experiments carried out and the above report written up by Mr. Victor W. Ray, Refuge Maintenance Man (General).

Paul W. Sturm

cc: Mr. William P. Baldwin, Refuge Management Biologist.

TABLE I

Plot No.	First Treatment					Second Treatment					Results	
	Date	Herbicide	Rate of Application	Actual Amount Used	Total Volume of Spray Solution	Date	Herbicide	Rate of Application	Actual Amount Used	Total Volume of Spray Solution	% Kill	% Regrowth
1	3/30	MH-40	2.5 lbs. active ingredient per acre	26 gms	1 gal.	4/5	2,4-D	12 lbs. acid equiv. per ac.	60 cc	1/2 gal.	100	10
						"	Cut	Under Water				1
2	"	"	5 lbs.	52 gms	"	"	2,4-D	12 lbs.	60 cc	1/2 gal.	100	2
						"	Cut	Under Water				10
3	"	"	10 lbs.	104 gms	"	"	2,4-D	12 lbs.	60 cc	1/2 gal.	100	2 1/2
						"	Cut	Under Water				2 1/2
4	"	"	20 lbs.	208 gms	"	"	2,4-D	12 lbs.	60 cc	1/2 gal.	100	1
						"	Cut	Under Water				5
5	"	"	2.5 lbs.	26 gms	"	"	2,4-D	12 lbs.	60 cc	1/2 gal.	100	5
						"	Cut	Under Water				5
6	"	"	5 lbs.	52 gms	"	"	2,4-D	12 lbs.	60 cc	1/2 gal.	100	2 1/2
						"	Cut	Under Water				10
7	"	"	10 lbs.	104 gms	"	"	2,4-D	12 lbs.	60 cc	1/2 gal.	100	5
						"	Cut	Under Water				5
8	"	"	20 lbs.	208 gms	"	"	2,4-D	12 lbs.	60 cc	1/2 gal.	100	2
						"	Cut	Under Water				4
22	5/21	"	20 lbs.	208 gms	4 gal.	6/4	2,4-D	4 lbs.	20 cc	2 gal.	99	0
						"	Cut					0
22b		No First Treatment				"	2,4-D	4 lbs.	20 cc	2 gal.	99	0
						"	Cut					0

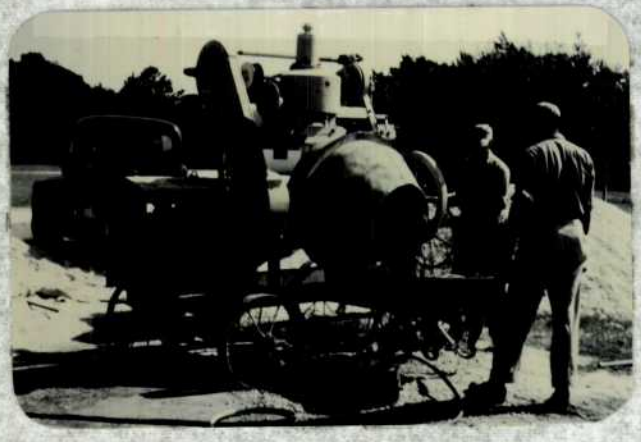
44	6/11	MH-40	5 lbs.	52 gms	4 gal.	6/24	2,4-D	4 lbs.	20 cc	2 gal.	60	0
						"	Cut					5
45	"	"	10 lbs.	104 gms	"	"	2,4-D	4 lbs.	20 cc	2 gal.	30	0
						"	Cut					3
46	"	"	20 lbs.	208 gms	"	"	2,4-D	4 lbs.	20 cc	2 gal.	50	0
						"	Cut					1
47	"	"	30 lbs.	308 gms	"	"	2,4-D	4 lbs.	20 cc	2 gal.	60	0
						"	Cut					1
48		No First	Treatment			"	2,4-D	4 lbs.	40 cc	4 gal.	80	0
49		No First	Treatment			"	Cut					20

TABLE II

Plot No.	Date Treated	Herbicide	Rate of Application	Actual Amount Used	Wetting Agent or Adhesive	Rate of Application	Actual Amount Used	Total Volume of Spray Solution	% Kill	% Regrowth
9	6/12	2,4-D	4 lbs. acid equiv. per acre	10 cc	VL-600	25% Solution	946 cc	1 gal.	80	5
10	"	"	"	"	"	12 1/2% "	473 cc	"	80	2 1/2
11	"	"	"	"	"	5% "	189 cc	"	90	5
12	"	"	"	"	Tergitol	7 1/2% "	285 cc	"	100	1
13	"	"	"	"	"	3% "	104 cc	"	100	1
14	"	"	"	"	"	1/2% "	19 cc	"	100	1
15	"	"	"	"	Tween-20	7 1/2% "	285 cc	"	100	5
16	"	"	12 lbs. acid equiv. per acre	20 cc	VL-600	25% "	946 cc	"	5	0
17	"	"	"	"	"	12 1/2% "	473 cc	"	30	0
18	"	"	"	"	"	5% "	189 cc	"	80	2 1/2
19	"	"	"	"	Tergitol	7 1/2% "	285 cc	"	100	0
20	"	"	"	"	"	3% "	104 cc	"	100	1
21	"	"	"	"	"	1/2% "	19 cc	"	100	1
23	6/21	"	4 lbs. acid equiv. per acre	10 cc	VL-600	25% "	946 cc	"	70	0
24	"	"	"	"	"	12 1/2% "	473 cc	"	95	1
25	"	"	"	"	"	5% "	189 cc	"	99	1

26	"	3	"	"	Tergitol	7 1/2%	"	285 cc	"	100	0
27	"	"	"	"	"	3%	"	104 cc	"	100	0
28	"	"	"	"	"	1/2%	"	19 cc	"	95	0
29	6/9	"	"	"	VL-600	25%	"	946 cc	"	85	2 1/2
30	"	"	"	"	"	12 1/2%	"	473 cc	"	80	2 1/2
31	"	"	"	"	"	5%	"	189 cc	"	75	2 1/2
32	"	"	"	"	"	25%	"	946 cc	"	80	2 1/2
33	"	"	"	"	"	12 1/2%	"	473 cc	"	80	2 1/2
34	"	"	"	"	"	5%	"	189 cc	"	80	2 1/2
35	"	"	"	"	Tergitol	7 1/2%	"	285 cc	"	99	0
36	"	"	"	"	"	3%	"	104 cc	"	90	0
37	"	"	"	"	"	1/2%	"	19 cc	"	90	0
38	6/10	"	"	"	Tween-20	7 1/2%	"	285 cc	"	95	0
39	"	"	"	"	"	3%	"	104 cc	"	80	0
40	"	"	"	"	"	1/2%	"	19 cc	"	75	0
41	"	"	12 lbs. acid equiv. per acre	30 cc	"	7 1/2%	"	285 cc	"	100	0
42	"	"	"	"	"	3%	"	104 cc	"	100	0
43	"	"	"	"	"	1/2%	"	19 cc	"	95	0

Rice grown in Cape Pond



Concrete Mixer in operation

Pouring concrete around existing Piles

Project completed

PUBLIC USE - C.Y. 1953

Please supply figures, or your best estimates for the following categories when applicable to your refuge:

A. Cape Romain National Wildlife Refuge.

B. Estimated total use of all types 1092 visitor-days.

1. Hunting use (for those refuges having public or regulated hunting.)

Estimate visitor-days none.

2. Fishing use. Estimate visitor-days 848.

3. Miscellaneous use (lump such uses as picnicking, swimming, wildlife observation, birdwatching, as well as those on the area for business or official use, including economic uses such as farming or trapping.)

Estimate visitor-days 244.

C. Remarks

January 12, 1954
Date

Signed Paul W Stevens
Refuge Manager

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

WATERFOWL

REFUGE Cape Romain MONTHS OF Sept 1, 1958 TO Dec 31, 1958 19___

(1) Species	(2) Weeks of reporting period 1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada					5	15	75	200	315	350
Cackling										
Brant										
White-fronted										
Snow										
Blue							2	2	6	3
Other										
Ducks:										
Mallard								100	1200	3800
Black						10	60	150	950	2700
Gadwall									75	350
Baldpate										200
Pintail					25		25	50	235	5000
Green-winged teal									30	75
Blue-winged teal	5	100	410	100	35	30	16	50	20	35
Cinnamon teal										
Shoveler									50	25
Wood		5	6	10		12		25	25	
Redhead										
Ring-necked									5	25
Canvasback										
Scaup									20	50
Goldeneye										
Bufflehead							1			
Ruddy								1	15	35
Other										
Coot:		5			50	10	75	300	515	615

Int. Dup. Sec.,
Wash. D. C.

3-~~7150a~~ 1750a
Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Cape Romain MONTHS OF Sept 1 TO Dec 31, 1953

(1) Species	(2) Weeks of reporting period 11	12	13	14	15	16	17	18	(3) Estimated waterfowl days use	(4) Production Broods seen	(4) Production Estimated total
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	300	400	150	160	150	150	150	150	18,790		
Cackling											
Brant											
White-fronted											
Snow	1			1	1		1	1	35		
Blue	7			7	4		7	7	310		
Other											
Ducks:											
Mallard	3250	1700	1450	2400	2200	2200	1050	1400	141,050		
Black	2750	1700	1200	1700	1600	1600	800	800	112,280		
Gadwall	350	200	55	300	200	200	250	350	16,310		
Baldpate	200	150	50	100	100	100	75	150	7,875		
Pintail	5600	3400	325	400	400	400	500	500	122,220		
Green-winged teal	75	75	75	150	150	160	100	100	6,510		
Blue-winged teal	35	35	50	75	75	75	75	75	8,225		
Cinnamon teal											
Shoveler	25	25	25	100	100	100	200	200	5,810		
Wood			25	25	25	25	25	25	1,620		
Redhead											
Ring-necked	25	25	100	150	25	25	100	100	3,850		
Canvasback			7		5	5	7	7	220		
Scaup	60	35	5	15	10	10	75	75	2,415		
Goldeneye				20		10		10	280		
Bufflehead	35	25	35	75	100	100	30	30	3,360		
Ruddy					50	50	100	100	2,100		
Other											
Coot:	615	610	600	700	1000	1000	1500	1500	63,665		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese	19,135	400	
Ducks	434,135	12,395	
Coots	63,666	1,500	

SUMMARY

Principal feeding areas Fresh waters ponds. To a limited extend also salt water creeks.

Principal nesting areas

Reported by Paul W Sturm
Refuge Mgr

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).

Interior Duplicating Section, Washington, D. C. 37944
1953

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

MIGRATORY BIRDS
(Other than Waterfowl)

Refuge Cape Romain Months of Sept 1 to December 31 195 8

(1) Species	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Use
I. Water and Marsh Birds:										
Horned grebe			700	11/15-12/31						1000
Pied-billed grebes			100	11/1-12/31						100
Brown Pelicans			2000	9/1-9/30						2000
Double-cr. Cormorant			3500	11/1-12/30						3500
Great Blue Heron			100	9/1-10/15						100
American Egret			75	9/1-10/15						75
Snowy Egret			400	9/1-10/15						400
Am. Heron			400	9/1-10/15						400
Little blue Heron			50	9/1-10/15						50
Reed Ibis			150	9/1-10/15						150
Clapper rail			3000	9/1-10/15						3500
Florida Gallinule			125	10/15-11/1						125
										1375
II. Shorebirds, Gulls and Terns:										
Oyster catcher			600	11/15-12/31						600
Black-bellied Plover			2000	12/15						2000
Ruddy Turnstone			100	12/1-12/31						100
Hud. Curlews			25	9/1-9/30						25
Long-billed Curlews			1	11/15						
Dowitchers			2000	9/1-11/15						2000
Herring Gulls			600	11/15-12/31						600
Ring-billed Gulls			500	11/30-12/31						500
Royal Tern			2000	9/1-10/15						2000
Black Skimmer			300	9/1-10/15						300
Hudsonian Godwits			500	11/1-12/15						500
Red-backed Sandpipers			600	11/1-12/15						600
Misc. Sandpipers			6000	9/1-12/31						6000

(over)

14327

(1)	(2)	(3)		(4)	(5)	(6)
III. Doves and Pigeons:						
Mourning dove		25	December			
White-winged dove						
IV. Predaceous Birds:						
Golden eagle						
Duck hawk		3-4	Nov.1ee			
Horned owl		5-6	"			
Magpie						
Raven						
Crow		50	"			

Reported by [illegible]

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

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first migration record for the species for the reporting period.

(3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated species days use (average population X no. days present) of refuge during the reporting period.

Interior--Duplicating Section, Washington, D. C.

26014

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Cape Romain Months of Sept. 1 to Dec. 31, 1948

(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	2650 A. of pine-palmetto forests with ponds, marshes, pond edge and salt water edge	20			70% male 30% female		19	1	125	One turkey hen caught with diseased neck. An eagle was observed flying away with turkey.

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-3
(June 1945)

BIG GAME

Refuge Cape Romain Refuge Calendar Year 1958

(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		unknown	none	none	none	none	unknown	unknown	unknown	none		40-60	40-60	

Remarks:

Reported by Paul W. Sturm

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 of 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.

Form NR-5 DISEASE 1616

Refuge Cape Romain Year 1963

Botulism None

Lead Poisoning or other Disease None

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 _____

Kind of disease _____

Species affected _____

Number Affected Species	Actual Count	Estimated

Number Recovered _____

Number lost _____

Source of infection _____

Water conditions _____

Food conditions _____

Remarks _____

3-1756 .
Form NR-6
(April 1946)

FISH

Refuge Cape Romain Year 1953

Species	Relative Abundance	Sport Fishing		Commercial Fishing		Restocking		Number removed for Restocking
		Man days Fishing	Number Taken	No. of Permits	Pounds Taken	Number Stocked	Area Stocked	
Channel Bass								
Striped Bass		600	3000-5000#					
Flounder								
Hook Fish								

REMARKS:

3-1757
Form NR-7
(April 1946)

PLANTINGS
(Marsh - Aquatic - Upland)

Refuge Cape Romain Year 1953

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
Chufas	Bulls Is	1bu/A	2 A	2 bu	April	0%	perhaps drought	
	Cape Is	1bu/A	2 A	2 bu	June	50%	drought; O.K. in wet areas	
Cowpeas	Bulls Is	1bu/A	2 A	2 bu	July	90% but deer later ruined them 100%		
Crotalaria	Bulls Is	20#/A	2 1/2 A	50 #	June	75%	drought	
Millet, Browntop	Bulls Is	20#/A	2 1/2 A	50 #	March	0%	drought or other unknown factors	
Millet, Pearl	Cape Is	30#/A	3 1/3 A	100 #	June	100% but blackbirds got them all		
Millet, Jap	Bulls Is	30#/A	14 A	400 #	Jun-July	0-75% Good in low fire in 200		
	Cape Is	30#/A	70 A	2100 #	Jun-July	0-50%	drought	good stand generally
Millet, Proso	Cape Is	30#/A	1/2 A	25 #	June	0%	unknown	
Oats and Abruzzi rye	Bulls Is	2 bu/A	5 A	10 bu	Sept	75%	turkeys and drought	
Rice, upland	Cape Is	1bu/A	10 A	10 bu	May-June	75%		Good crop but blackbirds got it
Lyegrass, It	Cape Is	30#/A	10 A	300 #	October	60%	drought	
Vetch, Hairy	Bulls Is	25#/A	1/2 A	15 #	Sept	80%	"	

TOTAL ACREAGE PLANTED:

Marsh and aquatic 0 1/2
Hedgerows, cover patches
Food strips, food patches 26 1/2
Forest plantings

Form NR-8
(Revised)

CULTIVATED CROPS

Refuge Cape Romain Year 1958

Permittee (If farmed by refuge personnel, so indicate)	Permit No.	Unit or Location	Crops Grown	Ave. Yield per Acre	Permittee's Share		Government's Share or Return				Compensatory Services, or Cash Revenue
							Harvested		Unharvested		
					Acres	Bu. Harvested	Acres	Bu.	Acres	Bu.	
	SEE FARM NR-7										

Summary of Crops Grown:

Crop	Acreage	Permittee's Share		Government's Share				Total Revenue
		Acres	Bushels	Harvested Acres	Harvested Bu.	Unharvested Acres	Unharvested Bu.	$

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS

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

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

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

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

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

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

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

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

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

3-1570
NR-8a

REFUGE GRAIN REPORT

Refuge Cape Romain Months of Sept 1 through Dec 31, 1953

(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
Oats	7 bu	5	12		3	9	12	None			
Rice, Upland	10 bu	15	25			20	20	5		5	None
Ryegrass, It		15 bu	15		15		15	None			
Rye, Abruzzi	15 bu		15		15		15	None			
Vetch, hairy		50 #	50 #		50 #		50 #	None			

(8) Indicate shipping or collection points

(9) Grain is stored at

(10) Remarks

*See instructions on back.

16—61482-1

NR-8a

REFUGE GRAIN REPORT

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

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 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.

16—61482-1 U. S. GOVERNMENT PRINTING OFFICE

3-1759
Form NR-9

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

Refuge Cape Romain Year 1953

Species	Collections				Receipts		Total Amounts on Hand	Amount Surplus
	Amount	Date or Period or Collection	Method	Unit Cost	Amount	Source		
Chufas					7 bu	Car. Sandhills	None	
Corn, shelled					200 #	Commercial	"	
Cowpeas					2 bu	"	"	
Crotalaria					60 #	Carolina Sandh.	"	
Millet, Sr.-top					1 bu	Commercial	"	
Millet, Pearl					100 #	"	"	
Millet, Jap					2500 #	"	"	
Millet, Proso					25 #	"	"	
Oats					10 bu	Santee Refuge	"	
					5 bu	Savannah Refuge	"	
Rye, Abruzzi					15 bu	Car. Sandhills	"	
Rice, Upland					16 bu	Lacoosine	"	
					15 bu	Savannah	5 bu	None
Ryegrass, It					15 bu	Ky. Woodlands	None	
Vetch, hairy					50 #	Wheeler	"	

Form NR-10

HAYING AND GRAZING

Refuge Cape Romain Year 1948

Permittee	Permit No.	Unit or Location	Actual Acreage Utilized	Animal Use Months	Tons of Hay Harvested	Period of Use From - To	Rate	Total Income	Remarks
NONE									

Totals:

Acreage grazed_____ Animal use months_____ Total income Grazing_____

Acreage cut for hay_____ Tons of hay cut_____ Total income Haying_____

1621

Form NR-11

TIMBER REMOVAL

Refuge Cape Romain Year 1953

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

Total acreage cut over_____ Total income_____

No. of units removed B. F._____ Method of slash disposal_____

Cords_____

Ties_____

_____

1622