

Pea Island National Wildlife Refuge

Narrative Report

September 1 to December 31, 1963

Refuge Personnel

William C. Good	Refuge Manager
Houston C. Phillips	Wildlife Aid
Marvin C. Toler	Laborer
Mrs. Valerie C. Good	Clerk-Typist (Intermittent)

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I. GENERAL

A. Weather Conditions.

In general this reporting period has been warm and dry. Rainfall did not equal the normal. Temperatures ranged slightly higher for both high and low readings than did the corresponding period of 1962. In October hurricane "Ginny" was spawned off Watteras Island and sea-sawed for ten days up and down the coast line causing damage to the dune systems.

The following data is taken from the Weather Station operated by the National Park Service on Bodie Island, 3 miles north of Pea Island and reflects conditions on the Refuge.

<u>Month</u>	<u>Precipitation</u>			<u>Temperatures</u>	
	<u>This Mo.</u>	<u>Normal</u>	<u>Dev. from Normal</u>	<u>Max.</u>	<u>Min.</u>
Sept.	5.25	6.96	-1.71	89	57
Oct.	3.06	4.80	-1.74	74	40
Nov.	2.97	3.03	-1.80	76	38
Dec.	<u>2.96</u>	<u>3.32</u>	<u>-.36</u>	<u>67</u>	<u>19</u>
Totals	14.24	18.11	-5.61	Extremes 89	19

A southwester on November 28-29 caused flooding of Pamlico Sound water over open fields and the State Highway but did not damage dike structures, buildings or the dune system.

B. Habitat Conditions.

1. Water

Both the North and South Pond floors were exposed until the first of November. Severe drought conditions developed in July and continued until early November.

Staff gauge readings for both ponds follow with 1962 readings for comparative purposes:

	<u>Gauge Readings</u>			
	<u>North Pond</u>		<u>South Pond</u>	
	<u>1963</u>	<u>1962</u>	<u>1963</u>	<u>1962</u>
Sept.	Dry	4.28	Dry	4.48
Oct.	"	4.18	"	4.28
Nov.	3.30	4.96	3.90	5.40
Dec.	3.70	5.04	3.85	4.64

Normal fluxuations in water levels in the Sound existed throughout the period and no extended turbulent water conditions developed on the Pamlico Sound Shoals.

Water salinity tests to evaluate the sea water content of both ponds were resumed in November. The silver nitrate titration method was used to determine the following readings:

Water Salinity Tests During Period
(Readings in % of Sea Strength)

Date	<u>North Pond</u>			<u>South Pond</u>		
	<u>North End</u>	<u>At Gauge</u>	<u>Gauge Reading</u>	<u>North End</u>	<u>On West Side</u>	<u>Gauge Reading</u>
11/13	11.8	12.73	3.30	11.18	9.73	3.60
12/16	9.79	10.25	3.54	9.47	8.54	3.86

2. Food and Cover

Approximately 70 acres of common ryegrass was planted in late September. Severe drought conditions delayed germination until late October. Heavy feeding and freezing weather conditions have reduced this planting to only scattered clumps. Flooding Pamlico Sound water destroyed an additional 10 acres of common ryegrass by chemical burning.

Mixed native flora within the impoundments was destroyed by the summer drought conditions. The marsh edges of the ponds and other marshes containing American three-square, robust three-square and wild millet withstood the drought conditions and produced satisfactory food stands.

Outside the impoundments, spartina alterniflora expanded its previous boundries throughout the marsh zone and has provided much feeding for snow geese. Beach pea, scattered throughout the higher elevations of the Refuge, produced a heavy seed production and is being fed on by Canadian Geese.

II. WILDLIFE

A. Migratory Birds.

1. Waterfowl

The first wintering waterfowl arrived in late September. By the first of October, 1500 Canadian Geese and 1100 ducks were using the Refuge. The count at the end of the period showed 230 Whistling Swan, 8500 Canadian Geese, 6500 Snow Geese, 6575 Ducks and 800 Coot on the area. These figures represent a slight increase in Canadian Geese, a slight decrease in Snow Geese and an increase in Ducks. Many young Snow Geese, five to seven per family, are present this season.

2. Other Migratory Birds

Ring-billed and Herring Gulls were common. An occasional Mourning Dove and Wilson Snipe were also observed.

B. Upland Game Birds.

Ring-necked Pheasants, quite common on the Refuge, are found around the Ponds or in the wild pastures along the state highway.

C. Big Game Animals.

Pea Island Refuge has no big game animals.

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

Muskrat, Otter, Mink and Nutria comprise the Refuge fur animal population and are sparse in numbers. No predation has been observed. An occasional feral cat can be seen adjacent to the highway or in the vicinity of the Refuge buildings.

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

Marsh, Duck and Sparrow Hawks used the Refuge in the late Fall. The Fish Crow is quite common to the area. One Bald Eagle was sighted near the Refuge Headquarters in late November. No predator pressure by Hawks has been noted.

F. Other Birds.

No additions or changes in the Refuge Bird List are required.

G. Fish.

Only salt water fishing is carried out on the ocean front or in

Pamlico Sound. Moderate to poor catches were reported due to changing weather conditions and roiled water.

W. Diseases.

There is no indication of any disease problem. Only an occasional Snow or Canadian Goose has been found dead so far this season.

III. REFUGE DEVELOPMENT & MAINTENANCE

A. Physical Development.

The Regional Office negotiated a contract with the Cape Hatteras Electric Membership Corp., Buxton, N. C., for construction of a power line from Rodanthe to the Refuge Headquarters.

Maintenance of buildings, fence repair, fire line plowing, equipment repair and maintenance, posting and farming rounded out the maintenance and operations program.

B. Plantings.

1. Aquatics and Marsh Plants

No plantings made.

2. Trees and Shrubs

No plantings made.

3. Upland Herbaceous Plants

No plantings made.

4. Cultivated Crops

Common ryegrass was planted to approximately 60 acres in the North Pond and an additional 10 acres in a strip between the two Ponds. Granular ammonium nitrate was used to top dress these pastures. Growth was retarded until late October because of serious drought conditions. The 10 acre field was flooded with sound water in late November and the grass killed. The 60 acre field was heavily used until freezing weather retarded further growth.

C. Collections and Receipts.

Nothing to report.

D. Control of Vegetation.

Spot treatment of approximately 8 acres of cattail in both impoundments was carried out during the summer. Dalapon, at the rate of 185 lbs. acid equivalent per acre, was used with gun jet equipment to treat typha domingensis and t. augustifolia in patch growths. Estimated material costs for this treatment is \$362.00.

E. Planned Burning.

These plans will be reported in the Narrative Report ending April 30th.

F. Fires.

Nothing to report.

IV. RESOURCES MANAGEMENT

No resources harvesting permits are in force and no financial income from refuge resources is received. No permit is required for fishing since it is carried out in navigational waters.

V. FIELD INVESTIGATIONS

Water salinity tests were conducted on both impoundment waters with relation to sea salting from the March, 1962 storm.

Inspections were made of both impoundments by Regional office and Patuxent Personnel relating to food production with reference to sea salting and other factors.

VI. PUBLIC RELATIONS

A. Recreational Uses.

These uses include sightseeing, wildlife observation, photography, Surf fishing and beach combing.

There were 294 visitors from 27 different states which included:

North Carolina, New York, Virginia, Dist. of Columbia, Delaware, Connecticut, Florida, Ohio, Illinois, Pennsylvania, Kentucky, Colorado, Vermont, Michigan, Nevada, New Mexico, California, New Jersey, Maryland, Georgia, Minnesota, Rhode Island, W. Virginia, Indiana, Massachusetts, Missouri and South Carolina. Also among the visitors were five from Canada and two from West Germany, making an overall total for the period of 301.

This figure indicates an increase of 80 over the corresponding period for 1962.

B. Refuge Visitors - Official.

<u>Date</u>	<u>Name and Organization</u>	<u>Address</u>
9/17	Clark Webster, RO Biologist	Hardeeville, S. C.
10/29	L. J. Givens, RO Supervisor	Atlanta, Ga.
	Edwin W. Ball, RO Biologist	" "
	Howard Huenecke, Central Office	Washington, D. C.
10/31	Dr. Howard Lee, RO 3	Milwaukee, Wis.
11/14	LeRoy Anderson, NBC-TV Photographer	Washington, D. C.
	Joseph Santos, " "	" "
11/19	Loren F. Baker, CG Intelligence	Portsmouth, Va.
11/25	Mr. & Mrs. Vernon Yost, GSA RO	Atlanta, Ga.
12/2	Charles Miller, FBI Agent	Elizabeth City, N. C.
	A. E. Stark, NPS, CHNSA	Manteo, N. C.
	Frank Cahoon, Dare Co. Sheriff	" "
	D. R. Bassnight, Deputy "	" "

C. Refuge Participation.

The Refuge Manager attended monthly meetings of the Dare County Peace Officer's Association. This group comprises all of the peace officers in Dare County and is in operation for the purpose of rendering mutual assistance in law enforcement.

The Refuge Manager represented the Service on November 20th at the dedication and formal opening of the Herbert C. Bonner Bridge spanning Oregon Inlet. The guest of honor was the Hon. Herbert C. Bonner. Other participants included representatives from the National Park Service, North Carolina State Highway Commission, Dare County Commissioners and McLean Construction Company.

D. Hunting.

The National Park Service operates a managed hunt area three miles north of the refuge and therefore no hunting is done on the Refuge.

E. Violations.

The Pea Island Coast Guard Station (Refuge Field Headquarters) was broken into and entered on the night of November 20th. Damage consisted of a broken door pane and a loosened moulding. Personal clothing was used and beds were slept in. The FBI office, Elizabeth City, The Dare County Sheriff's office and the National Park Service office, Bodie Island are cooperating in an investigation.

Nine Snow Geese were killed on the Refuge early on the morning of December 31st. U.S. Game Management Agent Ross and his staff, the National Park Service Bodie Island and State Wildlife Officer Forbes are cooperating in the investigation.

F. Safety.

Four Safety Meetings were held during the period. Subjects discussed were:

Sept.	Proper Lifting Methods
Oct.	Safety Requirements Handbook, Part IV, Motor Vehicle Travel
Nov.	"Rules of the Road" - National Trucking Association
Dec.	Outboard Motor Accident - A Case History.

There were no accidents during the reporting period. Approximately 31,059 man hours and 2124 calendar days have been worked since the last lost time accident. This accident occurred on January 21, 1958. Insulated rubber boots and storm suits were procured during the period.

VII. OTHER ITEMS

A. Items of Interest.

1. The Herbert C. Bonner Bridge over Oregon Inlet opened November 20th. This is reflected in a slight visitation increase and is expected to increase further as the public becomes aware that the bridge is open.

2. At the request of Soil Conservation Service personnel, a one pound can of beach pea seed was collected and sent to them for testing and propagation.

3. Sand dune repair, resulting from damage caused by "Ginny" was carried out by the National Park Service. Damage was caused by wind and water erosion and occurred in isolated areas along the dune system.

4. The North Carolina State Highway Commission started removal of installations at the Pea Island Ferry Landing in accordance with terms set forth by the Bureau of Land Management relative to a highway right-of-way accommodating the new Herbert C. Bonner Bridge.

B. Photographs.

Photographs for the period follow the signatures.

C. Signature.

Date completed January 15, 1964

Respectfully submitted,

William C. Good
William C. Good, Refuge Manager

Approval:

Victor W. Kay
Acting Regional Refuge Supervisor
JAN 20 1964

• JAN • 64



McLean Construction Company pouring last slab on Herbert C. Bonner Bridge

• JAN • 64



Fishing decks going into place on Bridge

JAN • 64



Governor's Official Party lined up for last ferry trip south over Oregon Inlet

• JAN • 64



The last ferry trip

• JAN • 64



Traffic lined up south of Oregon Inlet
awaiting bridge opening

• JAN • 64



Speaker's Platform, Dedication
Ceremonies, atop 65' high span,
Herbert C. Bonner Bridge

• JAN • 64



Bridge Dedication Ceremonies Complete

• JAN • 64



Replaced fence along Herbert C.
Bonner Bridge approach

• JAN • 64



• JAN • 64 •



National Park Service repair of damage to
Refuge dune system

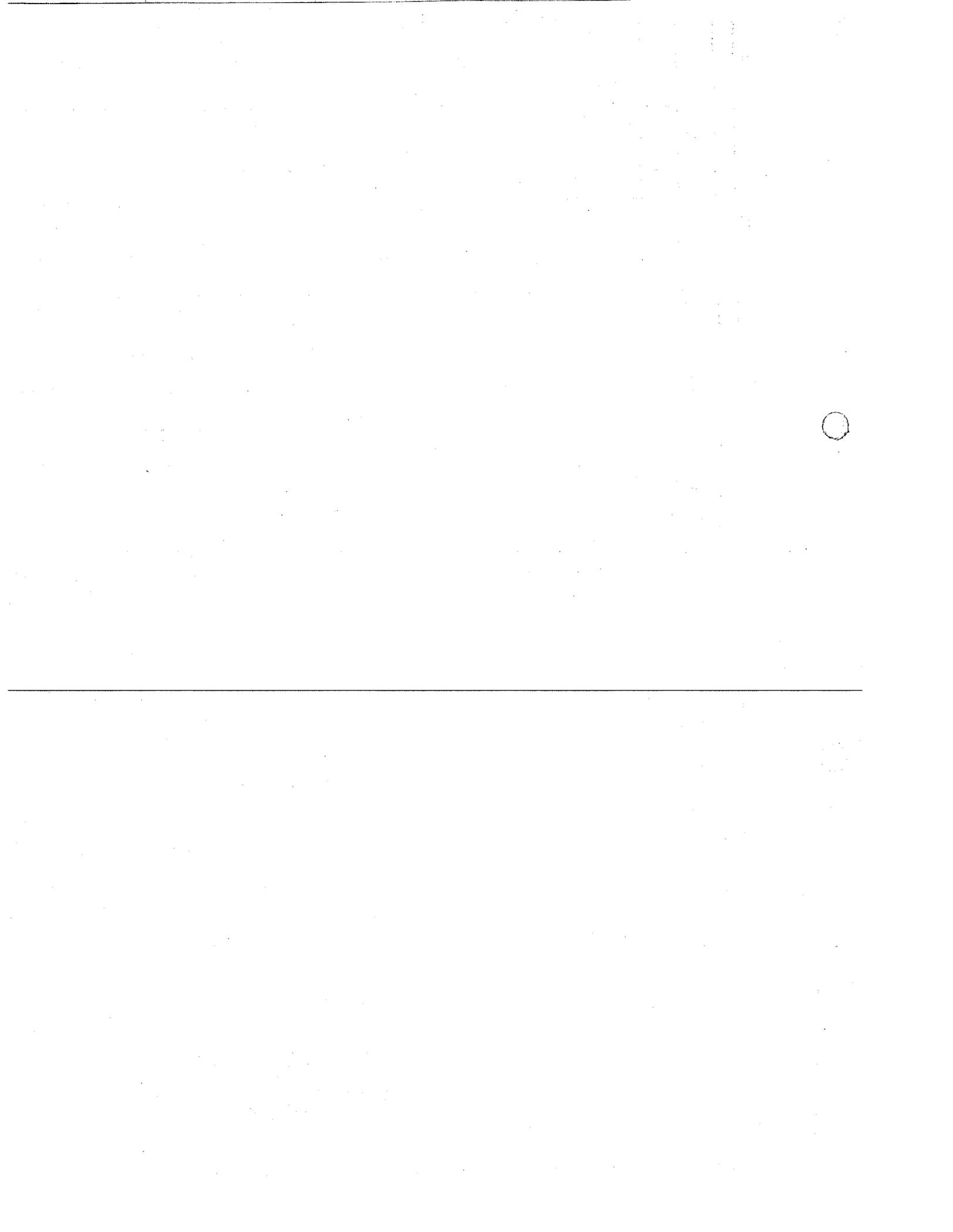
3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE Pea Island N. W. Refuge

MONTHS OF Sept. 1 TO Dec. 31, 1963

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling Trumpeter										24
Geese:										
Canada					1570	2626	3118	2767	3700	3050
Cackling Brant										
White-fronted Snow							110	176	1370	1692
Blue Other							1			
Ducks:										
Mallard							2			
Black Gadwall					115	227	113	136	234	213
Baldpate					40			25	517	125
Pintail					700	125	321	1105	330	350
Green-winged teal								55	310	
Blue-winged teal					150	65	60	225	30	
Cinnamon teal										1350
Shoveler								3	3	
Wood Redhead										
Ring-necked Canvasback										
Scaup Goldeneye										10
Bufflehead							1			
Ruddy Other							25	65	172	715
										1610
Coot:										
								25	361	311



3 -1750a

Cont. NR-1

(Rev. March 1953)

W A T E R F O W L
(Continuation Sheet)

REFUGE Pea Island N. W. RefugeMONTHS OF Sept. 1TO oc. 31, , 1963

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production : Broods: Estimated : seen : total	
	11	12	13	14	15	16	17	18			
Swans:											
Whistling	24	110	125	17	2	9	13	230	3,920		
Trumpeter											
Geese:											
Canada	4300	4180	4575	5452	6450	7050	7000	5000	106,953		
Cackling											
Brant											
White-fronted											
Snow	1760	3518	4325	2016	2927	3140	5600	500	233,128		
Blue	5		5	1				35	100		
Other											
Ducks:											
Mallard						10	25	125	1,134		
Black	245	253	1185	260	260	334	300	1000	34,342		
Gadwall								110	1,090		
Baldpate	2550	1630	1730		1765	1800	1500	1200	153,451		
Pintail	500	6170	6520	480	490	3300	2000	2000	251,547		
Green-winged teal	305	270	310	30	360	430	300		17,140		
Blue-winged teal				670					3,610		
Cinnamon teal									2,730		
Shoveler								50	302		
Wood									13		
Redhead											
Ring-necked								200	1,100		
Canvasback											
Scaup	35	25	25	88	45			20	1,771		
Goldeneye											
Bufflehead				1	1			110	20		
Ruddy	30	15	15		22			30	47		
Other	1370	815	220	2585	1020	2210	2000	00	3,240		
Coot:	330	353	375	176	180	102	250	300	2,411		

(over)

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans	3,920	230	
Geese	690,100	1,500	
Ducks	575,489	13,115	
Coots	22,000	100	

Total Waterfowl use Days--1,292,760

SUMMARY

Principal feeding areas entire refuge, Lemlica Sound, shoals, fresh water impoundments, salt marshes, sand dunes and rye grass fields.

Principal nesting areas none this period

Reported by

William C. Good
William C. Good

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

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1751

Form NR-1A
(Nov. 1945)MIGRATORY BIRDS
(other than waterfowl)

Refuge.....Pean Island N. W. Refuge..... Months of Sept. 1..... to Dec. 31,..... 1953

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Little Blue Heron	40	9/20	40	9/20	8	11/12				250
Louisiana Heron	100	9/20	100	9/20	10	11/12				250
Black Crowned Night Heron	75	9/20	75	9/20	12	10/20				100
Great Blue Heron	10	9/20	10	9/20	5	11/12				25
Common Egret	30	9/20	75	11/12	4	10/21				200
Snowy Egret	45	9/20	50	11/12	6	10/21				200
Double Crested Cormorant	200	11/12	300	12/16	300	12/16				1000
Common Loon	20	9/20	20	9/20	3	12/16				50
II. Shorebirds, Gulls and Terns:										
Common Tern	100	9/16	100	9/16	10	11/12				500
Royal Tern	25	9/16	25	9/16	20	11/12				200
Herring Gull	50	9/16	1000	12/16	1000	12/16				1000
Black-backed Gull	20	9/16	60	12/16	60	12/16				200
Ring-billed Gull	10	9/16	20	11/12	5	12/16				200
Laughing Gull	1500	9/16	1500	11/12	120	9/20				4000
American Avocet	10	11/12	25	11/12	25	11/12				50
Yellow-legs, Gr. & Lesser	250	9/16	300	12/16	300	12/16				1000
Sanderlings, all species	300	9/16	1000	12/16	1000	12/16				2000
Curlew	6	9/16	6	9/16	6	9/16				25
Black billed Fluvier	10	9/16	10	9/16	10	9/16				50

(over)

(1)	(2)		(3)		(4)		(5)			(6)
III. <u>Doves and Pigeons:</u>										
Mourning dove	20	9/10	50	12/16	50	12/16				100
White-winged dove										
IV. <u>Predaceous Birds:</u>										
Golden eagle										
Duck hawk	2	9/16	2	9/16	2	9/16				10
Horned owl										
Magpie										
Raven										
Crow	25	9/10	50	11/12	30	12/16				100
Sparrow Hawk	10	9/10	10	9/10	10	9/10				10
							Reported by <u>William C. Good</u>			
							William C. Good, Refuge Manager			

INSTRUCTIONS

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

3-1752
 Form NR-2
 (April 1946)

UPLAND GAME BIRDS

Refuge Pea Island N. W. Refuge Months of Sept. 1 to Dec. 31, 1943

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
			Number broods obs'vd.	Estimated Total		Hunting	For Re- stocking	For Research		
Common Name	Cover types, total acreage of habitat	Acres per Bird			Percentage				Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	Dikes, wax myrtle growth, uplands & marshes	2.64			100% M F		none		250	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

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

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

3-1753
 Form NR-3
 (June 1945)

BIG GAME

Refuge Pea Island N. W. Refuge Calendar Year 1963

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
			Hunting For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31		
Common Name	Cover types, total Acreage of Habitat	Number												
Pea Island has no big game animals														

Remarks:

Reported by William C. Good
 William C. Good, Refuge Manager

INSTRUCTIONS

Form NR-3 - BIG GAME

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

Refuge Pea Island N. W. Refuge Year 1943

Botulism

Lead Poisoning or other Disease

Period of outbreak _____

Period of heaviest losses _____

Losses:

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

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

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 winter kill

 Species affected Snow and Canadian Goose

Number Affected	Actual Count	Estimated
Species		
Snow Goose	<u>4</u>	<u>10</u>
Canada Goose	<u>5</u>	<u>10</u>

Number Recovered _____

Number lost _____

Source of infection _____

 Water conditions adequate

 Food conditions ye pass fields heavily browsed. native foods adequate on wild pastures and in Mallico Sound.

Remarks _____



PUBLIC RELATIONS

(See Instructions on Reverse Side)

Refuge Pea Island N. W. Refuge

Calendar Year 1963

1. Visits

a. Hunting 0 b. Fishing 935 c. Miscellaneous 1889 d. TOTAL VISITS 3722

1a. Hunting (on refuge lands)

Closed

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl			
Upland Game			
Big Game			
Other			

Number of permanent blinds _____

Man-days of bow hunting included above _____

Estimated man-days of hunting on lands adjacent to
refuge _____

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

TYPE OF AREA	ACRES	MILES
Ponds or Lakes		
Streams and Shores		13 green shore

1c. Miscellaneous Visits

Recreation 1824 Official 65
Economic Use 0 Industrial 0

2. Refuge Participation (groups)

ON REFUGE

OFF REFUGE

TYPE OF ORGANIZATION	NO. OF GROUPS	NUMBER IN GROUPS	NO. OF GROUPS	NUMBER IN GROUPS
Sportsmen Clubs	1	9		
Bird and Garden Clubs				
Schools				
Service Clubs				
Youth Groups				
Professional-Scientific			1	5
Religious Groups				
State or Federal Govt.			1	27
Other				

3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Press Releases	0	Radio Presentations	0
Newspapers (P.R.'s sent to)	1	Exhibits	0
TV Presentations	0	Est. Exhibit Viewers	0

INSTRUCTIONS

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

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

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

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

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

Other - INCLUDE crow, fox, and similar hunting.

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

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

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

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

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

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

Facilities

Picnic areas: areas ** 1 tables **16 fireplaces **8 toilets ** 1
drinking water No shelters No

Swimming: designated areas No bathhouses No

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

Camping: permitted **Yes or not permitted _____
tent camps **Yes total capacity **16
group camps No total capacity _____
hunter camps No total capacity _____
trailer camps **Yes
lodges No capacity _____
cabins No motels _____ total units _____

Tours: Season None frequency _____
self-guided nature trails No is trail leaflet available? _____
self-guided auto tour route No is tour leaflet available? _____
All tours are pre-arranged and are usually limited to groups.

Access points: estimate number in public use 3

General - Brief statement of two to five lines on recreational opportunities available on refuge (suitable for inclusion in refuge leaflets or briefing reports). **13 miles of ocean front and inlet are available to surf in Adequate opprotinities prevail in winter for bird photo observation. One overlook platform is open to the public situated on an impoundment dike; nearby there is a par area.**

(Over)

INSTRUCTIONS

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

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

3-1757
 Form NR-7
 (Rev. June 1960)

(1)
 NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

Refuge Pea Island N. S. Refuge Year 1963

Species	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
None							None						

- (1) Report agronomic farm crops on Form NR-8
- (2) C = Collections and R = Receipts
- (3) Use "S" to denote surplus

Total acreage planted:

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

Remarks: _____



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

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Sea Island N. W. Refuge County Dare State North Carolina

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water-fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
			Acres	Bu./Tons	Acres	Bu./Tons			
Annual Ryegrass							70	Annual ryegrass for winter goose browse	70
								(Farming accomplished by refuge personnel)	
								Fallow Ag. Land	

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

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle				
				2. Other				
				1. Total Refuge Acreage Under Cultivation				70
Hay - Wild				2. Acreage Cultivated as Service Operation				70

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

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

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

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

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

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

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

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

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

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

REFUGE GRAIN REPORT

Refuge Pea Island N. W. Refuge

Months of Jan. through December, 1963

(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
None											

(8) Indicate shipping or collection points _____

(9) Grain is stored at _____

(10) Remarks _____

*See instructions on back.

REFUGE GRAIN REPORT

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

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.
- (4) A total of columns 2 and 3.
- (6) Column 4 less column 5.
- (7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

3-1759
Form NR-9
(April 1946)

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

Refuge Sea Island N. W. Refuge Year 1953

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



HAYING AND GRAZING

Refuge Pea Island N. W. Refuge Year 1943

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 _____



TIMBER REMOVAL

Refuge..... San Isabel National Refuge Year 194 3

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
None								

Total acreage cut over..... Total income.....

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

Cords.....

Ties.....

.....



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Pea Island National Wildlife Refuge

Narrative Report

May 1 To August 31, 1963

Refuge Personnel

William C. Good	Refuge Manager
Houston C. Phillips	Wildlife Aid
Marvin C. Toler	Laborer
Mrs. Valerie C. Good	Clerk-Typist (Intermittent)

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I. GENERAL

A. Weather Conditions.

In general this summer has been hot and dry. The rainfall for May equalled the normal while June exceeded the normal. July and August both showed below normal rainfall. Temperatures ranged in the 90° readings throughout June, July and August and many of these days were humid as well as hot.

The information tabled below is taken from the Weather Station operated by the National Park Service on Bodie Island, 3 miles north of Pea Island and reflects conditions on the Refuge.

<u>Month</u>	<u>Precipitation</u>			<u>Temperatures</u>	
	<u>This Month</u>	<u>Normal</u>	<u>Dev. from Normal</u>	<u>Max.</u>	<u>Min.</u>
May	2.71	2.91	-.20	86	43
June	4.14	2.90	+1.24	93	57
July	2.16	4.36	-2.20	96	61
August	4.14	7.21	-3.07	95	64
Totals	13.15	17.38	-4.23	Extremes-- 96	43

B. Habitat Conditions.

1. Water

Both the North and South Pond floors became exposed during the summer. The South Pond was dry the later part of July and the North Pond became dry the first of August. Staff gauge readings for both ponds follow with 1962 readings for comparative purposes:

	<u>Gauge Readings</u>			
	<u>North Pond</u>		<u>South Pond</u>	
	<u>1962</u>	<u>1963</u>	<u>1962</u>	<u>1963</u>
May	4.18	4.08	4.10	3.90
June	3.74	3.98	3.62	3.90
July	4.30	3.38	4.16	Dry
August	4.20	Dry	4.42	Dry

Normal fluctuations in water levels in the Sound have existed throughout the period and no turbulent water conditions developed on the Pamlico Sound Shoals.

Water salinity tests were carried out during the period to evaluate the sea water content of both ponds. The silver nitrate titration method was used to determine the following readings:

Water Salinity Tests During Period
(Readings in ‰ of Sea Strength)

Date	<u>North Pond</u>			<u>South Pond</u>		
	North End	At Gauge	Gauge Reading	North End	On West Side	Gauge Reading
5/17	6.2	6.0	3.94	3.5	3.4	3.80
6/14	5.0	5.2	4.08	3.0	3.1	4.08

No further readings were taken during the period due to the lack of water.

2. Food and Cover.

Food and cover for all bird and mammal populations using the refuge was adequate during the reporting period.

Prospects for a bumper crop of native waterfowl food plants within the impoundments was encouraging until the middle of July. These impoundments now show dead plants, many in the flowering stage and seed from previous year's production. Some of the plants found in these impoundments are: sago pondweed, widgeon grass, redhead grass, marshgrasses and wild celery. The marsh edges of the ponds and the other marshes have good stands of American three-square, robust three-square and wild millet.

Outside the impoundments spartina alterniflora continues to expand its previous boundaries throughout its marsh zone. The growth is luxuriant and will provide much feeding for snow geese. Beach pea growths are scattered and heavy seed production is in evidence.

Widgeon grass and shoalgrass beds in the refuge Proclamation Area show satisfactory growth and should add additional food stuff.

II. WILDLIFE

A. Migratory Birds.

1. Waterfowl

The majority of wintering waterfowl had migrated before the start of the report period. A few Canada Geese remained on the Refuge until the early part of July. Black duck, Gadwall and Blue Winged Teal can be seen throughout the summer since all these species nest on the refuge. The first Black Duck brood was observed on May 4th and the first Gadwall brood on June 6th. Brood production of Black duck and Gadwall was somewhat reduced over last year and can be attributed in part to the delayed spring weather. Most woody growth on the pond edges is dead from the March 1962 storm and the resulting flooding of the pools with sea water. Blue crab, carried into these ponds by this same storm, are still in evidence and cause some predation on ducklings. Broods seen and production will be found on NR-1.

2. Wading Birds and Gulls

Colonial birds which use the South Pond dike rookery were not as abundant as in past years. All six species which are common in this rookery were again present. The Glossy Ibis showed a slight increase over last year.

Green Island which was used by Laughing Gulls for nesting is now gone through storm and tidal action. The major nesting sites are now on two islands produced from dredging spoils further out in the Sound and to the north of the Refuge.

B. Upland Game Birds.

Except for an occasional Mourning Dove, Ring-necked Pheasant is the only refuge game bird. These are most common along and within the impoundments. Favorable nesting conditions has resulted in a slight increase in the refuge population.

C. Big Game Animals.

Pea Island Refuge has no big game animals.

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

The refuge fur animals in order of abundance are: muskrat, nutria, otter and mink.

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

No sightings of Eagles were made during the reporting period. Fish Crow were observed throughout the period but in normal numbers.

F. Other Birds.

No change in the bird list is required at this time.

G. Fish.

Salt water sport fishing along the coastal area of the refuge has been reported as good throughout the summer. Surf fishing adjacent to Oregon Inlet in the recreation area, attracted camper fishermen from the middle west as well as the Eastern Seaboard. Jumping Mullet are still found in the impoundments. They entered these ponds during the March 1962 storm.

H. Reptiles.

The snapping turtle population in both pools has been reduced by approximately 60% as a result of salting from the March 1962 storm.

I. Diseases.

No disease among refuge populations were observed during the reporting period.

III. REFUGE DEVELOPMENT & MAINTENANCE

A. Physical Development.

Development and maintenance activities consisted of the following: Seven 100' shallow drains were cut in the North Pond field to

relieve standing water. Backfill was spread and graded on both pond berms to complete this repair work. The lookout Tower was repaired and painted. Truck trails were sprayed, mowed and holes filled with sand. A storage yard for posts, wire and field equipment was developed on the inside South Pond berm. Bulldozer work on the interior fence right of way to clean up storm damage was started. Minor building repairs were carried out. Automotive, tractor and farm equipment repairs and painting rounded out this maintenance work.

B. Plantings.

1. Aquatics and Marsh Plants.

No aquatics or marsh plants were planted during the period.

2. Trees and Shrubs.

No tree and shrub plantings were made during the period.

3. Upland Herbaceous Plants.

No planting or range renovation was carried out during the period.

4. Cultivated Crops.

Seed and fertilizers were procured for Fall ryegrass planting in the North Pond Field. Small drains were cut to remove water from low areas in this field.

C. Collections and Receipts.

1. Seed and other Propagules.

No seed or other propagules were collected or received during the period.

2. Specimens.

No specimens were collected during the period.

D. Control of Vegetation.

Eight acres of scattered cattail were treated with dalapon by

ground operation. Five acres of mixed brush on the South Pond berm were treated with 2,4-D and 2,4,5-T. Fifteen acres of a bog type of marsh were plowed with a bush and bog plow for development into a winter ryegrass field.

E. Planned Burning.

No marsh burning was carried out during the summer period. Eleven miles of fire lanes were plowed and widened from 15 to 25 feet to maintain a fire break.

F. Fires.

No fires occurred during the reporting period.

IV. RESOURCES MANAGEMENT

No resources harvesting permits are in force and no financial income is obtained from these resources. Fishing is carried out in navigable waters and requires no permit.

V. FIELD INVESTIGATIONS OR APPLIED RESEARCH

A. Progress Report.

Water salinity tests in the fresh water ponds have been taken throughout the period. Brood counts of ducklings were made to determine production on the Refuge. Inspections were made of both ponds by Regional office and Patuxent Personnel to determine production of native foods within the ponds in relation to salting and other factors.

VI. PUBLIC RELATIONS

A. Recreational Uses.

Refuge recreational uses include sightseeing, surf fishing, beach combing, photography and wildlife observation.

B. Refuge Visitors.

1. Registered Visitors

Registered Visitors at the Reception Office at Field Headquarters totalled 1273 from 36 states. There were 29 foreign visitors from Canada, Germany, Australia, England and Japan for a grand total of 1309. The corresponding period for 1962 showed 926 registered visitors or an increase of 383.

A breakdown of the 1273 visitors from the 36 states is set out below: Missouri 7, Wisconsin 1, Iowa 12, Illinois 16, Kansas 2, New York 85, Tennessee 40, Michigan 6, New Jersey 66, Virginia 273, Delaware 20, North Carolina 167, Arkansas 2, Florida 19, Maryland 127, West Virginia 19, Maine 2, Kentucky 8, Pennsylvania 147, South Carolina 11, Oklahoma 8, California 6, Georgia 20, Indiana 18, Rhode Island 3, Alabama 6, New Hampshire 3, Washington 3, Nebraska 5, Idaho 2, Ohio 86, Conn. 25, Dist. of Columbia 25, Texas 6, Mass. 24 and 2 visitors listed as United States with 1 visitor from Hawaii.

2. Official Visitors.

<u>Date</u>	<u>Name & Organization</u>	<u>Address</u>
5/23/63	Clark G. Webster, Wildlife Biologist, RO	Hardeeville, S.C.
	Dr. George V. Burger, Remington Farms	Chestertown, Md.
6/14	Robert T. Mitchell, Patuxent Res. Center	Laurel, Md.
6/26	W. O. Lambeth, Soil Cons. Service	Edenton, N. C.
	Joe P. Covington " " "	" "
	C. S. Sawyer " " "	Columbia, N. C.
7/9	Hugh B. Mills, Realtor	New Bern, N. C.
	Chas. S. Marshall, Nat'l Park Service	Richmond, Va.
7/11	Thomas W. Reed, RO Bur. Engineering	Atlanta, Ga.
	Leland H. Barrineau, RO Property Mgt.	" "
	John A. Johnson, Contractor	Belhaven, N. C.
	R. D. Windley " "	" "
	G. L. Cuthrell " "	Manteo, N. C.
	J. G. Kellogg " "	" "
7/15	E. Z. Cajucon, U.P. College of Forestry	Luquna, Phillipines
7/17	Lt. Col. J. E. Boyle, Dept. of The Army	Ft. Eustis, Va.
	Lt. C. W. Beaman " " " "	" " "
	Lt. Cdr. W. Koller " " " "	" " "
	P. H. Shen " " " "	Hampton, Va.
8/7	Edwin W. Ball, RO Branch of Refuges	Atlanta, Ga.
8/12	L. W. Clark, Dare Co. Board of Education	Buxton, N. C.
8/13	E. F. Johnson, RO Branch of Refuges	Atlanta, Ga.
8/16	Clark G. Webster	Hardeeville, S. C.
	Chas. S. Marshall	Richmond, Va.
8/19	John H. Ford, RO Br. of Realty	Atlanta, Ga.
	Charles S. Cook " " Engineering	" "

8/22	Leland H. Barrineau, RO Property Mgt.	Atlanta, Ga.
8/28	John H. Ford,	" "
	Charles S. Cook	" "

C. Refuge Participation

The Refuge Manager met twice with the Dare County Peace Officers Association. This group is composed of all peace officers of the towns, County, State and Federal Agencies in the County, organized for the purpose of rendering mutual assistance.

D. Violations

Nothing to report.

E. Safety

Four Safety Meetings were held during the period. Subjects covered were:

May Good Housekeeping practices
June Fire Hazards & Fire Fighting Methods
July National Safe Boating Week-June 30 to July 6, 1963
August Safe Operation of Bulldozers & Tractors

There were no accidents during the period. Approximately 2018 calendar days and 28,944 man hours have been worked since the last lost time accident. The last lost time accident occurred on January 21, 1958.

VII. OTHER ITEMS

A. Items of Interest

The Oregon Inlet Bridge (State No. 8-21306, F.A. Proj. No. S-1401(1)) is expected to be completed between November 15 and December 1, 1963 and will be opened to traffic at that time. Dedication ceremonies are scheduled for April, 1964.

B. Photographs

Photographs follow the signature.

C. Signature.

Date completed: September 16, 1963

Respectfully submitted,

William C. Good
William C. Good, Refuge Manager

Approval:

Victor W. Kay
Acting Regional Refuge Supervisor

SEP 18 1963



Helicopter of Lt. Col. J. E.
Boyle and Party on beach at
Pea Island Field Headquarters



Dry floor in Pool #2



Storage Yard on Pool #2 Berm

AUG • 63 K



Backfill on Pool #1 Berm ready
for seeding

• AUG • 63 K



Fire line plowing--Unit 4

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

WATERFOWL

REFUGE Pea Island Refuge

MONTHS OF May 1 TO August 31, 1963

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
<u>Swans:</u>										
Whistling										
Trumpeter										
<u>Geese:</u>										
Canada	30	40	10	10	10					
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
<u>Ducks:</u>										
Mallard										
Black	150	150	100	150	150	180	180	150	150	150
Gadwall	100	150	150	150	120	120	180	200	200	250
Baldpate										
Pintail										
Green-winged teal										
Blue-winged teal	100	100	80	50	30	20	10	30	20	30
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
<u>Coot:</u>	20	10	10	10						



	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans			
Geese	700	40	
Ducks	45,710	600	266
Coots	420		

SUMMARY

Principal feeding areas ~~Fresh water impoundments~~

Principal nesting areas ~~Dikes, marsh and islands within impoundments for gadwall and blue-winged teal; entire refuge used by black ducks.~~

Reported by William C. Good
~~William C. Good, Refuge Manager~~

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

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1751

Form NR-1A
(Nov. 1945)MIGRATORY BIRDS
(other than waterfowl)Refuge Pea Island RefugeMonths of May 1to August 31 1969

(1) Species Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total Estimated Number
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	
I. Water and Marsh Birds:										
Little blue heron	46	5/6	160	7/15	35	8/28	1	23	60	200
Louisiana heron	65	5/6	300	7/15	90	8/28	1	63	170	450
Black-crowned night heron	50	5/6	225	7/15	100	8/28	1	38	120	300
Yellow-crowned night heron	4	5/6	4	7/15	4	7/15	1	1	0	6
Common egret	40	5/6	85	7/15	32	8/28	1	29	40	300
Snowy egret	85	5/6	29-	7/15	45	8/28	1	50	160	300
Glossy ibis	65	5/6	120	7/15	20	8/28	1	30	80	250
Gr at blue heron	4	7/15	4	7/15	4	7/15				4
Clapper rail	2	5/6	3	7/15	2	8/28				4
II. Shorebirds, Gulls and Terns:										
Black-backed gull	4	5/6	4	5/6	1	8/28				20
Herring gull	600	5/6	600	5/6	25	8/28				500
Ring-billed gull	700	5/6	700	5/6	15	8/28				800
Laughing gull	1500	5/6	3000	7/15	1200	8/28				4000
Bonapartes gull	15	5/6	15	5/6	15	5/6				250
Common tern	20	5/6	400	7/15	20	8/28				400
Royal tern	10	5/6	200	7/15	5	8/28				300
Least tern	60	5/6	600	7/15	80	8/28				1000
Black skimmer	200	5/6	1500	7/15	60	8/28				1000
Willetts	150	5/6	600	7/15	20	8/28				500
Yellowlegs, great. & lesser	150	5/6	600	7/15	300	8/28				1000
Sandpipers, all sp.	1500	5/6	5000	7/15	300	8/28				5000

(over)

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

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge ~~See Island Refuge~~ For 12-month period ending August 31, 1960

Reported by William C. Good Title Refuge Manager

(1) Area or Unit Designation	(2) Habitat		(3) Use-days	(4) Breeding Population	(5) Production
	Type	Acreage			
Unit 1.	Crops		Ducks		
All unimpounded	Upland	592	Geese		
area from New	Marsh	2,664	Swans		
Inlet north to	Water	14,000	Coots		
Oregon Inlet	Total	17,256	Total	828,701	

Unit 2.	Crops	68	Ducks	100,940	260
Pool No. 2	Upland	98	Geese	262,941	
(North Pond)	Marsh	71	Swans	16,128	
An impoundment	Water	400	Coots	45,712	
	Total	640	Total	425,721	260

Unit 3.	Crops		Ducks	50,470	40
Pool No. 1	Upland	50	Geese	195,176	
(South Pond)	Marsh	145	Swans	11,428	
An impoundment	Water	180	Coots		
	Total	375	Total	167,074	40

Unit 4.	Crops		Ducks	50,470	
All unimpounded	Upland	393	Geese	157,765	
area from New	Marsh	1,216	Swans	4,092	
Inlet to the	Water	9,700	Coots		
south boundry	Total	11,309	Total	212,267	

Sub-totals	Crops	68	Ducks	504,699	300
for the	Upland	1,133	Geese	1,051,764	
refuge.	Marsh	4,099	Swans	20,160	
	Water	26,280	Coots	57,140	
Grand Total	Total	31,380	Total	1,633,763	300

	Crops		Ducks		
	Upland		Geese		
	Marsh		Swans		
	Water		Coots		
	Total		Total		

	Crops		Ducks		
	Upland		Geese		
	Marsh		Swans		
	Water		Coots		
	Total		Total		

(over)

INSTRUCTIONS

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

(1) Area or Unit: A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.

(2) Habitat: Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.

(3) Use-days: Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form NR-1.

(4) Breeding Population: An estimate of the total breeding population of each category of birds for each area or unit.

(5) Production: Estimated total number of young raised to flight age.

3-1752
 Form NR-2
 (April 1946)

UPLAND GAME BIRDS

Refuge Pea Island Refuge

Months of May 1

to August 31, 19 63

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'vd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked pheasant	Dikes, wax myrtle growth, uplands and marshes.	17.6	6	80	1m - 4f	None			300	

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.

Pea Island National Wildlife Refuge

Narrative Report

January 1 To April 30, 1963

Refuge Personnel

William C. Good	Refuge Manager
Houston C. Phillips	Wildlife Aid
Marvin C. Toler	Laborer

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I. GENERAL

A. Weather Conditions.

Both January and February were extremely wet with resulting abnormal flooding of both fresh water ponds. Heavy icing conditions resulting from subfreezing temperatures were also present. Some moderation in the weather began to occur in March with a continuing warming trend extending through April.

<u>Month</u>	<u>Precipitation</u>			<u>Temperatures</u>	
	<u>This Month</u>	<u>Normal</u>	<u>Dev. from Normal</u>	<u>Max.</u>	<u>Min.</u>
Jan.	6.80	3.26	+3.54	65	19
Feb.	4.39	4.01	+ .38	61	19
March	1.51	4.03	-2.52	78	21
April	<u>2.72</u>	<u>2.29</u>	<u>+ .43</u>	<u>86</u>	<u>38</u>
Totals	15.42	13.59	+1.83	extremes 86	19

The above data taken from the records furnished by the National Park Service reflects conditions at the Bodie Island Station as well as conditions on the refuge since Bodie Island is only three miles from Pea Island.

Precipitation measured 15.42 inches or 2.24 inches less than the corresponding period for 1962. Temperatures show a 2 degree maximum change and a 4 degree minimum change over the corresponding reporting period for last year.

This past winter was the most severe one in the memory of Outer Banks Residents.

B. Habitat Conditions.

1. Water

There was an excess of water in both ponds through the middle of March at which time the pond gates were closed. This water interfered with construction work relative to the bulkhead installation and flooded the associated ryegrass fields and a portion of the highway. Water levels now have stabilized in these ponds and are maintained at or near the 4.50 level.

Staff gauge readings for both ponds follow with 1962 readings for comparative purposes:

	<u>Gauge Readings</u>			
	<u>North Pond</u>		<u>South Pond</u>	
	<u>1962</u>	<u>1963</u>	<u>1962</u>	<u>1963</u>
Jan.	4.46	4.96	4.46	4.90
Feb.	4.40	4.70	4.50	4.70
March	5.28	4.44	5.70	4.40
April	4.78	4.20	4.84	4.10

Water salinity tests were carried out during the period to evaluate the sea water content in both ponds. The silver nitrate titration method was used to determine the following readings:

Water Salinity Tests During Period
(Readings in % of Sea Strength)

Date	<u>North Pond</u>			<u>South Pond</u>		
	<u>North End</u>	<u>At Gauge</u>	<u>Gauge Reading</u>	<u>North End</u>	<u>On West Side</u>	<u>Gauge Reading</u>
1/22	8.85	7.45	5.10	4.35	4.50	4.90
3/8	8.54	8.23	4.56	4.35	4.50	4.64
4/30	7.61	7.76	4.20	4.97	4.66	4.10

2. Food and Cover.

The 70 acres of common ryegrass planted for winter browse, covered by drifting sand from the November 25th northeaster with a depth of 1 to 3" of sand, provided little food stuffs throughout the period since subfreezing weather and continued flooding destroyed what growth did occur.

Continued heavy feeding of both the north and south ponds left little in the way of aquatics at the close of the hunting season. These aquatics are sago pondweed, widgeon grass, redhead grass, wild celery, smartweed and marsh grasses.

Spartina alterniflora, American three-square, robust three

square and wild millet in the marsh areas continued to be heavily fed by waterfowl throughout the period. Widgeon grass and shoal grass in Pamlico Sound also continued to afford adequate food. With the close of the hunting season, both Snow Geese and Canada Geese moved to adjacent Bodie Island for feeding on marsh areas. As the food stuffs in the two ponds became depleted, ducks likewise moved to the Bodie Island area.

II. WILDLIFE

A. Migratory Birds.

Waterfowl

At the opening of the reporting period, there were 200 Whistling Swan, 7000 Canada Geese and 4500 Snow Geese on the area, approximately 3500 Ducks and 500 Coots were also present. There was a general and gradual decline of all species through the latter part of March, at which time most of the winter population had dispersed.

Other Migratory Birds

Form NR-1A tables the movement of other migratory birds into or through the refuge.

B. Upland Game Birds.

Ring neck pheasants are quite common around the pond edges or in wild pastures along the highway. Food and cover is quite adequate.

C. Fur Animals.

Muskrat, otter, nutria and mink make up the refuge fur animal population with muskrats the most abundant of the four species. Food and cover for all species is adequate.

D. Hawks and Eagles.

Duck hawks, marsh hawks and sparrow hawks were seen during the cold weather months. No Eagles have been sighted.

E. Fish.

No fresh water species occur on the refuge. Salt water fishing is done on the ocean front. Very poor catches by sportfishermen were reported due to the severe weather conditions.

F. Diseases.

About 15 dead Canada Geese have been found during this period, half of the number probably due to hunting pressure and the other half winter killed.

III. REFUGE DEVELOPMENT & MAINTENANCE

A. Physical Development.

Sheet piling bulkhead repairs in both ponds were completed by the Contractor during the period. Back filling to the elevation of 6.8 ft. above sea level was completed on the South Pond. Levelling of backfilling in the North Pond will be completed when the fill material is dried out.

Fill material to the patrol road around both ponds is also in place and will be levelled when dry.

Approximately $1\frac{1}{2}$ miles of storm damaged highway fence has been removed and the sight levelled, ready for placing of new posts and wire. This repair work was stopped because of lack of funds.

The lookout tower at Field Headquarters was renovated during the period.

Maintenance of buildings and equipment, maintenance of fire lanes and the trapping and banding program rounded out the operations program.

$4\frac{1}{2}$ miles of new dunes (running from Pea Island Station south to Rodanthe) were completed under National Park Service contract. This repair included bulldozing of sand to a 14 ft. elevation and capping with a 4 ft. sand fence.

Also under National Park Service contract, grassing of dunes was completed.

B. Plantings-Cultivated Crops.

70 acres of ryegrass planted in the North Pond field and the strip between the two ponds, covered by sand from the Northeaster of 11/25/62, did not recover to any appreciable amount. What growth did survive was heavily fed and suffered additional sub-freezing weather damage.

C. Collections and Receipts.

Nothing to report.

D. Control of Vegetation.

Wax myrtle growth adjacent to the bulkhead installation was knocked down to permit construction of the bulkhead and related backfilling.

E. Planned Burning.

No planned burning was carried out during the period due to flooding of the areas by Sound waters and excessive rain fall.

F. Fires.

Nothing to report.

IV. RESOURCES MANAGEMENT

No resource harvesting permits are in force and no financial income is obtained from refuge resources.

V. FIELD INVESTIGATIONS

Continued observations with reference to the March 7th storm damage to the fresh water ponds continued throughout the period.

A post-season banding program was carried out with the results shown on the following table:

Species	Birds Banded	Retrapped & released (foreign retraps)	Totals
Canada Geese	35	2	37
Black Ducks	74	5	79
Mallard Ducks	19	1	20
Pintail Ducks	<u>13</u>	-	<u>13</u>
Totals	141	8	149

VI. PUBLIC RELATIONS

A. Recreational Uses.

Recreational uses of the refuge include sightseeing, wildlife observations, beachcombing, fishing and photography.

B. Refuge Visitors.

1. Registered Visitors

Total registered visitors at Field Headquarters were 250, which was an increase over the corresponding period last year.

2. Official Visitors

<u>Date</u>	<u>Name and Organization</u>	<u>Address</u>
1/16	C. Ed Addy, Central Office	Patuxent Research Refuge, Md.
1/17	Otto Horschutz, N. C. Wildlife	Washington, N. C.
1/21	George E. Otto, Penn. Wildlife	Newton, Penna.
1/29	Dr. Quey & Jim Parnell, N.C. State	Raleigh, N. C.
2/6	Donald J. Hankla, Regional Office	Atlanta, Ga.
	K. Duane Norman, " " " "	" " " "
2/14	Jose Pojan, Nat'l Park Service	Venezuela
	Alberto Bruzual " " " "	" " " "
	Karl H. Rossoll, Regional Office	Atlanta, Ga.
	J. R. Dawsey " " " "	" " " "
2/28	Bob Spake, Dare County Agent	Manteo, N. C.
3/7	Edwin W. Ball, Regional Office	Atlanta, Ga.
	Clark G. Webster, Savannah N.W.R.	Hardeeville, S. C.
3/15	D. R. Ambrosen, Back Bay N.W.R.	Princess Anne, Va.
	John Fields, " " " "	" " " "
4/5	Otis Paulis, Regional Office	Atlanta, Ga.
	Jim Taylor	"
4/24	Mr. & Mrs. Clark Webster & Mrs. Webster, Sr., Savannah N.W.R.	Hardeeville, S. C.
4/25	Willie G. Cahoon, Mattamuskeet N.W.R.	New Holland, S. C.
	Bobbie Brown " " " "	" " " "

C. Refuge Participation.

The Refuge Manager met twice with Dare County Peace Officers Association. This group has been formed for the purpose of mutual assistance. It includes all peace officers of the towns, county, state and federal agencies.

D. Violations.

Nothing to report.

E. Safety.

Four safety meetings were held during the period. Subjects covered were:

January	How to Help the Injured Employee
February	Regional Safety Bulletin
March	Safe Operating Practices for Crawler Tractors
April	Safe Operating Practices for Hand Tools

There were no accidents during the period. 1895 calendar days passed without an accident. Approximately 26,870 man hours of work have been performed without a lost time accident. The last accident at Pea Island occurred on January 21, 1958.

VIII. OTHER ITEMS

A. The breach in the Hatteras Island between Avon and Buxton was closed by the joint efforts of the National Park Service, Corp of Engineers and the North Carolina Highway Department. This fill was completed by means of dredging. The highway link is now in place permitting travel from Oregon Inlet to Hatteras.

A new International Harvester Scout 4 wheel drive truck was delivered to the Refuge in April.

On April 6th, the Refuge Manager suffered a heart attack. Due to the extended illness of Mr. Good, this report is a joint effort of the Pea Island Staff under the direction of Willie G. Cahoon, Refuge Manager at Mattamuskeet.

B. Photographs

Photographs follow the signature.

C. Signature.

Date completed: May 14, 1963

Respectfully submitted,


Willie C. Cahoon, Refuge Manager

Approval:


Acting Regional Refuge Supervisor

MAY 20 1963

• MAY • 63 •



Gathering beach grass for transplanting to dunes

• MAY • 63 •



Contractor's grass planting crew

• MAY • 63 •



Contractor's grass planting crew

• MAY • 63 •



Berm erosion in North Pond. Note truck trail and slope of berm

• MAY • 63 •



Wave action from Northeaster, North Pond

• MAY • 63 •



Cut in dune from 11/25 storm between Pea Island and Rodantha

• MAY • 63 •



Broken dunes with newly established center line for new dune

• MAY • 63 •



Dune replaced after 11/25 storm, ready for grassing, between Rodanthe & Pea Island Station

• MAY • 63 • ©



Framework for Wakefield piling

• MAY • 63 • ©



Wakefield piling in place

• MAY • 63 • ©



Dragline bringing in fill

• MAY • 63 • ©



High water damage, patrol road
North Pond

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

W A T E R F O W L

REFUGE Sea Island

MONTHS OF January 1 TO April 30, 1963

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling	200	75	150	50	10	50	10	10		
Trumpeter										
Geese:										
Canada	7000	4000	6500	4000	3000	2000	2500	3000	500	600
Cackling										
Brant										
White-fronted										
Snow	4500	2000	2000	2000	200	2000	500	300	30	20
Blue	20	10	20	10						
Other										
Ducks:										
Mallard	100	100	100	200	35	200	100	100	10	20
Black	1000	350	1000	600	500	600	500	500	100	200
Gadwall									10	
Baldpate	500	200	500	200	100	100	100		100	100
Pintail	600	500	500	500	300	500	200	200	30	100
Green-winged teal	200		300					250	100	50
Blue-winged teal								20	50	
Cinnamon teal										
Shoveler	50	10	150	50	100	50			25	10
Wood										
Redhead										
Ring-necked	50		50						25	20
Canvasback										
Scaup	200	100	100	300	50		50	50	25	100
Goldeneye										
Bufflehead	100		100	500			100	200	50	50
Ruddy	400				300	200	200	200	300	200
Other Hooded Merganser	20	10	20							
Common Merganser	200	100	150	200		200			200	200
Common Scoter										
Coot:	500	150	500	100	100	100	500	300	75	50



3 -1750a

Cont. NR-1

(Rev. March 1953)

W A T E R F O W L
(Continuation Sheet)

REFUGE Pea Island MONTHS OF January 1 TO April 30, , 1963

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total	
	11	12	13	14	15	16	17	18			
Swans:									3,927		
Whistling	6										
Trumpeter											
Geese:									235,200		
Canada	500	100									
Cackling											
Brant											
White-fronted											
Snow									4,150		
Blue									120		
Other											
Ducks:											
Mallard	10								6,525		
Black	300	100							6,250		
Gadwall	50	100							1,400		
Baldpate	200								14,700		
Pintail	50								24,360		
Green-winged teal	100								7,000		
Blue-winged teal		100							1,100		
Cinnamon teal											
Shoveler	10								3,100		
Wood											
Redhead											
Ring-necked									1,015		
Canvasback											
Scaup	100	20							7,665		
Goldeneye											
Bufflehead	100								1,400		
Ruddy	150								13,450		
Other hooded Merganser									350		
Common Merganser		100							8,450		
Common Scouter	200								1,400		
Coot:	50	20							2,470		

(over)

	(5)	(6)	(7)	
	Total Days Use	Peak Number	Total Production	SUMMARY
Swans	3,927	200		Principal feeding areas <u>Impoundments, fresh marshes, salt marshes, ryegrass field and Pamlico Sound shoals.</u>
Geese	330,470	11,500		
Ducks	106,840	3,420		Principal nesting areas _____
Coots	2,470	500		

Reported by _____

Willie C. Cahoon, Refuge Manager

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

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1751

Form NR-1A
(Nov. 1945)MIGRATORY BIRDS
(other than waterfowl)Refuge Pea Island Months of January 1 to April 30, 1963

(1) Species Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total Estimated Number
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	
I. Water and Marsh Birds:										
Little Blue Heron	2	1/20	20	4/30	20	4/30				45
Louisiana Heron	3	3/20	60	4/30	60	4/30				125
Black-crowned night Heron	3	3/20	80	4/30	80	4/30				150
Common Egret	4	5/21	40	4/30	40	4/30				60
Snowy Egret	6	3/14	120	4/30	120	4/30				160
Glossy Ibis	6	3/17	40	4/30	40	4/30				60
Common Loon	2	2/15	25	4/30	5	4/30				50
Double-crested Cormorant	10	2/20	2000	3/20	300	4/30				3500
Black Skimmers	8	3/31	50	3/25	350	4/30				500
Gannet	12	2/3	500	3/25	6	4/30				600
Great Blue Heron	4	4/20	15	3/20	4	4/30				15
Marsh Hawk	1	3/20	10	4/30	10	4/30				20
II. Shorebirds, Gulls and Terns:										
Common Tern	8	3/30	200	4/26	200	4/27				400
Royal Tern	4	3/31	40	4/26	40	4/27				60
Least Tern	6	1/6	40	4/26	40	4/27				100
Herring Gull	200	1/5	2500	4/29	200	4/30				2600
Ring-billed Gull	200	1/10	2000	4/29	100	4/30				4000
Laughing Gull	2	3/31	2000	4/29	2000	4/30				3000
Willetts	6	4/9	150	4/30	150	4/30				300
Black-necked Stilts	6	4/8	20	4/30	20	4/30				30
American Avocets	12	3/25	20	4/30	20	4/30				30
Oyster Catcher	2	3/17	8	4/30	8	4/30				8
Yellowlegs, Great. Less.	4	3/25	300	4/30	150	4/30				350
Sandpipers, all Species	30	1/29	1200	4/30	1200	4/30				2000

(over)

(1)	(2)		(3)		(4)		(5)			(6)
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove	6	3/20	20	4/28	20	4/28				35
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow	1	1/10	3	2/20	1	4/28				5
							Reported by.....Willie G. Cahoon, Refuge Mgr.			

INSTRUCTIONS

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

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 Pea Island Year ending April 30, 1963

(1) Species Common Name	(2) Density Cover Types & Total Acreage of Habitat Acres Per Animal		(3) Removals					(4) Disposition of Furs					(5) Total Popula- tion	
			Hunting	Fur Harvest	Predator Control *	For Re- stocking	For Re- search	Share Trapping			Total Refuge Furs Shipped	Furs Donated		Furs Destroyed
								Permit Number	Trappers Share	Refuge share				
Muskrats	Impoundments & adjacent area (1500 acres)		1.8										800	
Otter	Range over all of the land & marsh area and tidal creeks (5880 acres)		588										10	
Nutria	Impoundments & adjacent area (1500 acres)		20										75	
Mink	Entire refuge area (5880 acres)		588										10	

* List removals by Predator Animal Hunter

REMARKS: 1 nutria destroyed during period.

Reported by Willie G. Cahoon, Refuge Manager

INSTRUCTIONS

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

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