Pea Island National Wildlife Refuge

Narrative Report

September 1 to December 31, 1945

CONTENTS

PEA ISLAND NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

SEPTEMBER 1 TO DECEMBER 31, 1945

I. GENERAL

A. Weather Conditions

The weather data for this report is taken from the Cooperative Meteorological records of Mrs. Rosa Drinkwater, Manteo North Carolina. This being the nearest weather station and approximately twenty miles north of the Refuge, the readings do not represent the rainfall accurately on the Refuge.

Following are some tables for comparison with corresponding period for last year.

	Precipitation	Max. Temp.	Min. Temp.
September 1945	3.90 in.	91 degrees	64 degrees
October "	1.30 "	84 "	42 "
November "	1.88 "	83 "	30 "
December "	4.69 "	63 "	23 "
Total	11.77 "		
September 1944	.96 "	96 "	57 "
October "	2.58 "	85 "	38 "
November "	1.92 "	73 "	36 "
December "	1.84 "	68 "	27 "
Total	6.80 "		

B. Water Conditions

The rather heavy but well scattered rainfall has kept the water level this period at an excellent height in pond #1. The entire area is estimated to have been covered to a average depth of 8-10 inches. Pool # 2 is still being flooded periodically with salt water and is controlled by the tides from the Sound. The water level raised gradually thus allowing excellent feeding conditions for the birds.

II. WILDLIFE

A. Migratory Birds

1. Populations and Behavior

Waterfowl on the whole have probably shown a slight decrease to the corresponding period for 1944. Although there seem to be an abundant supply of food the birds are not here. The decrease in Baldpates, Shovellers and othe surface feeders is offset somewhat by the increase of Snow Geese. The most noticeable decrese is in the number of Canada Geese as compared to the corresponding periods. There is evidence that we have held what birds came in but it appears they have never migrated to this vicinity to date. It is certainly a beautiful sight to see the Snow Geese feeding, circling and making noise in the flats between the impoundment areas.

Water birds which never concentrate here in large numbers have been here in their usual numbers. Observations and records show comparative numbers as to corresponding years. Whistling Swan show an increase of over 100%. Actual count of 74 birds was made in pond # 1.

Marsh Birds, excepting Coots, appear to have shown a little change in numbers. Coot which use the fresh water ponds exclusively show a slight decrease although the water level and food conditions have been excellent.

Shorebirds have been noted throughout the entire period. Some of the species, namely, Hudsonian Curlew and Godwits have not been observed at all.

Gulls and Terns, common through September and November, have been here in their usual numbers.

Hawks and Eagles have been very abundant as usual. 6 Bald eagles were observed in one day.

2. Food and Cover

The heavy rainfall of this period plus that of the preceding period has produced an abundant supply of food, especially in the fresh water pond # 1. Duck Millet and Giant Fox Tail, Setari magna was very prolific this year. The marsh plants, Scirpus americanus and Spartina alterniflora have been very abundant and have produced much of the food in the marshes. Areas burned in the Control Burning

program are producing some green food for the geese. In the open water of the sound many of the shoals have been covered with an excellent growth of Widgeon grass, Rupia maritina, which was available on low tides and has been one of the main sources of food. It seems that EElgrass, Zostera marina, has made a wonderful comeback. A fairly abundant supply is evidenced by the concentrations of the birds on these shoals south and west of Oregon Inlet.

3. Botulism

There has been very little disease to date. Only two geese have been picked up and one of them was found to have a broken wing. The other one evidently was affected by parisitism.

B. Fur Animals

Muskrats continue to appear on the increase. It is not uncommon to see one in the water any time of day. Several houses can be seen scattered over the area.

Otter also seem to be increasing. Several slides or paths have been observed crossing over the dikes.

III. REFUGE DEVELOPMENT MAINTENANCE

A. Physical Development

1. Trucks

The ford pickup, I-17276, on the whole is in poor condition and is used on the island only. Just enough repairs are put on it to keep it running mechanically. The salt water has rusted all the fenders and body off it.

The chevrolet pickup, I-17275, im in good mechanical condition and the appearance is neat. Some maintenance repairs were done this period--new brake shoes and wheel cylinder repair kits. The body was given a coat of paint.

2. Boats

Boat FWS 186 is in good condition other than in need of a new exhaust manifold and a order was placed for one some two months ago but it appears hard to get . The bottom will require a coat of copper paint some time in March and it is planned to give the boat an entire paint job at this time.

3. Buildings

The overnight cabin is kept in a clean, orderly condition and a new water tank has been purchased but not installed yet.

4. Dike Repair

The dragline was receive from White River and loaded on a barge for transportation to Pea Island december 27. An operater an oiler have been employed and work is expected to begin on the portion damaged by the hurricane early in January 1946

B. Plantings

Nothing to report.

C. Collections

1. Canada Geese

Traps were constructed and have been baited continuously in an effort to capture live geese for transfer as decoy flocks to other Refuges but to date the effort seems to have been in vain. Only three geese have been taken. Every effort is bsing used to capture the birds.

IV. PUBLIC RELATIONS

A. Refuge Visitors

Officials visiting this station during the period included Messrs. Arthur F. Miller, Regional Office, Dr. Bourne, Central Office and U. S. Game Management agent Carter.

B. Violations

Violations have not been numerous and no one has been apprehended but car tracks indicate there has been one or two along the public road. There has been no reports or evidence of firelighting to date.

Submitted by,

Charles M. Parker

Charles M. Parker
Refuge Manager

Date Submitted,

_____

Approved,

_____

Form NR-1

MIGRATORY BIRDS

Refuge Pea Island Nat'l Wildlife Months of Sept. 1 to Dec. 31, 1945

1615

(1) Species	(2) First Observed		(3) Became Common	(4) Peak Concentration		(5) Last Observed		(6) Young Produced			(7) Total
Common Name	Number	Date	Date	Number	Date	Number	Date	No. Broods Obsvd.	Avg. Size	Esti-mated Total	Number Using Refuge
Grebe, Horned	5	11/1	12/1	5	12/1	5	12/31				5
Grebe, Pied Billed	11	10/1	12/1	175	12/1	175	12/31/				175
Gannet	1	9/25				2	11/3				
Cormorant			9/20	50							200
Heron, Gre_t Blue	4	10/1	12/20	12							12
Egret, American	10	9/25	9/25	10			10/25				10
Egret, Snowy				50	10/1						50
Heron, Louisiana	1	9/25				1	9/25				1
Heron, Black Crowned				50	Resident						50
Swan, Whistling	20	11/11	11/20	72	11/20						72
Geese, Canada	6	9/6	12/1	4000	12/20						4000
Geese, Snow	8	11/3	12/1	5000	12/20						5000
Black Duck	200	10/25	12/1	2000	12/20						2000
Gadwall	20	11/1	12/1	800	12/20						800
Baldpate	20	10/1	12/1	150							150
Pintail		9/25	10/1	500	11/3						500
Teal, Green Wing	30	10/1	11/1	300	12/1						300
Teal, Blue Wing	20	9/18	10/1	200	10/1						200
Shoveler	15	10/25		100	11/20						100
Redhead	2	11/11				2	11/11				
Canvasback	5	11/11				5	11/11				5

REMARKS: (Pertinent information not specifically requested)

INSTRUCTIONS

Form NR-1 - MIGRATORY BIRDS (Include species in families Gaviidae through Strigidae; also doves and woodcocks)*

In case a resident form occurs, such as mottled duck on the Gulf Coast, use only the columns that apply.

(1) SPECIES: Use correct common names as found in the A.O.U. Check List, 1931 Edition, and list in A.O.U. order. General terms are to be avoided, such as "scaup", "teal", etc.; use "green-winged teal" or "lesser scaup".

(2) FIRST OBSERVED: The first refuge record for the species during spring migration, fall migration, wintering, or summering, and the number observed. In the case of resident species this column may be disregarded.

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(3) BECAME COMMON: The date the species became common on the refuge.

(4) PEAK CONCENTRATION: The greatest number of the species present on any one date or limited interval of time.

(5) LAST OBSERVED: The last refuge record for the species during the spring or fall migration, wintering, or summering, and the numbers observed exclusive of obvious cripples or non-migrants.

(6) YOUNG PRODUCED: Estimated number of young produced based upon 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 are to be omitted.

(7) 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 manner in which birds come through; i.e., in waves or all at once. On refuges representing the terminus of the flight lane, the figures would probably be the same in many cases.

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

FORM MR-1

MIGRATORY BIRDS

Refuge Pea Island Months Of Sept. 1 to Dec. 31, 1945

(1) Species	(2) First Observed		(3) Became Common	(4) Peak Concentration		(5) Last Observed		(7) Number Using Refuge
Common Name	Number	Date	Date	Number	Date	Number	Date	Date
Scaup, Lesser	15	11/11		1000	12/20			1000
Buffle Head	8	11/11	12/1	300	12/1			300
Ruddy Duck	5	11/11		15	12/20			15
Merganser, Red Breasted	14	10/1		6000	12/30			6000
Eagle, Bald	6			6	11/11			6
Hawk, Marsh	2	10/1		2	10/1			2
Osprey	12	10/1		12	10/1			12
Coot	5	9/25		500	11/11			500
Willet	12	10/25				12	10/25	12
Yellow-Legs, Greater	Observed occasionally but not sure of identification							
Yellow-Legs, Lesser	"	"	"	"	"	"		
Sandpiper, Least	Observed occasionally							
Sandpiper, Red backed	Observed occasionally I am sure but not positive of identification							
Sanderling	Observed occasionally during period							
Gull, Herring	3	9/18	11/11					6000
Gull, Ring-billed	2	9/18						100
Tern, Common	Observed throughout entire period							
Tern, Royal	Observed 3-4 during period							
Tern, Caspian	"	"	"	"				
Skimmer, Black				4000	11/1			4000

Form NR-6 DISEASE

Refuge Pea Island Nat'l Wildlife Year 1945

Botulism

Period Of Heaviest losses _____

Period of outbreak December

Losses:	Actual Count	Estimated
(a) Waterfowl	1	
(b) Shorebirds		
(c) Other		

Number Hospitalized	No. Recovered	%recoverds
(a) Waterfowl	1	100%
(b) Shorebirds		
(c) Other		

Areas affected All

Condition of vegetation and invertebrate life Good

Remarks Annual occurence but exceptional light to date this year

Kind of disease _____

Species affected _____

Geese, Canada

Number Affected Species	Actual Count	Estimated

Number Recovered _____

Number Lost _____

Source of Infection _____

Water Condition Excellent

Food Conditions Excellent

Remarks _____

Form NR-7

PLANTINGS
(Marsh - Aquatic - Upland)

Refuge Pea Island Nat'l Wildlife Year 1945

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
NOTHING TO REPORT								

TOTAL ACREAGE PLANTED:

Marsh and aquatic_____
Hedgerows, cover patches_____
Food strips, food patches_____
Forest plantings_____

Form NR-9

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

1620

Refuge Pea Island Nat'l Wildlife Year 1945

Species	Collections				Receipts		Total Amounts on Hand	Amount Surplus
	Amount	Date or Period or Collection	Method	Unit Cost	Amount	Source		
NOTHING TO REPORT								

PEA ISLAND NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

MAY 1 - AUGUST 31, 1945

C O N T E N T S

PEA ISLAND NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

MAY 1 TO AUGUST 31, 1945

I. GENERAL

A. Weather Conditions

The weather data for this report is taken from the Cooperative Meteorological record of Mrs. Rosa Drinkwater, Manteo North Carolina. This being the nearest weather station, and approximately twenty miles north of the Refuge, the readings do not represent the rainfall accurately on the Refuge.

Following are some tables for comparison with corresponding period for last year.

	Precipitation	Max. Temp.	Min. Temp.
May 1945	3.09 in.	69 degrees	43 degrees
June "	7.37 "	95 "	52 "
July "	7.04 "	97 "	66 "
Aug. "	2.81		
Total	20.31 "		
May 1944	1.94 "	97 "	53 "
June "	.59 "	97 "	61 "
July "	2.74 "	94 "	66 "
Aug. "	4.10 "	97 "	57 "
Total	9.36 "		

B. Water Conditions

Due to exceptional rainfall during this period water conditions in pool no. one has been excellent. Rainfall duringthe preceding period combined with the current period was sufficient to bring the water level up to normal; therefore the entire area in pool No. one is estimated to have been covered to an average depth of 6 inches which is an exceptional and most desirable condition. Pool No. 2 is still being flooded periodically with salt water and controlled by the water in the sound.

II. WILDLIFE

A. Waterbirds

Most of the species in this group have visited the Refuge in their normal numbers but as usual these species are winter visitors and left before the first of May.

B. Wading Birds

Most species have been here in their usual numbers, several of which continued to nest here. Some nesting activity was observed on Bild Island and in the Black Crowned Night Heron rookery near the overnight cabin of the Louisiana Heron and Snowy Egret. This is the second consecutive year for them to nest on the Refuge. Observations show there werea number of young birds this period, particularly Little Blue Herons, but it is thought they were hatched on areas adjacent to the Refuge. Black Crown Night Herons appeared to nest as usual with approximately 25 nests and 75 young birds observed. 5 Green Herons were observed in one day. Some increase is noted in the American and Snowy Egret but apparently there is very little or none in the Great Blue Herons.

C. Waterfowl

Most of the waterfowl which uses the area had migrated by the beginning of this period. However there was a small number of Canada geese, Black Duck and Gadwall that used the area this period. There was a flock of 45 Canada geese that remained for awhile but they all disappeared but 6. The 6 remaining geese seem to be able to fly and be in good condition. There is noticeable improvement in Parasitism among the geese this year.

The Black Ducks and Gadwall nested as usual and a few young birds were observed but no Blue Wing Teal noted this period other than 4, very early.

D. Marsh Birds

These birds are evident but seldom seen. Conditions have been most favorable for them this period.

E. Hawks And Eagles

Ospreys have been very abundant as usual but other species have been scarce, however, 2 Eagles were noted at the end of the period.

F. Shore Birds

The passage and use of this species on the Refuge compares

favorably with previous years but the Willet, Hudsonian Curlew and Godwits continue to be noticeably few.

G. Gulls and Terns

Laughing Gulls continue to nest on the outer Islands, including Green and Bild island, and have used the area in their usual numbers this period. The nesting activity of the Black Skimmers, common, Least and Caspian tern continue to decrease. No Royal tern nests observed this period.

1. Food and Cover

The copius rainfall of this period added to already favorable conditions has produced an abundant supply of food in the pool and adjacent areas, particularly those burned last year,,upon which there is a wonderful growth of Scirpus Americanus, about 45 per cent coverage. Scirpus robustus is abundant in much of the marsh area in No. 1 pool, while No. 2 pool is under salt water since the storm last September Spartina alterniflora is attempting to come back. This will be particularly attractive to Snow and Canada geese. Scirpus robustus and Americanus continues to grow in the upper area. There is a good growth of ground beams, especially on the inside of the sand fence and areas affected by last years storms. The dikes are well covered with a heavy growth of Spartina petans due to the abundaht rainfall this summer. There is a good supply of Widgeon grass, Ruppia mariana, in the sound. Eel grass, Zosteria marina, is very scattered and in poor condition.

2. Disease

Parasitism was greatly improved over previous years. There being only 36 geese affected this year and none this period.

H. Fur Animals

Muskrats continue to appear to increase. Ten have been observed at one time in pool No. 1 and several in the salt water in pool No. 2.

Otter also are on the increase as several paths, or slides, have been observed croosing the dikes, however only 5 at any one time has been observed but it is evident there are more.

III. REFUGE DEVELOPMENT MAINTENANCE

A. Physical Development

1. Trucks

The ford pick-up is in poor mechanical condition and is kept at the overnight cabin for use on the island only. Just enough repairs are put on it to keep it running.

The Chevrolet pick-up No. 17275 is in good mechanical condition and minor repairs were put in it this period; namely, spring hanger bolts and bushings, repaired grill, cab seat cushion, and as a prevention agains't rusting the body was given a coat of paint and the under side was cleaned and red leaded.

2. Boats

Boat FWS 186 was picked up and allowed to dry. The guard-rail and bottom was cleaned and given a coat of red lead and copper paint. Boat FWS-800 also was dried, cleaned and given a coat of copper paint.

3. Buildings

The overnight cabin was cleaned and painted one coat on the outside walls. A new linoleum rug was put on the floor and the screens and window glasses repaired. The twist in the storage shed, caused by the storm, was repaired and a few places on the roof were repaired but there is great need for a new metal roof.

4. Cattail Cutting

Annual cutting seems to have retarded the growth of this pest but there were scattered patches in pool No. 1 which necessitated some cutting. The cutting is not completed but 4 man days of cutting has been done and will be completed within a short time.

B. Plantings

Dr. Prytherch of the Beaufort North Carolina hatchery delivered 1000 Diamond Back turtles on June 13, and they were released in the creek in No. 2 pool. They arrived in good condition and none had died in transit.

IV. PUBLIC RELATIONS

Officials visiting this station during this period included Messrs. Arthur F. Miller and Philips O. DuMont. Dr. Herbert F. Prytherch and E. V. Floyd of the Fisheries Dep't. There were 4 other visitors for the purpose of wildlife information.

Submitted By,

William L. Hills

William L. Hills
Refuge Manager

Approved,

Arthur Fowler
9-6-45.

Date Submitted

Sept. 4, 1945

Form NR-1

MIGRATORY BIRDS

Refuge Pea Island Nat'l Wildlife Refuge Months of May 1, to August 31, 1945

1612

(1) Species	(2) First Observed		(3) Became Common	(4) Peak Concentration		(5) Last Observed		(6) Young Produced			(7) Total
Common Name	Number	Date	Date	Number	Date	Number	Date	No. Broods Obsvd.	Avg. Size	Esti-mated Total	Number Using Refuge
Loon, common	2					1	May				10
Grebe, Pied billed	2	8/10									
Cormorant	Observed occasionally through entire period										
Heron, Great Blue	2		8/7	Resident							50
Egret, American	6	5/17	5/21	300	8/10						400
Egret, Snowy	14	5/17	5/21	500	8/10			10	4	25	600
Heron, Louisiana	4	5/17	5/21	200	8/10			8	4	16	250
Heron, Green	2	5/17	5/21	10	8/10						25
Heron, Little Blue	2	5/17	5/21	10	8/10						25
Heron, Black Crown								25	4	75	150
Bittern, Least	1	5/17									15
Goose, Canada				175	5/17	45	7/21		6 remained rest of pd.		
Duck, Black				60	8/10			5	8	25	100
Gadwall								12	8	60	100
Teal, Blue Wing	4	5/17									10
Merganser, Red-Breasted	Observed occasionally entire period										
Osprey	"		frequently	"	"						
Eagle, Bald	2	8/7									2
Vulture				2							
Plover, Semi-palmated		5/17		4000	8/10						4000
Turnstone, Ruddy	8	5/17									50

REMARKS: (Pertinent information not specifically requested)

INSTRUCTIONS

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Common Name	Number	Date	Date	Number	Date	Number	Date	No. Broods Obsvd.	Avg. Size	Esti-mated Total	Number Using Refuge
Sandpiper, Least					5/17						2000
Sandpiper, Spotted	6										100
Sandpiper, Red backed				3000	5/17						6000
Sandpiper, Semipalmated				4000	8/10						5000
Curlew, Hudsonian	10	5/1									25
Godwit, Marbled	2	7/27									10
Sanderling				200	8/10						500
Willet, Western				100	7/27						200
Yellow legs, Greater				25	8/10						100
" " , Lesser				800	5/17						3000
Dowitcher				5000	5/17						3000
Gull, Herring				200	5/17						300
Gull, Ring-billed				14	5/17						50
Gull, Laughing				1500	6/14			500	3	1000	2500
Tern, Common								38	2	60	500
" , Royal				100	6/14						200
" , Caspian				100	6/14						300
" , Least				300	6/14			7	2	10	1000
" , Black				200	8/10						400
Skimmer, Black				1000	8/10						1500
Rail, Virginia				2	5/17						25
Dove				1	5/17						1

REMARKS: (Pertinent information not specifically requested)

INSTRUCTIONS

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3-1570
NR-8a

REFUGE GRAIN REPORT

Refuge Pea Island Nat'l Wildlife Months of May 1. thru August 31 1945.

(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 USE		
				TRANS-FERRED	SEEDED	FED	TOTAL		SEED	FEED	SURP.
Corn	4	None	4	None	None	None		4		X	None

(8) Indicate shipping or collection points Manteo, N. C. via Elizabeth City, N. C.

(9) Grain is stored at Shed on Pea Island , Overnight cabin

(10) Remarks This grain is badly weevil eaten and will not be of much use.

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 lbs., Corn (ear)--70 lbs., Wheat--60 lbs., Barley--50 lbs., Rye--55 lbs., Oats--30 lbs., Soy Beans--60 lbs., Millet--50 lbs., Cowpeas--60 lbs., and Mixed--50 lbs. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

(1) List each type of grain separately: Corn, wheat, proso millet, etc. 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 breakdown by varieties of grain listed in Column 6.

(8) Nearest railroad station for shipping and receiving.

(9) Where stored on refuge: "Headquarters grainary", etc.

(10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

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PEA ISLAND NARRATIVE REPORT
April 30, 1945

PEA ISLAND NATIONAL WILDLIFE REFUGE
NARRATIVE REPORT
Period January 1- April 30,1945

I. General

A. Weather conditions. This Refuge does not operate an official weather station and data contained in this report was taken from the Cooperative Observer's Meteorological record of Mrs. Rosa L. Drinkwater, Manteo, N. C. nearest observer to the refuge. Following are some tables for comparison with the corresponding period for last year;

	Percipitation	Max. temp.	Min. temp.
January 1945	1.40 In.	59 degrees	23 degrees
February "	6.56 "	78 "	19 "
March "	.40 "	88 "	37 "
April "	.24 "	88 "	45 "
Total	8.60 "		

Corresponding period:

January 1944	2.24 "	73 "	21 "
February "	3.56 "	74 "	22 "
March "	5.76 "	81 "	23 "
April "	3.06 "	82 "	35 "
Total	14.62		

January was generally mild except for a few days of freezing weather toward the latter part of the month. Rainfall was light. February was cold until the second week which was followed by rain and slight moderation until Feb. 13 when rain and continued cold pervailed until the end of the month. March was fair;rainfall below normal,dry. April continued dry and windy and warm;rainfall below normal.

B. Water Conditions: Rainfall on the Refuge was slightly more than recorded,sufficent to maintain almost a normal water level on pool # 1 throughout the period, the beds being slightly covered with water. Pool # 2 in spite of being subject to salt water from the sound with periodical raises, supports a surprising population of waterfowl.

II Wildlife

A. Waterbirds: While there appears to be no concentrations of these birds, observation and records make a fovarable comparison.

Wading Birds: Most of this group are summer visitors,except Great Blue and Black -crowned Herons which are residents. Several species have arrived the latter part of the period.

Waterfowl: For unknown reasons there was a large decrease in most species far beyond former years on the average. Ducks never did arrive in large numbers. More Canada Geese were reported farther inland which may have affected the refuge population. Snow Geese failed to arrive in their usual numbers and left early, however they were 350 observed on the refuge as late as February 24. Ducks were not on the ponds in comparison with former years, this may have been due to the general decrease in numbers. Concentrations of scoters or Red-breasted mergansers have not been observed. Buffle-head were in their usual numbers with possibly a 331/3 % increase over last year.

Marsh Birds: These birds are rarely seen or heard and there are no figures fo for comparison. Coots however continue to increase in number by 300 % over last year.

Hawks and Eagles: This group except the Osprey are winter visitors and do not show any change in numbers.

Shore Birds: The spring migration which commenced in March showed a good population at the end of the period. However observation and figures do not compare with last year but this may be due to a difference of opinion by the observers and method of observation. The salt marshes which have been denuded by Snow Geese continue to be the favorite feeding ground for most species except Sanderling.

Gulls and Terns: The number of birds this year comparesfavorable with last year, except great Black-backed/which appear to have fallen off in number . According to figures the Laughing Gull population is off 331/3 %. Avery recent observation reveals a considerable number of Common and Least Terns coming in; no nests observed

2. Food and Cover: Water conditions being favorable there was a good supply of food in the No. 1 impoundment. Also pool # 2 in spite of the salt water entering in the September storm, provided food according to the number of birds feeding there. The marshes provided Spartina alterniflora, Scirpus americanus and Scirpus robustus. The burning program was carried out too late to provide fall graging for the geese but Canada and Snow Geese were observed using the area. Spring growth provided excellent grazing but there were no large numbers of geese left at that time. On the burned areas a 60 % coverage of Scirpus americanus is fast approaching a state of maturity due apparantly to the advanced season. The sound waters provided an abundance of food; Rupia maritima on low tide and agood supply of Zosteria mariana was apparant but in two to four feet of water.

4. Lead poisoning and Other Diseases: There has been no evidence of lead poisoning noted but parasitism which is an annual occurence was noticeable during the period particularly through January to February 10;very few after that date to the end of the period. 32 dead birds were observed and it is estimated that not over 100 died; this is a steady improvement over the past years when 2 or 3 hundred died. It is a remote possibility that the burning program contributes toward the improvement; the burning should be done by September 30.

D. Fur Animals. Muskrats are in evidence in the # 1 impoundment and indications are that they are increasing. Several Otters are also noted but they appear not to increase.

III Refuge Development and Maintenance

Patrol of the entire area has been less frequent than formerly due to curtailed personnel and an apparant improvement in violations, also more time is required in menagement,and the maintenance of equipment. Repairs to the motor in "RED HEAD II" FWS 186 were completed in January 2 and the boat placed in service after months of laying up; this boat has been recently removed from the water,copper painted and the hull painted to the railing. The storm damage to carlins and cabin top rails were repaired,light screens, canvas curtains renewed and repaired. The interior of the motor (water circulation) was treated with red lead. The row boat FWS 800 was pulled out and cleaned for complete painting. The two trucks have been maintained and kept in good operating condition,particularly the Chevrolet L-17276. The Ford L-17275 remains on the refuge. Some carpenter tools were purchased, and others such as field tools have been transferred to this station. 1100 feet of dike has been cleared of Wax Myrtle and Locust growth. The water control structure (metal parts) in pool # 1 was cleaned and painted with red lead. Bermuda grass was planted and mulched around the Over-night Cabin extending to the storage shed. Stormdamage to the storage shed was further repaired,door,bottoms closed in and runway for storing truck, roof patched and lock installed on one door. A location for a water gauge has been set in pool # 2. The breaches in this dike remain,but repairs are contemplated. 15 geese were caught, 9 survived and will be transferred toanother refuge. Two traps were built.

IV Public Relations

Officials

A. Refuge Visitors. Mr. Oscar L. Chapman,Assistant Secretary, U.S. D. I., Dr. Ira N. Gabrielson, Director, Game management Agents, E. R. Atkinson and Eugene M. Boring visited on Feb. 10. Mr Boring in January.

IV Public Relations Continued

Others in February: Miss Ellen Peters, Dorothy Waples and a Miss Wedge who remained for 2 days.

Mr. Harold S. Peters visitedthe refuge on March 4.
Messers James Silver and J. P. Mann on March 19.
Mr. Richard F. Pittman made an inspection trip on January 15 and again on March 15 with Mr. William V. Taylor

Official visitors: Total 7; Others, total 4; Visitor days 6.

May 9, 1945 — William L. Hills

_____ — Jr. Refuge Mgr.

1. Water Conditions.

The water level in the # 1 impoundment was very low during last summer ,but showed a slight improvement for the year. Late summer rainfall was sufficent for the aquatic plants to develpp before the winter season. The # 2 impoundment maintained a better water level and appeared very promising, when the September hurricane breached the North dike in three places and salt water flooded the area. In spite of this disaster much food was apparant due to the constant use of the area throughout the winter by waterfowl. At every periodic raise of water in the sound the impoundment was subjected to being filled with salt water, there being no way of perventing this until major repairs of the dike can be made. Rainfall was not as heavy as desirable ,but plantlife did not suffer nor was there any shortage of food.

2. Wildlife

There was a large decrease in waterfowl for reasons thus far unknown. No concentrations of Brant or Redheads were observed in refuge waters and few reported generally. Snow Geese appeared to remain later onthe refuge but few er than the pastyear. Ruffle Head appeared to be the exception by a slight increase. Coot also appeared to improve, 800 remaining most of the season. There was great improvement in Parasitism among Canada Geese, as far as records are concerned; the decrease in numbers will account for some disease, but when only about 25 birds were found dead and about 30 estimated to be affected for the period, improvement is obvious when there was an estimated population of 8000,which is conservative, on the Refuge. The burned areas were used by a considerable number of geese and it is thought these areas may contribute to the decrease in Parasitism. The greatest concentrations were observed in December, after that there was agenoral decline in numbers.

Waterbirds were less by comparison of records.

Wading Birds. They are few in number,but most species recorded.

Marsh Birds.There are no figures for comparison,but some have been observed. Coots have been observed to 800. Only 2 Florida gallinules were observed last of the summer.

Gulls and Terns. These birds make afoverable comparison in numbers. There appears to be less nesting, probably to too much vegetation on some of the nesting areas.

Fur Animals.

Muskrats appear to increase in the #1 impoundment. Several Otter are apparant but no increase is noted.

Refuge Development.

Due to curtailed personnel no particular development has been accomplished. There has been less patrol due to an apparant improvement of violations. More time has been spent on the maintenance of equipment and work on the Refuge. The september storm did considerable damage to the sand fence on the sea shore and the North dike around # 2 impoundment was breached in three places. Some damage was done at Refuge headquarters; the storage shed received damage to eachof double doors and the composition roof. The Overnight Cabin came through with minor damage to windows; most of which was repaired. One of the row boats was lost and not accounted for. Slight damage was sustained by the motor boat "Red Hen II" in the shed at Mantee, which was repaired; also the engine parts were received, installed and the boat placed in service. 23 quarts of Beach Pea seed were collected and shipped. Two traps were made and 9 geese were caught for transfer. Grass was planted around the overnight canin and toward the storage shed and mulched with dead grass drift on the South dike; removal of grass and drift also helped the growth of grass along the dike. The water control metal parts in pool # 1 were cleaned and painted. Several hundred feet of the west dike, pool # 1 was cleared of wax Myrtle and Locust growth. The burning program carried out in November on 147 acres did not provide grazing for the fall migration of geese but considerable use was made of the areas.

Public Relations. Official visitors during the year were: Messers. M. P. Markwood and John Bloz in February. Messrs. James Silver, Roy Moore, Arthur F. Miller and Dr. Don Coburn. 20 other people visited the Refuge for the purpose of studying wildlife

May 15, 1945

William L. Hills

Jr. Refuge Manager.

Form NR-1

MIGRATORY BIRDS

Refuge Pea Island, Manteo, N. C. Months of January to April 30, 1945

(1) Species	(2) First Observed		(3) Became Common	(4) Peak Concentration		(5) Last Observed		(6) Young Produced			(7) Total
Common Name	Number	Date	Date	Number	Date	Number	Date	No. Broods Obsvd.	Avg. Size	Esti-mated Total	Number Using Refuge
Loon, common				10	entire period						75
Grebe, Horned				4	"	"					25
Grebe, Pied-billed				6	March						50
Gannet	10	Jan	3/7	1500	3/19						2000
Cormorant				75							400
Heron, Great Blue											12
Egret, American	4	3/30	4/14								20
Egret, Snowy	8	3/30	4/14								30
Heron, Louisiana	1	4/14									4
Heron, Green	1	4/23									1
Heron, Black-crown Night											25
Bittern, American						1	3/28				
Swan, Whistling	4x					6	3/3				30
Goose, Canada						1500	3/5				5000
Goose, Snow						350	2/24				2500
Duck, Black				1660	Jan						1000
Mallard	xdx			4x		4	1/20				
Gadwall				200	Jan						250
Baldpate				150	Jan	24	3/28				150
Pintail				300	Jan		3/5				400
Teal, Green-winged				350	3/5	24	4/26				350
Teal, Blue-winged				150	4/26						150

REMARKS: (Pertinent information not specifically requested)

INSTRUCTIONS

Form NR-1 - MIGRATORY BIRDS (Include species in families Gaviidae through Strigidae; also doves and woodcocks)*

In case a resident form occurs, such as mottled duck on the Gulf Coast, use only the columns that apply.

(1) SPECIES: Use correct common names as found in the A.O.U. Check List, 1931 Edition, and list in A.O.U. order. General terms are to be avoided, such as "scaup", "teal", etc.; use "green-winged teal" or "lesser scaup".

(2) FIRST OBSERVED: The first refuge record for the species during spring migration, fall migration, wintering, or summering, and the number observed. In the case of resident species this column may be disregarded.

(3) BECAME COMMON: The date the species became common on the refuge.

(4) PEAK CONCENTRATION: The greatest number of the species present on any one date or limited interval of time.

(5) LAST OBSERVED: The last refuge record for the species during the spring or fall migration, wintering, or summering, and the numbers observed exclusive of obvious cripples or non-migrants.

(6) YOUNG PRODUCED: Estimated number of young produced based upon 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 are to be omitted.

(7) 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 manner in which birds come through; i.e., in waves or all at once. On refuges representing the terminus of the flight lane, the figures would probably be the same in many cases.

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

Form NR-1

MIGRATORY BIRDS

Refuge Pea Island, Manteo, N. C. Months of January to April 30, 1945

(1) Species	(2) First Observed		(3) Became Common	(4) Peak Concentration		(5) Last Observed		(6) Young Produced			(7) Total
Common Name	Number	Date	Date	Number	Date	Number	Date	No. Broods Obsvd.	Avg. Size	Esti-mated Total	Number Using Refuge
Sheveler				200		50	4/26				300
Duck, Ring-necked						10	3/5				10
Canvas-back						2	1/15				2
Duck, Lesser Scaup				3000			1/13				4000
Golden-eye, American						4	1/15				4
Buffle-head				1000	2/24						1500
Scoter, Surf						360	4/3				300
Duck, Ruddy				50	2/24	6	3/18				50
Merganser, Red-breasted				8000	1/31						10000
Eagle, Bald				6	1/31	2	4/26				6
Vulture, Turkey				2		2	4/26				
Hawk, Marsh						1	4/26				6
Osprey						1	4/26				
Hawk, Pigeon						1	4/26				
Coot				600	1/31	50	4/26				600
Plover, BB				8			4/26				200
Snipe, Wilsons						1	4/3				
Sandpiper, Least				1000	4/26						2000
Sandpiper, spotted	2	4/26									
Sandpiper, Red-backed				5000			4/26				5000
Willet				18	4/27						100
Yellow-legs, Grater			4/14	200	4/27						1000

REMARKS: (Pertinent information not specifically requested)

INSTRUCTIONS

Form NR-1 - MIGRATORY BIRDS (Include species in families Gaviidae through Strigidae; also doves and woodcocks)*

In case a resident form occurs, such as mottled duck on the Gulf Coast, use only the columns that apply.

(1) SPECIES: Use correct common names as found in the A.O.U. Check List, 1931 Edition, and list in A.O.U. order. General terms are to be avoided, such as "scaup", "teal", etc.; use "green-winged teal" or "lesser scaup".

(2) FIRST OBSERVED: The first refuge record for the species during spring migration, fall migration, wintering, or summering, and the number observed. In the case of resident species this column may be disregarded.

(3) BECAME COMMON: The date the species became common on the refuge.

(4) PEAK CONCENTRATION: The greatest number of the species present on any one date or limited interval of time.

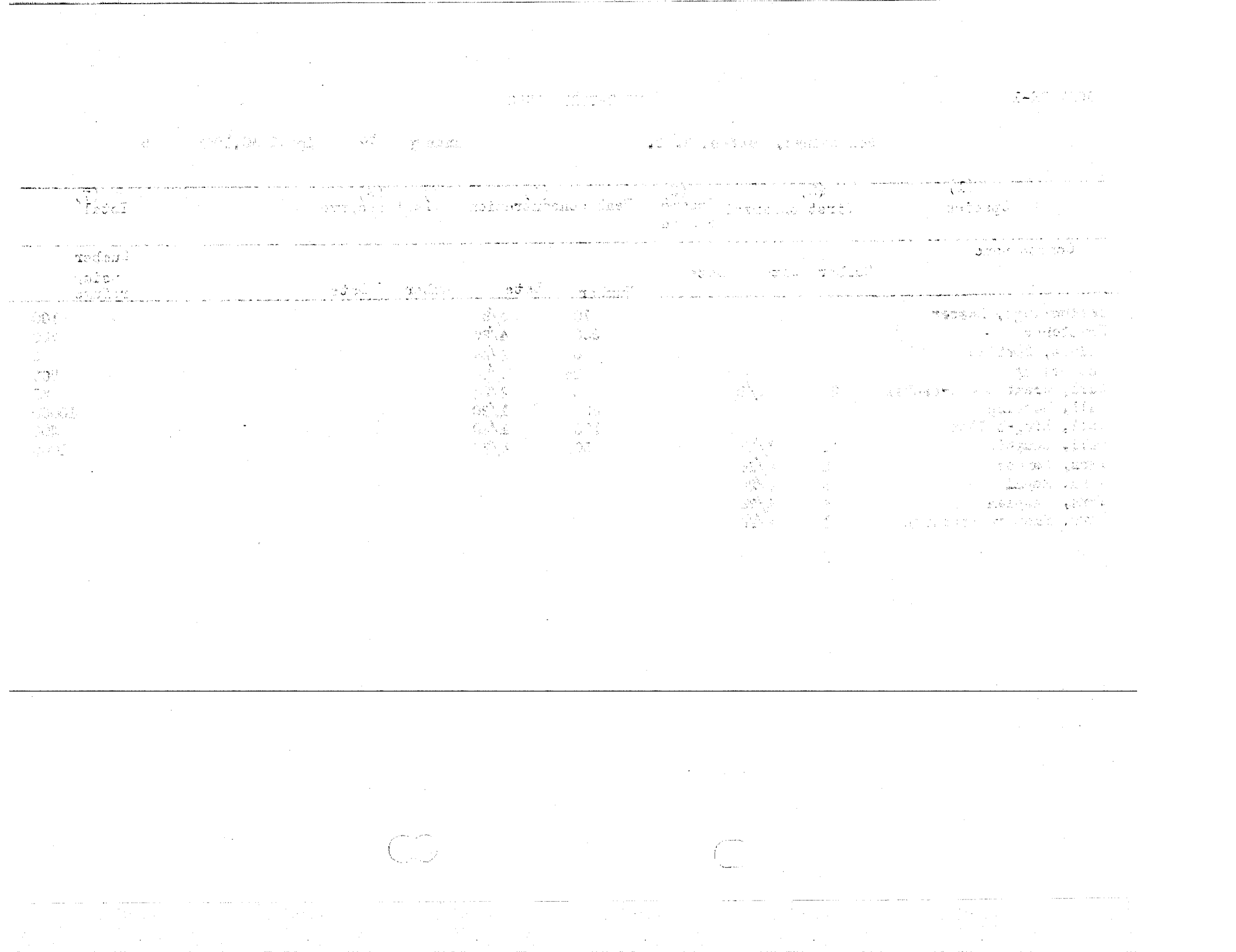
(5) LAST OBSERVED: The last refuge record for the species during the spring or fall migration, wintering, or summering, and the numbers observed exclusive of obvious cripples or non-migrants.

(6) YOUNG PRODUCED: Estimated number of young produced based upon 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 are to be omitted.

(7) 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 manner in which birds come through; i.e., in waves or all at once. On refuges representing the terminus of the flight lane, the figures would probably be the same in many cases.

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

(1) Species	(2) First observed		(3) Peak concentration		(4) Last observed		(5) Total
Common name	Number	Date	Number	Date	Number	Date	Number using refuge
Yellow-legs, Lesser			10	3/5			100
Dowitcher			300	4/26			600
Godwit, Marbled			8	2/24			8
Sanderling			25	3/28			500
Gull, Great Black-backed	2	1/20	6	2/24			25
Gull, Herring			3000	1/20			10000
Gull, Ring-billed			100	1/20			500
Gull, Laughing	10	3/26	500	4/26			1000
Tern, Common	2	4/26					
Tern, Royal	3	3/28					
Tern, Caspian	4	4/26					
Dove, Eastern Mourning	1	4/26					



Form NR-4

SMALL MAMMALS

Refuge Pea Island, Manteo, N. C. April 30, 1945

(1) Species	(2) Density		(3) Removals					(4) Disposition of Fur							(5) Total Population
								Share Trapping							
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control	For Re-stocking	For Research	Permit Number	Trappers' Share	Refuge Share	Total Refuge Furs Shipped	Refuge Income	Furs Donated	Furs Destroyed	
Muskrat	Impoundment, grass & marsh, 50 A	1		no removals					no disposition of fur						50
Otter	"	10		"	"				"		"	"	"		5

REMARKS:

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. "List of North American Recent Mammals" by G. S. Miller, Jr., a very good reference, is now out of print, although a revision is scheduled for publication in the near future.)

(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, 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. Also show any removals not falling under heading 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 and the total income to the refuge by species, including share-trapped furs and furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimness 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.

Form NR-5 DISEASE 1616

Refuge Pea Island, Nontso, N. C. Year 1945

~~Botulism~~

Period of outbreak December through February

Period of heaviest losses January & February

Losses:

	Actual Count	Estimated
(a) Waterfowl	82	100
(b) Shorebirds		
(c) Other		

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

Areas affected (location and approximate acreage) all

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

Condition of vegetation and invertebrate life good

Remarks

Lead Poisoning or other Disease

Kind of disease

Species affected Canada Geese

Number Affected Species	Actual Count	Estimated

Number Recovered

Number lost

Source of infection

Water conditions good

Food conditions good

Remarks unusual occurrence

3-1570
NR-8a

REFUGE GRAIN REPORT

Refuge Pea Island, Manteo, N. C. Months of January thru April 1945.

(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 USE		
				TRANSFERRED	SEEDED	FED	TOTAL		SEED	FEED	SURP.
Corn	none	14	14			10	10	4		x	
Wheat	none	2	2			2	2	0			

(8) Indicate shipping or collection points Manteo via Elizabeth City, N. C.

(9) Grain is stored at storage shed on Pea Island

(10) Remarks Wheeler Refuge, Decatur, Alabama. Shelled corn, 4 bu good condition and 2 bu wheat. Purchased locally on ear ~~xxxshelled~~ $8\frac{1}{2}$, shelled $1\frac{1}{2}$

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 lbs., Corn (ear)--70 lbs., Wheat--60 lbs., Barley--50 lbs., Rye--55 lbs., Oats--30 lbs., Soy Beans--60 lbs., Millet--50 lbs., Cowpeas--60 lbs., and Mixed--50 lbs. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

(1) List each type of grain separately: Corn, wheat, proso millet, etc. 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 breakdown by varieties of grain listed in Column 6.

(8) Nearest railroad station for shipping and receiving.

(9) Where stored on refuge: "Headquarters grainary", etc.

(10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.