

PEA ISLAND NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

SEPTEMBER 1 TO DECEMBER 31, 1947

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PEA ISLAND NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

September 1 to December 31, 1947

I. GENERAL

A. Weather Conditions

In general no extreme weather conditions were experienced during this period. Temperatures were about average with a high of 95 degrees and a low of 26 degrees. There was more rainfall than during any similar period (Sept. 1--Dec. 31) since 1944. However, the precipitation was well scattered during the period.

In the early part of November an unusually high tide, aided no doubt by a stiff "northeaster" was experienced. The tide water from both sea and sound covered roads stopping all traffic for over a day.

The weather data below is taken from the Cooperative Meteorological records of Mrs. Rosa Drinkwater, Manteo, N. C. This is the nearest weather station to the refuge and no doubt there is some variance from actual weather conditions between the weather station and the refuge.

	<u>Precipitation</u>	<u>Max. Temp.</u>	<u>Min. Temp</u>
September 1947	7.66 Inches	95 deg.	58 deg.
October "	4.28 "	86 "	35 "
November "	2.30 "	83 "	26 "
December "	3.58 "	69 "	31 "
Total	17.82 "	Ext. 95	26

B. WATER CONDITIONS

A As a result of sufficient rainfall the water level in Pool #1 remained high throughout the period. It varied from a low of 4.20 on September 16 to a high of 4.93 on December 1. Since the pool is feed solely by rainfall, it has fluctuated with the rainfall. Feeding conditions have been excellent throughout the last four months.

Pool # 2 is still subject to flooding by waters from the sound.

C. FIRES

None

II. WILDLIFE

A. MIGRATORY BIRDS

1. Populations and Behavior

The period saw large flights of both geese and ducks concentrate on the refuge. Many of the pintails, blacks, blue-winged and green-winged teal continued south after a rest period. Those who have compared this year's flight with that of last year concede that there has been an increase of both ducks and geese.

Snow geese (5) were believed to have first been seen on November 14, but identification was not positive. A large flock of about 2000 was seen on November 22. Since that date they have increased until on December 20 it was estimated that between 6500 and 7000 Snows were on the Pea Island Refuge. At the same time it was estimated that over 9000 Canada Geese were using the area. It has been difficult to estimate the Canadas since they are scattered in small groups over the entire area.

Snow geese have never been observed in Pool # 1. They have been feeding in Pool # 2, in the area between the impoundments and in the sound.

About 75-80 swans have been observed on the refuge. In contrast to the snow geese they seem to prefer Pool # 1 but have also frequently been observed in the area between the pools. It is estimated that 500 Ruddy ducks use the refuge. Blacks and pintails appear about equal in number with approximately 1500 of each species on the refuge. In addition considerable numbers of Shovellers, Gadwalls, Ruffleheads, Green-winged-teal, Baldpates and Mallards have been observed.

Relative few shore birds have been noticed. More were seen at the beginning of the period than at the end. Gulls and gannets are present in large numbers. Occasionally one will see a Wilson's Snipe or a pair of mourning doves.

On December 20th 20 Bald Eagles (most of them immature) were observed on the refuge. Marsh hawks can be seen daily.

2. FOOD AND COVER

The food supply in the marsh and impoundments appears to be excellent. A goodly supply of rainfall produced an excellent growth. The

water levels in the impoundments was sufficiently high to make most of this food available for waterfowl using the area.

Although no study was made of the food supply in the sound, it appears to be rather sparse. The writer does not mean to say that there is a noticeable difference this year from preceding years, but he was surprised that the stand wasn't denser. Nevertheless large flocks of geese (both Canada's and Snow) and ducks have been seen in the sound when tide conditions made feeding possible.

3. BOTULISM

None

4. LEAD POISONING AND OTHER DISEASES

None observed.

B. UPLAND GAME BIRDS

One pheasant was seen near the south boundary of Pea Island Refuge. Occasionally a pair of mourning doves are seen. With these exceptions no upland game birds are found on the refuge.

C. BIG GAME ANIMALS

None on the refuge

D. FUR ANIMALS, PREDATORS, RODENTS AND OTHER MAMMALS

Two fur-bearing animals in evidence are the muskrat and otter. Signs of both can be seen and frequently the animals themselves can be observed. From information available it appears that they are very slowly increasing but neither has reached the point of being injurious or have reached a point where controlled removal is suggested.

The only other mammal known to exist on the refuge is the wild cat (house cats gone wild). They prey chiefly on smaller birds.

E. PREDACEOUS BIRDS

The number of predaceous birds seen this period is so small that they have presented no problem in wildlife management.

III. REFUGE DEVELOPMENT MAINTENANCE

A. PHYSICAL DEVELOPMENT

The dike job is continuing but slowly. About 185 feet of dike have been completed. The new dike was sprigged as it was completed. Twice during the period the entire drum shaft assembly had to be

removed for repair. In addition there were frequent minor breakdowns. The manager understands that within the last two years practically the entire machine has been overhauled. It is hoped that the job will now continue with few interruptions. At the present rate of work it will take $1\frac{1}{2}$ -2 years to complete the job.

Repair work was started on several low places in the sand fence impounding Pool # 1. Sprigging with brush was attempted and although it has had only several weeks to catch sand, it is already showing results. Myrtle brush was used. It is "planted" in the low areas where tide water has been coming in. On the last pages of this report several snapshots have been included showing "before and After" scenes. No. 1 and 2 show the brush after it was planted. The sand collected between the rows of brush. A view of this can be seen in No. 3. In Nos. 4 and 5 other views can be seen of the results. Before the plantings this site was used by vehicles passing from the wash to the inside road. Since vehicle operators depended on this "gap", an opening was left in one row of brush. This was done to avoid stalling of vehicles and to give the driver's a chance to learn a new "gap". As can be seen from the photo the driving is becoming rather difficult and at the time of this writing only vehicles equipped with four wheel drives can get through.

From ten to twenty inches of sand have collected behind the brush. No doubt additional plantings will be necessary to build the sand fence sufficiently high.

Maintenance and repair of equipment has taken considerable time. The pickups must be spot painted to prevent rusting. A 1938 Ford pickup for use on the beach was recently obtained. This is to take the place of the Ford stake truck now in use and very fast deteriorating.

B. PLANTINGS

None

C. COLLECTIONS

During this period about 160 pounds of Scirpus robustus seed was collected. This seed is on hand and ready for shipment to any designated place.

D. RECEIPTS OF SEED AND NURSERY STOCK

None

IV. Economic use of Refuge

None

V. FIELD INVESTIGATIONS OR APPLIED RESEARCH

None

VI. PUBLIC RELATIONS

A. RECREATIONAL USES

During October and November quite a number of folk ventured down to Pea Island and vicinity to try their luck at surf fishing. As with all fishing the reports of their success varied from very good to very bad. Visitors from Virginia, Maryland, Pennsylvania, New York, New Jersey and Indiana were noted.

B. REFUGE VISITORS

In regards to visitors there has been considerable activity, especially during the month of December. Messrs. Silver, Miller, Baldwin, and Spencer arrived in Manteo, N. C. on December 7, but the writer was on Pea Island and did not get to see them. Messrs. Wm. T. Davis and Thos. M. Carter were here the following week on law enforcement work. Roy Ferguson Game Management Agent-Pilot was here the same week.

On December 6 there was an "invasion" of 42 members of the North Carolina Bird Club. This was the first time that the State Club visited Pea Island Refuge. The group departed Manteo at 6.30 A. M. on the 6th December for Pea Island. Fifty-eight species of birds were seen. The demonstration of the Snow Geese was no doubt the feature of the day.

The Annual Christmas census was taken December 20. Mr. R. L. Wolff of Goldsboro, N. C. and party of three students conducted the census.

C. VIOLATIONS

No violations were observed on the refuge. Within the last week there is evidence of trespass, but it is thought that due to exceptionally low water in the sound this may have been done by clambers rather than hunters. The manager has been spending most of the weekends on the refuge.

On one occasion the manager accompanied state wardens on patrol on Bodie Island (North of Refuge).

At the time Messrs. Davis and Carter were here, the refuge boat, Red Head II, was placed at their disposal.

VII. OTHER ITEMS

A. ITEMS OF INTEREST

One of the high points of the period was the transfer of the writer from the St. Marks Refuge to Pea Island Refuge. With new problems and interests, he finds the work enjoyable. Sand (it often seems bottomless) driving is difficult, so is housing. Arriving at the height of the water-fowl season, he hasn't had time to get acquainted with many local people and with various phases of refuge work. He finds that one of the items he is short on is TIME.

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Pen Island Months of Jan 1 to April 30 1948

(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. <u>Water and Marsh Birds:</u>										
Cormorant, Double-Cr			400	3/20/48	400	4/30/48				400
Heron, Great Blue			4	3/48	2	4/26/48				6
Heron, Louisiana			4	3/48	2	4/26/48				10
Heron, Black Crowned Nt.			9	1/10/48	1	4/30/48				15
Egret, Snowy	2	4/12/48	25/	4/30/48	15	4/30/48				25
Bittern, American					1	2/17/48				
Grebe, Horned			50	4/48	12	4/26/48				60
Grebe, Pied-billed			20		4	4/26/48				30
Heron, Green			10	4/48	1	4/30/48				10
Loon, Common			200	4/48	15	4/30/48				500
Rail, Clapper			Frequently heard, seldom seen		1	4/29/48				
Sora					1	4/29/48				
Dowitchers	50	3/30/48	250	4/8/48						250
II. <u>Shorebirds, Gulls and Terns:</u>										
Sandpiper, Least	200	3/48	1000	4/20/48						1000
Sandpiper, Red-backed	12	1/9/48	3000	4/24/48						3000
Sanderling			300	4/30/48						300
Yellow-legs			300	4/24/48						300
Gull, Herring			4000	1/9/48						4000
Gull, Great Bl-Banded			100	2/17/48	1	4/26/48				200
Gull, Laughing	3	3/28/48	600	4/24/48						600
Gull, King-billed					2	3/10/48				
Tern, Royal			100	4/30/48	20	4/30/48				150
Tern, Least			25		2	4/26/48				25
Willet					5	4/26/48				
Gannet			1000	3/48	50	4/8/48				1500
Killdeer			15	3/48	2	4/30/48				
Plover, Semi-palmated			10	4/48						
Sandpipers--Miscellaneous--Too far away to identify (over)										5000

Refuge Pea Island Months of Jan 1 to April 30, 1948

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'vd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
<p>NOT APPLICABLE TO THIS REFUGE</p>										

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Pass Island Year ending April 30, 1948

(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					
Muskrat	Marsh		No removals										Est	800	
Otter	"		No removals											Est	500

* List removals by Predator Animal Hunter

REMARKS:

Reported by _____

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove			2 3/25/48		2
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow (<u>mostly</u> <u>Corvus ossifragus</u>)		30 4/30/48	2 4/30/48		2

Reported by

Paul W. Sturm

Paul W. Sturm, 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.

Refuge Pan Island Refuge Months of Sept. 1 to Dec. 31,, 1947

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
NOT APPLICABLE TO THIS REFUGE										

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 Refuge

Calendar Year Sept. 1 to Dec. 31, 1947

(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	
Common Name	Cover types, total Acreage of Habitat	Number											
	NONE												

Remarks:

Reported by

INSTRUCTIONS

Form NR-3 - BIG GAME

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

Refuge PEA ISLAND REFUGE Year 194

Botulism None Lead Poisoning or other Disease None

Period of outbreak _____

Period of heaviest losses _____

Losses:

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

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

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

Areas affected (location and approximate acreage) _____

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

Condition of vegetation and invertebrate life _____

Remarks _____

Kind of disease _____

Species affected _____

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

Number Recovered _____

Number lost _____

Source of infection _____

Water conditions _____

Food conditions _____

Remarks _____



PLANTINGS
(Marsh - Aquatic - Upland)

Refuge PEA ISLAND REFUGE Year 194 7

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
NONE								

TOTAL ACREAGE PLANTED:

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

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS

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

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

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

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

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

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

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

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

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

3-1570
NR-8a

REFUGE GRAIN REPORT

Refuge PEA ISLAND

Months of Sept 1 thru Dec. 31 194 7.

(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.
	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

(8) Indicate shipping or collection points.....

(9) Grain is stored at.....

(10) Remarks.....

NR-8a

REFUGEE 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.

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

Refuge FBA ISLAND REFUGE Year 1947

Species	Collections				Receipts		Total Amounts on Hand	Amount Surplus
	Amount	Date or Period or Collection	Method	Unit Cost	Amount	Source		
<u>Scirpus robustus</u>	160 #	Sept. 1947	Hand stripping	67½¢ per lb.			160 #	160 #

3-1760
 Form NR-10
 (April 1946)

HAYING AND GRAZING

Refuge.....**PEA ISLAND REFUGE**.....Year 194**4**..

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

PEA ISLAND REFUGE

Refuge..... Year 194.....

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.....

.....

Refuge Pea Island

Months of Jan 1 to April 30, 1948

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'vd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
<p>NOT APPLICABLE TO THIS REFUGE</p>										

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.

SMALL MAMMALS

Refuge Pea Island

Year ending April 30, 1948

(1) Species Common Name	(2) Density Cover Types & Total Acreage of Habitat Acres Per Animal		(3) Removals Hunting Fur Harvest Predator Control * For Re- stocking For Re- search					(4) Disposition of Furs					(5) Total Popula- tion	
								Share Trapping			Total Refuge Furs Shipped	Furs Donated		Furs Destroyed
								Permit Number	Trappers Share	Refuge share				
Muskrat	Marsh		No removals									Est	800	
Otter	"		No removals									Est	500	

* List removals by Predator Animal Hunter

REMARKS:

Reported by *R. W. Lindeman*

INSTRUCTIONS

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

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

WATERFOWL

Refuge Pea Island Refuge Months of September 1 to December 31 1947

(1) Species	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Young Produced		(6) Total
	Number	Date	Number	Date	Number	Date	Broods Seen	Estimated Total	Estimated for Period
I. <u>Swans:</u>									
Whistling swan	8	11/3/47	80	12/6/47					80
II. <u>Geese:</u>									
Canada goose			9000	12/20/47					11,000
Cackling goose									
Brant			?						?
White-fronted goose									
Snow goose	5	11/14/47	7000	12/20/47					7,000
Blue goose			5	12/6/47					10
III. <u>Ducks:</u>									
Mallard			25	11/15/47					40
Black duck	Resident		2500	10/30/47					3,000
Gadwall			400	11/15/47					400
Baldpate			150						200
Pintail			3000	11/15/47					3500
Green-winged teal			350	11/15/47					400
Blue-winged teal			?						?
Cinnamon teal									
Shoveller			200	11/29/47					300
Wood duck									
Redhead			15	11/15/47					?
Ring-necked duck									?
Canvas-back			10	11/15/47					?
Scaup			5	12/22/47					?
Golden-eye									
Buffle-head			300	12/6/47					300
Ruddy duck			500	12/6/47					500
Merganser, Red-br			6000	12/10/47					6000
IV. <u>Coots:</u>									
			150	12/6/47					150

Total Production:

Geese none
Ducks none
Coots none

SUMMARIES

Total waterfowl usage during period 36,650
Peak waterfowl numbers 20,235
Areas used by concentrations Pools No. 1 and 2
and area between pools. Also area in sound adj to
pools
Principal nesting areas this season _____

Reported by Paul W. Sturm
Paul W. Sturm, Refuge Manager

INSTRUCTIONS

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance.
- (2) First Seen: The first refuge record for the species during the season concerned in the reporting period, and the number seen. This column does not apply to resident species.
- (3) Peak Concentration: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned in the reporting period.
- (5) Young Produced: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (6) Total: Estimated total number of the species using the refuge during the period. This figure may or may not be more than that used for peak concentrations, depending upon the nature of the migrational movement.

Note: Only columns applicable to the reporting period should be used. It is desirable that the Summaries receive careful attention since these data are necessarily based on an analysis of the rest of the form.

3-1751

Form NR-1A
(Nov. 1945)MIGRATORY BIRDS
(other than waterfowl)Refuge.....Pea Island Refuge..... Months of Sept. 1 to Dec. 31 1947.

(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
<u>I. Water and Marsh Birds:</u>										
Cormorant, double Cr.	Resident		35	?						35
Heron, Great Blue	"		4	12/6/47						20
Heron, Louisiana			2	12/6/47						5
Bittern, American			4	12/6/47						10
Grebe, Horned			?							?
Grebe, Pied-billed			12	12/6/47						30
Loon, Common			?							?
Rail, Clapper			2	12/6/47						?
Snipe, Wilson's			2	12/20/47						20
Avocet			2	12/20/47						2
<u>II. Shorebirds, Gulls and Terns:</u>										
Sandpiper, Least			25	11/15/47						?
Sandpiper, Red-backed			18	12/6/47						?
Sanderling			40	11/24/47						150
Yellow-legs			2	12/20/47						?
Gull, Herring			5500							?
Gull, Great Black Backed			38	12/20/47						?
Tern, Common			?							?
Tern, Least			?							?
Gannet			2500	12/6/47						3000
Killdeer			4	12/12/47						?

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove		2	12/6/47		16
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow		2	?		?
Eagle, Bald		Seen	Occasionally		
Osprey		20	12/20/47		25
Hawk, Marsh		5	10/47		
Hawk, Pigeon		14	12/20/47		20
Hawk, Sparrow		2	12/6/47		?
		5	12/6/47		

Reported by

Paul W. Sturm
Paul W. Sturm, 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.

PEA ISLAND NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

MAY 1 TO AUGUST 31, 1947

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PEA ISLAND NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

MAY 1 TO AUGUST 31, 1947

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 reading accurately on the Refuge.

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

	Precipitation	Max. Temp.	Min. Temp.
May 1947	.34 Inches	91 Degrees	43 Degrees
June 1947	4.46 "	96 "	47 "
July 1947	4.44 "	98 "	64 "
August 1947	2.15 "	94 "	66 "
Total	11.39 "		
May 1946	2.08 "	86 "	37 "
June 1946	5.40 "	96 "	58 "
July 1946	15.74 "	96 "	64 "
August 1946	4.50 "	93 "	61 "
Total	27.72 "		

B. Water Conditions

The rainfall for this period was far below normal thus causing the water level in fresh water Pond # 1 to be below normal too. The exceedingly low rainfall of May caused the water level to drop until there was no water on the flats at all, only in Barrow Pits around the Dike.

This condition however did not last more than 30 days, May 15 to June 15, and did^N seem to damage the growth of the Aquatic Vegetation at all. Scattered rainfall began in June thus the water level started gaining and has continued to do so throughout the period. We had a gauge reading of 4.40 first of May, 3.60 15th. of June and back to 4.00 to 4.19 through August 31st. This reading now has the water level over most of the pond to an average depth of 4 - 6 inches. At least we have passed the danger period for the summer and with average amount of fall rains the feeding conditions for the birds will be excellent.

Pool # 2 is still being flooded periodically with salt water and the level is controlled by the Tides from the Sound.

II. WILDLIFE

A. Migratory Birds

1. Populations And Behavior

As usual the majority of the waterfowl had migrated by the beginning of the period. However, there were a small number of Canada Geese (300), Black Duck (200), Gadwall (75), Blue and Green Wing Teal (100) and Shovellers (25) using the area at the start of the period. These birds however were all gone by the first of May or first of June except the scattered few that remained to nest. It is estimated that we raised approximately 175 Black Duck and 250 Gadwall on the area this summer. This estimation is based on the number of nests and broods observed and allowing for rest of the area. It might be said that the writer feels this is a very conservative estimate because an actual count of 75 to 125 young biddied was made in the fresh water pond on different occasions. Too we would get a glimpse of one or two young ones in different sections scattered all over the area but the heavy vegetation would not let us see the brood. However, we would flush the mother bird and her actions plainly stated there were young around. All observations and counts revealed there were approximately 50 % more Gadwall than Black Duck. Last year we had 30 Gadwall and 400 Black. We do not know nor can we explain why the change this year. Of the 25 or 30 Teal that stayed most of the summer only one brood of 3 young was observed. Only 4 Canada Geese were observed during the summer. Red-breasted Mergansers were seen as late as last of June.

Although many of the Shorebirds had passed through the area during the preceding period there was a good return flight of several species and heavy concentrations during May and first of June. Greater Yellow-legs, Red-backed Sandpiper, Semi-palmated Plover, Semi-palmated Sandpiper, Dowitcher were plentiful with a few Willet, Ruddy Turnstone, Black-bellied Plover and Curlew.

The wading birds have been here in their usual numbers and several nests observed. An estimated 125 nests were observed in the rookery adjacent the Overnight Cabin with Black-crown Night Heron first in number, Louisiana Heron second, and Little Blue Heron third; 60 - 40 and 25 consecutively. Approximately 10 Louisiana Heron and 4 Little Blue's nest were found on the lump or outer Island with the Gulls and Terns. There were a few Snowy Egret around the rookery but no nests or young actually observed. We do believe however some of them were nesting.

Gulls and Terns continue to use the outer Islands for nesting. An estimated 250 nests of Gulls were observed, 25 Royal Tern and 25 Common & Least Tern. A photographer for the State news service visited the island with the writer and was supposed to furnish this office with a copy of the prints taken but to date we have not heard from him. Very disappointing because it is a beautiful sight to see the hundreds of Gulls and Terns circling, screaming and diving at any one who approached the Island. No Skimmers nesting on the area this year.

Osprey have been abundant and several Bald Eagle observed during the period.

2. Food And Cover

Although the rainfall for this period was light it was scattered and kept the vegetation growing so that at the close of the period we have an excellent supply of food over the entire area. Scirpus-americanus is well scattered over the entire area with Scirpus-robustus abundant in all marginal areas of the marsh and fresh water ponds. There is an abundant supply of Wild Millet and Setaria-magna (Giant Fox Tail) in the fresh water pond with some Sago-pondweed and Muskgrass. These latter species however suffered some from the low water levels during May and June. There are large patches of Smartweed scattered throughout the area including the higher levels in the fresh water pond. Spartina Alterniflora has done exceptionally well in the flats between the ponds and has now started in the flats just north of the north dike Pool # 2. A strip 200 yds. wide now runs from the Sound side to the Telephone line. We believe this was caused by closing the hole in the dike and stopping the flow of the Tide down the Flats.

Beach Peas are a solid mass on all the higher Sand Dunes and Dikes. Eel And Widgeon grass in the Sound is scattered over most of the shoals and will furnish a large amount of food for the birds.

3. Botulism

There has been no disease on the area this period therefore nothing to report.

4. Fur Animals

Muskrats are very common on the area with no change in numbers. An estimated 400 on the area.

Otter remain the same with an estimated 50 on the area. These animals have not shown much activity this period.

III. REFUGE DEVELOPMENT MAINTENANCE

A. Physical Development

1. Trucks

The new International pickup was received first of June and before any road use it was sprayed underneath on chasis and fenders with 3-M Undercoater, rubber base. All wheels removed and hubs, brake drums and inside of wheels painted.

Chevrolet pickup # I-17153 is in good mechanical condition and regular preventive maintenance carried on this period to keep it so. Motor tuned up and fenders welded and spot painted to try to keep down rust. However, the appearance is getting bad and now that it has had 7 years service in the salt water and sand we are fighting a losing battle. Rust is breaking through in several places around the cab, doors and fender joints.

Ford Stake #I-17291 is in fair mechanical condition but fenders and cab is eaten away with rust and the appearance is very bad. It is used mainly on the island in connection with the dragline work and rarely ever driven on the highway.

2. Boats

Boat FWS-186 is in good mechanical condition and has needed no repairs this period. It was dry docked and copper painted on the bottom with 2 coats of enamel on cab, deck and hull.

Boat FWS-800 was dried and painted 2 coats enamel this period.

3. Buildings

The Overnight Cabin is kept clean and in an orderly condition

It was painted inside and out and all screens renewed last period so has needed no repairs this period.

4. Dike Repairs

The dike repairs has continued to progress slowly but steadily throughout the period and there has been practically no lost time. 150 ft. of finished dike this period, 400 ft. of inside pool toe built up to elevation 5 ft. and 400 ft. of dig up from barrow pit to stock pile and then moved or handled once again toward position of dike. All finished dike sprigged. Two ramps over dikes of Pool # 1 were constructed this period with asphalt mixed with sand and steel mats laid in. Good stable ramps and the public well satisfied. The writer feels that it should be stated that with the present dragline, a 1/2 yd. machine, there is no doubt it will not complete the repairs this fiscal year. It is estimated that it will require two years from the present time to complete the job with a 1/2 yd. machine and then it would have to run without any lost time for repairs.

B. Plantings

2000 Diamond Back Terrapin were picked up from the Beaufort hatchery and planted in the various creeks scattered throughout the Refuge.

C. Collections

Nothing to report for the period, however, at the time of this writing we are collecting Scirpus-robustus seed and a full report will be included in the following periodic report.

IV. PUBLIC RELATIONS

A. Refuge Visitors

The only official visiting the area during the period was Regional Refuge Biologist, William P. Baldwin for a few days in August while the writer was on Annual Leave.

Mr. Harry T. Davis of the State Museum, Raleigh, N. C., first part of July for banding purposes of the Gulls but bands that were ordered did not come and he had to cancel his trip. Also Mr. Himmer of the State News Service for photographs of nesting Gulls and Terns. He had excellent chances for pictures but we have never heard from him.

B. Violations

Nothing to report. Everything quiet and orderly on the area.

Submitted by.

Charles M. Parker.
Charles M. Parker

Refuge Manager

Date submitted

9-10-47.

Approved,

3-1750
Form NR-1
(Nov. 1945)

WATERFOWL

Refuge Pea Island Refuge Months of May 1 to August 31, 1947

(1) Species Common Name	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Young Produced		(6) Total
	Number	Date	Number	Date	Number	Date	Broods Seen	Estimated Total	Estimated for Period
I. <u>Swans:</u> Whistling swan	None								
II. <u>Geese:</u> Canada goose			300	4/10	4	8/8/47			4
Cackling goose	None								
Brant	None								
White-fronted goose	None								
Snow goose	None								
Blue goose	None								
III. <u>Ducks:</u> Mallard	Resident						15	175	875
Black duck	Resident						30	250	300
Gadwall	None								
Baldpate	None								
Pintail	Resident				50	5/15			50
Green-winged teal	None						1	3	55
Blue-winged teal	None				25	5/20			25
Cinnamon teal	None								
Wood duck	None								
Red head	None								
Ring-necked duck	None								
Canvas-back	None								
Scaup	None								
Golden-eye	None								
Buffle-head	None								
Ruddy duck					20	5/20			20

IV. Coot

(over)

SUMMARIES

Total Production:

Geese.....

Ducks **436**.....

Coots.....

Total waterfowl usage during period **1000**.....

Peak waterfowl numbers..... **1000**.....

Areas used by concentrations..... **Fresh Water pond**.....

Principal nesting areas this season..... **Dikes and Fresh Water Pond # 1 and scattered through the Higher Marsh areas.**.....

Reported by..... **Charles N. Parker**.....

INSTRUCTIONS

- (1) **Species:** In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance.
- (2) **First Seen:** The first refuge record for the species during the season concerned in the reporting period, and the number seen. This column does not apply to resident species.
- (3) **Peak Concentration:** The greatest number of the species present in a limited interval of time.
- (4) **Last Seen:** The last refuge record for the species during the season concerned in the reporting period.
- (5) **Young Produced:** Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (6) **Total:** Estimated total number of the species using the refuge during the period. This figure may or may not be more than that used for peak concentrations, depending upon the nature of the migrational movement.

Note: Only columns applicable to the reporting period should be used. It is desirable that the Summaries receive careful attention since these data are necessarily based on an analysis of the rest of the form.

MIGRATORY BIRDS
(other than waterfowl)

Refuge Pea Island Refuge

Months of May 1 to August 31, 1947

(1) Species Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production		(6) Total Estimated Numbers
	Number	Date	Number	Date	Number	Date	Total Nests	total Young	
<u>Water And Marsh Birds</u>									
Cormorant	Resident				Observed occasionally Throughout period				75
Heron, Great Blue	Resident								35
Egret, American	8	5/5	500	8/8/47					500
Egret, Snowy	Throughout period		350	8/8/47					350
Heron, Black Crown	Resident						60	240	450
Heron, Louisiana	2	5/5	125	8/8/47			40		120
Heron, Little Blue	resident						25	100	150
<u>Shorebirds, Gulls And Terns:</u>									
Sandpiper, Least			200	5/5					1500
Sandpiper, Red-backed			3000	5/5/					4000
Sandpiper, Semi-palmated			5000	5/5					5000
Plover, Semi-palmated		5/5	3500	8/8					3500
Dowitcher			1000	5/5					1000
Yellow-legs, Greater			2000	8/8					2000
" " , Lesser			500	8/8					500
Gulls, Laughing			2000	6/1					2000
" " , Herring			300	5/5					300
Tern, Common			500	6/1					500
Tern, Least			250	6/1					250
Tern, Royal			75	6/1			25	50	75
Tern, Caspian			50	6/1					50

3-1752
 Form NR-2
 (April 1946)

UPLAND GAME BIRDS

161

Refuge Pea Island Months of May 1 to August 31, 1947

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
						Hunting	For Re- stocking	For Research		
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage				Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
	NOT APPLIABLE TO PEA ISLAND REFUGE									

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.

REFUGE GRAIN REPORT

Refuge Pee Island Refuge

Months of May 1 thru Aug. 31 1947.

(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.
None	None	None		None				None			

(8) Indicate shipping or collection points Wentoo, North Carolina

(9) Grain is stored at.....

(10) Remarks.....

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.

PEA ISLAND NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

JANUARY 1 TO APRIL 30, 1947

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PEA ISLAND NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

JANUARY 1 TO APRIL 30, 1947

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 reading accurately on the Refuge.

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

	Precipitation	Max. Temp.	Min. Temp.
January 1947	6.18 Inches	77 Degrees	22 Degrees
February 1947	.70 "	68 "	14 "
March 1947	3.48 "	71 "	27 "
April 1947	3.52 "	84 "	35 "
Total	13.88 "		
January 1946	3.52 "	73 "	27 "
February 1946	5.66 "	75 "	30 "
March 1946	.61 "	81 "	37 "
April 1946	1.96 "	87 "	41 "
Total	11.75 "		

B. Water Conditions

Due to the abundant but well scattered rainfall the water level this period was kept at an excellent height in fresh water pond # 1. The above normal rainfall of January kept the water level a little too high for best feeding conditions, but by February the rainfall slackened and the gauge reading dropped to an average reading of 4.35-50 and remained so through the entire period.

This reading kept the entire area covered to an average depth of 8-10 inches; excellent feeding conditions for the birds.

Pool # 2 is still being flooded periodically with salt water and the level is controlled by the tides from the Sound.

II. WILDLIFE

A. Migratory Birds

1. Populations And Behavior

It might be stated that waterfowl as a whole show a slight increase as compared to the corresponding period last year. This is in the duck population as the Canada Geese are estimated to be the same as last year, approximately 6000 during the period. As usual most of the geese have migrated by the close of the period but we have an estimated 300 at the end of the period. The Snow Goose population of an estimated 5500-6000 remained a few weeks longer than last year. The majority migrated by the last week of January, however, we had a small flock to remain through February with the last observation of 2 on February 26. The most noticeable increase in the duck population as compared to the corresponding period last year is in the Pintail, Shoveler and Teal. An estimated 2500-3000 Pintail, 1000 Shoveler, and 1500 Teal using the area during the period. Also, an estimated 2500 Black Duck, 500 Gadwall, 200 Baldpate and a scattered few of other species. Red-breasted Mergansers remain about the same. Approximately 25,000 during the period and an estimated 2000 at the close of the period. 2 Blue Geese were observed in the fresh water pond on February 17. The Black Duck are paired off and several have been noted nesting at the close of the period.

Water Birds, although never concentrating in large numbers have been here in their usual numbers. Whistling Swan show a slight increase over last year. Approximately 150 using the area with 20 remaining in the fresh water pond through February.

Marsh Birds including Coot have changed very little in number compared to previous years. Approximately 400 using the fresh water pond the entire period with an estimated 25 at the close of the period.

Shorebirds have been noted throughout the period and the spring migration which started in March is well under way with several species being very common. There has been an excellent flight of Yellow-legs. The writer witnessed approximately 500 in one flock the last week of April. Red-backed Sandpipers, Least Sandpipers, Dowitchers and several Black-bellied Plovers have been noted.

Gulls and Terns have been noted through the period but most of the winter population of Herring, Ring-billed and Great Black-backed gulls have left at the close of the period leaving only a small number of immature birds. The Laughing Gull, Least and Common Tern are arriving for nesting and summer population but no nests have been noted at the close of the period.

Hawks and Eagles have been abundant throughout the period with Osprey leading in numbers. A count of 25 may be made while passing through the Refuge area.

2. Food And Cover

Water conditions have been very favorable as well as a good food supply in the fresh water pond # 1. Sago pondweed, Muskgrass and Wild Millet furnished most of the food in the pond with Three Square around the margin and on the higher levels. This is evidenced by the fact the birds concentrated on the pond throughout the period. Through the marshes Spartina-alterniflora, Scirpus Robustus and Americanus (Three Square) supplied most of the food. Approximately 300 acres were Controlled Burned during the early spring and although severe weather conditions retarded the spring growth the areas have been used heavily by the Canada Geese. Widgeon Grass and Fel Grass was available in the sound at low tides and furnished much of the food. The writer accompanied Mr. Baldwin on a tour visiting the local fishermen regarding the comeback of these grasses and each one visited stated that there was much more of these grasses this year than they had seen in several years.

3. Botulism

There has been no disease of this nature on the area this period. The annual occurrence of a few cases of Parasitism during February and March were noted. Approximately 25 dead and dying birds were found during the entire period. This is believed to be 50 % of the birds affected because the writer searched the marsh regularly in an effort to keep up with it. Naturally the public seeing a few of the birds along the roadway tried to start a public scandal or problem but with the help of Mr. McNeill and his Elizabeth City, N. C. paper we held it in check.

4. Fur Animals

Muskrats continue to appear to be increasing. They may be seen most any time of the day and over most of the area of pond # 1. 30 houses were found in the pond alone. An estimated 400 on the area.

Otter also seem to be increasing. There are 8 to 10 slides on the dikes of each pond. One family of six were observed during the period. An estimated 50 on the area.

III. REFUGE DEVELOPMENT MAINTENANCE

A. Physical Development

1. Trucks

As stated in previous reports the Ford Pickup is broken beyond repair from years service in the salt water and now has been traded in on the new International pickup which we are to receive in June.

Chevrolet pickup I-17153 is in good mechanical condition and several maintenance repairs were placed on it this period. Rust is beginning to break through the body and fenders at all joints and seams even though it receives special care such as being sprayed underneath and greased weekly. It is a 1940 model and these 7 years service in the salt water and sand has had its effect. The motor was given a complete overhauling during the period: rings, bearings and valves. A new pickup bed was built including cross member supports.

Ford Stake I-17291 is in fair mechanical condition other than the brakes. It was condemned by Mr. Gustafson and is now used only for heavy loads of fuel around the dragline. It rarely ever leaves the island.

2. Boats

Boat FWS-186 is in good mechanical condition and has needed no repairs this period. Most years it would have been copper painted by the close of this period but because of unusual weather conditions, work program and the worm season will not start until July or August it has been delayed. It will be dry-docked, dried, bottom copper painted and cabin painted inside and out at the first of the following period. If funds are available it is planned to replace the portion of the cabin made up with canvass with ply wood and painted to match the rest of the cabin.

Row Boat FWS-800 was dried and painted two coats of paint this period.

3. Buildings

Considerable maintenance was done to the overnight cabin this period. It was painted inside and out including floors and all screen window frames and doors replaced and painted.

4. Dike Repairs

The dike repair has been progressing slowly but steadily this period. Quite a lot of lost time occurred during February and March due to severe weather conditions, however, the machine has moved more material this last month of April than it has any month in the preceding 15. The repair of the second break in the Dike began second week in January and since that time we have put up approximately 14-1500 ft. of approximately 50% of the outside toe. This was done so the water could be stopped from flowing back and forth with the tide through the break where the machine was working, plus 400 ft. of dig up from barrow pit into stock pile and rehandled into position of dike completing 250 ft. of dike with exception of inside pool toe. All area sprigged up with the machine. Approximately 10 man days sprigging has been used on barren spots around the finished dike of each pond. Materials and equipment are ready to construct the asphalt ramp over southdike of Pool # 1 but weather conditions has prevented construction this period.

B. Plantings

Nothing to report.

C. Collections

Nothing to report.

D. Controlled Burning Operations

Approximately 300 acres were controlled burned during the period. Weather conditions caused late spring growth but the areas did furnish quite a lot of green food for the birds and the areas were used heavily by the geese.

IV. PUBLIC RELATIONS

A. Refuge Visitors

Official visitors to the Refuge during the period were Mr. Krummes, Chicago office and Mr. Howard Miller, Regional Office, Atlanta.

Mr. Wolff and 4 students of Goldsboro, N. C. again visited the Area during this period for a bird study on February 23 & 24. Also, Mr. Robert Johnson, Phillips Wildlife Laboratory, Upton, Mass. on Feb. 17.

B. Violations

No arrests made and no one apprehended this period. We have heard no shots or seen any signs of trespass, all in all everything has been very quiet on the Refuge this period.

Submitted by,

Charles M. Parker
Charles M. Parker,

Refuge Manager

Date Submitted,

4-10-47

Approved,

HIGHLIGHTS OF THE YEARS ACTIVITIES

Due to the fact the feeding areas on which the birds concentrate for feeding and resting are so accessible to the general public while traveling through the Refuge, constant patrol and observation was performed through the winter months. Just prior to the Holiday season a request was made to the Game management agent for assistance and he sent in agents from Ga. and S. C. for a few days. As usual during their visit everything was quiet. After their visit and the Holiday season ended everything quieted down and has remained so to date.

All of our equipment is getting old and constant maintenance has been put forth during the year. It has been quite a problem but we have managed and kept it all going. With no Refuge Shop or equipment much of the work has been done in commercial shops.

Refuge signs have been replaced from time to time including repositing of the interior roadway with new 4 x 4 posts, painted and with new signs.

Under the supervision of Mr. Baldwin food study plots have been set up in the fresh water ponds and marked with concrete posts. Also, water salinity and acid tests have been made on the fresh water ponds and records filed for future use and study. It is planned to carry this out year after year.

Dike repairs which began a year ago January has been steadily pushed. This work is very slow due to the fact the drag-line is only 1/2 yd. capacity and practically worn out. Approximately 1400 ft. of finished dike including sprigging was completed last November. Machine repaired during December and operations resumed in January. We now have approximately 1200 ft. of outside toe and 250 ft. of dike completed including sprigging. Comparing the area completed against the area to be rebuilt it is estimated to take the machine we are now using 18-24 months to complete the repairs.

WATERFOWL

Refuge Pea Island Months of January 1 to April 30, 1947

(1) Species	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Young Produced		(6) Total
	Number	Date	Number	Date	Number	Date	Broods Seen	Estimated Total	Estimated for Period
I. <u>Swans:</u>									
Whistling swan			150	1/1	1	3/28			150
II. <u>Geese:</u>									
Canada goose			6000	1/15	300	4/30			6000
Cackling goose									
Brant <u>Black</u>	50	1/28			50	1/28			50
White-fronted goose									
Snow goose			5500	1/25	2	2/26			5500
Blue goose	2	2/17			2	2/18			2
III. <u>Ducks:</u>									
Mallard					6	3/28			6
Black duck	Resident		2500	1/15	400	4/30			2500
Gadwall			500	4/1	20	4/30			500
Baldpate			200	1/25	10	3/28			200
Pintail			2500	1/25	25	3/28			2500
Green-winged teal			1000	3/28	100	4/30			1000
Blue-winged teal			500	3/28	50	4/30			500
Cinnamon teal									
Shoveller			800	3/28	50	4/30			800
Wood duck									
Redhead									
Ring-necked duck	Rare - failed to								
Canvas-back			2000	1/28		Same			2000
Scaup			2500	1/28	10	3/28			2500
Golden-eye	Very rare				2	4/15			2
Buffle-head			1000	1/28					1000
Ruddy duck			100	1/28	4	4/30			100
Mergansers, Red-breasted			25,000		2000	4/30			25,000
IV. <u>Coots:</u>									
			400	1/15	25	4/30			400

3-1750
(July 1946)

(over)

Form NR-1

SUMMARIES

Total Production:

Geese _____

Ducks _____

Coots _____

Total waterfowl usage during period 50,708

Peak waterfowl numbers 50,708

Areas used by concentrations Fresh water ponds and
oyster shoals.

Principal nesting areas this season _____

Reported by Charles M. Parker

INSTRUCTIONS

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance.
- (2) First Seen: The first refuge record for the species during the season concerned in the reporting period, and the number seen. This column does not apply to resident species.
- (3) Peak Concentration: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned in the reporting period.
- (5) Young Produced: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (6) Total: Estimated total number of the species using the refuge during the period. This figure may or may not be more than that used for peak concentrations, depending upon the nature of the migrational movement.

Note: Only columns applicable to the reporting period should be used. It is desirable that the Summaries receive careful attention since these data are necessarily based on an analysis of the rest of the form.

Refuge Pea IslandMonths Of January 1 To April 30, 1947

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production		(6) Total
	Common Name	Number	Date	Number	Date	Number	Date	No. Colonies Nests	E. Estimated Number
I-WATER & MARSH BIRDS									
Comorant									400
Heron, Great Blue	8	3/28							15
American Egret	6	4/20							30
Snowy Egret	2								10
Heron Louisiana	2	4/20x			2	4/20			10
II. SHOREBIRDS, GULLS, AND TERNS									
Sandpiper, Least		4/1	1000	4/30					1000
Sandpiper, Red-Back			5000	4/30					5000
Willet	2	3/28	Scarce						25
Yellow Legs, Greater	4	3/28	1000						1500
Gull, Great Black B.					4	3/28			200
Gull, Herring			4000	1/20					5000
Gull, Ring-billed			200						500
Tern, Common	20	4/15							150
Tern, Least	50	4/15							100
Tern, Royal	1	?							50
Tern, Caspian	4	4/15							100

Refuge Pea Island

Months of January 1

to April 30

, 1947

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
<p>Not applicable to Pea Island Refuge</p>										

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

Refuge

April 30, 1947

(1) Species	(2) Density	(3) Removals	(4) Disposition Of Fur	Total Popula- tion
Muskrat	Marsh	No removals	Est.	400
Otter	"	" "	"	50

For Release

April 30, 1954

Page

Total -amount not	(2) Description of the	(3) Business	(4) Density	(1) Special
000	-	-	-	-
00	"	"	"	"

REFUGE GRAIN REPORT

Refuge Pea Island.....

Months of Jan. 1..... thru April 30..... 1947...

(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.
None	None	None					None				

(8) Indicate shipping or collection points.....

(9) Grain is stored at.....

(10) Remarks.....

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.
-



No. 1
Sand Fence repair
Sprigging with brush



No. 2
Sand fence repair



No 3



No 4.



These photos taken about three weeks after those on preceding page. Sand accumulated against brush is 10-20 inches deep

No 5



North Carolina State Bird Club
Visitors