PEA ISLAND NATIONAL WILDLIFE REFUGE
NARRATIVE REPORTS
SEPT. 1, TO DEC. 31, 1950

CONTENTS

PEA ISLAND NATIONAL WILDLIFE REFUGE

NARRATIVE REPOT

Sept. 1, to December 31, 1950

1, GENERAL

A. Weather Conditions

Data contained in thsi report was furnished through the curtesy of Mrs. Rosa Drinkwater manager of the local Meterological Station in Manteo to whom I am endebted therefor,

The tempatures for the period was somewhat lower than for the same Period a year ago going as low as 19 above during the month of Dec.compared with a low of 26 for last year,Rainfall was not normal ending up the period with a - 4.03 compared with a - 5.24 last year.

On Sept. 16, we had one of the most severe north easters recorded blowing for a period of three days without a letup and a velocity of from 25 to 40 Mi. per hour, Played havoc with our farming program, Also on Nov. 25, had what might be termed a storm,Westerly windy reached a velocity of 70 Mi. Per Hour and blew for about 6 Hours, Covered Pea Island with sound water to a depth of 18 to 24 Inches, Completly covering the grain field around the Overnight mink Cabin, and salting up the Spartina marshes to the point we have not been able to carry out the burning Schedule on time so far,The table below gives the Rainfall and tempatures for the period on a monthly basis.

	Precipitation			Temp.	
	Actual	Depart. From Normal		Max.	Min.
Sept.	5.70	X 1.59		93	50
Oct.	.76	X 2.49		83	54
Nov.	1.10	- 1.76		84	27
Dec	2.52	- 1.57		70	19
Tot.	10.08	- 4.03	Extremes	93	19

II Wildlife

A. Migratory Birds

1 Poup. and Behavier

The Refuge started out the period with a normal or above normal Population of of all the birds common to the area,Gulls. Terns, Skimmers, Herons, Egrets,and a host of shore birds to numerious to enumerate,Including Sandpipers plovers sanderlings and curlews, The fall migration began about the middle of Sept. and by Nov. 20 there was very few of the summer residents left on the refuge, Gulls being the exception, Herring and ringbill Gulls are still present on the Area in large numbers, Black Backed gulls made their first appearance on Oct. 20 having observed ~~thm~~ 8 near New inlet on that date, Gannets arrived on the 24th. in large numbers seen over 2000 just below Oregon Inlet C. G. Station on this date and they continued to increase until about Dec 15 when they reached a peak, The number has shewed a steady decline until at present there are only a few hundred.

Of the Waterfowl, Blue wing Teal were the first to arrive on the way south ward, On Sept 23, seen 47 in the north Pool, At their peak about 800 was using the Refuge, This Specie does not winter on Pea Island in great numbers, It has been noted that some days there will be several hundred present and within a day or two none can be found at all, Black and Pintail Ducks started arriving on or about Oct. 18,The first 40 Canada Geese were seen on the same date,Swan were later than last year the first 6 having been seen Nov. 6,all Species continued to increase until by the last of Dec, There was an Estimated 12 to 14000 Canada Geese, and about 24000 Ducks in the aggregate,Snow Geese started coming in on the 18th. of Nov. and by Dec 29, there was estimated about 12000 or about the same as last year, Red Head, Canvas Back and Merganser Ducks are very scarce this season, with not over 40 or 50 on the entire refuge.

The Snow Geese contrary to last years behavior have paid no attention to the cultivated fields, and only use the northen half of the refuge at all none having been seen south of New Inlet so far this season, This is strange as there are some very good stands of Alternaiflora along the sound side of the refuge on the south end that have not been touched while all the stands on the north end have been pretty well cleaned out as of this date.

The only unusual Species observed this season is one Barnacle Goose that came in on or about Nov. 28, and is still present using with a flock of Canadas, Several small flocks of Dovekies have been seen flying close inshore on the Sound side of the Island, And two of this Specie have bee picked up in the Road, Injured by flying into Telephone lines it is persumed, Both of these birds died within a few Hours,No razor Billed Auks have been seen so far this season.

2, Water Conditions

Both Pools have had considerable lower water levels this period than for the same time last year, The South Pool was Completly dry during some of the summer months with the north Pool having just enough to keep the Vegetation living, At no time in the last four months have the Guage readings exceeded the 4.00 mark, With the results that the South Pool produced next to Nothing in the way of food with the north Pool having an estimated stand of about 65%, This situation is of a serious nature but as both Pools depend entirely on Rainfall with no source of runoff supply there is very little that can be done to remedy the fault, On the other hand the Sound produced by far a better crop of Widgeon Grass, Sheal Grass,and some sage than last season the cause of this is not known unless the water in the sound was some what salter this fall than last,running about 62% Sea Strength During july Aug. and Sept.

3, Food and Cover

As stated above the continued low water levels in the two Pools was not favorable for the growth of all the Grasses and Pond weeds common to both of the Pools, in the water areas, The marginal edges of both ponds did produce an excellent stand of Smartweed, Three Square, and some Foxtail Millet, and waterfowl have utilized all of these to a great extent, The abundant crop of Vegetation in the sound comprises the major food supply for the waterfowl on Pea Island, and when conditions are favorable for feeding there can be seen Canada Geese, Black and Pintail Ducks feeding as far as three miles off shore.

The Island as a whole produced a normal or above normal ~~af~~ Crop of Beach Pea, Which up until now have been more or less an unknown quanity as to food value but it has developed that some of the Geese collected and sent to Pautaxent have been feeding on beach Pea extensively and this Item of feed may prove of more value that heretofore thought in the future.

The 52 Acres of Grain planted out Sept. 4-10 proved to be a great disappointment, The Northeaster mentioned under weather, Just about killed out the 26 Acres planted adjacent to the North Pool with salt Spray just 12 days after it came up, The 16 Acres planted around the overnight cabin was flooded to a depth of from 18 to 24 Inches during the high storm tide of Nov. 25, with salt water killing 99% of this field, This left only the 10 Acred in the south end of the south pool which did furnish a small amount of green Browse and have been fed down to a barren field at this time of writing, The greatest number of waterfowl observed feeding on all of the field at any one time did not exceed 500, My opinion is that we can write the farming program off as about a 80% failure, There is no question that the waterfowl will eat all we can raise, But the results of the last two seasons render it doubtful if we will ever be able to Produce much of any value by cultivation.

Cover is abundant for all Species needing cover, The brush type are used mostly by Black and yellow Crowned Night Herons, Sparrows, and Warblers, the only Species using the Spartina type to any extent are nesting Black and Gadwall ducks during the summer months.

4, Botulism and Lead Poisoning

None

5, Other Diseases

Up to Dec. 31, 1950 there were seen a total of 21 sick Canada Geese on the refuge, Compared with 5 for the same period last year, about half of this number was collected and either sent to Patuxent alive, Or dissected and the internal tracts removed and sent, This is about four times the numbers affected compared to last years figure and is on the increase, The critical period for a serious outbreak seems to be during the months of Feb. and March and there is no way of knowing what the future developments will be this year.

B, Upland Game Birds

With the exception of a small migration of doves coming through during Oct.(about 30 were seen) no other Species were seen.

C. Big Game Animals

None

D. Fur Bearing Animals

Muskrat that normaly use in the South Pool were forced to move to other locations durnig the summer and fall months, Due to such low water they are back in now in about the usual numbers is thought that the rat population over the Island as a whole are slowly on the increase they can be seen around both Pools and all along the Sound side of the Island where there is tide water creeks and pot holes, Estimated Population 700 to 800, No actual survey have been made to determine definite numbers present and figures quoted represents an estimate only.

E. Predators

The only Predatory Animals at large on Pea Island are a small number of common house cats in a wild state, Damages from this source is negligible.

III
Refuge Development and Maintenance

A. Physical Developments

During this period, 52 Acres of Grain was planted in three plots,Most of the work connected with this program was accomplished during the last period and was reported in Aug. Narrative report, But the actual seedeig was bagan Sept. 4,and completed Sept. 10,results of which have been covered under Item Food and Covered.

11, miles of fire lines were plowed putting in control lines making it possible to burn off certain marsh areas impossible to burn for lack of control in the past years, To date App. 160 Acres of marsh have been burned and another 300 is contemplated within the next two or three weeks, Burning conditions permitting, 400 Pounds of Italian Rye Grass seed have been applied to 16 Acres of this burned off marsh, The seeding was done on Dec. 28, and have not germinated or emerged yet, results of this project will not be known for some time yet.

B. Maintenance

Repairs to all but one of the Road runways over the dykes was one of the major repair jobs of the period, The old landing mats have rusted out to the point where two of the ramps became almost impassable, Repairs was made with such Materials as was available but is of a temporary nature at best, It is hoped to have the new landing mats earmarked for this project and now located at White River Refuge on hand and permanent repairs made within the next few weeks.

It was necessary to expend several man days removing drift from most of the roads (except within the two pools) following the storm of Nov. 25,which covered the most of Pea Island to a depth of 18 to 24 Inches with tide water from the sound side.

General Maintaneance was carried on on the trucks and tractors,The Skiff boat was hauled out cleaned and painted, Tractor and plow Equipment borrowed from Mattamuskeet was returned, and Corn hauled in to carry on the trapping and feeding program.

IV.
Economic uses

A. Removal of Fish

By special request free use permits were issued to six crews of commercial fisherman to net and remove Mullet fish from the north pool this operation was carried out during the week Sept 26, to 30, 21, fisherman participated in this operation under the supervision of Refuge personnel, 2592 pounds of Commercial fish was removed, Estimated 40% of the mullet in the pool at the time.

V,

Field Investigation and applied Research

A. Goose Disease Study

In cooperation with Mr. John Stennis assigned to Pea Island on the Goose study, Refuge Personnel have devoted a major part of their time during Nov. and Dec. to assisting him in the Trapping, Banding, Weighing and Collecting Program incidental to the Disease study being carried out at Patuxent, It is hoped that some concrete results will be realized out of this Program since so much time and effort have been put fourth, It is anticipated this study will continue throughout the present season.

VI

Public Relations

A. Publicity

at the request of the central office to assist in the Life Magazine's effort to obtain photographs of the New net Type trap in action used by the service in banding operations, Some very time consuming preparations were made, Such as well hidden blinds, Details to back grounds Etc. Mr. J. G. Zimmerman, Life Magazine Photographer arrived in Manteo on the afternoon of Dec. 20, and during the afternoon of the 22nd. succeeded in shooting a series of pictures covering the entire operation from the time we entered the blinds until the complete banding operation was finished, At my request Mr. Zimmerman agreed to furnish us with some of the more interesting shots, He seemed very well pleased with the whole setup and thought we got some very good takes, Some of which will be sent in along with this report, this Project should result in some good publicity for the service, In connection with some of the phases of its Scientific activitys.

B. Recreational Uses

Surf fishing was very good for the first three months of the period and attracted large numbers of sport fisherman along the surf line as far south as New Inlet some day 30 to 40 people could be seen trying their luck, At various times partys could catch as many as 100 pounds of fish during a days fishing, Most of the fish caught was Drum, (Channel Bass) Blue fish,with a few flounders,

Quite a few sightseers came in during Dec. to see the Snow Geese and other wildlife in general,and few were disappointed as several thousand snows can usually be seen from the road feeding along the flats.

C. Violations

None this Period.

Visitors This Period

Official

Mr. Ugene D. Eaton	9/7/50	Washington, D. C.
Dr. E. E. Wehr	9/14/50	Beltsville, Md.
Dr. Carlton E. Herman	9/14/50	Laurel, Md.
Mr. James Silver	9/30/50	Atlanta, Ga.
Mr. Ralph Harris	9/30/50	Wilmington, N. C.
Mr. Yates Barber	10/2/50	" N. C.
Mr. Howard A. Miller	10/14/50	Atlanta, Ga.
Mr. Lawrence S. Givens	10/14/50	" Ga.
Mr. Lester E. Scherer	10/28/50	" Ga.
Mr. Brewster, Naval Archt.	11/20/50	

Unofficial

Mr. J. G. Zimmerman	12/20/50	Washington, D. C.
Dr. A. D. Shaftesbury	12/28/50	Greensboro, N. C.

Approved: (sgd) Howard A. Miller

Regional Refuge Supervisor

January 12, 1951

WATERFOWL

Refuge Pea Island Months of Sept. 1, to Dec. 31, 19~~X~~ 50

(1) Species	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Young Produced		(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Broods Seen	Estimated Total	Estimated for Period
I. Swans:									
Whistling swan	8	11/6	82	11/25					82
II. Geese:									
Canada goose	40	10/18	12-14000	11/25					14000
Cackling goose									
Brant									
White-fronted goose									
Snow goose	26	11/17	12000	12/29					12000
Blue goose	1	11/1	1	Collected, 12/5					1
III. Ducks:									
Mallard	3	10/18	60	12/29					100
Black duck	Res.		6800	12/29					8000
Gadwall	Res		700	12/10					1000
Baldpate	8	10/18	30	12/10					50
Pintail	38	10/18	4800	12/10					5000
Green-winged teal	3	10/18	200	11/26					250
Blue-winged teal	47	9/23	800	10/26					1000
Cinnamon teal									
Shoveller	4	10/18	300	12/29					500
Wood duck									
Redhead									
Ring-necked duck	60	10/28	500	12/29					800
Canvas-back	8	12/2	30	12/29					30
Scaup	28	10/28	4000	12/29					4000
Golden-eye									
Buffle-head	3	11/3	80	12/29					150
Ruddy duck	38	10/28	1000	12/29					1200
IV. Coot:	2000	10/28	4500	12/6					6000

3-1750

SUMMARIES

Total Production:

Geese None

Ducks None

Coots None

Total waterfowl usage during period 54,365

Peak waterfowl numbers 49,882

Areas used by concentrations Entire Refuge Area.

Principal nesting areas this season None

Reported by Lewis B. Turner

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.

2338

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge Pea Island Months of Sept. 1, to Dec. 31, 1950

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Cormorants	65	9/25	100	9/30						250
Egrets American			22	9/30						25
" Snowy			36	9/30						50
Herons, Great Blue			14	9/30						20
" Louisanna			24	9/30						35
" Yellow Crowned Night Res.			158	9/30						200
" Black Crowned " Res.			200	9/30						300
Grebe, Horned	6	9/26	50	12/29						50
" Pie Billed	15	9/26	100	12/29						100
Loons, Common	2	10/8	20	12/29						50
II. Shorebirds, Gulls and Terns:										
Yellow Legs Greater			200	9/1						300
Plovers, Black Bellied			75	9/30						100
Sandpipers, Western			350	9/1						500
" Semi-palmated			500	9/1						1000
" Redbacked			2000	9/1						2500
Terns, Royal			800	9/1						1000
Skimmers, Black			500	9/1						500
Gulls, Herring			3000	9/26						4000
" Bonapartes			75	9/26						200
" Ring Bill			200	9/26						350
Gannets	800	10/28	2500	11/10						3000
Rails, Clapper	Res.		200	12/29						200

(over)

(1)	(2)	(3)		(5)	(6)
III. Doves and Pigeons:					
Mourning dove	About 30 Seen on the refuge During the month of Oct				
White-winged dove					
IV. Predaceous Birds:					
Golden eagle					
Duck hawk	From three to five present since Oct 15.				
Horned owl					
Magpie					
Raven					
Crow					

Reported by Lewis B. Turner

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 Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

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

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

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

(6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Pea Island Months of Sept to Dec. 31, 19~~4~~ 50

(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 specifioally requested. List introductions here.
Does not apply To Pea Island										

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 Calendar Year 1950

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re-stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
Does Not apply to Pea Island Refuge														

Remarks:

Reported by [illegible]

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 <u>each</u> <u>species</u> 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.

116008

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Pea Island Year ending Dec. 31, 1950

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(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 Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	
Muskrat	700 Acres	1½	None removed this Period											

* List removals by Predator Animal Hunter

REMARKS:

Reported by L. B. J.

INSTRUCTIONS

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

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

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

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

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

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

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

116007

Form NR-5

DISEASE

1616

Refuge Pea Island Year 1949

Botulism

Period of outbreak Nov. 26 to ?

Period of heaviest losses

Losses:

	Actual Count	Estimated
(a) Waterfowl	21	35
(b) Shorebirds		
(c) Other		

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

Areas affected (location and approximate acreage)
Over the entire refuge, 5800 Acres

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

Condition of vegetation and invertebrate life

Remarks

Lead Poisoning or other Disease

Kind of disease Unknown

Species affected One, Canada Geese

Number Affected

Species	Actual Count	Estimated
One	21	35

Number Recovered 8 Collected for Scientific Research

Number lost

Source of infection Unknown

Water conditions Favorable

Food conditions Favorable

Remarks Reoccurrence of Disease which frequently occur on Pea Island

3-1756
Form NR-6
(April 1946)

FISH

Refuge Pea Island Year 19X 50

Species	Relative Abundance	Sport Fishing		Commercial Fishing		Restocking		Number removed for Restocking
		Man days Fishing	Number Taken	No. of Permits	Pounds Taken	Number Stocked	Area Stocked	
Mullet	Medium	Est. 30	XXXXXXXX	6	2592 Lbs.	Out of north Pool, Sept. 26-30		

REMARKS:

Form NR-7

PLANTINGS
(Marsh - Aquatic - Upland)

Refuge Pea Island Year 19~~4~~ 50

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
Rye Grass, (Italian)	South Pool	25 Lbs Per Acre	16 Acres		12/28/50	Not up yet		
This planting was done on a burned over marsh. Area was burned Dec. 26, and seeding was done Dec. 28.								

TOTAL ACREAGE PLANTED:

Marsh and aquatic ~~App. 16 Acres~~
Hedgerows, cover patches _____
Food strips, food patches _____
Forest plantings _____

1618

3-1758
Form NR-8
(April 1946)

CULTIVATED CROPS

Refuge **Pea Island** Year 194~~1~~ **50**

Permittee (If farmed by refuge personnel, so indicate)	Permit No.	Unit or Location	Crops Grown	Avg. Yield per Acre	Permittee's Share		Government's Share or Return				Compensatory Services, or Cash Revenue
							Harvested		Unharvested		
					Acres	Bu. Harvested	Acres	Bu.	Acres	Bu.	
Farming Operation Carried on by refuge Personnel		**central part of Refuge 3 Units**	**Barley Rye**	**Green Browse only**	**52**						

Summary of Crops Grown:	Crop	Acreage	Permittee's Share Acres	Permittee's Share Bushels	Government's Share Harvested Acres	Government's Share Harvested Bu.	Government's Share Unharvested Acres	Government's Share Unharvested Bu.	Total Revenue
									$

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. thru Dec. 1950

(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, Yellow	25 Bu.	175 Bu.				75 Bu.		125 Bu.		Feed and Trapping	

(8) Indicate shipping or collection points Shipped to Nattamuskeet Refuge

(9) Grain is stored at Part at Pea Island Rest at Nattamuskeet

(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.

Form NR-9

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

1620

Refuge Pea Island Year 19X 50

Species	Collections				Receipts		Total Amounts on Hand	Amount Surplus
	Amount	Date or Period or Collection	Method	Unit Cost	Amount	Source		
No Collections this Period.								

3-1760
Form NR-10
(April 1946)

HAYING AND GRAZING

Refuge Pea Island Year 19X50

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
Does not apply to Pea Island Refuge									

Totals:

Acreage grazed..... Animal use months..... Total income Grazing.....

Acreage cut for hay..... Tons of hay cut..... Total income Haying.....

PEA ISLAND NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

MAY 1, to Aug. 31, 1950

CONTENTS

I. GENERAL

A. WEATHER CONDITIONS

The weather data contained in this report was furnished by Mrs. Rosa Drinkwater, Manager of the metrological Station located in Manteo, This information does not necessarlly reflect weather conditions on Pea Island since the records show that for this period, there was 22.80 inches of rainfall while the Pond levels on Pea Island remained almost constant.

Precipitation				Temperatures	
May.	Actual	Normal	Dept. from Normal	Max.	Min.
June	6.93	3.52	x 3.41	90	42
July	4.54	5.30	- .71	93	49
Aug	10.20	6.26	x 3.92	95	64
	1.13	5.47	- 3.32	91	62

Except for abnormal rainfall during july, this summer has been about normal, No hurricanes, altho one missed this Coast by about 100 miles on Aug 19th.and brought in heavy seas but did no damage to the Refuge only slowed up Surf fishing for a week or so.

B. WATER CONDITIONS

The Refuge started out this period with excepticnally low water levels in both ponds, Guage readings beings N. Pond 3.88 S. Pond 3.58 as of May 1st. and remained almost constant throughout the period, there was not suffecient water to maintain adquate plant growth in the ponds proper,and at this time the south pond is in a very poor condition with the north pond being in some what better Condition as to aquatic growths.

On Aug. 18-19 a very through survey was made by boat of the Sound waters adjacent to the Refuge and observations made at thattime showed the conditions to be in about a normal Status compared with last years survey, Salinity test of July 1st. showed the sound waters to be 64.2 North Pool 22.0 South Pool 2.6

C. FIRES

None this period.

1,POPULATION & AND BEHAVIOR

AS of may 1st. there were app. 160 Canada geese still present on the refuge, this number continued to decrease until by Aug. 20th. there were only about 20 left,6 of which were collected and shipped to Dr Herman at Laurel Md. For Scienctific purposes,all of which seemed to be in fair condition.

Nesting Activities showed some varation from last sesson according to the records, Gadwall's showed an increase, With a count of 429 this season compared with a count of 325 for last season,Black ducks showed a decrease with a count of 66 this season compared to 115 last Season, Blue wing Teal did not nest on the Refuge this spring, One pair having been observed for about 10 day and was seen no more.

According to the records the Migration of Gulls, Terns,and Shore Birds was about 10 days late,Most of them coming in during the fisrt two weeks of May enstead of the last week of April,The following Species were at their peak during this period,Herring Gulls, Laughing Gulls,Common Terns,Red backed Sand Pipers, Ruddy Turnstones,Semi-palmated Sandpipers,and other Species, With Dowitchers, Yellowlegs, Willets,and Hudsonion Curlews following close behind,The following Species are known to have nested on the Refuge,Royal, Common. and Least Terns,Laughing Gulls,Little Blue, Little Green and Black crowned Knight Herons, Willets, Night Hawks, and Clapper Rails.

One of the unusual events of the period were the arrival of 8 Avocets on or about May 20th. in the South Pond and continued to use the Area until Aug. 20,when they disappeared and have not been seen since, It is not thought they nested as they showed no signs of pairing off and stayed close together in one flock for the entire period, The most abundant Species were Red Backed sand Pipersand semipalmated Sandpipers,with Hudsonion Curlews showing quite an encrease over last year.

2.FOOD AND COVER

Due to low water conditions throughout the period, Vegetative growth are not up to expectations in either of the ponds and leave a lot to be desired, altho the marginal edges of both ponds show a remarkable crop of Smpus Rob, Amer.and Smartweed,a very complete survey of both ponds on Aug 19th. showed the South Pond suffering most, with a very sparce growth of pond weeds and grasses, and the north pond being about 60% covered with vegatation with a density of about 40% it is thought that if sufficent rainfall can be had before Nov. 1st. both ponds may recover and be in good Condition by the time of fall Migration, a very Comprehensive survey was made of the waters in the Sound Areas east of the Refuge on Aug 18th. and found the Bottom covered with Vegetative Growth far beyond expectations and by far better than last years Stand, as it sums up at present, It seems that our ponds will not be as good as last season but that the sound area will be better, barring Hurricanes we should have an adquated supply of food this season.

Marginal edges of both ponds have a very good crop of Spartina Patens, Rushes,and some weeds of various species, But seems to be an ideal habitat for nesting ducks,About 90% having nested on the burm of the dikes and adjacent Marsh mostly in Patens type,

3,BOTULISM AND OTHER DESEASES

None present on the refuge this period.

4,FUR BEARING ANIMALS

Fur bearing animals on the Pea Island Refuge consist of Muskrat, and Otter, The Rat Population seems to be about Static with an estimated population of about 800, Otter are seen in numbers of from 1 to 8 in a bunch at times, they range very widely and it is hard to get an estimate that is thought to be anywhere near accurate, Present estimates are about 35 to 40 for the Refuge Area.

III. Refuge DEVELOPMENT AND MAINT.

A. PHYSICAL DEVELOPMENTS

During this Period Refuge personnel Cut, Hauled and dug in Myrtle Brush app. 5 Ft.high on 900 Ft.of sand fence two rows solid line.Thus completing repairs to the sand fence at all low places within the north pond,This job required 23 man day of labor.

Also during the period We pulled up sorted out and transplanted App. 12000 Giant Smartweed plants Portoricense along the south and east side of the South Pool in four rows 1½ miles long.

a Small tractor was transfered in and work was began immediately clearing off the Myrtle and other brush on App. 26 Acres of new ground for farming purposes this fall, Completed this and double disced the tract plus another 25 Acres laying along the east side of the North Pond having in all app. 50 Acres, at the present time all the fertilizer have been distributed on all but about 6 acres and seeding operations will be next in order weather permitting.

Maintanence of Equipment still remains one of the top heavy burdens to be contended with on Pea Island, Still maintain it is a never ending process and with all the effort put fourth by the personnel Equipment seems to just rust out and there is very little that can be done about it, The Boat Red Head The II. was pulled and the bottom coppered painted, Also the Hull and Cabin, During the month of june and will have to be hauled out again in Sept.

B. COLLECTIONS

None this Period.

IV. PUBLIC RELATIONS

A. VIOLATIONS

None for the period.

B. VISITORS, (OFFICIAL & UNOFFICIAL)

Official.

Mr. William P. Baldwin	7/1/50	Portwenthworth Ga.
Mr. S. Rudolph	7/1/50	Mattamuskeet Refuge
Mr. Howard A, Miller	7/20/50	Atlanta, Ga.
Miss Patricia Miller	7/20/50	Atlanta, Ga.
Mr. Lawrence S. Givens	7/20-23/50	Atlanta, Ga.

Unofficial

Mr. &Mrs. Larry White	7/3/50	Panama City, Fla,
Mrs. Georgie Moore	7/3/50	" " "
Mrs. G. A. Baker	7/31/50	Moultrie Ga.

WATERFOWL

Refuge Pea Island Months of May 1, to Aug. 31, 194~~X~~ 50

(1) Species	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Young Produced		(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Broods Seen	Estimated Total	Estimated for Period
I. Swans:									
Whistling swan									
II. Geese:									
Canada goose			160	May 1,	21	Aug. 25,			40
Cackling goose									
Brant									
White-fronted goose									
Snow goose									
Blue goose									
III. Ducks:									
Mallard									
Black duck			200	May 17,			11	66	125
Gadwall			550	July 28,			61	490	500
Baldpate									
Pintail									
Green-winged teal									
Blue-winged teal	Thought to be Mig.		35	Aug.13,	XXXXXX,	Aug. 13,			
Cinnamon teal									
Shoveller									
Wood duck									
Redhead									
Ring-necked duck									
Canvas-back									
Scaup									
Golden-eye									
Buffle-head									
Ruddy duck									
IV. Coot:			50	May 1,	8	June 20,			15

3-1750
(July 1946)

(over)

Form NR-1

Total Production:

Geese _____

Ducks 615

Coots _____

SUMMARIES

Total waterfowl usage during period 680

Peak waterfowl numbers 995

Areas used by concentrations Fresh water ponds

Principal nesting areas this season Spartina Marsh and Burm of Dikes

Reported by Lewis B Turner
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.

2338

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge Pea Island Months of May 1, to Aug. 31, 1950

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Egret American	2	5/2/50	28	6/11/50						40
" Snowy	1	5/2/50	35	6/11/50						65
Pelicans Brown	26	5/2/50	26	5/2/50						26
Grebes, Piebill	2	8/23/50	2	8/23/50						2
Rails, Clapper	Seen Throughout the season			?						?
" Sora	0									0
Herons, Great Blue	9	7/14/50	14	8/23/50						20
" Lou.	4	5/1/50	35	7/14/50						50
" Little Blue	2	5/8/50	65	7/14/50			?	?	25	75
" Blacked crowned	Seen t-O season		135	7/14/50			?	?	60	150
"										
II. Shorebirds, Gulls and Terns:										
Plover, Upland	1	8/18/50	1	8/18/50						1
" Semi-Pal.	300	5/11/50	300	5/11/50						400
Turnstone, Ruddy	1500	5/11/50	1500	5/11/50						2000
Willets,	30	5/11/50	90	6/28/50						100
Yellowlegs,	50	5/11/50	1200	6/28/50						1400
Dowitchers,	20	5/11/50	800	6/28/50						1000
Gulls, Herring	2000	5/11/50	2000	5/11/50						1200
" Laughing	1500	5/11/50	1500	5/11/50				?	?	900
" Bonaparties	100	5/11/50	400	6/28/50						500
Terns, Royal	25	5/11/50	600	6/28/50				?	300	800
" Comm.	12	5/11/50	300	6/28/50				?	75	400
" Least	30	5/11/50	600	6/28/50				?	150	1000
Skimmers, Black	7	6/20/50	250	8/14/50				?		300
Knots,	5	5/11/50	100	5/20/50						150
Sandpipers, R. B.	1000	5/11/50	2000	6/28/50						2500

(over)

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

Reported by.....

INSTRUCTIONS

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

(2) First Seen: The first refuge record for the species for the season concerned.

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

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

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

(6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Pea Island Months of May 1st. to Aug. 31, 19~~4~~50

(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 specifioally requested. List introductions here.
	None									

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

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

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

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

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

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

Form NR-7

PLANTINGS
(Marsh - Aquatic - Upland)

Refuge Pea Island Refuge Period May 1, to Aug. 31 Year 194 50

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
Giant Smartweed Portoricense	South Pond	3 Ft each Way	Border line 15 Ft. 1½ Miles	12000	May and June	98%		

TOTAL ACREAGE PLANTED:

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

1618

3-1570
NR-8a

REFUGE GRAIN REPORT

Refuge Pea Island Months of May 1st. thru Aug. 31, 1950

(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 on Cobb	25 Bu.		25 Bu.					25 Bu.		Feed	
Barley (Wong)		40 Bu.	40 Bu.					40 Bu.	Seed		
Rye (Abruzzi)		50 Bu.	50 Bu.					50 Bu.	Seed		
Rye Grass		500 lbs	500 lbs					500 lbs	seed		

(8) Indicate shipping or collection points Baltimore Md.

(9) Grain is stored at Refuge Cabin

(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.

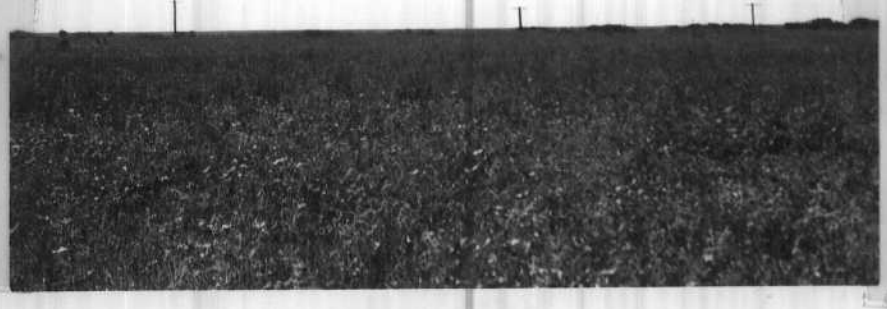
(10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

No. 1

Showing one of the nine places where repairs to Sand fence were made with brush dug in to hold it intact, Beach paa coming along the slopes

No. 2

Part of the farming Area along the east side of the north pond before Discing,



No 3,
Same as No. 2, after double discing, Fertilizer applied after

No. 4,
One of the dark spots encountered in the farming operation

PEA ISLAND NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

JANUARY 1,TO APRIL 30, 1950

Contents

PEA ISLAND NATIONAL WILDLIFE REFUGE
NARRATIVE REPORT

JANUARY 1,TO APRIL 30,1950

I.GENERAL

A. Weather Conditions

The weather for the period was above normal for temperature,Jan. and and feb.being almost like spring with a far below normal rainfall,March came in somewhat colder with more rainfall but still below normal and continued colder thru the first two weeks of april with very little rain,the last two weeks of april warmed up and had very nice weather but very little rain,and at the present time it continues very dry,with the ponds reflecting this condition, having aguage readings of 3.68 and 3.82 compared with a high of 4.25 and 4.40 for the same day last year.

The table below shows the Precipitation and the Max. and Min. temperatures for the first three months of the period, Data for april not being available until about the 5Th. of may.

	Precipitation		Temperatures	
	Actual	Dep. from Normal	Max.	Min.
Jan.	1.20	X -2.16	77	36
			XX	XX
Feb.	1.48	-2.33	74	25
Mar.	2.68	- .90	70	22
Totals	5.46	-5.39	77	22

Data for this report was obtained from Mrs. Rosa Drinkwater who keeps meterological records in Manteo

B. Water Conditions

Water levels in the two impoundments was satisfactory for the first two months of the period but due to a continued drought the ponds showed a steady decline and the last two months was not so good from a waterfowl standpoint,Altho the fowl had about exhausted all the food there was by this time,It is hoped that rainfall will be sufficient to keep the levels up during the summer months so that any Black or Gadwall ducks nesting will have adequate supplys of food and water.

II WILDLIFE

A. MIGRATORY BIRDS

1,Population and behavior

The Refuge started off this period with about anormal population of Waterfowl, With an estimated 12000 to 14000 Canada geese 12000 Greater Snows and 20.000 Ducks of all species, With 115 Swan by actual count,The only noticable difference in behavior as recorded for the same period last year,Was the fact that all the Greater Snows Stayed upon the refuge in mass until Jan. 6th. When they all left in one night except 26 Immatures which stayed until April 24th.when last seen.

It was noted that while the Snow geese was present that they confined all of their feeding activities to the North Half of the refuge, only one small flock having been observed south of New Inlet during the entire season.

As usual they showed a decided preference for Alternifiora and fed out large areas of this before they moved over into the two ponds and started on Scirpus Am. and Spartina Patens which before they left muddled out a good percentage of the marginal edge of both Ponds.

The Canadas used over the entire Area, But with ideal weather and tide conditions during the months of Jan.and Feb. over 80% of them confined their feeding to the sound with the burned off areas accounting for 1500 or 2000 at times more and at times less but in such numbers that they kept the burns browsed off close to the ground, It was interesting to note that a burn that occured North of Oregon Inlet on the same Vegetative type and at about the same time of our burns but was not utilized by the geese,Showed a regrowth of 4 to 6 inches while the areas we burned was at the same time kept browsed downn to the ground,This indicates that particular attention should be directed toward an entensive burning program in the future.

Ducks used over the refuge as a whole including the sound area and at times thousands of Pintails could be observed feeding right along with the canadas in the shoal waters of the sound,While the blacks seem to prefer the Ponds, Tide water creeks, and marshy areas they were also seen feeding upon the Dry Spartina sand flats and dunes in good numbers it is not known what the source of food was in these Areas as there was no green vegetation available there, Teal,Gadwall, Shovellers and some greater Scaup, Used XX in the ponds in greater numbers than elsewhere, and by the last of Jan. most of the food in them was exhausted.

Compared to last years records Red Breasted Mergansers was non-existent only having seen a few hundred in the deep water around Oregon Inlet,Red Head and Canvas backs was also very Searce,Althe the Commercial fishermen reported there was several thousand Red Heads using in the deep waters of the Sound south of Roanoke Island none was observed upon the refuge.

The Spring Migration started in the week of Feb.26th. when about half of the population of Canadas and a large number of ducks left on the full moon light nights,The Population of Geese and ducks remained about static them for another month

1, Population and behavior, Cont.

When on march 24th.to 27th. Another migration took place with almost all the Canadas and ducks leaving,There was also noted several thousand Geese heading North off Shore on the Atlantic side coming from points somewhere south of Pea Island at the same time,Thru the month of april there has been just a mattering of Geese some 200 or more and about 400 or 500 black and gadwall duck present, It is thought that the ducks are nesting but no actual nest have been found to date.

Shore birds continued Searce throughout the period with only a few Black bellied plover and semi-palmated sand piper remaining through the winter, On feb. 14th a transient flock of some 2000 Red backed sandpipers came in but was gone the next day,Willets, Yellow legs,sandpipers and kindred species are just starting to come in and no actual counts or estimates are available at this time

Great black backed Gulls remained upon the refuge for the entire period, With an estimated population of 250 Having counted 184 in one days count.

There occured two unusual visitors to the refuge this period, On Jan. 17th. a Razor Billed Auk was picked up along the beach just south of Oregon Inlet by a State Highway Patrolman and brought in for identification and then released,Another Auk of the same Specie was picked up just north of New Inlet on April 4th,by Mr. Douglas E. Wade and his group of Students, This bird was dead when found but in very good condition one of the students made a skin of it,On April 24th. Mr Phillips and my self Observed a total of 17 Arctic Terns flying over the South Pond, They were in groups of 2 and 3 and was all heading north.

Herring and laughing gulls,Some royal terns,And afew herons and Egrets have arrived but no counts have been made on these as yet.

2, Food and Cover

Althe the refuge started out the winter season with an excellent growth of various pond weeds and other aquatics in both pools and a fair to good crop of Scirpus Robustus and Am. also smartweed, The start of this period found the food supply pretty well depleted and had it not been such a favorable weather during Jan. and Feb. for the waterfowl to feed in the sound it feared there would have been a serious shortage, As it was by Feb. 10th both pool Areas was completly barren,with the results that the geese and ducks had abandoned it looking elsewhere for food, It was during these two months that the supplemental feeding Program was carried out, app. 55000 pounds of corn was hauled out and scattered in a total of nine different places,Strange to say some of it was ~~[illegible]~~ not eaten althe,it was placed in places known to carry a concentration of waterfowl,From the experience gained in this operation,it is the opinion of the writer that a feeding program of this kind is not the solution to any food shortage that might occur at Pea Island.

3. Botulism

None Present,

4. Otehr diseases, Lead Poisoning

In connection with outbreaks of an unknown Disease that have played havoc with the Canada Geese here on Pea Island in past seasons,A diligent effort was made throughout the period to collect Sick geese, Droppings,and pottions of tissues,for submission to the Bureau of Animal Industry at Beltsville, Md.for scientific study.

Six different collections of droppings was made, a total of 32 Geese was shipped or carried by truck, About half of this number was in the last stages of the Diseases and several of them died in transit.

There have been no widespread outbreaks of the Disease this Season compared with previous years, Mr. Phillips and myself have maintained a close check and have combed the Island repeatedly for sick Geese,a total of about 40 have been observed that were known to be affected,This number it is thought represents at least 75% of total number affected on the Island this season,An Area canvassed last year by Mr. Douglas E. Wade and the group of college Students was canvassed this year by the same group at the same time of year last year they found 59 dead geese carcasses this year over the same Area they did not find any, It is hoped that the cause of this Disease can be located and steps taken to prevent another outbreak in the future.

B. Big Game Animals

None on the Refuge.

C. Fur Bearing Animals

In the past two years there have been several attemps made to collect anumber of Muskrats, For the purpose of stocking two ponds on Cape Romain Refuge, Past efforts have met withlittle success but by the modification of the traps on hand and the construction of others and a lot of hard work we succeeded in trapping and otherwise catching 22 Rats which was carried to Cape Romain by truck,They all arrived in good condition and at last report was doing fair,In trapping the rats there was another angle investigated and it is the opinion of the writer that the estimate on rat population should be upped to at least 750 or 800 rat for the refuge as a whole.

Otter seems to be slowly on the increase but due to the extended range of these animals it is hard to arrive at any thing like an accurate figure on total population but agood guess would be between 30 and 35.

there is known to be at least one *on the Refuge Area as one was caught in one of the Duck traps on Feb. 14th.and later released in good condition and has not been seen since.

*Nutri

III Refuge Development and Maint

A.Physical Development

Since the completion of the dike around the north Pond there have been no actual development work accomplished this period,Except the Maintenance phase.

The TD-14 Tractor and Dozier was brought up from Mattamuskeet andseven low places in the sand fence along the east side of the north Pond was brought up to average grade,Brush is being dug in to hold this material as rapidly as possible, But is not completed at this date, It is planned to Sprig these places with Spartina Patens and give it a start with Nitrogen as soon as possible.

One runway was repaired where the road crosses the south pond Dike, But this operation was of a temporary nature, since it will take new landing mats to even make a semi-permanent job, This item was covered in this years budget estimate.

Final work was completed on the Installation ofa Kohler light plant, Water pump,hot water gaugx Heater,Gas Range, Refrigerator, Toilet, Kitchen sink, Etc. in the C.G. Building on Pea Island,The largest single Item in this job was the replacement ofPipes,Valves Guages,and other plumbing fixtures that was removed prior to the acquisition of the Bldgs. by our service, There remains a lot of maintenance work to be done on these Bldgs. for which there was no funds available this period.

Various Repair was made to both of the trucks, It is a never ending process to maintain these trucks under the condition in which they operate and is one of the major problems to contend with at Pea Island,Details of which will not be gone into at this time.

B. Fires, Wild.

None occured on the refuge this period.

C. Controlled burning program

Separate Report attached.

D. Farming and other plantings.

No actual farming has been carried on this period but plans are well under way for the fall program.

200 pounds of wild Millet seeds was sown out on the marginal edge of the south pond where we succeeded in burning off a narrow strip of Cattail and other Species close along the water edge,The seeds were applied at the rate of 10 pounds per acre planting about 20 Acres, This operation was more or less an experiment, But was carried out with the thought in mind to get production of a crop of Millet before the Cattail could get a spring growth started to any extent, Results are doubtful.

IV Economic Uses

None on the Refuge for this period.

V Field Investigation
Applied Research

Mr. Douglas E. Wade and a group of five Student member of the Dartmouth Ecologicel Society paid their annual visit to Pea Island (March 25, to April 4,) and continued their studies of the Muskrat Population, Bird life in general, and succeeded in collecting several species of small rodents etc. Have not recieved any report From Mr. Wade regarding their studies up to this date but it should have some valuable Information when it is recieved, We Owe Mr. Wade and the group our thanks for the assistance they gave us in the Murkrat Trapping program.

VI PUBLIC RELATIONS

A. Recreational Uses

The use of the Refuge for recreation purposes have been limited to a few partys of Spoit fishermen around Oregon Inlet with very poor results, And one group of members of the Carolina Bird Club on a bird study tour they were not disappointed, And seemed to think Pea Island was a wonderful Refuge.

B. Law Violations

It is very evident that the assignment to Pea Island of a full time patrolman living on the Refuge has solved the Problem of Poaching, As there has been no law violations of any kind for this period.

C. Refuge Visitors

Official		
Mr. Richard E. Griffith	Washington,	D. C.
Mr. Frank Dufrense	"	D. C.
Mr. Robert Hines	"	D. C.
Mr. Lawrence S. Givens	Atlanta,	Ga.
Mr. William P. Baldwin	Portwentworth,	Ga
Unofficial		
Mr. Stuart Critcher	Williamston,	N. C.
Dr.& Mrs A. D. Shaftesbury	Greensboro,	N. C.
Mr. & Mrs. George A. Smith	"	N. C.
Mr. & Mrs. Floyd H. Craft	"	N. C.
Mr. & Mrs. Frank Farrar	~~XXXX~~ Suffolk,	Eng.
Mr. Hal Strickland	Greensboro,	N. C.
Dr. & Mrs. Young	Boston,	Mass
Mr. Douglas E. Wade and party of Five College Students from Dartmouth	Hanover	N. H.

Date Submitted;

May 4, 1949

Lewis B. Turner
Refuge Manager

CONTROLLED BURNING REPORT
PEA ISLAND REFUGE
SEASON*1949-50

At the time of Mr. Griffiths Visit to Pea Island in company with Dr. Cottam, Mr. Uhler Mr Miller, Mr. Baldwin and others Oct. 30, the problem of burning off some of the marshy Area was discussed in some detail,At that time I was instructed by Mr. Griffiths to burn off all the area possible in an effort to prevent another outbreak of the desease prevelant here for several seasons past among the winter population of Canada Geese.

Since there was no Equipment available to construct Lines and breaks necessary to carry out a burning Program as set up under the approved plan the areas burned do not comform to the plan in question,But we succeeded in burning off about 220 Acres of Marsh divided in three units.

UNIT, NO.1

This unit consisting of two marshy islands cut off by tide water creeks and sand flats situated about 1/3 mile south of New Inlet and laying along the sound side was burned on dec.21, App. 60 acres, The dominant vegetative growth was Spartina Patens about 70% Scirpus am. 20% and Misc. matter about 10% Total density of all species about 70%,This unit was burned with a south wind,velocity about 25 MPH,Cover burn for this unit 80%.

The area greened up on or about Jan 1, and the first geese observed useing it for feeding purposes was on jan. 8,counting a total of 80,Subsequent use thereafter was from 200 to 600 Canadas most of the time until the birds started the spring migration when numbers fell off some what.

UNIT, NO.2,

This unit laying between the road and the water in the south pond and having app.55 Acres was burned on Dec 31, Dominant Growth, Spartina Patens 65% Scirpus Am. 20% Sedge and other Species 15%,Density of all Species about 75%, This area was burned with a North East wind velocity about 25 MPH and got a cover burn of about 85%,This tract greened up about Jan.12,and was utilized from then on until the Spring Migration by from 250 to 600 Geese,Some corn was hauled out on this burn and was taken along with the green forage but some of it was wasted.

Unit, NO.3,

This Area consisting of about 100 Acres situated about 3/4 mile south of Oregon Inlet Coast Guard Station and laylig between the road and the sound was Burned Feb.1,with a North East wind Velocity 30,MPH, Dominant Growth Spartina Patens 70%,Scirpus Am 15% Wax Myrtle and sedge 15% Density of all species 70% Cover burn about 70% of the acre,This unit greened up within ten days and carried a steady population of Geese of from 300 to 600 from Feb.10, until the Spring Migration.

SUMMARY

A very close check was kept on all the Areas covered by this report and it is estimated that the Units in question carried a steady population of Canadas ranging in numbers from 1000 to 1500 for a period of seven weeks,

Since a conventional farming program is not practical on Pea Island, it is recommended that with the mgx acquisition of equipment,that the future burning program be stepped up to a high degree since this is the most economical method to produce the much needed food in the late winter months.

Lewis B Turner
Refuge Mgr.

WATERFOWL

Refuge Pea Island Months of Jan. 1, to April 1950

(1) Species	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Young Produced		(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Broods Seen	Estimated Total	Estimated for Period
I. Swans:									
Whistling swan			108	1/10/50	7	3/6/50			113
II. Geese:									
Canada goose			12000	1/10/50	200	4/30/50			15000
Cackling goose									
Brant									
White-fronted goose									
Snow goose			12000	1/1/50	26	4/24/50			15000
Blue goose									
III. Ducks:									
Mallard			100	1/14/50	6	4/8/50			150
Black duck			3000	1/14/50	550	4/28/50			4000
Gadwall			500	1/14/50	80	4/28/50			550
Baldpate			100	1/14/50	12	4/12/50			150
Pintail			4000	1/14/50	35	4/12/50			5000
Green-winged teal			200	1/14/50	125	3/28/50			250
Blue-winged teal			150	1/14/50	8	4/28/50			200
Cinnamon teal									
Shoveller			400	1/14/50	12	4/15/50			500
Wood duck									
Redhead									
Ring-necked duck			100	1/14/50	22	3/28/50			200
Canvas-back			15	1/14/50	5	2/25/50			20
Scaup			3000	1/14/50	24	2/25/50			3500
Golden-eye									
Buffle-head			100	1/14/50	7	3/2/50			150
Ruddy duck			600	1/14/50	28	3/2/50			750
IV. Coot:			500	1/14/50	30	4/12/50			500

3-1750
(July 1946)

(over)

Form NR-1

SUMMARIES

Total Production:

Geese _____

Ducks _____

Coots _____

Total waterfowl usage during period 44055

Peak waterfowl numbers 30075

Areas used by concentrations entire Refuge

Principal nesting areas this season _____

Reported by Lewis B. Turner

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.

2338

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge Pea Island Months of Jan 1, to April 30, 1950

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Commorants	600	XX/XX/50	600	4/28/50	500	4/28/50				700
Herons, Great B.	Res		20	4/28/50	30	4/28/50				25
" Louisiana	Res		30	4/28/50	50	4/28/50				50
" Black Crowned	Res		50	4/28/50	45	4/28/50				60
Egrets American	3	3/17/50	30	4/28/50	30	4/28/50				35
" Snowy	6	3/17/50	35	4/28/50	35	4/28/50				50
Loons Common	Seen all	period	20	1/14/50	3	3/20/50				40
Grebe Horned	" "	"	35	1/14/50	1	4/28/50				50
Grebe Pie-Billed	" "	"	30	1/14/50	2	4/28/50				50
Avocet	" "	"	6	1/14/50	6	2/16/50				6
II. Shorebirds, Gulls and Terns:										
Sandpipers Red backed	3000	2/14/50	3000	2/14/50	3000	2/15/50				3000
Great black Gulls	Seen all	period	200	1/14/50	22	4/15/50				200
* Gulls Herring										
* " Laughing										
* " Bonapartes										
* Willets	* all these Species are just arriving and official Counts have not been made to date									
* Yellow legs										
* Skimmers Black										
* Terns royal										

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. Doves and Pigeons:					
Mourning dove	Possibly 12 on the refuge				
White-winged dove					
IV. Predaceous Birds:					
Golden eagle					
Duck hawk	6 To 10 observed Thru this period				
Horned owl					
Magpie					
Raven					
Crow Fish	Perhaps 12 using the refuge this period				

Reported by Lewis B. Turner

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 Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

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

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

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

(6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Pea Island Months of Jan. 1, to April 30, 1950

(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 specifioally requested. List introductions here.
	DOES NOT APPLY 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.

Form NR-4

SMALL MAMMALS

Refuge Pea Island April 30, 1960

(1) Species	(2) Density		(3) Removals					(4) Disposition of Fur							(5)
								Share Trapping							Total Population
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	Cattail, Scripus Am Robustus Spartina Patens Unknown Acreage					22								EST.	700
Otter	Fresh water Ponds			NONE											35

REMARKS:

1615

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-7

PLANTINGS
(Marsh - Aquatic - Upland)

Refuge PEA ISLAND Year 1960

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
Wild Millet	South Pond, East Edge	10 Lbs. Per Acre	20 Acres		4/14/50	?		Not up as of this date

TOTAL ACREAGE PLANTED:

Marsh and aquatic 20 Acres
Hedgerows, cover patches
Food strips, food patches
Forest plantings

1618

3-1570
NR-8a

REFUGE GRAIN REPORT

Refuge Pea Island Months of Jan 1, thru April 30, 1940.

(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 on the Cob	450, Bu	None	440 Bu	None	None	425 Bu		25 Bu		Feed	

(8) Indicate shipping or collection points

(9) Grain is stored at Overnight Cabin Pea Island

(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.

Close view of muskrat in trap. Caught at Pea Island Refuge during trapping operations.

Showing 10 muskrats ready for shipment by truck. Note separate containers for each.

Showing an Otter run on the burm of one of the dikes at Pea Island.

View of new net-type trap operated at Pea Island and Mattamuskeet, set and ready to be fired.

Showing details of mortar of trap shown above.

Large muskrat dwelling house in pond at Pea Island.

Another rat house smaller and of very rough construction.

Otter tracks in sand along water edge of south Pond, Pea Island.

Note pencil upper left for scale.

Boat tail grackles feeding, Pea Island Refuge.

Part of the 4000 Snow Geese that cleaned up the barley and rye planted for the Canada Geese.

Part of the 4000 Snow Geese that cleaned up the barley and rye planted for the Canada Geese.

View of S. W. Corner of South Pond, Pea Island Refuge with muskrat house.