

Regional Director, Atlanta, Ga.

Jan. 4, 1955

Refuge Manager, Pea Island Refuge, Manteo, N. C.

Narrative Report, Sept. 1, thru Dec. 31, 1954

Find submitted herewith Narrative report, covering all activities at this Station for the period in question.

Considerable time was expended in the preparation of this Report and is believed to just about cover all angles worth reporting as concerns Pea Island.

Levin B. Turner

PEA ISLAND NATIONAL WILDLIFE REFUGE
NARRATIVE REPORT

SEPTEMBER 1, TO DECEMBER 31, 1954

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PEA ISLAND NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

SEPTEMBER 1, TO DECEMBER 31, 1954

I, GENERAL

A, Weather Conditions

Prevailing weather for the period has been about seasonal and average with years past with the exceptions of Hurricanes.

One passed thru on aug. 30, two days before the period started, two more Edna, Sept. 10, and Hazel, Oct. 14, skirted close by but done no damage except minor damage to the fence line, Rain-fall has been above average with 26.54 inches compared with 14.16 inches for the same period last year, Compensating somewhat for the extreme dry weather that existed throughout the summer months.

Temperatures has been mild most of the period with only one hard freeze-up which only lasted three days, Seasonal North easters came in about average for Oct. and the first two weeks of November, have had only one since this date which was a very severe blow, but did not last long enough to bring in Sea tides or cause any damage.

Information listed in the table below was furnished by the U. S. Weather burea Station located at Hatteras N. C. and is app 40 miles south of the Refuge, Lowest Temperatures shown on their Reports for the period was 27 Degrees, This compares with readings at Refuge H. Q. Station of 18 to 20 Degrees on several mornings.

	Precipitation		Temperatures	
	Actual	Dep. from Nor.	Max.	Min.
Sept.	10.75	X 6.25	89	63
Oct.	3.28	- 1.22	87	49
Nov.	4.83	X .33	72	43
Dec.	7.48	X 2.98	67	27
	<u>Tot. 26.34</u>	<u>10.78</u>	<u>Max 89</u>	<u>Min 27</u>

II, WILDLIFE

A, Migratory Birds

1, Populations and Behavior

Very little change can be noted in the numbers of late summer and fall Residents on the Refuge area compared to the same period last year.

Summer populations began leaving during the latter part of Sept. and by the first of Nov. most of the Gulls Terns had gone, Shore birds and a few Skimmers remained until a later date and could be observed up until about the 20th. with a few Skimmers still present Dec. first with a few greater Yellowlegs still present.

Fall Migrations of Herring, Ringbill, and great blackback Gulls began on or about Sept. 28 and increased all through Oct. and the first weeks of Nov. All of this group except the Black back should actually be listed as Residents since a small number of them remain on the Refuge the year around, but build up during the winter in numbers running into thousands and are late to leave in the spring.

First of the fall migrating Waterfowl was seen Sept. 8th. when 85 Blue Wing Teal began using the North Pond, Pie Bill Grebes came within the next ten days in good numbers, Teal continued in increasing numbers for the next three weeks but most of these go on thru within a few day and we never build up a very great population of Bluewing, Next to come in was Canada Geese, Pintail and Widgeon Ducks, First four or five hundred of these came in on Sept. 29 and continued to increase until about a normal population was on hand by the third week in Nov. With about 10,500 Geese and 17,000 Ducks.

Greater snow Geese came in in mass on the 11, of Nov. numbering 11,000 or more within two days, This was app. 15 days earlier than usual and is believed to be the results of the Shooting Season opening 10 days earlier than in past years, This flock remained on the Refuge Area until Dec. 8, when all but about 3,000 left Pea Island for about two weeks when they started coming back in and at the close of the Period app. 7,000 was present, A close individual count made on this flock at the request of the Regional Office disclosed, That of the 4,200 birds counted only 168 was juveniles, or exactly 4 %, This figure compares with checks made in past years which varied from 21 to 28 percent juveniles, indicate that the greater Snow as well as blues suffered a loss in the breeding grounds.

The first Swan to arrived was on Nov. 6, when 23 was seen on the north pond, checks of the Records show that this is just one day earlier than last year, This number continued to increase until a peak count was on Nov 26 when we had 210, This is app. 20 % below last years population which was a peak of 264, These birds behaved somewhat different from last season in that they go and come at intervals, Some days we can count up to 200 or more and within three days only 20 or 30 can be observed, It is known that they do more feeding on the sound than is usual and is thought to be caused by the ponds going completely dry this past summer with a corresponding drop in the food available.

2, Water Conditions

The period started out with Gage reading of 4.00 for the North pond and 3.80 in the South Pond this is far below the levels for last year but still better than for the summer months when both ponds was completely dry for several weeks, The Hurricanes that passed thru during the period did raise the levels somewhat but not to normal for the seasons past, Readings at the last of the period ranged at about 4.00 and 4.20, Which put some Water over the Marginal edges of both ponds but leave a lot to be desired, Waters of Pamlico Sound remained about constant with Salinity ranging from 58 to 68 ‰ Sea Strength and no damaging tides from the Hurricanes.

3, Food and Cover

With Low Water Levels in the Impoundments thru most of the summer and going dry at the last, food production in the main body of the ponds was just about Nil, The Marginal Edges produced a better than normal crop of Three Square, Smart Weed and Wild Millet, The 88 Acres of Cattail cut over two times during the summer came in with a very good crop of Smart Weed and Millet and is now being utilized by both Geese and Ducks to a great extent, 52 Acres of Domestic Rye Grass planted in the north pond area did very well and has been a great help in furnishing Green Browse, This field carries from 200 to 800 Geese almost constantly, They keep it browsed off clean most of the time, Food plants out in the sound was damaged by the two Hurricanes during late summer but recovered and the last survey made during Oct. indicated it was just about normal with other Years, One Tract of Marsh was burned off on Nov 8, which is Earlier than Usual, But was burned off primarily for Snow Goose use it is the Area laying between the two ponds and When the Snow Geese arrived just three days later it was used by them in numbers running into thousands.

Beach Pea Which is one of our most valuable natural foods on the Refuge failed to produce a normal crop, This was caused by the extreme drought conditions, This Specie can stand a lot of dry Weather but can be killed out by such conditions as prevailed during June and July, It was noted that at the period it should have been blooming out it had been stunted so that runners normally several feet long was only about 18 inches long with no bloom, What peas was produced, matured late and was still shedding out Dec.1, To sum up the Food Situation we expect a severe shortage by the second week in Feb.

4, Botulism and Lead Poisoning

None for the period.

5, Other Diseases

The Disease that is prevalent among the Pea Island flocks of Canada Geese during years past has been very slight so far this Winter Only 5 Geese have been Observed thought to have been effected up to the end of the period, Two of these was collected for Research, Two was found dead and the other two could still fly and could not be collected.

Other Diseases Continued

Research is still carrying on investigations on the cause of these epidemics and it is hoped they will come up with useful information that can be applied in the near future to cut down on the die-off from this Disease, Other phases of this subject will be covered under Research and Investigation.

B. Upland Game Birds

Does not apply to Pea Island Refuge except for ^{Doves} a very few in number passing thru during early Fall.

C. Big Game Animals

Does not apply to Pea Island.

D. Fur Bearing Animals

Population trends of fur bearing Species on the Refuge does not seem to change to any great extent from year to year.

Muskrat is the predominant of this group, They have been checked and watched carefully for the last several years and show no very great increase, Numbers, based on what Information that has been accumulated over the years indicate we have app. 1500 on the Refuge Area.

Otter, Which has been residents of the Refuge almost from its establishment in small numbers have increased to about 30 to 45 and remain at this figure, This Animal ranges over the entire area and no pot hole is to small for his Investigation in the search of food groups of 6 and 8 can be seen at times in the north pond which seems to be their favorite abode.

The Mink mentioned in this periods last years report along the east side of the North Pond has disappeared, No Mink sing have been found in several months now.

III, REFUGE DEVELOPMENT AND MAINTANENCE

A. Physical Developments

No new physical developments have been carried out during the period.

B. Maintenance

This phase of activity has accounted for the major part of time put in by Refuge Personnel, The 12 miles of fence line has to be checked after each severe Northeaster and Repaires made where necessary which is quite a job within itself with all the drift that has to be removed, Fire lines was plowed for the second time this year, Maint. Schedules was kepted up on all Equipment including farming machinery,

Maintenance Cont.

and work has ^{went} steadily forward when time was available on the Rehabilitation of the Interior of the old Mess Hall Building, making it into a sub-headquarters Office, This project was started during the last period, But with farming operations Trapping and a host of other duties to be carried out this job seems to progress rather slow, The office Room itself is now ready for fitting out with necessary furnishings and part of the furniture is on hand, plumbing Installed for toilets facilities and lavatory.

In connection with the trapping program, all trapping blinds was repaired and recovered, Trap Nets was mended where needed, new bridles spliced on and wiring system overhauled.

C, Farming.

This Operation had some setbacks this fall, as usual we planned to plant out the farming area located in the North Pond and arrangements were made to that effect, The first batch of seed planted was transferred in from kentucky Woodlands and was broadcast for us by aeroplane by Mr. Ball on Sept. 29, Due to the slowness of the crawler type tractor used in covering the seed it was five day before we finished, These seed failed to come up, After waiting app 15 days we replanted again and got up an excellent stand from Oregon grown seed, Results of which has been discussed under food and cover.

D, Fires, Wild and Otherwise

No fires occurred on the Refuge except controlled fire which was used Nov. 8, Burning off a tract of marsh for Goose browse and snow Goose use, This tract consist of app 160 acres of Spartina Patens, This Item was also covered under another heading.

IV, ECONOMIC USES

A, Commercial

None for the period.

V, FIELD INVESTIGATION AND APPLIED RESEARCH

A, Trapping, Goose Disease Study

This is the fifth year that an extensive trapping program has Been in effect in connection with the Goose disease study being conducted by the Division of Research in an attempt to isolate the cause or causes of the Disease that reaches epidemic proportions among the Canada Geese wintering at Pea Island Refuge at intervals.

So far this Season we have not had any to good luck, The trapping was started Oct. 14, with two net traps and several different sites baited

Trapping, Goose Disease Study Cont.

but due to Fair Blue Bird weather all during Oct. and Nov. and an abundance of Green food still available, it was found impossible to attract but a very few Geese into the trapping Sites, To date some 85 Geese have been trapped compared with 221 last year, Another factor working against us was an influx of Mallard ducks running into hundreds that took to the Sites and kept the Bait cleaned up to the point that it interfered with the Goose trapping success. But with colder weather we hope to trap the Quota of 500 set up by Research before the end of the season.

Some 300 Mallard and black ducks have been trapped and banded in an attempt to spook them off the trapping Sites but they persist in eating all the bait scattered, And future trapping success depends upon our ability to get rid of the ducks by some means or other.

VI, PUBLIC RELATIONS

A, Publicity

NonSpecial program have been carried out during the period as public appearances, Radio programs or talks, Most of the publicity efforts being the dispensation of Refuge Leaflets and birds list and showing three separate groups over the Refuge and explaining our objectives in Field management and Wildlife Populations.

B, Recreational

Recreational uses of the Refuge area continued high during the first two months of the period, with emphasis being mostly on Surf Casting, A very good run of Channel bass came thru during the month of Oct. and Success was better than for the last several season, some parties carried out catches exceeding a hundred pounds, and most all parties fishing caught some fish, During the last two months the flux of Visitors dropped off drastically and at the end of the period there is very few willing to face the weather to engage in the Sport.

Traffic over the Oregon Inlet Ferries also showed a drastic decrease under the past period, of almost 50 %.

Figures for the period April 1 thru Aug. 31 was 43005 Vehicles and 150527 passengers.

Compared to these, This Periods Traffic was 24842 Vehicles and 82947 Passengers, This periods figures was not broken down into State and out of state cars by the Highway Commission, But they run about equal, Just what the percentage of this traffic can be credited to Recreational uses of the Refuge would be strictly a guess, But it is known that most all of the out of State Visitors are very much interested in the Wildlife that can be observed from their Automobiles, and the number of people trying to secure photographs at close range to the geese and other Species is astonishing.

Our best Estimates of man days use for the period based on Checks and Observation is.

Fishing	2100
Sightseeing and other	3400

Recreational Cont.

which is app. 50 % higher than for last years uses for the same period, The great flock of Greater Snow geese that can be seen from the Highway most of the time is especially interesting to the people and is the largest single attraction we have on the Refuge.

C, Violations

As was the case last year we are plagued with a few instances of people sniping at the Geese along the highway on the Flats with Rifles, This is generally done from the cars and at close range, We have put in lots of time trying to catch these Violators but have not been successful to date, To catch them requires being on the scene at just the right moment since it only takes a moment to stop and shoot and get under way again, Luckily most of them are very poor shots and no cripples have been picked up, Efforts will continue to put a stop to this Violation, But we can expect a certain amount of it just as long as the Geese are present, so close to the Road and the Highway has such heavy use.

VI, PUBLIC RELATIONS CONT.

D, Visitors

OFFICIAL

Mr. Ted Ball	Sept. 29, 1954	R.O. Atlanta Ga.
Mr. Carl Fermanieh	Nov. 18, 1954	R. O. Atlanta, Ga
Dr. Carlton E. Herman	" " "	Patuxent, Refuge
Dr. ? Cowan	" " "	" "
Mr. Clark Webster	" " "	" "
Mr. John H. Steenis	" " "	" "
Mr. L. S. Givens	Dec. 12, 1954	P. O. Atlanta, Ga.
Mr. Roy Rogers	Dec. 15, 1954	Carolina, S. H. Refuge

UNOFFICIAL

Mrs. & Mr. L. S. Barrington,	Oct. 17, 1954	Charelston, S. C.
Miss Patricia Carey and Group of four others	Nov. 13, 1954	Springfield, Va.
Mr. T. L. Quay and a group of 8 Students From the N. C. State, Univ.	Dec, 19, 1954	Raleigh, N. C.

Submitted by Laura B. Turner Approved by (sgd) Howard A. Miller
 Regional Wildlife Supervisor

Date June 4, 1955 Date 1/7/55

PUBLIC USE - C. Y. 1954

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

A. Pea Island National Wildlife Refuge.

B. Estimated total use of all types 11,570 visitor-days.

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

Estimate visitor-days _____.

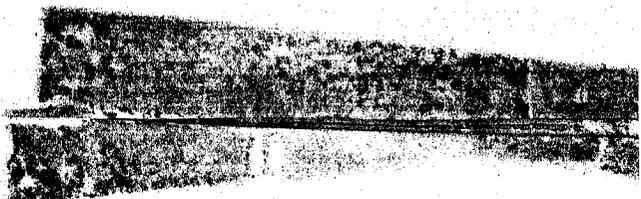
2. Fishing use.

Estimated visitor-days 5,970.

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

Estimate visitor-days 5,400.

C. Remarks.



1/12/55
Date

Lewis B. Jensen
Refuge Manager

	(5)	(6)	(7)	SUMMARY	
	Total Days Use	Peak Number	Total Production	Principal feeding areas	Entire Refuge
Swans	4,508	210	0		
Geese	514,827	29,500	0		
Ducks	1,076,310	16,808	0	Principal nesting areas	Does not apply this period.
Coots					
				Reported by	Lewis B. Turner

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

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

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

W A T E R F O W L

REFUGE Pea Island, Manteo, N. C.

MONTHS OF Sept. 1 TO Dec. 31, 1954

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling Trumpeter	1	1	1	1	1	1	1	1	23	63
Geese:										
Canada	5	5	5	5	41	600	1200	6400	6200	6800
Cackling Brant										
White-fronted Snow										
Blue Other										
Ducks:										
Mallard								14	82	80
Black	200	200	300	325	600	800	660	900	750	800
Gadwall	60	60	50	50	65	100	200	200	18	200
Baldpate					300	900	1230	1480	3800	3000
Pintail				400	900	1275	3750	3500	4000	6500
Green-winged teal			450	500	65	400	600	400	600	750
Blue-winged teal	85	260	400		70	125	670	530	60	400
Cinnamon teal										
Shoveler					10	10	10	16	20	28
Wood Redhead										
Ring-necked Canvasback							12	21		
Scaup Goldeneye									800	850
Bufflehead									2	8
Ruddy							4	65	2500	2000
Other										
Coot:							670	925	2200	2350



3-1751

Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS

(other than waterfowl)

Refuge Pea Island, Manteo, N. C. Months of Sept. 1 to Dec. 31 1954

(1) Species Common Name	(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>											
Commorants	17	10/2	208	10/15	23	12/23				300	
Herons, Great Blue	Sum.Res.		7	9/8	1	12/23				10	
Herons, Little Blue	" "		78	9/8	6	12/23				100	
Herons, Louisiana	" "		54	9/8	12	12/8				70	
Herons, Yellow Crowned	Res.		182	9/8	23	12/8				250	
Herons, Black Crowned	Res.		165	9/8	12	12/8				200	
Egrets, American	Sum.Res.		300	9/15	2	12/8				350	
Egrets, Snowy	" "		280	9/15	4	12/23				300	
Grebes, Piebilled	Res.	Mig.	675	10/14	132	12/23				900	
Grebes, Horned	7	9/8	9	10/14	5	12/23				15	
Loons, Common	3	9/8	21	10/14	6	12/8				25	
Rails, Clapper	Res.	No accurate data on these,				Estimated Population					600
									Tot.	3,120	
<u>II. Shorebirds, Gulls and Terns:</u>											
Plovers, Black bellied	21	9/15	54	10/14	26	12/8				150	
" Wilson	Sum.Res.		238	9/8	12	12/8				500	
Willetts,	" "		240	9/8	4	9/22				300	
Sand Pipers, All Species	" "		11000	9/8	500	12/23				12000	
Yellow Legs, Great-Less	" "		500	9/8	30	12/8				750	
Terns, Royal	" "		200	9/8	4	10/21				350	
Terns, Common	" "		750	9/8	21	10/21				1000	
" , Black	200	10/2	1500	11/19	150	12/8				2000	
Gulls, Laughing	Sum. Res		5000	9/8	200	12/8				6000	
" , Herring	Res.		4200	10/14	Still here					5500	
" , Ring Bill	Res.		800	10/14	" "					1200	
" , Black Back	3	10/2	234	10/14	" "					350	
Gannets,	1500	10/14	2800	12/8	800	12/23				5000	
									Tot.	35,100	

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove		A few passing thru in early fall, no counts made on these			
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow Fish Eagles, Bald Osprey	None Weekly None None None	Waterfowl counts with observations of duck hawks, show an average pop. of 5 Wintering population of this Species average App. 25 Pea Island has an average of from two to four Bald Eagles wintering on the Refuge, with no nesting, and the status of these birds have not changed within the last five years Two or three of these birds can almost always be seen on the Refuge area during the winter, more during the summer.			
				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 Gruiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1752
 Form NR-2
 (April 1946)

UPLAND GAME BIRDS

1613

Refuge Pea Island, Manteo, N. C. Months of Sept. 1 to Dec. 31, 1945

(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.
										Does not apply to Pea Island Refuge, except for an occasional dove during early fall, mostly migrating

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, Manteo, N. C. Calendar Year 1954

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
			Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
Common Name	Cover types, total Acreage of Habitat	Number												
	Does not apply to Pea Island Refuge None present													

Remarks:

Reported by

Lewis B. Turner

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.

DISEASE

Refuge Pea Island, Manteo, N. C. Year 1954

Botulism

Lead Poisoning or other Disease

Period of outbreak _____

Period of heaviest losses _____

Losses:

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

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

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 Unknown

Species affected Canada Geese

Number Affected Species	Actual Count	Estimated
<u>1</u>	<u>78</u>	<u>100</u>
_____	_____	_____
_____	_____	_____

Number Recovered None

Number lost 78 100

Source of infection UNKNOWN

Water conditions Fair

Food conditions Fair to Poor

(Note) This is the disease that the Research has been studying for the last five years.

72 of the number listed above is a carry over from last seasons count. To date this season 6 known dead or sick birds have been observed

Remarks _____



3-1756
 Form NR-6
 (April 1946)

FISH

Refuge.....Pea Island Refuge, Manteo, N. C.....Year 1954..

Species	Relative Abundance	Sport Fishing		Commercial Fishing		Restocking		Number removed for Restocking
		Man days Fishing	Number Taken	No. of Permits	Pounds Taken	Number Stocked	Area Stocked	
Channel Bass Speckled Trout Blue Fish Flounder	Fair to Good	6,855	Unknown	0	0	0	0	0

REMARKS: Figures quoted above an estimate. It has been found impossible to keep an accurate daily check on all fishing activities without serious interference with the work schedule with limited personnel available. Periodic checks two or three times are taken weekly.



3-1757
 Form NR-7
 (April 1946)

PLANTINGS
 (Marsh - Aquatic - Upland)

Refuge.....Pea Island, Manteo, N. C.....Year 1954...

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
No aquatic plantings accomplished during the year.								

TOTAL ACREAGE PLANTED:

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

3-1758
 Form NR-8
 (April 1946)

CULTIVATED CROPS

Refuge Pea Island, Manteo, N. C. Year 1954

Permittee (If farmed by refuge personnel, so indicate)	Permit No.	Unit or Loca- tion	Crops Grown	Avg. Yield per Acre	Permittee's Share		Government's Share or Return				
					Acres	Bu. Har- vested	Harvested		Unharvested		Compensatory Services, or Cash Revenue
							Acres	Bu.	Acres	Bu.	
52 Acres of Domestic Ryegrass planted by Refuge Personnel. For supplemental green browse for geese during the winter months.											

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

Interior Duplicating
 Section, Wash. D. C.

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.

REFUGE GRAIN REPORT

Refuge Pea Island, Manteo, N. C.

Months of Sept. 1 through Dec. 31, 1954

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Shelled Yellow Corn	None	85 Bu.	85 Bu.	0	0	70 Bu.	70 Bu.	15 Bu.		Trapping Waterfowl	

(8) Indicate shipping or collection points Mattamuskeet Refuge, New Holland, N. C.

(9) Grain is stored at Field H. Q., Pea Island

(10) Remarks _____

*See instructions on back.

REFUGE GRAIN REPORT

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

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

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

3-1759
Form NR-9
(April 1946)

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

Refuge Pea Island, Manteo, N. C. Year 1954

Species	Collections				Receipts		Total Amounts on Hand	Amount Surplus
	Amount	Date or Period of Collection	Method	Unit Cost	Amount	Source		
None collected and none received this period.								



3-1760
 Form NR-10
 (April 1946)

HAYING AND GRAZING

Refuge.....Pea Island, Manteo, N. C.Year 19⁵⁴

Permittee	Permit No.	Unit or Location	Actual Acreage Utilized	Animal Use Months	Tons of Hay Harvested	Period of Use		Rate	Total Income	Remarks
						From	To			
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.....



Regional Director, Atlanta, Ga.

XXXX Sept. 5, 1954

Refuge Manager, Pea Island, Manteo, N. C.

Narrative Report, May thru August

Find transmitted herewith Narrative report for the Months of May 1, to August 31, 1954, Covering all activities for the period in question on Pea Island Refuge.

Futher Information will be furnished on Experimental plots treated with herbicides when final results is known, Nov. 1, Report and forms.

Heinie B. Turner

PEA ISLAND NATIONAL WILDLIFE SERVICE

NARRATIVE REPORT

MAY 1, TO AUGUST 31, 1954

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PEA ISLAND NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

MAY 1 TO AUGUST 31, 1954

I, General

A, Weather Conditions

This Period has been another one of those times when the Refuge has been plagued with a severe drought along with several south eastern States, Temperatures has remained about normal or just be low, with clear skies and normal winds for most of the time, No hurricanes occurred until August 30, when the first of the season came roaring up the coast close inshore with winds up to 85 Miles per hour, Lasting from about 3, O'clock in the afternoon until 6, A. M. the next morning, This was the same Storm that struck the new england States with so much damage.

Luckly the Refuge only suffered minor damage, most of it to the fence line along the highway.

The table listed below shows Data furnished by the U. S. Weather Bureau Station located at Hatteras N. C. a Distance of 39 Miles below the Refuge and does not reflect actual conditions as they occur on the Refuge.

	Precipitation Actual	Dept. from Normal	Temperatures	
			Max.	Min.
May	3.54	- .96	80	49
June	.94	-3.56	89	69
July	10.27	x5.77	89	69
Aug.	6.93	x2.43	91	69
	To 21.54	Tot 12.72	91	49

B, Water Conditions

Altho the table above shows 10.27 inches of rain for the month of ~~August~~ ^{July} the Refuge had less than 1 Inch of rain and the results was that both of the ponds went completely dry and remained in that condition for period of over five weeks, This of course destroyed all the aquatic growths and no recovery is expected in time for the coming winter season, Waters in the sound has been normal with Salinity of app. 65 per cent Sea strength and conditions favorable for a better crop of grasses than normal, No severe winds have occurred with the exception of the hurricane mentioned above to keep the waters turbid,

II, WILDLIFE

A, Migratory Birds

1, Populations and Behavior

The current period started out with an increase over last years Population of Waterfowl, First of may found app. 150 Canada Geese still on the refuge Area compared with 65 last year, This number continued to decrease until about may 20th when only 30 was present, All of these left except 5 which remained throughout the summer and is still present, this is below the yearly average of from 15 to 30.

The status of nesting ducks changed somewhat from last year, Gad-walls showed a decrease of app 22 % with a peak count of 71 broods and 542 young, Compared with 102 broods and 714 young last season, Black ducks increased, Peak count for these were 31 broods and 241 young averaging 7.7 per brood, Compared with 20 Broods and 140 young for last season.

Only 2 broods of Bluewing Teal nested on the Refuge this year, One with 5 young and the other 4, also there were 5 broods of Piebilled Grebe nested in the north pond averaging 3 to the brood.

First of the fall migrants was noted on Aug 15 when 65 Bluewing Teal was counted in the north pond area, Since that date up to 200 has been counted at different times, Most of these birds pass on thru within a few day and no great number remain on the refuge for the winter season, Aug. 13 is about 12 days earlier than for this Specie last year.

Piebill Grebes came in right along with the teal and at the present time we have app 60 of these birds on the north pond.

The period started out with about a normal population of Egrets, Gulls, Terns, Skimmers and Herons, Principles nesters of this group is laughing Gulls, Royal and common terns, with a few skimmers, Most of the Skimmers that formerly nested on the Refuge have moved to the Spoil Banks along the channel north of Oregon Inlet and is not on the Refuge at all, Laughing Gulls nesting is Estimated at app. 1600 nest with a hatch of about 2000 young, Little blue Herons and Louisiana Herons use the same nesting Sites and is Estimated at app. 300 Nest with some 900 young, A small colony of Yellow crowned Night Herons nest along the west side of the south pond in the dense growth of wax Mirtle in this Area, No accurate information 's available on the number no these nesting.

No appreciable change can be noted in the population of shore birds which consist of the following Species, Willets, Yellowlegs both greater and lesser, Turnstones, Plover, Sanderlings and Sandpipers of all Species, Of this group only Willets is known to nest on the Refuge, No counts have been run on this nesting activity and no number can be quoted, During the last five weeks when the north pond has been almost completely dry, Birds listed in the group above have been using this area in the thousands a very conservative estimate would be over 15000.

1, Population and Behavior Cont

The only Species that could be listed as unusual on the Refuge for the period was 3 Oyster Catchers, observed aug. 14, one Avocet, aug. 25, and one Glossy Ibis aug 18-30,

2, Food and Cover

Food for the period past have been plentiful for the few Waterfowl present, But the outlook for the coming winter season is not so bright, Due to the continued drought for the last three months both of the impoundments went completely dry, The south pond about two weeks before the north pond this of course is serious since the summer growth of aquatics in the main body of both ponds was destroyed, The marginal edges of both ponds have a better than average crop of Three Square, Cirpus Am. Robustus and several Species of Smartweed, Two surveys have been made over the pamllice sound bottom during the period, and the last one made aug. 17-18 showed an average or better stand of Vegetative growths all along the shore line extending app. $3\frac{1}{2}$ miles off shore, Since that date a hurricane passed thru close in shore on the Atlantic side with winds up to 85 miles per hour, This occurred on Aug. 30, and caused some damage to vegetation in the open waters of the sound, But if no other storms occur it should recover before the Waterfowl season starts.

present plans call for planting out app. 52 acres of Ryegrass during the last week in Sept. in the north pond farming area, This program has been in effect for the last four years and has been found to be the only crop that can be planted that pays off, In addition to the farming program, Controlled marsh burning will be continued during the winter this has also proven to be valuable as a means of producing green browse during the late winter months, Plans call for burning app 375 Acres, one unit of this will be burned earlier than usual since it lays adjacent to the area used by the snow Geese most, and they generally leave during the first two weeks in Jan. it is hoped that with what supplemental food that can be furnished we will have at least enough food to last thru the season.

Cover is not an important item on Pea Island as there is plenty for all Species requiring cover and for nesting activities.

3, Botulism and other Diseases

None have occurred on the Refuge for the Period.

4, Fur bearing Animals

Muskrat numbering 1000 to 1500 have had to change their habitat during the last two months due to the absence of water in the two ponds where most of them exist, they can be seen in great numbers feeding along the borrow pits where some water still remain but most of them have moved

4, Fur bearing Animals Cont.

into the tide water Creeks and pot holes along the sound shore line where there is still plenty of food available, With waterlevels restored in the ponds they are expected to moveback into their old established range, It is believed that they are on the increase slowly but no recent counts have been conducted and any increase quoted would be of a purly estimate nature.

Otter remain in about the usual number estimated at 30 to 40,at least 4 young otter have been observed within the last three months in the north pond, contrary to the behavior of muskrats with low water levels, Otter seem to concentrate and work out all the berrow pits,this is natural since all marine life is confined to the small amount of water left and it is supposed this makes for better fishing conditions, there is very little of all the waters on the Refuge that is not ~~known~~ thoroughly worked over by these animals and they range from one end of the Refuge to the other.

III, Refuge Developement and Maint.

A, Physical Development

No new Physical developments have been carried out during the period.

B, Maintenance

Maintnance on Pea Island is one of the major activities and have been carried on constantly all through the period, During the winter months the 12 miles of fence need regular attention, This drops off during the summer, But with buildings, Roads and Equipment to maintain,posting and 11 miles of fire line to be plowed each summer it can be readily seen that we never catch up, During the period past a major repair job on all the doors, windows and screens on all the buildings have been carried out, trim work repainted and some work has been accomplished toward converting the old mess hall building into a sub head Quarters office, This consist of removing all the Shelves and closets refinishing the Interior with a paint job, Removing the old floor covering and laying new tile flooring cover this job is about 80 % complete and we expect to have it ready within the next 10 days for office use,This does not include plumbing necessary for the installation of toilet facilities.

all work on the fire lines mentioned above have been completed,and Regular maintenance schedules on all trucks, Tractors and farming Equipment Light plant and other Items have been carried out on schedule, Brush cut out around the southpond road and some small repairs made to gates along the fence line.

C. Farming and other plantings

No farming or other plantings has been carried out for this period.

D. Pest Plant Control

This subject will be more fully covered by an attached appendix in the back of this report.

E. Fires, Wild and otherwise

No wild fires occurred on the Refuge area for the period past.

IV, Economic Uses

A, the only Economic uses on the refuge for the period consist of Mr. J. B. Tillett's Concession located on the north end of the Island the annual fee of \$100.00 was transmitted to the regional office on July 2,

V, Field investigation and applied Research

A, No research was accomplished this period with the exceptions of bimonthly brood counts over the duck nesting areas and periodic surveys covering the Shal waters of Pamlico Sounds, checking on food growth and conditions, and the treating of mire plots with herbicides in cattail control, This Item will also be covered in the pest plant control appendix.

VI, Public Relations

A Recreational Uses

It is thought that this summer has been the most active in recreational use of the Refuge since its establishment as a Refuge back in the 30s, Fishing and bathing has been at an all time high throughout the period, It was our intentions to set up some kind of checking system for this season to determine just what the volume of use is during the four busiest months, But after investigating the possible use of a station it was decided it would take a full time man to handle this Item alone, Of course with only two men in the personnel this was impossible, Visitors to the Refuge has been checked at random two or three times a week, the results of these checks shows that at least 5400 man days of recreational uses for the period.

B, Publicity

It is feared that not enough emphasis has not in the past been put on this item of activity, We are daily handing out and mailing out the new Refuge leaflet No. 6 recently received, to an ever increasing number of Visitors, Heretofore we have been handicapped in not having the facilities to handle the people desiring information concerning the Refuge and its purposes.

The New Sub-Headquarters office will soon be in commission and we hope to have a more efficient system set up to handle all the publicity angles, Also we are in some doubt as to just how to report a break down on Visitors to the Refuge in per cent of those passing thru on to hatteras and and return, the table listed below will give some idea on the Volume of tourist traffic through the Refuge, This information was obtained from the State Highway Comm. who operate the Ferry across Oregon Inlet.

May,	Foreign Vehicles	3203
"	N. C. "	3130
June	Foreign "	4475
"	N. C. "	4697
July	Foreign "	7500
"	N. C. "	6000
August	Foreign "	8200
"	N. C. "	5800
Total for the period		<u>43005</u>

The State Highway Commission compute the number of persons as $3\frac{1}{2}$ to the Vehicle this would indicate that app. 150527 people passed thru the Refuge during the last four months, Just what percent of ~~them~~ these could be considered as Refuge Visitors has us up a tree, It is estimated that about 8-10 % of the vehicles listed above is local people either living on the Banks or on business to the Area and should be discounted in any estimate of actual visitors to the Refuge.

C, Violations

No serious Violations have occurred during the period, We are still having trouble with a certain amount of dumping, and some travel off given lines of travel, No charges have been made during the period.

Public Relations, Visitors Schedule

Official

Mr David E. Booth, Eng.	5/20/54	Atlanta, Ga.
Mr W. L. Norton, Aud.	6/23/54	" "
Mr. Charles Lister Aud.	6/23/54	" "
Mr. W. P. Baldwin Bio.	8/4/54	Port Wentworth, Ga.
Mr. Walter A. Gresh, R.O.	8/19/54	Atlanta, Ga.
Mr. Swift, Wash. Office	8/19/54	Washington, D. C.
Mr. Carl V. Fermanich, R. O.	8/20/54	Atlanta, Ga.
Mr. Kenneth E. Wilson	8/23/54	Currituck, N. C.

Unofficial

Mrs. Mildred Luckie	6/23/54	Vero Beach, Fla
Mrs. Charlotte Hilton Green	7/26/54	Raleigh, N. C.
Mr. W. F. Reuntrey and a party of 50 other members of the Virginia Society of Ornithology.	7/14/54	Norfolk, Va.
Mr. Charles Hoover	8/26/54	Roanoke Rapids, Va.

Date Submitted _____

Submitted by _____

Approved by C. V. Fermanich
Act. Regional Wildlife Supervisor

Sept. 10, 1954

Appendix No. 1, Pest Plant Control

Mechanical Treatment of Cattail, Pea Island

This is a continuance of a pest plant control program that was established in the summer of 1952, When the tract containing app 65 Acres was first treated.

High Water levels all during the summer of 1953 prevented a retreatment during that summer and the Area of infestation has increased to app 90 Acres to date, The area in question being along the east and south sides of the south pond,

On June 21, this summer we started cutting down the dense stand of Cattail, Typha Domingensis with water levels app. 2 inches over the ground surface, Cutting continued until June 29 when we had treated all that could be cut until water levels receded somewhat leaving app 4 acres uncut.

A 100 % kill back was obtained on all standing cattail and a very good stand of Smartweed and wild Millet came in within the next three weeks, Water levels continued to recede until the pond was completely dry with some water still in the Borrow pit by aug 1,

on Aug. 10 the second treatment was started to cut out the stand off app. 18 to 25 % regrowth that had occurred from roots since the first treatment was completed, this second regrowth had reached a height of about 40 inches and was mixed in with a very good stand of Smartweed which had just begun to flower out, It was thought that the second treatment would destroy all the crop of Smartweed but this proved an error since most of it recovered and at the present time is seeding out, Results of this second cutting was not as good as was obtained on the 2 $\frac{1}{2}$ acre check plot that was treated during the summer of 52, when we only got about a 10 % come back after the second cutting, Most of the 88 acre tract now has a 10 to 20 % comeback after the second cutting,

This cannot be explained unless difference in water levels are responsible, The second cutting on the check plot in 52, was accomplished with the water level app. 4 inches over the ground surface while the second cutting this summer was very dry with no water above ground, The regrowth that is now present will not amount to anything this season since frost will kill it back before seeding out but it does leave a remnant of root stock that will sprout back out next spring will after two or three years be back to a dense stand.

It is believed that the Stalk cutter can be further improved for this type of Operation, Since having the solid cylinder made up and blades attached to this instead of to conventional spokes it puts very little load on the tractor cost of operation per Acre could be cut in half by making the cutter 12 Ft. wide instead of the present 6, Ft and the tractor would handle it just as easy,

The 9 Plots of Cattail treated with MH-40 and 2-4-D and cut over one week later with the machine shows some promise for a combination operation that will probably be much better than just the Mechanical cutting, Final results on this is not yet available, But will be reported on Results Data report due Nov. 1,

It will be noted that the cost of this operation was \$1.12 and 1.10 per acre compared with \$2.70 per acre during the summer of 1953, Improvement of the cutter and a more powerful motor installed in the tractor made this low cost possible, As stated above this cost can still be reduced by one half by the addition of another unit along side of the present cutter used, the cost of this would be app. \$400.00

	(5)	(6)	(7)	SUMMARY	
	Total Days Use	Peak Number	Total Production		
Swans	:	:	:	Principal feeding areas	North and South Ponds
Geese	2695	150	0		
Ducks	110648	1750	792	Principal nesting areas	North pond
Coots	0	0	0		
				Reported by	Lewis B. Turner

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

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

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge Pea Island, Manteo, N. C. Months of May 1 to August 31 1954

(1) Species Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Pelicans, Brown			14	5/20						30
Piebill Grebes	Res.		65	8/20						80
Rails, Clapper	Res.	Seen throughout the season, No census data available								
Egrets, American	31	5/14	245	8/20						300
Egrets, Snowy	15	5/14	300	8/20			2	24	70	325
Hérons, Great Blue	Res.		8	8/20						12
" , Little Blue	Res.		55	8/20			2	8	20	100
" , Yellow Crowned	Res.		70	8/20			1	16	60	125
" , Black Crowned	Res.		75	8/20			1	8	25	100
" , Louisiana	Res.		42	8/20			2	10	35	75
II. Shorebirds, Gulls and Terns:										
Plover, Wilson			635	8/20						800
" , Black Bellied			65	5/14						100
" , Semipalmated			300	5/14						500
Willetts			130	8/20				?	?	200
Turnstones, Rudy			900	8/20						1100
Terns, Royal			250	6/20			2	40	80	400
" , Common			700	6/20			1	100	175	900
Terns, Least			600	6/20			1	80	140	800
Terns, Black	7/25		1600	8/20						2000
Gulls, Herring	Res.		1500	5/14						2500
" , Ringbilled	Res.		300	5/14						750
" , Laughing	Res.		4500	6/20			2	1600	2000	5000
Yellow legs, Great & Less	Res.		800	6/20						1100
Dowitchers	9	5/14	70	6/20						100
Sandpipers, All Species	850	5/14	14000	8/20						15000
Skimmers, Black	200	5/14	700	8/20			1	60	100	700

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove	Scattered groups of two or three passing thru mostly during March and Sept. each year probably 60 during a season.				
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow	1 8/20	1	Still here		
	Res.	A few nest on the south pond dike during June of each year.			
					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 Gruiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1752
 Form NR-2
 (April 1946)

UPLAND GAME BIRDS

1613

Refuge Pea Island, Manteo, N. C. Months of May 1 to Aug. 31, 1945

(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 specificoally requested. List introductions here.
	Does not apply to	Pea Island	Refuge	with the exception of an	occasional	dove	passing thru.			

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 Pea Island, Manteo, N. C.

Months of May 1 through Aug. 31, 1954

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
None carried thru this period and none on hand at present.											

(8) Indicate shipping or collection points None

(9) Grain is stored at None

(10) Remarks _____

*See instructions on back.

REFUGE GRAIN REPORT

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

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

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

PEA ISLAND NATIONAL WILDLIFE REFUGE
NARRATIVE REPORT
JANUARY 1 TO APRIL 30, 1954

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PEA ISLAND NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

JANUARY 1 TO APRIL 30, 1954

I, GENERAL

A, Weather Conditions

Weather Conditions for the period has been about normal with the exceptions of one or two cold waves which sent the temperatures down to an extreme low of 12 Above on Jan 14, this only lasted a couple of days however and generally speaking conditions has been very favorable, 4 North Easters ocured lasting for several days at the time but these are seasonal and to be expected, No damage ocured except to the fence which was broken in several places.

Data contained in the table below was furnished for Jan. by the local Cooperative Weather Station in Manteo, Data for the three months Feb. March and April was furnished by the U. S. Weather bureau Station at Hatteras N. C. It is noted that Temperatures at Hatteras range App. 6 degrees higher than on Pea Island, And does not reflect weather conditions as they occur on the refuge, a change in the source of weather Information was caused by the illness of the local weather Station Operator.

	Pricipitation		Temperatures	
	Actual	Dep. fromm Normal	Max.	Min.
Jan.	3.79	-.71	71	12
Feb.	2.68	-1.33	73	31
March	4.49	X .60	72	35
April	1.54	-2.96	78	39
	<u>Tot12.50</u>	<u>Tot. 5.80</u>	<u>78</u>	<u>12</u>

II, WILDLIFE

A, Migratory Birds

1, Population and Behavior

Wintering Species of waterfowl were about the same in numbers as last year with the exception of two or three Species, Canada Geese showed an increase of App. 20 % Snow Geese App. 40 % decrease with Swan showing an increase of 30 %

Peak numbers on Canada Geese and Swan was during the first week of Jan. Snow Geese about the last week of Jan. Canada Geese numbered about 10,000 Swan 263 and Snows App. 900, With the exception of Snow Geese these numbers did not change to any extent until until the first week in feb. when a decline was noted in Geese and swan this continued slowly until the start of the spring migration during the first week in march, Snow Geese left and come back at intervals and it was hard to keep an accurate check on them, for the first time in five years they changed their habits completely, the reason for this is unknown as all Information available indicates that there was app. 50 % decrease all along the atlantic seaboard and in most instances their habits was very erratic.

At the start of the period ducks numbered app. 17,000 which was somewhat less than for the last season count, the rafts of Ring neck and Scaup did not number as high as last year in the north pond which accounted for the greater number last year, but this is something new for Pea Island and cannot be considered normal until another few winters have past and future results known, Raft ducks in the north pond last year numbered app. 10,000 compared with a peak this year of 6,000.

Feeding habits was normal with the exceptions of two or three instances when extremely low temperatures caused the ponds to freeze over and Sound Conditions were unfavorable when this occurred the Island was covered with waterfowl hunting a place to get out of the weather.

Spring Migration started the first week in march with small numbers of Geese and all Species of ducks leaving this movement was continued for the next three weeks, When mass Migration occurred and continued until about April 15, as of to Date only about 85 Geese remain with app. 1,000 Black and Gadwall ducks still present most of these birds are concentrated in the two pond areas and shows lively nesting activities.

Coots were normal with a peak number of 600 or slightly over these remained constant until Migration and well up into march at the end of April 20 to 30 could still be counted around the ponds

Population and Behavior Cont.

Spring Migration of Gulls, Terns, Herons, Egrets and Shore birds started right on schedule, Black back, Herring and Ringbill gulls started leaving about the 10th of march and continued until the end of the period when only a few of these species still remain, The first of the incoming was laughing gulls, and common terns, which arrived on or about march 20th from that date until the end of the period the population have been steadily increased and now number thousands, Royal terns and Black Skimmers were several day behind but are now present in about normal numbers.

Shore birds including Yellow legs, Willets, Turnstones, plovers, sanderlings, and Sandpipers of all Species have been arriving in good numbers since about march 12th and can now be counted in the thousands.

Gannets were present through out the period and as is natural with this Specie migrate north slowly following the fish off shore most birds observed since about the middle of march have been northward bound, There can still be an occasional gannet seen but at the end of april this was rare.

2, Food and Cover

It would be our desire to be able to say that food supplies was abundant but since this is not the case even with all our efforts to increase the ~~sumat~~ amount available by means of low marsh burning and thru farming, it still has to be reported that the last two weeks of feb. and all thru march the food situation on Pea Island was anything but favorable, It is believed this has a direct bearing on the duck population showing such a decrease during this period, Geese on the otherhand continues to stay on and tough it out, as has been the case for the last several years 52 acres of rye grass was planted out the first week in oct. last year and did well even up until the waterfowl left during march, Also the burning program was carried out during the first week in Jan. Burning off app. 370 acres of low Spartina marsh which with the ~~wixesgr~~ Rye grass did furnish some supplemental green browse and probably was the difference between enough to squeeze by and a critical shortage this was evident from the fact that the last 2500 geese using on the area confined their feeding upon these burns and the Grass field, and everything considered the food supply was about normal, at least no worse than some other years past.

3, Water Conditions

With water levels remaining above normal through out the period in the two ponds, conditions were very favorable for Waterfowl use, Records show that the ponds maintained levels of from 4.40 to 5.00 almost constantly, This is adquate to maintain normal growth of aquatic plants that is native to fresh water impoundments such as these are, Waters of pamlico Sound was normal with the exceptions of one or two periods when severe north westers was blowing with extreme low temperatures, no salinity tests have been made during the period, But is believed to be app. 60 % sea strength.

4, Botulism and Lead Poisoning

None for the Season.

5, Other Diseases

The Disease which effects the Canada Geese on Pea Island some years showed an Increase of about 200 % over that of last year with a total of 76 known dead or sick compared with 27 for the season last year, 4 of the number listed for this season was reported in Dec. Narrative report, This subject will be more fully discussed under Field Investigation and Research.

B, Upland Game birds

Does not apply to Pea Island except for the few doves that at times ~~xx~~ Migrate thru in early fall and Spring.

C, Big Game Animals

Does not apply to Pea Island

D, Fur Bearing Animals

No change can be reported in the Status of fur bearing Animals on the refuge from previous reports, The muskrat population remains at about the level, Estimated number 1200, Otter 35-40.

The Mink that has been reported in the Dec. Narrative for the first time along the Eastern side of the north ponds, is still present but no actual survey has been accomplished to determine just what the number is, During the coming duck nesting season particular attention will be given in an effort to determine if these animals is a serious predator threat.

E, Predators/

With the Exception of a few wild House cats, Which seems to be able to hold their own despite our efforts to get rid of them, is the only serious predators on the refuge, Duck ~~haxx~~ Hawks numbering 2 to 4 at the time is usually present on the Refuge during the winter months but is not considered a serious menace, The Golden Eagle that was present last winter was not this winter, This bird was known to have preyed on Geese and ducks through out the winter.

III, REFUGE DEVELOPMENT AND MAINT.

A, Physicial Developpments.

No new Developments was planned for this period and none accomplished.

B, Maintenance

The 12 miles of new fence along the west side of the Highway has proven to be our chief headache in this phase of activity, High Sound tides which occur frequently has a habit of bringing a vast amount of drift which lodge against the fence causing broken wires and leaning over post for long stretches, High storm tides from the Ocean side does not bring in the drift in such quantities, but due to high velocity currents actually wash out the heavy concrete post in places causing more damage, 14 man days was expended in fence Maint this period.

Regular Maint Schedules was maintained on all Refuge Equipment such as trucks and farming machinery, The 22 H. P. Cletrac Tractor was hauled to Elizabeth City and a reconditioned motor installed in place of the wornout motor, The replacement motor was a six cylinder and found to be far superior to the four, Since we can coast along in high gear where we use to have to work in low or second, this inresses the daily capacity of this unit by at least 75 % Also some track repairs and adjustments was made by refuge personnel.

Approval was given to salvage the old occ Equipment shed near the overnight cabin, In order to do this it was necessary to sort out and move a Misc. accumulation of junk and Materials stored for the last 10 or 15 years, New shelves was built in the basement of the Mess Hall Bldg. and all this Material stored there, all useable timber, Which was a few heavy Oak sills was removed and the rest was hauled down and burned on the site.

C, Farming.

No farming was accomplished this period with the exceptions of a small experimental plot of wild cow peas which was planted out April 4th. and light harrowing of app. 30 Acres of low dune type along the road between the two ponds in an attempt to stimulate a full stand of Native Beach Pea.

D, Fires, Wild and Otherwise

No Wildfires occured on the Refuge for the period, Controlled marsh burning will be covered under an appendix later in the Report.

IV, ECONOMIC USES

A, Commercial

No Commercial Economic uses of the refuge for the period with the exception of Mr. J. B. Tillett's Concession located on the north end of the Island near the ferry landing, Which seems to be about Defunct since it has not been in Operation since the latter part of Oct. last year.

V, FIELD INVESTIGATION AND APPLIED RESEARCH

A, Goose disease Study

In connection with the Goose disease study being carried on at Patuxent for the last several years, The trapping program which was started last oct 8th. was continued thru this period up until March 8th. Listed below is a summary of the entire seasons operation and results, (Note) 225 of the birds covered was listed in Dec. Narrative report, It is interesting to note that exactly 5 months of work was done on this project.

Total Birds trapped,	568
Ducks, Black and Mallards, Banded and Released	52
Geese,	516
Geese,transferred to other refuges (Leg Banded Only)	128
Geese,furnished to Patuxent Healthy Birds	32
Geese,banded and Released (Also collar Banded)	365
Geese,Sick, Collected not trapped, Furnished to Patux.	16

Periodic checks were made over the entire refuge area for sick and dead Geese, the Total count was 76 known dead or sick, these figures represent findings of Refuge Personnel and Mr. John H. Steenis This compares with 27, total for last winter.

VI, PUBLIC RELATIONS

A, Publicity.

No active publicity program have been carried out this period some 200 of the Pea Island Wildlife leaflet was mailed out and various contacts made with people requesting Information concerning the Refuge and Native wildlife Species and possibilities of obtaining outstanding photographs Etc.

B, Recreational

Cold weather prevailing during the first two months of the year discouraged all except the most optimistic from visiting the Refuge bent on recreation, A party of 32 Carolina Bird Club Members was furnished a trip over the Refuge by Refuge personnel on Jan 2nd. and several other parties of from 2 to four have visited during the last two months, Surf fishing picked up about the first of April and some channel bass running, fishing parties could be observed almost daily along the beach line from Oregon Inlet to New Inlet, luck was not to good, and no accurate information is available as to the actual number or pounds of fish taken, Estimates from checks taken about twice weekly indicate there was app. 470 Man days spent in the pursuit of the finny tribe, during the period.

C, Violations.

None for the period that we know about, except for minor cases of dumping and wandering around off the prescribed lines of Travel.

D, Visitors

UNOFFICIAL

Messers Overton and Quay, heading a party of 32 CBC members on a birding and sightseeing tour, All parts of the State Jan 2, 1954

Mr. F. S. Barkalow and party of six students from North Carolina State college, Interested in Banding and wildlife Management, Jan.31,

Mr. Gustave Haltman with a party of 5 Student Asst. connected with the park Service Richmond, Va. Feb 5,

Mr & Mrs M. A. Benson 4/9/54 Wash, D. C.

Mr & Mrs. J. M. Barnett 4/21/54 Toronto, Canada

OFFICIAL

Mr. Carlton S. Herman 1/9/54 Patuxent Refuge

Mr. William P. Baldwin 2/1/54 Portwenthworth, Ga.

Mr. L. S. Givens 2/12/54 Atlanta, Ga.

Date Submitted

5/8/54

Prepared by

Archie B. Turner

Approved by

15/Howard A. Miller

May 27, 1954

CONTROLLED BURNING PROGRAM
PEA ISLAND REFUGE
1953-54

The controlled burning program that has been in effect for the last several years was continued on thru the winter season 1953-54. We have on Pea Island app. 1400 Acres of low Spartina marsh that is equally divided into three parts as near as possible, one third being burned each year.

All reports submitted in the past referred to tract numbers by 1, 2, 3, Etc. Due to some confusion arising from this system the burning maps covering the actual operations has been revamped and permanent numbers assigned to each Tract, Numbers used in this report will reflect permanent number assigned, Under this System we expect to maintain records over a period of many years that will greatly assist in noting all Ecological changes due to a long drawn out burning program on this type of marsh.

Tract No. 1, consisting of App. 80 Acres, Laying just south of Oregon Inlet C. G. Station has the most mixed stand of vegetative matter of any of the units, Spartina Patens 65 % Juncus 20 % Wax Myrtle and Bayberry 10 % Broom Sedge 5 %, This tract was burned Jan. 18, with a due south wind app. 15 MPH, a clean burn was obtained over about 85 % of the tract killing back the Myrtle and other brush app. 75 % First noticeable greenup was Feb 5th. Geese started using on this burn at that time and continued until migration.

Tract No. 3 Laying along the eastern border of the north pond consisting of App. 50 Acres was burned on the same day as number 1, Jan 18, This tract has app. 80 % Spartina Patens, 20 % Juncus with some wax Myrtle mixed in, Burned with a South wind 15, MPH got a clean burn over app. 90 % of the area, Greenup occurred along with tract number 1, with Geese and Black ducks using it until migration time.

Tract No. 6, Laying along the sound side between the two ponds having app. 110 acres, Was also burned on Jan 18, With a east wind App. 10 MPH. This tract consist of Spartina Patens 70 % Wax Myrtle Very Rank growth, 10 to 14 Ft. High 20 % IVA and other matter 10 % First time this tract has been burned under the program, had a hot fire but due to the Myrtle having all the grass crowned out over some of the area did not get the results expected, Got a clean burn on App. 70 % of this tract.

Tract No. 7-A Consisting of app. 50 Acres, Laying along the south end of the south pond was burned Jan. 29. with a south wind, Vegetative matter Spartina Patens 85 % Wax Myrtle 15 % obtained a very clean burn on this tract and it greened up immediately with Geese and Pintail and black ducks using it constantly thru Feb and Part of march. over 900 geese was counted on this tract until alone on several occasions.

A total of about 300 acres was burned compared with 470 last season.

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

WATERFOWL

REFUGE Pea Island, Curtes, N. C.

MONTHS OF Jan 1, TO April 30, 1954 19

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
<u>Swans:</u>										
Whistling Trumpeter	263	258	260	255	261	254	206	158	122	86
<u>Geese:</u>										
Canada	10.000	8.800	9.000	9.200	7.200	6.000	6.000	6.000	5.400	2500
Cackling Brant										
White-fronted Snow	1.800	26								
Blue Other										
<u>Ducks:</u>										
Mallard	80	65	85	71	65	70	42	54	35	40
Black	4.800	4.800	4.200	3.750	4.000	3.600	3.250	2.375	1.800	1.000
Gadwall	1.700	1750	1.400	1.500	1.100	900	7.35	8.00	8.00	900
Baldpate	1.500	1.500	1.500	1.400	975	1.000	650	650	350	350
Pintail	4.800	4.775	4.800	4.300	4.000	3.000	2.550	1.400	1.255	900
Green-winged teal	1.100	875	900	1.100	900	1.000	660	800	900	350
Blue-winged teal	450	400	450	375	300	300	400	375	375	400
Cinnamon teal										
Shoveler	600	600	600	600	550	600	450	500	300	225
Wood Redhead										
Ring-necked Canvasback	3.000	3.000	2.800	3.000	2.875	2.500	300			
Scaup	3.000	2.750	2.200	2.200	2.000	1.500	600			
Goldeneye										
Bufflehead										
Ruddy	1.200	1.200	1.100	1.200	950	1.000	475	300	300	200
Other										
<u>Coot:</u>	600	600	475	550	600	350	300	325	250	300

W. W. FISH &
SERVICE

MADE IN U.S.A. 52

ATLANTA, GA.



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

WATERFOWL
 (Continuation Sheet)

REFUGE Pea Island, Manteo, N. C.

MONTHS OF Jan. 1 TO April 30, 1954, 19

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total	
	11	12	13	14	15	16	17	18			
<u>Swans:</u>									16.561		
Whistling	55	30	18								
Trumpeter											
<u>Geese:</u>									497.224		
Canada	1.000	775	150								
Cackling											
Brant											
White-fronted											
Snow									12.782		
Blue											
Other											
<u>Ducks:</u>									4.641		
Mallard	25	10	12						250.432		
Black	850	850	800						104.175		
Gadwall	900	900	900						71.435		
Baldpate	175	75	80						231.231		
Pintail	600	550	200						55.713		
Green-winged teal	350	300	300						41.041		
Blue-winged teal	480	700	875								
Cinnamon teal											
Shoveler	160	165	85						38.129		
Wood											
Redhead									122.353		
Ring-necked											
Canvasback									99.225		
Scaup											
Goldeneye											
Bufflehead									58.907		
Ruddy	225	145	120								
Other											
<u>Coot:</u>	200	124	68						44.158		

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans	18,561	243	0
Geese	410,008	11,800	0
Ducks	1,087,284	32,230	0
Coots	44,158	600	0

SUMMARY

Principal feeding areas All over the refuge

Principal nesting areas None

Reported by Lewis H. Turner

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

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

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Poa Island Year ending April 30, 1954

(1) Species	(2) Density		(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
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal						Permit Number	Trappers Share	Refuge share				
Muskrat	Cattail & Scirpus Am.	Unknown	0	0	0	0	0						Est.	1200
Otter	the two ponds and tide water creeks		0	0	0	0	0						Est.	40

* List removals by Predator Animal Hunter

REMARKS:

Reported by Lewis B. Turner

INSTRUCTIONS

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

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

Refuge Pea Island

Year 1945

Botulism

Lead Poisoning or other Disease

Period of outbreak None

Period of heaviest losses _____

Losses:

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

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

Areas affected (location and approximate acreage) _____

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

Condition of vegetation and invertebrate life _____

Remarks _____

Kind of disease Unknown

Species affected Canada Geese

Number Affected Species	Actual Count	Estimated
<u>Canada Geese</u>	<u>76</u>	<u>100</u>
_____	_____	_____
_____	_____	_____

Number Recovered None known

Number lost 76

Source of infection Unknown

Water conditions Very Good

Food conditions Fair

Remarks _____



3-1570
NR-8a

REFUGE GRAIN REPORT

Refuge Pea Island

Months of Jan thru April 1954

(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.
Yellow Corn, (Shelled)	29 Bu.	28 Bu	57 Bu	0	0	57 Traps		0			

(8) Indicate shipping or collection points Brigantine Refuge, and Bought at Belleross, N. C.

(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.