

Regional Director, Atlanta, Ga.

Jan. 5, 1957

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

Narrative Report-Pea Island

Please find transmitted herewith Narrative Report in duplicate covering the Period, Sept. 1, through Dec. 31, 1956. It is believed to contain all pertinent information and data on all activities and programs carried out during the period mentioned above at Pea Island Refuge.

Archie B. Turner

PEA ISLAND NATIONAL WILDLIFE REFUGE
NARRATIVE REPORT
SEPTEMBER 1 TO DECEMBER 31, 1956

Contents

	Page
I, General	
A, Weather Conditions	1
II, 1, Populations and Behavior	2-5
2, Water Conditions	3
3, Food and Cover	4
4, Botulism and Lead poisoning	4
5, Other Diseases	4-5
B. Upland Game Birds	5
C, Big Game Animals	5
D, Fur Bearing Animals	5
III, A, Physical Developments	5
B, Manintenance	6
C, Farming	6
D, Fires, Wild and Other	6
IV, A, Commercial	6
B, Non-Commercial	7
V, A, Geese Disease Study	7
B, Trapping Program	7-8
VI, A, Publicity	8
B. Recreational	8-9
C, Violations	9
D, Visitors	10
Pest Plant Control	11
Public Use CY. 1956	12
NR Forms	

PEA ISLAND NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

SEPTEMBER 1, TO DECEMBER 31, 1956

I, GENERAL

A, Weather Conditions

Contrary to conditions that prevailed during the same period for the last two years we had no Hurricanes during the fall months, weather has been very mild with but two cold fronts moving in which was not severe, Sept. had about an average amount of Rain fall, Oct. was very wet having 10.23 inches of Rain accompanied by four days of North East wind reaching a velocity of 50 MPH on Oct. 16-19 causing some interruption of travel and generally flooding out all the lower portions of the Refuge.

Nov. and Dec. had but very little rainfall and temperatures some what above normal for the time of the year lowest temperature recorded for the period was on Dec. 30, with a reading of 30° and a high of 89 on Sept. 30, Skys mostly fair and as a whole excellent weather.

Data listed in the table below was furnished through courtesy of the National Park Service who maintain an official Weather Station at Bodie Island Station, 3miles north of Pea Island and reflect actual conditions as they exist in the area.

	Pricipitation		Temperatures	
	Actual	Dep.from Nor.	Max.	Min.
Sept.	4.94	X .44	89	45
Oct.	10.23	X 5.73	81	55
Nov.	.64	- 3.86	74	34
Dec.	.84	- 3.66	71	30
	<hr/> Tot16.65	<hr/> Tot- 1.35	<hr/> Max. 89	<hr/> Min 30

September - December - 1956

II, WILDLIFE

A Migratory Birds

1 Population and Behavior

Start of the period Sept. 1 found the Refuge populated with an average number of late summer and fall residents present with the exception of a few species Laughing Gulls, Terns, Black Skimmers, Herons and Egrets, Shore Birds and other species showed the first activity in fall migration during the last week of Sept. all during Oct. the usual departure occurred for most of those mentioned above with the exception of Black Skimmers which show some inclination to remain until well after the cold weather arrives by the end of Oct. most of the fall Migrants from the Refuge had gone.

Fall Migrants into the Refuge area consisting of Herring, Black Backed, and King Bill Gulls were in evidence by the middle of Oct. and continued to increase for the next three weeks when several thousand could be observed, Blacked Backed Gulls showed the largest increase over last years number, Other species about the same for the same period in 1955.

Southward migration of Waterfowl started on Sept. 17 when the first flock of Blue Wing Teal arrived numbering about 40 and were seen in the north Pond, Piedbilled Grebes began to arrive at the same time several being seen on the same date, Pintails, Bald pates, Mallards and Blacks, first were seen on Oct. 7 when a good number were counted within both pond area, These along with other species continued to increase all through Oct and by Nov. 15 there was app. 24000 ducks on the area all species combined, This is app. 3000 less than for the same date last year, Pintals showed an increase while some of the others was off somewhat in numbers, Mallards also showed a small increase over last year.

The first Canada Geese arrived Oct. 8 numbering 23, 7 Canadas remained over all summer and the first arrivals settled down in the South Pond with this small flock, Canadas continued to arrive all through Oct. and some during the first week of Nov. bringing the population up to app 10.500 by Nov. 20, This is about the same number as last year for the same period.

Swan was late in arriving, The first 8 was seen Oct. 27 in the North Pond but came in in greater numbers than last year with a peak count of 340 on Nov. 15, This compares with a peak count for last year of 270, It is interesting to note that the total number of Swan on the Refuge during the winter of 49-50 was 57 and has shown a steady increase every year since.

Greater Snow Geese was a few days ahead of schedule this winter, The first arriving Nov. 2 and on the 9th had increased to 1100, the arrival of these birds was somewhat erratic contrary to rule, They generally arrive in mass overnight this season they just dribbled in, The peak count for these was on Dec. 14 when there was about 9500 present, For some reason they all left the Refuge

Populations and Behavior Cont.

on the night of Dec. 19, with the exception of 40 which is still present, This is almost three weeks ahead of the usual time for their departure which is generally about Jan 6-10.

No unusual behavior have been observed during the period, Canadas and Pintail Ducks have done most of their feeding in the sound on Shoal grasses while all other Species of Ducks do most of their feeding on the Island itself mostly within the two Ponds and laong all the tide water creeks, A flock of app. 8000 Red Head Ducks use the North Pond as a resting ground but do very little feeding this has only been happening for the last two years, Up until then Red Head Ducks was almost non existent on the Refuge area except out in the deeper water bordering the boundary line app. 3 miles off shore.

2. Water Conditions

Considered as a whole Water conditions has been very good for the last four months, First two months of the period rain fall was above normal and during Oct. the water levels in both ponds reached an all time high and has remained above normal throughout the season which was favorable for Waterfowl feeding the marginal edges of both pools, Also freshened up most of the salt marshes which is subject to constant tidal action during periods of high tides.

No salinity test were run on the Waters of Pamlico Sound which normally run 55-65 ‰ Seas strength bordering the Refuge line but is thought to be below this figure at the close of the period, High Sea tides ran across from the Ocean side during the dates of Oct. 16-19 when we had a severe North Easter with wind reaching 50 MPH, No material damage was done except to interupt traffic for two days.

Find listed in table below, Gauge reading for each month ending for both pools

Month	North Pond	South Pond
Sept. 30,	4.60	4.42
Oct. 31,	5.80	5.80
Nov. 30,	5.24	5.16
Dec. 31,	5.00	4.90

3, Food and Cover

All plans formulated planned and put into effect takes into consideration that adequate food supply is the most important single item involved in the management of Pea Island Refuge as an efficient unit capable of maintaining the wintering population of Waterfowl that it is loaded with each winter in good condition, In past years a shortage almost always develops during the last two weeks in Feb. and lasting through March when Migration starts.

It is believed that notwithstanding the fact that our farming was badly damaged by the excessive Rainfall during Oct. that this period started out with the best supply of food that has occurred in the last several years, No Hurricanes occurred to damage the Shoal Grasses in Pamlico Sound and surveys disclosed that aquatic stands in the area was very good compared to most years, Neither pond went dry last summer and the results was an excellent crop of Native aquatic in both ponds with the north pond being the better in the Water area, and the south pond producing the better crop on the Marginal Edges consisting of app. 110 acres of almost a solid stand of wild Millet and Smartweeds which was an outgrowth of our Cattail control program which has progressed very successfully for the last two years.

Native Beach Pea which is an important item in the food supply at Pea Island produced a better than average crop having had no high storm tides to retard or destroy it as has been the case for the last two years, This crop of peas is usually fed out during the month of Feb. and the first two weeks of March, Canada Geese and black Ducks scour every foot of the area having stands of Beach Pea.

I regret to have to report that our winter farming program was anything but a success, We planted out a total of 62 acres of ~~XXX~~ Italian Ryegrass the last week in Sept. with 300 lbs of Basic Fertilizer per acre and obtained an excellent stand but during the Month of Oct. we had 10.23 inches of Rainfall which flooded out both fields and destroyed app. 65 % of stand, The fields remained so wet we could not replant or even get machinery in to apply the Nitrates as was planned, Canada Geese have eaten the remaining grass down to the ground and as of this date both fields are barren of any vegetation suitable for browse.

Despite this failure it is thought that our wintering Waterfowl will probably come through the winter season in fair condition.

4, Botulism and Lead poisoning

None occurred on the Refuge during the period.

5, Other Diseases

The Disease that effects the Wintering flocks of Canada Geese on Pea Island almost every winter in varying degrees has been very light so far this winter, several thousands of the entire area has been made for sick and dead birds and only 5 known sick or dead have been found up to Dec. 31, this compares with 4 found for the same period last year

Other Diseases Cont.

It is too early to make any predictions as to what the seasons number may reach since most of the outbreaks occur during Feb. and March, Narrative report for the period ending April 30 will carry a detailed account covering the entire season, This is the first winter in the last seven years that Refuge Personnel has not been required to assist in the Goose Disease Study which is understood to have been concluded altho we have not received a copy of the final report as to results of the project.

B. Upland Game Birds

Does not apply to Pea Island except for an occasional dove seen passing through.

C. Big Game Animals

Does not apply to Pea Island Refuge.

D. Fur Bearing Animals

There is no change of and note to report on the status of Fur Bearing Animals native to the Refuge, Muskrats which is the dominant specie remains at an almost constant level as far as can be determined, Our estimates on total population for the refuge is app. 2000 based on what data we can obtain from observations.

Otter range freely all over the entire refuge area and is estimated to number around 40 or a few over, No young Otter have been seen within the last few months but a couple was seen during the spring.

Nutria which has been prevalent further down the outer banks has slowly spread northward until we have at least 3 on Pea Island, One of these was caught recently in one of our Duck Traps, This was a young one and sign has been seen on several occasions indicating that there is at least two more adults using in the south Pond, It is not known at what rate they will increase and no plans has been made as yet concerning any action to be taken if they become troublesome.

III, REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Developments

The only new development under this heading consist of an Equipment shed 12 X 36 Ft. long an adjoined on to our present service Bldg. at Pea Island field Station, This is being built by Refuge personnel at odd times when the work load on other activities will permit, Present Status of this project is, concrete flooring poured, Base sills cut placed and bolted down, about one half of the framing is cut and assembled but but not yet set up in place, It is expected that it will be some time in the spring before this job is completed

B, Maintenance

This particular activity accounts for a goodly portion of the Refuge Personnel's time throughout the year, This period has been no exception, Altho we was not plagued with Hurricanosand extensive damage to the 12 miles of fence and other installations as was the case last year, There is a certain amount of Maintenance needed and required each month, Schedules on Equipment Maint. has been maintained, two inspections and some repairs to the fence was accomplished, Minor repairs to the light plants was made during the period, All trapping blinds was put in good condition, Trapping Nets, Mortars and other items was overhauled, Minor repairs to Build/ings and gutters and some paint work was done during the period, Tractor, and other farming equipment was cleaned up sprayed with heavy oil and stored following the end of the farming operation, Inspections were made and new signs posted around the Refuge boundary where necessary, Some work was done on the sand fence bordering the north pond erecting some plank barriers in two places where a blowouts had started, And numerous other small items all of which takes time.

C, Farming

As was noted under Food and Cover the farming program carried out at Pea Island was anything but a success, Altho more money was expended and more acreage was planted, Due to an excessive amount of Rainfall during the month of Oct. very little was produced in the way of Green Browse, We plan on some modification of the farming program for the coming year, Three small experimental plots planted out to summer crops of Soy Bean and Mile showed enough promise to warrent a small acreage of these on a trial basis, These changes will be shown in the annual Management Report, Due Jan. 22.

D, Fires, Wild and Other

No wildfires occured on the Refuge during the period, Some controlled Marsh Burning has been done but since this program is not complet and it is desirable to report burning activities on a seasonal basis this program will be reported in detail in, Controlled burning report which is due with April 30, Narrative report.

IV, ECONOMIC USES

A, Commercial

Only one Commercial use of the Refuge area is in effect at this time, It being the old J. B. Tillett Concession taken over by the National Park Service, This was leased out by them to private parties for operation on July 5, and was in operation until about Sept. 15, Any funds that accrue to our service from this operation is handled at Regional office levels and this Station has not been furnished a copy of the accounting to date if any has been submitted.

Economic Uses Cont.B, Non-Commercial

One Special use permit was issued to the North Carolina Wildlife Resources Comm. to collect 50 live Muskrats for restocking purposes on State owned Marshes, No work was accomplished on this permit until Sept. when 9 Rats was collected and removed under the permit which expired on Sept. 30, This item will be submitted on NR 4 with April Narrative.

V, FIELD INVESTIGATION & APPLIED RESEARCH

A, Goose Disease Study

As was stated under "Other Diseases" this is the first winter in the last seven years that Refuge Personnel has not been required to give active assistance in the Goose Disease Study that was carried out by the Research Div. at Pea Island, This years activities consist of weekly canvases of the Refuge area to determine to what extent if any the flocks of Canadas are effected, So far only 5 known sick or dead birds have been found.

B, Trapping program

For the past several years we have concentrated on trapping Canada Geese in connection with the Goose Disease Study, In those years we trapped some 2700 Geese.

This year under instructions from the Regional office we are concentrating on a duck trapping and banding program to assist the Atlantic Flyway Waterfowl Council in their program, Also doing a limited amount of Canada Goose trapping and banding, Find listed below number of different Species trapped and banded to date.

Canada Geese (Also White plastic Neckbands attached)	68
Black Ducks	36
Mallards	58
Pintails	30
Red Heads	114
Ring Neck	1
Gadwall	1
Baldpate	1

Trapping Program Cont.

Canvas Back	1
Greater Scaup	1
Coots	96

 Tot. 406

To date we have not been successful in trapping the particular Species requested by the Flyaway Council with the exceptions of Canada Geese and Coots, But we may round out the Quota before the Season is over.

VI, PUBLIC RELATIONS

A, Publicity

Publicity for the period consisted mostly of distribution of our Refuge Leaflet No. 6 and Refuge Bird lists to visitors and furnishing information requested by mail and other sources, to all interested persons concerning the Refuge and its objectives, Several tourist resorts along the outer banks from Powell's Point south to Mataras is furnished supplies of this material which they in turn furnish to Visitors and other parties.

No public appearances has been made and no Movies shown, 4 Man days was expended in assisting Mr. Lansdale (Bounce) Anderson, Out Door Film Corp. Photographer in securing more shots of Wildlife which will be used in Making the Movie his Firm has contracted to make for the National Park Service on the Recreational Area.

One 10 minute Tape Recording was made in cooperation with Mr. Paul Moran, News Director of Radio Station W I S T of Charlotte N. C. for use over that and other Station, The recording carried information on Species, Number of Populations, dates on migration and other related subject matter.

B, Recreational

Number of visitors increased app. 100 % over the same period last year to the Refuge, As usual fishing was the major activity engaged in, Surf fishing was not up to par during Oct. and Nov. altho weather conditions was very favorable no good run of fish was present during the fall months.

Visitors interested in Wildlife, Especially Snow, Geese and other Species generally was next in numbers with a scattering of others that was just sight seeing and Beach Combing, Photography,

Based on information the following estimates is thought to closely reflect actual use of the Refuge area for Recreational use

Recreational Cont.

	Man Days		Man Days
Fishing, This period	3.600	1956 Tot.	14.566
Sight Seeing & Other, Per, 6.300 0		1956 Tot.	18.131
	<u>9.600</u>		<u>32.697</u>

One Way Traffic across Oregon Inlet

Vehicles, This period	2.443
" 1956	<u>93.753</u>
Passengers This period	7,818
" 1956	<u>93,753 298,808</u>

Figures listed in the last table above was computed from information furnished by the National Park Service who maintain automatic counters on the Highway at Oregon Inlet

C, Violations

At least three violations is known to have occurred on the Refuge in the last three months, Mostly people taking shots of the Canada Geese which is feeding constantly in the field along the Highway in the North Pond area.

Considerable time was spent by Refuge Personnel in trying to apprehend these parties, But it seems to be violators who shoot one time and do not come back since there is no pattern to go by this is one of those hard ones to crack, No serious violations except these have occurred during the period.

D, Visitors ScheduleOfficial

Mr. Rex Gary Schmidt	Sept. 4-5	Washington, D. C.
Mr. W. G. Cahoon	Sept. 13,	Mattamuskeet Refuge
Mr. ? Ceda, Burea-Budget	Sept. 13,	Washington, D. C.
Mr. ? Gordan " "	Sept. 13	" "
Mr. Robert W. Ludden, Nat.P.Ser.	Sep. 13	" "
Mr. L. S. Givens, FWS	Sept. Oct. 1,	Atlanta, Ga.
Mr. Allyn F. Hanks, Nat. P. Ser	Oct. 4,	Manteo, N. C.
Mr. Ross L. Leffler,	Oct. 23,	Phil. Pa.
Mr. E. V. Hines, Game agent	Oct. 25,	Kitty Hawk, N. C.
Mr. Robert Halstead, " "	Oct. 25,	Washington, N. C.
Mr. Lester Bagley, Asst. Dir.	Dec. 1,	Washington, D. C.
Mr. Carl V. Fermanich, FWS	Dec. 2,	Atlanta, Ga.
Mr. John R. Walther, Presquile,	Dec. 2,	Presquile Refuge

Unofficial

No list will be attempted on unofficial visitors to the Refuge for the period, since we have 209 registered since the last Report was submitted Aug. 31,

Approved By ^{1st} C. V. Fermanich Submitted By Lucia B. Turner
 Act. Regional Refuge Supervisor
 Date 4/9/57 Date Jan 5, 1957

PEST PLANT CONTROL-PEA ISLAND
C.Y. 1956
CATTAIL AND BRUSH

For the last several Years we have had in effect at Pea Island a Cattail Control program by mechanical means, Tractor and heavy duty stalk cutter, Progress and results of which has been reported from year to year.

This year in addition to this program there was added some herbicidal control work on Cattail and also app. 80 acres of brush control mechanically, The following is a summary of the work and the results obtained.

26 Acres of Cattail Domingensis was sprayed by air on May 19 with Dalapon, 27 Lbs. 73 % per acre, Close checks showed a 100 % kill back and the last thorough inspection on Oct. 19, showed less than a 3 % comeback from root stock, This is considered about the closest thing to a fool proof control yet tried, altho cost are much to high to carry out a large scale operation, Cost on this Particular operation was \$21.12 per acre, Total \$549.10

An additional 65 acres of Cattail, Domingensis was treated for the third time with the Tractor and two Heavy duty Stalk Cutter pulled tandem and weighted with 800 lbs of added weight, Most of this acreage had only about a 35 % stand due to other operations which had reduced the density.

Results on this operation was a 100 % killback within two weeks and a regrowth of app. 10 % within about 7 weeks, last inspection on Oct. 19 showed a slight increase of survival or app. 15 % regrowth, Costs on this operation was \$1.40 per acre, Total \$91.00, Dates of this operation was July 1-8

Some 80 Acres of land which had reverted to a low dense stand of Wax Myrtle was treated on June 20 to July 10 in an effort to bring it back into active production of Scirpus Am which was the major specie before the brush took over, This treatment consisted of double cutting with a bush and bog plow heavily weighted behind one of the Stalk cutters pulled with the T-9 Tractor, Results was altho the operation was some late in the season, a fair stand of three square and Smartweed mixed, which has been eaten out by Canada Geese and black Ducks, It is anticipated that at least one more treatment will be necessary to completely eradicate the Brush from this area, Costs of this operation was, \$1.45 Total, \$116.01.

All cost figures shown above is actual cost based on labor, Gas and Oil, And does not take into consideration the depreciation of Equipment used in the work.

PUBLIC USE - 1956

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

A. _____ National Wildlife Refuge.

B. **Poa Island** total use of all types _____ visitor-days.

1. Hunting use (for those refuges having public or regulated hunting.) ^{32,897}

Estimate visitor-days _____

2. Fishing use. Estimate visitor-days .00

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.) ^{14,566}

Estimate visitor-days _____

C. Remarks _____ 18.131

Figures listed above reflect an increase over last year of almost 100 %

Date Jan. 5, 1957

Signed Reuben B. Turner
Refuge Manager

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

WATERFOWL

REFUGE Pea Island, Nantux, N. C.

MONTHS OF Sept 1, TO Dec. 31, 1956, 19

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	7	7	7	25	520	1699	3000	3500	3600	
Cackling										
Brant										
White-fronted										
Snow							21	21	21	
Blue							1	1	1	
Other										
Ducks:										
Mallard			2	2	4	20	200	400	650	
Black	400	400	400	400	700	700	800	800	1200	
Gadwall	700	700	400	600	200	400	1050	900	900	
Baldpate			200	200	1000	1000	2000	2500	3200	
Pintail			500	650	1000	700	1800	5100	5300	
Green-winged teal						200	600	600	500	
Blue-winged teal	80	400	30	6	200	80	20	40	100	
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked							20	85	40	
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other Unidentified						1800	1900	1800	2000	
Coot:					22	410	450	680	1000	



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

WATERFOWL
 (Continuation Sheet)

REFUGE Pea Island, Manteo, N. C.

MONTHS OF Sept. 1 TO Dec. 31, 19 56

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production : Broods: Estimated : seen : total		
	11	12	13	14	15	16	17	18				
Swans:												
Whistling	8	182	349	334	328	308	320	298	14.056	0	0	
Trumpeter												
Geese:												
Canada	6460	7050	9000	10500	10500	11600	10800	9600	586.538	0	0	
Cackling												
Brant			8	4					84	0	0	
White-fronted												
Snow	21	1180	1400	8600	6000	8500	9500	10000	295.288	0	0	
Blue	1	8	8	8	8	8	8	8	322	0	0	
Other												
Ducks:												
Mallard	600	800	1200	1150	1300	1300	1100	1500	74.396	0	0	
Black	950	900	1100	1400	1350	1600	1450	1500	39.300	0	0	
Gadwall	900	1350	1400	1800	1800	1200	950	800	108.850	0	0	
Baldpate	5500	5500	7600	4500	4000	3000	2600	1900	311.500	0	0	
Pintail	5000	6000	7800	3500	4500	3000	3000	2400	350.350	0	0	
Green-winged teal	650	600	600	600	700	400	700	2000	57.250	0	0	
Blue-winged teal	50	100	40	10		20	8	30	8.708	0	0	
Cinnamon teal												
Shoveler		2	4	90	300	700	550	450	33.582	0	0	
Wood												
Redhead		1	4	6	300	7000	9000	6500	176.787	0	0	
Ring-necked	65	80	80	140	155	800	850	800	21.805	0	0	
Canvasback				3	22	420	55	30	3.710	0	0	
Scaup	50	200	600	700	300	250	400		24.450	0	0	
Goldeneye												
Bufflehead												
Ruddy	8	500	550	570	700	600	700	550	29.248	0	0	
Other Unidentified	3460	3500	3000	2800	3500	3000	2800	2800	238.700	0	0	
Coot:	1300	1800	2300	2200	2000	1700	900	1000	108.934	0	0	

(over)

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans	14.056	340	0
Geese	882.232	21.000	0
Ducks	1,473.504	24.500	0
Coots	108.934	2.300	0

SUMMARY	
Principal feeding areas	Snow Geese and puddle ducks, Both Ponds and marsh, Canada Geese and Pintail Ducks, Sound Waters and all parts of the Refuge Area
Principal nesting areas	None

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 Sept. 30 to Dec. 31, 1956

(1) Species Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total Estimated Number
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	
I. Water and Marsh Birds:										
Herons, Great Blue	Res.		14	10/19	4	12/21				20
" Little Blue	Res.		76	9/7	2	12/21				100
" Louisiana	Res.		53	9/7	8	12/21				76
" Black Crowned	Res.		160	9/7	17	12/21				200
" Yellow Crowned	Res.		60	9/7	3	12/21				120
Egrets American	Sum Res.		170	9/7	8	12/21				200
" Snowy	" "		308	9/7	6	12/21				400
Loons Common	18	10/12	21	10/12	8	12/21				30
Grebes, Piedbilled	Res.		271	12/12	52	12/21				300
Cormorants	6	10/12	80	12/21	80	12/21				100
Bitterns American	1	10/12	7	12/21	7	12/21				15
Gannets,	70	11/16	900	12/21	900	12/21				1600
Rails, Clapper	No accurate data on Rails,		Est. Population							750
Skimmers, Black	Sum Res.		700	9/7	20	11/16				1000
II. Shorebirds, Gulls and Terns:										
Terns, Royal	Sum Res.		204	9/7	33	12/21				400
" Common	" "		650	9/7	1	12/21				800
" Least	" "		480	9/7	22	11/16				800
" Black	200	10/12	200	10/12	3	12/21				400
Gulls, Laughing	Res.		3500	9/7	200	12/21				
" Herring	"		6500	10/12	4000	12/21				8000
" Ring Bill	"		230	10/12	75	12/21				400
Plovers, Wilson	Sum Res.		80	9/7	2	10/12				200
" Black Bellied	14	9/7	200	10/12	24	12/21				250
Sand Pipers, All Species	Sum Res.		6500	9/7	300	12/21				9000
Yellow Legs, Great-Less	Res.		900	9/7	38	12/21				1500
Turnstones, Ruddy	Sum Res.		650	9/7	3	11/16				600
Sanderlings	" "		900	9/7	40	11/16				2000

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove	An Occasional few passing thru during Oct. Never see over a dozen				
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow	Average population 4-6 during the winter months				
	Crow population on the Refuge area will not exceed 40 at any time,				
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.

Refuge Pea Island, Hatteras, N. C.

Months of Sept. 1

to Dec. 31., 1956

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'vd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
	Does not apply to Pea Island, except for an occasional dove observed migrating thru during Sept-Oct/									

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 1956

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses		(6) Introductions	(7) Estimated Total Refuge Population		(8) Sex Ratio
			Hunting For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss		Number	Source	
Common Name	Cover types, total Acreage of Habitat	Number										
Does not apply to Pea Island, No big game animals on the area												

Remarks:

Reported by _____

INSTRUCTIONS

Form NR-3 - BIG GAME

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

3-1755
Form NR-5
60701

DISEASE

Refuge Pea Island, Manteo, N. C.

Year 19 58

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	Actual Count	Estimated
Species		
<u>Canada Geese</u>	<u>51</u>	<u>60</u>
_____	_____	_____
_____	_____	_____

Number Recovered None

Number lost 60

Source of infection See Remarks

Water conditions Good

Food conditions Fair

Since we have not yet received a copy of Dr. Herman's final report on the geese disease study, kind of disease is still listed unknown, 46 of the birds listed above was lost during the last half of last season, only 5 known sick or dead birds have been recorded up to Dec 31, this Season

Remarks _____



3-1756
 Form NR-6
 (April 1946)

FISH

Refuge Pea Island, Manteo, N. C.

Year 1945

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 Blue Fish Flounder Speckled Trout	Fair to Good	6,800 Est.	Unknown	0	0	0	0	0
<p>Sport fishing on the 12 miles of surf line is on the increase annually. Figures listed above is an estimate only. Time that Refuge personnel has to devote to checking this Activity is limited. This years fishing has been better than average but actual pounds of fish caught is unknown but from periodic checks made a fair estimate would be about 3-4 lbs per man day.</p>								

REMARKS:



3-1757
 Form NR-7
 (April 1946)

PLANTINGS
 (Marsh - Aquatic - Upland)

Refuge Pea Island, Manteo, N. C. Year 1946

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 plantings accomplished for the calendar Year 1946								

TOTAL ACREAGE PLANTED:

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

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

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Pea Island, Mantee, County Dare State N. C.

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water-fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
			Acres	Bu./Tons	Acres	Bu./Tons			
Ryegrass, Italian					62		62	Green Winter Browse for Waterfowl	62
								Fallow Ag. Land	None

No. of Permittees: Agricultural Operations None Haying Operations None Grazing Operations None

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle				
				2. Other				
				1. Total Refuge Acreage Under Cultivation				62
Hay - Wild				2. Acreage Cultivated as Service Operation				62

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

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

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

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

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

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

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

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

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

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

REFUGE GRAIN REPORT

Refuge Pea Island, Manteo, N. C.

Months of Sept. 1 through Dec. 1956, 195

(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
Corn, Yellow Shelled	None	500 Bu.	500 Bu.			Trapping purposes	100 Bu.	200 Bu	Trapping	None	

(8) Indicate shipping or collection points Black Water Refuge, Cambridge, Md.

(9) Grain is stored at in basement, Pea Island Station

(10) Remarks We expect our present supply to be adequate until the end of the winter trapping program

*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.

Form NR-9

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

Refuge Poa Island, Manteo, N. C.

Year 1956

Species	Collections				Receipts		Total Amounts on Hand	Amount Surplus
	Amount	Date or Period or Collection	Method	Unit Cost	Amount	Source		
	No collection of seed or planting stock during calendar year 1956							

3-1760
 Form NR-10
 (April 1946)

HAYING AND GRAZING

Refuge Pea Island Refuge, Manteo, N. C. Year 1946

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, No haying or Grazing operation in effect									

Totals:

Acreage grazed..... Animal use months..... Total income Grazing.....
 Acreage cut for hay..... Tons of hay cut..... Total income Haying.....

TIMBER REMOVAL

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

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
Does not apply to Pea Island, No timber on the area								

Total acreage cut over.....

Total income.....

No. of units removed B. F.

Method of slash disposal.....

Cords.....

Ties.....

.....

Regional Director, Atlanta, Ga.

Sept 10, 1956

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

Narrative Report-Pea Island, Period May 1, thru Aug. 31, 1956

Please find transmitted herewith Narrative report covering the period mentioned above, Some of the subject matter may be somewhat brief in description but is beleived to cover all the essential points on all activities carried on through the period under report.

It is regreted that the report is a few days late and will try and see that it is submitted on schedule in the future.

Hennis B. Turner

PEA ISLAND NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

MAY 1, TO AUGUST 31, 1956

CONTENTS

	Page
I, General	
A, Weather Conditions	1
B, Water Conditions	1
II, Wildlife	
A-1 Population and Behavior	2
2, Food and Cover	3
3, Botulism and other Diseases	3
4, Fur Bearing Animals	3-4
III, Refuge Development and Maint.	
A, Physical Developments	4
B, Maintenance	4
C, Farming	4
D, Fires, Wild and otherwise	5
IV, Economic Uses	
A, Commercial	5
V, Field Investigation and Research	
A, Field Research	5
VI, Public Relations	
A, Recreational Uses	5
B, Publicity	6
C, Violations	6
D, Visitors	7
Pest plant control Program	8
NR Forms	

PEA ISLAND NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

MAY 1, TO AUGUST 31, 1956

I, General

A, Weather Conditions

In Contrast to weather conditions for this period last year the North Carolina Coast has had one of the best summers on record for the last several years, Temperatures has remained at a very normal range of from the lower 40's to a high of only 93 during the last four months.

May was somewhat low on Rainfall, June just below normal, With July and August showing above normal, August having a total of 10.85 Inches for the month, No hurricanes have occurred up to date and we hope there will be no repetition of the epidemic of storms that plagued the Coast line as was the case last season, Causing severe damage and Generally disrupting all work programs and activities being carried out on the Refuge area.

Data listed below was furnished thru the courtesy of the National Park Service who maintain an official weather Station at their Bodie Island Station three miles north of Oregon Inlet and do reflect weather conditions as they exist on the Refuge.

Precipitation Actual	Dep. From Normal	Temperatures	
		Max	Min
May, 2.08	- 2.42	93	46
June 3.90	- .60	91	58
July 7.25	x 2.75	93	87
Aug. 10.85	x 6.35	92	65
<u>Tot. 24.08</u>	<u>x 6.08</u>	<u>93</u>	<u>46</u>

B, WATER Water Conditions

With Rainfall being 6.08 inches above normal for the last four months of course the Refuge area has had an abundance of water, Levels in both ponds have remained high enough to maintain normal growths of Aquatics which is something unusual for the summer months.

Pamlico Sound waters have remained about normal with probably less salinity than usual, No test have been run during the period but normally the sound waters adjacent to the Refuge run app 65 % sea strength, No severe winds have occurred to cause any turbulence and the water has remained very clear for the entire period.

II, WILDLIFE

A, Migratory Birds

1, Population and Behavior

This period started out with a remanent of some 130 Canada Geese and app 600 ducks left from the wintering Population of Water fowl, The Canadas had all departed by the last of May except 7 which remained all summer, The Black and Gadwall ducks increased somewhat until during the active nesting season the number was about 1200 and included more Blue Wing Teal than in former years.

For some reason unknown the actual hatch was off app. 50 % on Gadwalls from last season count, Blackfell off somewhat but the actual number on these is not known since they nest all over the Refuge where there is suitable water conditions along the tidewater creeks pot holes etc. this makes it impossible to get an accurate check on all broods as we can on the Gadwalls that only nest within the two fresh water pond areas Brood counts this summer disclosed a figure of 72 Broods of all species and 519 young, This compares with a figure of 136 Broods and 977 young last season, Blue wing Teal is on the increase as nesting Species at Pea Island, Having had 7 Broods with 56 young this season in past years never over two broods had hatched, In addition 1 brood of Red Breasted mergansers hatched off with 7 young this is the first record of these having nested on the area.

Summer populations of Gulls, Terns, Herons and Egrets were about normal with two colonies of the Herons nesting along with Egrets, Laughing Gulls which normally nest on the Refuge on two low lying Island along the west side moved to a series of small Island and spoil banks along the channel running from Oregon Inlet to Mantee and not being on the Refuge, it is thought the cause of the move was damage to their former Islands by Hurricanes which gave them a beating last summer destroying most of the vegetative matter which existed, Also Black Skimmers deserted the Refuge area for nesting purposes althe there was an average number present no nesting birds was found in all the former nesting sites the reason for this is unknown.

Plovers, Turnstones, Sanderlångs, Sandpipers and yellow legs were present in about the usual numbers as last year altho we did not get such a count as we did on Sandpipers as we did last year during the low water period that existed during the middle of the summer which concentrated them into a few places where they could readily be observed

No unusual species have been observed during the reporting period with the exception of the Glossy Ibis which was reported in the south Pond area last season numbering 5, Glossy Ibis again were present in the same location this July numbering 6 but showed no nesting activities and was only present about three weeks, This is thought to be a small flock of birds that stop over a few day on Pea Island in route to some other locality

We have not gone into detail on actual numbers of all species under this heading since NR forms carry all the data available based on actual counts and our best estimates, and a duplication of the same would be of no value in this report.

2, Food and Cover

It is our thought that the last four months has proven to be about the best over all food conditions that has existed on the Refuge Area in the last several years, Weather of Course is a determining factor on food production along the outer banks and since weather conditions has been almost perfect so far this season results has been very good, Of course during the summer months when the number of birds is limited there is always plenty of food available.

With water levels remaining higher in the ponds than usual they have a better crop of aquatics in the process of maturing in the main body of the ponds, While the marginal edges show an unusual crop of Smart weed, Wild Millet, Three Square and other species, these combined with what planting we plan to do during the month of Sept. along with the Marsh burning program should provide us with an extra crop of Food for the wintering population of Waterfowl this coming season, Surveys conducted over Pamlico Sound by boat on July 19 and part of 20 showed Growth conditions of all the aquatics native to the waters to be in excellent condition covering app. 70 % of all the bottom below low water line, this check covered all the shore line extending from Oregon Inlet to south of Rodanthe a distance of over three miles out, If no hurricane occur for the next few weeks, prospects for food in the sound is the best in several years, After all this area is the most important since it furnishes over 90 % of all food available to the Pea Island flocks and hurricanes such as struck the area last year could play havoc with the most important source of food for the winter.

Native Beach Pea which is an important item of food during the last two months of the winter season shows a better than average crop over the entire area, All of this specie outside of the two ponds were completely destroyed by hurricanes last year, It is hoped that it will survive this season.

3, Betulism and other Diseases

No diseases have occurred effecting the summer populations of birds on the refuge during the Period.

4, Fur Bearing Animals

Contrary to Conditions that prevailed last year when most of the permanent population of Muskrats were forced to migrate to another location due to low water levels the Rats has has an ideal condition throughout the summer and has become more abundant than in any period noted so far, Estimates for the total population of Muskrats has been on the average of 1500-2000 for some time past but this is thought to be very conservative, and the number is probably much higher, No recent survey has been conducted as to number of Maternal houses existing on the area but this has been found in the past to be very inaccurate due to so many rats present in burrows with no houses present at all, So that any estimate would probably be of no value based on this method of census, Actually the number of rats on the Refuge could well be double that of estimates submitted.

Fur Bearing Animals Cont.

The population of Otter on the Refuge seem to remain at about the same level with no noticeable increase. These animals range all over the entire area and on south off the Refuge and no doubt some of them is trapped during the winter months south of our boundary line since it is known that considerable trapping is carried on around the village of Rodanthe and Salvo. This probably accounts for the permanent number with no increase to mention. There is no lack of food for these animals as they have access to 12 miles of coast line on both sides of the Island the sound side being laced with tidewater creeks that furnish excellent feeding conditions all year round.

III, REFUGE DEVELOPMENT AND MAINT.

A, Physical Developments

The only new physical developments accomplished during this period consist of one walkway constructed, being 80 Ft long and built across the Borrow pit to an Island for photography purposes for visitors. Also two Photography Blinds were constructed in the North Pond area for Visitor use this winter in securing close up Movie and still shots of Waterfowl. We are having an ever increasing number of Visitors interested in this activities and have had several criticisms because we had no adequate blinds suitable for the purpose. We expect to get some favorable comments on the results of these two blinds from the visiting public.

B, Refuge Maintenance

As usual this particular activity accounts for the bulk of time expended by the personnel during the summer months. This period was no exception, Maintenance has been maintained on all motorized equipment farming machinery, Buildings, Roads and fences. Three more new duck trap was constructed. With the assistance of Mr. Ball 26 acres of Cattail was treated with herbicides and another 65 acres was treated mechanically with the Tractor and two heavy duty stalk Cutters. Still another 80 acres was cut over and plowed with a bush and bog plow for the control of Wax Myrtle and other brush in an effort to reclaim it for the production of food plants. this program will be more fully covered in another part of this report under another heading where it is possible to give cost data and other information.

C, Farming

No large scale farming operations have been carried out during the period. Two acres of experimental plantings of each, Hairy Indigo and Chufas, was made during april with proper fertilization but the results so far have been very disappointing. In addition three small plots were planted out on the land plowed for Brush control consisting of Soy Bean, Crowder field peas, and Mile Maize, the peas and beans showed very little promise but strange to say the Maize did fair considering the type of soil and the amount of preparation prior to planting. This item will be ~~RETRY~~ tried again under more favorable conditions.

D, Fires, Wild or otherwise

No wildfires occurred on the Refuge during the period, and no controlled burning has been done.

IV, ECONOMIC USES

A, Commercial

The Concession formerly owned by Mr. J. B. Tillet and since purchased by the National Park Service is now again in operation since about July 1. Since our Memorandum of agreement with the Park Service carries a clause whereby all proceeds from this concession shall be paid over to our service it is assumed that the Fee of \$50.00 per month plus 1 % of the gross intake will be made over to our service at Regional office levels as it is collected by the National Park service, no information is available as to when the first payment will be made, or the exact amount involved.

V, FIELD INVESTIGATION & APPLIED RESEARCH

A, Field Research

The usual periodic brood counts were made during the summer, during the duck nesting season. Both Heron and Egrets Rookerys were checked several times during the period before and after hatching began. A complete survey was made of all the panicle sound waters from Oregon Inlet to south of Rodanthe during July investigating general conditions of vegetative stands and density which was found to be in very good condition.

The Research Division has carried out no program during the summer and no work has been accomplished in this program during the period.

VI, PUBLIC RELATIONS

A, Recreational Uses

With perfect weather throughout the period and enough ferries in operation to handle the traffic load, The influx of visitors far exceeded any for a like period on record to date.

Fishing was the main attraction with the beach lined at times for a long distance all surf casting, Bathing, beach combing, and just plain loafing accounted for another large number along with a smaller number interested in bird watching, Photography and other past times,

Based on information obtained by checks made twice a week along the beach line from Pea Island Station to Oregon Inlet it is estimated that the total man days use for recreational purposes was about 17000 or over double that for the same period last summer.

Camping on the rough camping ground fell off somewhat due to the Park Service establishing a better equipped area for visitors on the north side of the Inlet with better protection from insects but we still had a good number of campers on the north end of the Island.

B, Publicity

With the full time load for the limited personnel at this Station there has been no time available for out side appearances at meetings, Movie showing etc. most of our efforts on the publicity angle is devoted to distribution of Refuge leaflets and bird list along the beach line from Kitty Hawk south to Hatteras at all the tourist resorts, Hotels and cafes, Also information is furnished to a great number of visitors at the publicity office located at the field Head Q. Station, This phase of Management is requiring an increased portion of time expenditure with each passing year by Refuge personnel and to do the job equal to the Park Service standards it would require a full time man at least five months of the year, There is some question in my mind concerning this particular problem at Pea Island Station, to keep abreast of the increasing had of visitors and neglect some other activity or just simply let the visitors take care of themselves and carry on all the other necessary work that is required to get the most value out of the refuge as it pertains to Wildlife habitation, as the situation exist at present altho we do the best job possible one or the other has to suffer some neglect during certain seasons of the year,

During the four months past 68 persons have been taken on conducted tours of the Refuge area, A total of 633 persons registered at the Head Quarters office, seeking information of the area and other matter, Listed below is a summary of one way traffic thru the Refuge as furnished by the automatic counter maintained by the Park Service at Oregon Inlet.

Month	Vehicles	Passengers
May	6.472	19.709
June	13.527	45.038
July	23.137	77.061
Aug.	21.388	71.040
	<hr/> Tot. 64.524	<hr/> Tot. 212.868
Jan.-April period	Tot. 9.821	Tot. 32.344

C, Violations

No serious violations have occurred during this period, some dumping along the highway has occurred and an occasional dog is allowed out of vehicles at times, No action of a legal nature has been instigated but warning have been issued to several parties concerning these violations.

The two Negro men apprehended cutting and removing wire from the fence line during April pled guilty and was given a one year term in prison.

D, Visitors Schedule

Official

Mr. Lester E. Scherer	5/18	Atlanta, Ga.
Mr. Kenneth Wilson	5/18	Currituck, N. C.
Mr. Edwin Ball	5/19	Atlanta, Ga.
Mr. Willie G. Caheon	5/19	Mattamuskeet Refuge
Mr. Allyn F. Hanks, Park Supt.	6/7	Manteo, N. C.
Mr. Frank E. Egerton,	8/3	Dukes University

Unofficial

Names and dates of all the unofficial visitors will be omitted due to the long list on hand, 633 Visitors registered at the field H. Q. office during the period.

Date Submitted ^{Supt} ~~Aug.~~ 10.

Submitted by Dennis B. Turner

Approved by [Signature]
Regional Refuge Supervisor

SEP 13 1956

PEST PLANT CONTROL PROGRAM
PEA ISLAND REFUGE

May thru August, 1956

In connection with our annual mechanical operation on the control of Cattail within the pond areas we have been reporting only on operations by Mechanical means.

This year we have also carried out an operation with the assistance of Mr. Ball, Regional Pilot Biologist whereby 26 acres of the stand of Cattail in the south pond was sprayed with Delapen. The actual spraying was done on May 19 over a stand consisting of about a 20 % normal density or the remainder of what was left after last seasons Mechanical treatment which reduced it down to this point. Results was very good killing out the Cattail almost 100 % no planting was done after the spraying but as of this date we have a 100 % stand of wild millet and Smartweed on the acreage treated.

Another 65 acres was cut over with the tractor and heavy cutters during the week July 1-7 with equally good results. High water levels in the pond forced us to discontinue this project before completion but the area treated also has an excellent stand of Millet and Smartweed and as of now the rank growth of Cattail that existed on over 100 acres has been reduced down to the point where it can be brought under control if not complete eradication with herbicides at a price that will not be prohibitive.

another 80 acres of low lying marsh land along the east side of the south pond that had reverted to almost a solid stand of Wax Myrtle and other brush have been treated in an effort to reclaim the tract. The area was cut over with one of the heavy Cutters and plowed with a bush and bog plow during the period June 28 to July 10. It is to early to tell just what the results will be on this operation but the object in mind was to bring this acreage back into active production of Cirpus Am. which formely was the dominant growth existing. It will probably be necessary to repeat the plowing again next summer to get the results desired since one treatment will not completly kill out the brush.

Following is the cost for each operation described above on an acre basis

26 Acres Sprayed with Delapen,	Tot. Cost, \$549.10	Per Acre, \$21.11
65 Acres cut with Traector	" " 91.00	" " 1.40
80 Acres Brush plowed	" " 116.01	" " 1.45

3 -1750a

Cont. NR-1

(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Poa Island, Manteo, N. C.MONTHS OF May 1 TO Aug. 31, 1955

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production : Broods: Estimated : seen : total		
	11	12	13	14	15	16	17	18				
Swans:												
Whistling												
Trumpeter												
Geese:												
Canada	7	7	7	7	7	7	7	7	3,080	0	0	
Cackling												
Brant												
White-fronted												
Snow												
Blue												
Other												
Ducks:												
Mallard												
Black	300	340	420	500	535	400	400	400	45,965	27	189	
Gadwall	380	380	400	485	550	600	480	480	48,325	38	267	
Baldpate												
Pintail												
Green-winged teal												
Blue-winged teal	40	40	35	45	100	112	100	100	12,507	7	56	
Cinnamon teal												
Shoveler												
Wood												
Redhead												
Ring-necked												
Canvasback												
Scaup												
Goldeneye												
Bufflehead												
Ruddy												
Other Red Breasted Merganser, one pair, First Record										1	7	
Coot:												

(over)

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans			
Geese	Canada 3,060	128	0
Ducks	106,897	1085	519
Coots	0	0	0

SUMMARY

Principal feeding areas The two fresh water ponds

North pond had the heaviest use

Principal nesting areas North Half of the Refuge area

and especially the ponds

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 Aug. 31, 1956

(1) Species Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total Estimated Number
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	
I. Water and Marsh Birds:										
Herons, Black Crowned	Res.		200	5/29			1	40	130	340
" Yellow Crowned	Res		85	5/29			1	8	22	160
" Louisiana	Res		110	5/29			1	25	100	240
" Little Blue	Res		65	5/29			1	60	180	300
" Great Blue	Res		9	5/29						12
Egrets, American			210	5/29			1	38	115	300
" Snowy			400	5/29			2	85	300	500
Pelicans, Brown			35	8/3						35
Rails, Clapper	Res.	No Data Available								
Grebes, Piedbilled	Res		65	8/3				7	21	100
Gannets,						650	5/8			1000
Bittern, American					4	5/8				5
Osprey,			6	5/29	1	8/3				6
II. Shorebirds, Gulls and Terns:										
Terns, Royal			285	5/29						400
" Common			800	5/29			1	85	165	1000
" Black	8	7/10	450	8/3						600
" Least			850	5/29			4 ?	120	400	1200
Gulls, Herring	Res.		1600	5/29						2000
" Ringbill	Res.		300	5/29						800
" Laughing	Res.		4000	5/29	This Species moved their nesting location this year None on the Refuge area					4500
Yellow Legs, Green & Less	Res.		700	5/29						1000
Flovers, Black Bellied			80	8/3						150
" Wilson			375	8/3						500
Sandpipers, All Species			9000	5/29						11000
Skimmers, Black			350	8/3	No Skimmers nested on the Refuge Area					800
Turnstones, Ruddy			900	8/3						1200

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove	Does not apply to Pea Island except for an occasional few Migrating				
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow	<p>‡ was observed during the first week of may, None since</p> <p>Residence year round, in very small numbers, few nesting.</p>				
					Reported by <u>Lewis B. Turner</u>

INSTRUCTIONS

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

Refuge Pan Island Refuge, N. C. Months of May 1 to Aug. 31, 1955, XXX

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
	Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'vd. Estimated Total		Percentage	Hunting	For Re- stocking		
<p>This Report does not apply to Pan Island Refuge with the exception of an occasional dove migrating thru. Hardly over more than 4 or five seen at any one time</p>										

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

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

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

REFUGE GRAIN REPORT

Refuge Pea Island Refuge, Manteo, N. C.

Months of May 1, through Aug. 31, 1953

(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
Yellow Shelled Corn	4 Bu	0	4.bu	0	0	0	0	4 Bu.	to be used trapping		

(8) Indicate shipping or collection points Black Water Refuge

(9) Grain is stored at Refuge Headquarters, Pea Island

(10) Remarks Remnants left over after Trapping was discontinued, last March

*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.

Regional Director, Atlanta, Ga.

April 6, 1956

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

Narrative report, Pea Island, Jan. through April

Please find submitted herewith Narrative report covering the period mentioned above.

Considerable time went into the preparation of this Report and it is believed to cover about all items of activities and data worth reporting

Lewis B. Turner
Lewis B. Turner, Refuge Manager

PEA ISLAND NATIONAL WILDLIFE REFUGE
NARRATIVE REPORT

JANUARY 1, TO APRIL 30, 1956

CONTENTS

	Page
I, General	
A, Weather Conditions	1
II, 1, Populations and Behavior	2-3
2, Water Conditions	3
3, Food and Cover	3-4
4, Botulism And Lead Poisoning	4
5, Other Diseases	4
B, Upland Game Birds	4
C, Big Game Animals	4
D, Fur Bearing Animals	4
E, Predators	5
III, A, Physical Developments	5
B, Maintenance	5
C, Farming	5
D, Wildfires & Otherwise	6
IV, A, Commercial	6
V, A, Geese Disease Study	6
VI, A, Publicity	7
B, Recreational	7
C, Violations	8
D, Visitors	9
Controlled Burning Program Report NR Forms	10

PEA ISLAND NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT
JANUARY 1, TO APRIL 30, 1956

I, GENERAL

A, Weather Conditions

This period has proven to be rather rugged from a Weather standpoint, During the period Jan.8-13 the longest hardest and worst North Easter for the past 30 years struck the North Carolina Coast, With winds of near hurricane force which blew for a long sustained period, The rest of January was almost as bad, Temperatures was not at an extreme low but the whole month was just plain bad weather, Feb. and march also brought along two normal north easters but was just a sepher compared with the Jan. Storm, April started out good but another severe North Easter ocoured on the 11 and 12th which had wirts up to 73 MFE, This one only lasted about 48 hours and petered out with out causing much Damage, Since that date April has been seasonal or about normal, Precipitation exceeded that for the same period last year by some 2.69 inches but is still slightly below normal.

Data listed below was furnished by the National Park Service official weather station maintained at their Bodie Island Station and reflect conditions as they actually exist as this Station is just three miles north of the Refuge.

Precipitation,			Temperatures,	
	Actual,	Dep.From Normal	Max.	Min.
Jan.	2.79	- 1.41	59	25
Feb.	4.63	± .13	75	27
March,	3.03	- 1.47	68	28
April,	3.57	- .95	76	35
	<u>Tot. 14.02</u>	<u>Tot. - 3.68</u>	<u>Max. 76</u>	<u>Min. 25</u>

January - April 1956

Page 2,

II, WILDLIFE

A, Migratory Birds

1. Populations and Behavior

This reporting period began with the wintering Populations about on an equal or slightly larger than for the same period a year ago, Canada Geese numbering between 10 and 11000, Greater Snow Geese numbered app 5500 about half of this flock having left the Refuge area on Dec. 28 Some of these came back and on one count on Jan. 13 showed the flock back up to 5500.

Ducks all Species combined numbered app. 15000 with Geese numbering 2000.

Numbers of Canadas remained almost constant until Feb. 10 when the counts had decreased to about 8000, March 3, Count showed 3000 still remaining and at the end of April only 200 remained.

Snow Geese decreased until on Jan. 27 count showed 950 the last seen was on Feb. 2 when the last remaining 370 left the Refuge and did not return, This is considerably later than they usually stay at Pea Island before going back to upper Currituck Bay.

Ducks scattered off the Refuge area rapidly after hunting season closed and counts made during the last two weeks in Feb. Showed only about 3000 left, Mostly Blacks, Gadwall and Greenwing Teal, a later spring migration brought this number up again to app. 6000 for a short period thru March, These being Pintails and Bluewing Teal with some Baldpates, A late movement of Redbreasted Mergansers occurred during the last week in March when the Area around Oregon Inlet and south had over 50,000 for a period of a week these were all gone by April 6, There was also at the same time some 20,000 Gannets feeding on a run of fish all along the Refuge surf line this flock worked north and was gone within about ten days, With just a scattering number still being present for another two weeks.

The wintering Population of Herring, Ringbill, and Black backed gulls showed an increase over last winter, The constant number of all these combined was about 9000 compared with an estimated 6800 last year Great blackbacks numbered slightly over 500 compared with 350 last season, Six years ago the peak count on blackbacks was 157.

Migration of Gulls, and Terns started on schedule about March 5 when the Herring and Ringbills started leaving and by April 25 most of these Species were gone, Laughing Gulls, Royal and Common Terns started arriving about March 20 and at the end of April numbering several thousand, Herons, Egrets and shore birds of all Species were a few days later than last year the first arriving the third week in March at the end of April Little Blue, Black, and Yellow crowned night Herons were starting nesting activities in two separate locations, Of the Shore birds, Black bellied plovers showed a decrease, While Redbacked and Pectoral Sandpipers showed the greatest increase ever last year, Willets and Yellow legs was present in about equal numbers

Populations and Behavior Cont.

as last year, To date no Black Skimmers or sanderlings have been observed altho a few ruddy Turnstones have arrived.

2. Water Conditions

Water conditions for the period has been very satisfactory as a whole, with the two ponds maintaining levels somewhat above normal for this time of the year keeping all the marginal edges submerged to the extreme limits of the shore which enabled Waterfowl to utilize more area than normally. The waters of Panice Sound was churned up to a great extent during two severe North Easters but this usually only last a few days and clears up rapidly, as a matter of fact this is in some ways desirable if it does not get too rough for the Geese and ducks to feed. When we have the North Easters the sound tide gets very low along the Pea Island shoreline and allows feeding in waters that is normally not available with normal tides, on these occasions Geese can be seen as much as three miles off shore feeding where there is an abundance of food when the nearer shallow waters have been eat out.

Salinity of the sound waters is unknown since we have had no test run for the period but should be somewhere normal or about 63 % sea strength.

Tables below show the Gauge readings for the end of the four months being reported.

Ann St,	North Pond	South Pond
Jan. 31	4.62	4.88
Feb. 29	4.80	4.80
Mar. 30	4.80	4.80
Apr. 30	4.72	4.68

3. Food and Cover

Food conditions remained fair to good or about normal for the period altho not quite up to last years production in the panice Sound area. Also the south pond went entirely dry last summer and of course did not produce but very little aquatic in the main body of the pond. The north Pond had an abundance of aquatic at the start of the period but was eaten out clean by the last of January. The marginal edges of both ponds had a very good crop of three square, Smartweed and wild millet. The 65 Acres planted out to Italian Ryegrass did exceptionally well throughout the season and as was the case last period reported, it continued to carry from 600 to 1400 Geese at all times with a scattering of Pintail Ducks also. The controlled marsh burning program was carried out on schedule with most of the burning being accomplished during Dec. with one unit being burned on Jan 9 consisting of 177 acres bringing the total to 710 acres burned for the winter. Burning will be covered in more detail in a separate report being attached at the end of the narrative

Food And Cover Cont.

Native Beach Pea within the two pond areas was above average but since this is a small percentage of the Refuge area and all the Pea outside of the Dikes was destroyed by the two hurricanes last summer it was estimated that we had perhaps a 35 to 40 % crop based on a past annual production basis.

All Canada Geese trapped for the season past showed an average weight each of 7.8 pounds, This compares with 8.2 for last year and 6.9 two years ago.

4. Botulism and Lead Poisoning

None for the period, It seems not to exist on Pea Island.

5. Other Diseases

The unknown disease that ^{is} prevalent among the wintering Canada Geese each year to a more or less degree was very much below what it was during the last winter, Known sick and dead birds for the entire season was 46 compared with 111 for the last winter past, This count is the combined figure of Refuge Personnel and the Research crew from Patuxent who made canvases at two week intervals and our own surveys was made weekly and sometimes daily, This item will be more fully reported under Field Investigation.

B. Upland Game Birds

Does not apply to Pea Island with the exception of an occasional Dove.

C. Big Game Animals

Does not apply to Pea Island Refuge.

D. Fur Bearing Animals

Fur Bearers on Pea Island consist of Muskrats and Otter, Of Muskrats, Our estimates are around 1500 to 2000 and no radical change has occurred in population trends in the last several years they seem to remain at about this figure year after year as far as we can tell,

Otter number some 30 to 40 and is in about the same status as the Rats, Not showing any increase to mention, No harvesting of either species has been accomplished but there is one Special Use permit in effect to live trap 50 Rats for restocking purposes on Marshlands owned by the State, They have not commenced the trapping program as yet but expect to within the next few days.

E. Predators

Predators on Pea Island does not exist fortunately with the exception of a few wild house Cats, These are at a low ebb at present due to some disease they contracted last fall killing out a goodly number several was found dead during Oct. and Nov. Mostly young kittens but the number of adults have decreased also, Two bald Eagles wintered on the Refuge and caused some disturbance among the Ducks and eot but but was never observed preying on Waterfowl.

III. REFUGE DEVELOPMENT AND MAINT.A. Physical Developments

Physical Developments for the period consisted of pouring another five Car parking area of Concrete adjacent to the Publicity Office at Pea Island Station, The one constructed a year ago proved to be just half enough, We now have facilities for parking ten vehicles, The new lot contains 220 Sq. yards of area.

B. Maintenance

The past four months period proved to be the worst in the last several years from a Maintenance standpoint, One North Easter that ocured during the period Jan 8-13 brought in sea tides six to eight feet above normal Breaking the sand fence into in several places in the South Pond area, And causing major damage to the fence line along the highway, 6.100 yards of Material was moved in repairing the Sand Fence on a contract basis, Refuge Personnel expended 31 man days during the period on the fence repair job, Some of this was caused by Vandalism, Cutting and removing Copper wire, The guilty parties has since been caught and charges filed against them, But most of the damage was caused by high tide waters, Some painting was done on the buildings, Mostly trimwork and windows.

Maintenance schedules were maintained on all the motorized equipment, The boat pulled and painted inside and out, All boundary posting signs checked and several new ones erected, All trapping Equipment hauled in cleaned up and painted or greased and the nets mended and stored, two new portable type duck traps was constructed for an attempt to trap some of the nesting Black and Gadwall Ducks during the summer.

C. Farming

No farming was accomplished during the period, Plant were to plant out about four Acres in experimental summer cover crops during April but the fields have continued so wet through the month we have been unable to get them in, We expect to plant these within ten days.

D, Wild Fires and Otherwise

No wild fires occurred on the Refuge during the period, Controlled Marsh Burning will be reported in detail under separate report, Controlled burning Report, later in the Narrative.

IV, ECONOMIC USES

A, Commercial

No Economic Uses to report this period, It is understood that the Concession formerly owned by Mr. J. B. Tillett and located on the North end of Pea Island, which has been acquired by the National Park Service has been leased out on an Annual Basis but to date no one is operating it, Revenue from this establishment revert back into Fish and Wildlife Service Accounts under the Memorandum Agreement with the Park Service.

V, FIELD INVESTIGATION AND APPLIED RESEARCH

A, Goose Disease Study

For the past six years Personnel of this Station have been assisting the Research Division at Patuxent in their research work program during each winter, This consist of Trapping, Banding, Weighing, and sexing Geese, Also collection of samples of Vegetative matter, conducting censuses for sick and dead birds at regular intervals, and attending to the captive flocks of Geese brought in for comparative Data purposes.

Our trapping program for the season was not very successful for some reason of which we are unaware, Five trapping sites were kept baited all season but the Canadas just would not come in to bait, The results was only 105 ~~xxxxx~~ Geese was trapped, and Banded

Listed below is the results of the Winter Program..

Total Geese Trapped	121
" " " and Banded	105
Total Geese found sick and Dead	48
Total Healthy Geese sent to Patuxent	19
Captive Geese Held in pens and liberated in the Marsh last Oct	65
Captive Geese recovered and carried back to Patuxent	64

In addition to the above 79 Ducks were trapped and banded divided as follows, Blacks, 17, Mallards, 50, Pintails, 16 Coots, 5.

VI, PUBLIC RELATIONS

A, Publicity

Only local publicity activities have been continued this period, Refuge Leaflets No. 6 and bird lists have been furnished to all Visitors to the Station and additional information concerning the Refuge has been Given to all parties requesting it, All Tourist resorts from Powell's Point south to Hatteras have been furnished with supplies of Leaflet Material, And some 123 written request have been received and complied with by mailing out printed Matter, No Movies has been shown or public appearances made.

Registered Visitors at the Field Office Numbered 107 compared with 103 for the last four months reported, Sept-Dec. Narrative,

Nine guided tours of the Refuge have been accomplished during the period for parties numbering from 2 to 6 persons each, With two more scheduled for May numbering 15-20 each.

Listed below by months is Vehicular traffic thru the Refuge one way for the period.

Month,	Vehicles,	Passengers,
Jan.	2,109	6.662
Feb.	1,270	3.753
March,	2.068	6.618
April	<u>4,374</u>	<u>15.509</u>
Tot.	REMOVED 9.821	32.544
Sept-Dec. Narrative Report	21.577	77.398

B, Recreational

Due to abnormally bad weather during Jan-Feb. very few persons used the Refuge area for Recreational Purposes, Some fishing was done with but very little success, March and April has shown a steady increase in Surf Fishing, Photography, And just plain visiting for any purpose of interest.

Friday April 27 marked the starting Day for the annual Pirate's Jamboree lasting three days, Friday was Outer Banks day and all visitors to the event numbering app. 8000 had to pass thru the Refuge area and quite a number of these stopped off for various reasons along the 12 miles of surf line thru the Refuge, Estimated man days of Recreational use is as follows.

Man days of Fishing and clamming	996
Man days of Sightseeing and other	1831

C. Violations

We have no Game Law Violations to report for the period, But Pea Island seems to be plagued with more than its share of troubles of a more serious nature.

On April 2, We discovered that the fence line running along the Highway was being damaged by vandalism, Cutting and removing the Copper Wire from the post, The FBI and the local County Sheriff was notified, Most of the wire that had been removed was replaced and the fence checked daily for further damage, none occurred for several days when another raid was made, We started a continuous all night patrol and after a week of this on Thursday April 26, Two Negroes from Manteo, George A. McClees and Leon Morgan was apprehended in the act of cutting and removing the wire about 1 mile north of the south boundary line, We collected all the evidence possible and filed an Information with the FBI, Agent Wood of Elizabeth City rounded up the two men and arraigned them before the U.S. Commissioner who held them on charges of theft of Gov't property, Bail was set at \$500.00 each, which to date they have been unable to raise and are being held in prison in Wilson N. C. for trial next Oct. 3,

App 400 lbs of Copper wire was stolen before we could break up the activity, Estimated cash damage to the fence is about \$500.00.

D. Visitors

Official

Mr. Carl Fermanich, R.O.	2/3	Atlanta, Ga
Mr. Lawrence Smith, Refuge Mgr.	2/7	Seneea Falls, N.Y.
Mr. Jacob M. Valentine, Refuge Mgr.	3/3	Chinsetauge, Va.
Dr. Arch Cewan, Research Div. all thru period		Laurel Md.
Mr. Clark Webster, " " " " "		Laurel, Md
Mr. Edwin Ball, R. O.	3/5	Atlanta, Ga.
Mr. Allyn F. Hanks, Park Supt.	4/4	Manteo, N. C.

Unofficial

As stated under Publicity we had 107 Registered visitors at Pea Island Station during the four month reporting period. these were from several states but most of them from North Carolina, Virginia, and Maryland, with a scattering from Penn. and New England States.

Submitted By Jimmie B. TurnerApproved By L. Lawrence S. GuianaDate, 5/6/56Date May 8, 1956

CONTROLLED BURNING PROGRAM
PEA ISLAND REFUGE
WINTER, 1955-56

Some of the controlled Marsh burning being reported in the Report was accomplished during 1955 but since it is desirable to report on burning activities on a seasonal basis rather than on Narrative periods, All burning done during the Winter of 1955-56 is covered.

Unit 2, located app. 2 miles south of Oregon Inlet and containing 441 Acres was burned off Nov. 9, with a North East wind of 15 MPH, Vegetation consisted of, *Spartina Patens*, 65 % *Scirpus Am.* 20 % and a low stand of Wax Myrtle which had been reduced by fire three years ago laying along the sound side about 15 %, Got a very good burn close to the ground on most of the area and set the Myrtle back for some time to come.

Geese used this tract for feeding purposes in a very satisfactory manner numbering from 150 to as high as 700 at times, Most of the benefits derived from burning is during the late winter months especially during Feb. and the first two weeks in March.

Unit No. 7 located along the east side of the South Pond and containing 92 Acres was burned off on Dec. 6, with a North East Wind app. 20 miles an Hour, Dominant Vegetation was *Spartina Patens*, 60 % *Scirpus Am.* 20 % Broom Sedge and Wax myrtle 20 %, Secured a fair burn on all but the lower marginal edge which was to wet due to high water levels prevailing in the pond at the time, This particular area was utilized by the Snow Geese to a great extent during the month period immediately after burning, Counting upward of 4000 on it on several occasions, Later in the season Canada Geese also browsed it down almost to the ground.

Unit No. 10, laying adjacent to the south Boundary line and containing 177 Acres was burned off on Jan. 9 with a North East wind app. 30 MPH, Vegetative Matter on this unit was of a mixed nature with *Spartina Patens* app. 40 % *Juncus* and other low marginal species, 30 % low dune type with Wax Myrtle about 30 %, Some of the last mentioned area did not burn off as desired due to not having enough grass under-story to carry fire, also this tract was hard hit by high hurricane tides from the sound which washed out and moved a good percentage of the dead grasses which accumulated since burning three years ago, this cut the effectiveness of the burning somewhat, App 65 % of the tract burned off so that it was useful for browsing purposes but since Canadas do not use the south end in as great numbers as the rest of the Refuge only limited numbers was observed feeding this area, 425 being the most counted at any one time.

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

W A T E R F O W L

REFUGE Pea Island

MONTHS OF Jan. 1. TO APRIL 30, 1956, 19

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling	215	149	200	208	70	199	70	127	3	7
Trumpeter										
Geese:										
Canada	10500	9800	9000	9600	8000	6500	7000	4800	5000	800
Cackling										
Brant										
White-fronted										
Snow Greater	8500	4000	3800	950	370					
Blue	3	7	7	1						
Other										
Ducks:										
Mallard	725	700	700	800	800	490	400	160	55	4
Black	1200	1000	1000	1100	950	360	600	450	450	160
Gadwall	2800	1900	1700	1800	1100	790	550	200	300	100
Baldpate	2900	2000	1800	1800	900	450	300	150	85	20
Pintail	2000	2500	3000	3500	2000	890	1100	1200	200	300
Green-winged teal	1700	1500	1200	1250	450	1290	1500	900	300	400
Blue-winged teal	100	160	90	22	8	30	10			80
Cinnamon teal										
Shoveler	750	600	600	700	600	450	450	300	180	75
Wood										
Redhead	6000	4500	800	800	200	390	150	100	20	20
Ring-necked	700	900	800	800	200	390	150	100	20	20
Canvasback	3	5	3	4	12					
Scaup	800	800	400	650	450	290	400	150	35	30
Goldeneye										
Bufflehead										
Ruddy	900	900	650	1000	700	290	300	150	90	110
Other	2200	2100	1500	2400	1800	890	1000	400	80	30
Coot:	2400	2000	1600	950	800	490	250	250	200	200

3 -1750a

Cont. NR-1

(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Fes IslandMONTHS OF Jan. 1, TO April 30, 1956

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total	
	11	12	13	14	15	16	17	18			
Swans:											
Whistling	7	42							8,760	0	0
Trumpeter											
Geese:											
Canada	600	600	500	400	360	360	176		503,895	0	0
Cackling											
Brant											
White-fronted											
Snow -----									--- 125,340	0	0
Blue -----									--- 126	0	0
Other											
Ducks:											
Mallard ERE ---	2								--- 33,257	0	0
Black	150	200	180	280	260	300	300		63,745	0	0
Gadwall	100	80	100	250	400	400	400		87,260	0	0
Baldpate	10	4	30	20					80,146	0	0
Pintail	180	8	500	80					152,140	0	0
Green-winged teal	70	85	20	20					74,025	0	0
Blue-winged teal	150	300	400	300	450	400	40		17,780	0	0
Cinnamon teal											
Shoveler	50	60	70	10					31,466	0	0
Wood											
Redhead ---									--- 79,201	0	0
Ring-necked	20	10							27,650	0	0
Canvasback	20	2							346	0	0
Scaup ---									--- 27,209	0	0
Goldeneye											
Bufflehead											
Ruddy	110	40	10	30	8				36,386	0	0
Other Unidentified	10								66,940	0	0
Coot:	40	30	40	62	100	100	5		65,909	0	0

(over)

	(5)	(6)	(7)	
	Total Days Use	Peak Number	Total Production	SUMMARY
Swans	8,750	210	0	Principal feeding areas <u>Entire Refuge Area</u>
Geese	329,235	18000	0	
Ducks	777,850	14145	0	Principal nesting areas <u>None this period</u>
Coots	65,809	2400	0	
				Reported by <u>Lewis B. Turner</u>

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 Month of Jan. 1. to April 30. 1956

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Hérons, Louisiana	Res.		34	4/27						50
" Great Blue	Res.		5	4/27						8
" Little Blue	Res.		39	3/27						50
" Yellow Crowned	Res.		41	4/27						75
" Black Crowned	Res.		40	4/27						75
Egrets, American	3/18	2	34	4/27						65
" Snowy	3/18	9	61	4/27						80
Orebes, Piedbilled	Res.		106	1/6						200
Loons, Common	all	Winter	63	1/6						75
Pelicans, Brown	3/18	11	16	4/27						20
Commorants,	212	3/18	300	4/27						400
Gannets,	All	Winter	24000	2/24	8	4/27				24000
II. Shorebirds, Gulls and Terns:										
Gulls, Blackbacked	All	Winter	550	1/6	2	4/27				600
" Ringbilled	"	"	870	1/6	75	4/27				1000
ANKING Herring	Res.		7400	1/6						8000
" Laughing	Res.		2500	4/27						3000
Terns, Royal	16	3/18	134	4/27						200
" Common	38	3/18	240	4/27						300
" Least	2	3/18	170	4/27						250
" Caspian	2	3/18	30	4/27						50
Willetts,	14	3/28	38	4/27						200
Yellow Legs, Greater	Res.		385	4/27						400
" " Lesser	Res		20	4/14						50
Plovers, Black Bellied	1	3/18	6	4/27						25
" Wilson	14	3/18	90	4/27						200
Sandpipers, All Species Combined	Res		4400	4/27						5000
Sanderlings	8	3/18	45	4/27						200

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove	An occasional dove observed passing through, Not enough to record				
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow	Averaged about three using the refuge area during the period				
Reported by <u>Lewis B. Turner</u>					

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)
 II. Shorebirds, Gulls and Terns & Gruiformes)
 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, 1956

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'vd.	Estimated Total		Hunting	For Re- stocking	For Research		
Common Name					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	March and April	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

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

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

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Pea Island Year ending April 30, 1958

(1) Species Common Name	(2) Density		(3) Removals					(4) Disposition of Furs					(5) Total Popula- tion	
	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re- stocking	For Re- search	Share Trapping			Total Refuge Furs Shipped	Furs Donated		Furs Destroyed
							Permit Number	Trappers Share	Refuge share					
Muskrat	Cattail & Scirpus Am. and other three Square App. 900 Acres within the two fresh Water Ponds	App 2.2	0	0	0	0	0							Est. 2000
Otter	RMG Ranges all over the entire Refuge area	167	0	0	0	0	0							Est. 35

* List removals by Predator Animal Hunter

REMARKS:

Lewis B. Turner

Reported by

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 GRAIN REPORT

Refuge Pea Island

Months of ~~Apr~~ Jan. 1. through April 30., 1956

(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
Yellow Corn, Shelled	115 bu.	None	115 Bu			trapping	111 bu	4 bu		Trapping this Summer	

(8) Indicate shipping or collection points Blackwater Refuge, Last period

(9) Grain is stored at Pea Island Headquarters Station

(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.