

PEA ISLAND NATIONAL WILDLIFE REFUGE

Narrative Report for period September 1 to December 31, 1958

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PEA ISLAND NATIONAL WILDLIFE REFUGE

REFUGE NARRATIVE REPORT

September 2 through December 31, 1958

Charles F. Noble, Refuge Manager
Houston C. Phillips, Refuge Aid

I. GENERAL

A. Weather Conditions

With September coming close to an end hurricane weather again dealt a blow to coastal North Carolina. Late Saturday night of the 27th Hurricane Helene carried winds of 75 miles per hour as recorded at the Hatteras weather station located some 35 miles south of the refuge. Contrary to the normal tide situation expected during a hurricane, the waters in Pamlico Sound in the vicinity of the refuge receded. Previous hurricanes have brought tide waters which have covered all areas of the refuge except the sand dunes and the dikes surrounding the fresh water impoundments. Fortunately damage to the refuge was minor; the sub-headquarters flagpole was bowed, a few shingles were blown from the buildings, and some wind erosion occurred on sand dunes.

An extremely intensive north-easter beginning during the night of October 18 and continuing through the 21st hit the area before all ponded water which fell during the September hurricane had disappeared. Local folk declared this to be the most severe north-easter in many years. The storm's intensity was not attributed to wind velocity, although it was as strong as in most severe storms, but more so to the long duration of the storm. With every hour it lingered the ocean seas were higher and fiercer. By the time the seas subsided the sand dunes facing the ocean were cut perpendicular with a smooth bank of six feet or more the entire length of the refuge. At a few points the ocean had broken through the dunes. No salt water spilled into the fresh water impoundments, but near break-throughs occurred adjacent the south pond.

Fall temperatures were mild until the first of December. November was a warm month for the most part. During December conditions changed when well below freezing temperatures were recorded on eleven days. The low of 22 degrees was recorded on December 16.

A. Weather Conditions - Continued

Rainfall for the four month period was approximately 2.50 inches above normal. Heavy rains during Hurricane Helene accounts for a good part of the above normal precipitation. 20.62 inches of rainfall was recorded for the period.

Listed below is the weather data furnished us by the National Park Service from their official weather station located on Bodie Island. This data was recorded only three miles north of the refuge and reflects weather conditions on the refuge.

	Precipitation		Temperatures	
	This Month	Dev. from Normal	Max.	Min.
Sept.	7.92	+ 5.42	93	56
Oct.	4.49	- 0.01	81	47
Nov.	3.23	- 1.23	79	33
Dec.	4.98	+ 0.48	64	22
Total-	20.62	+ 2.62	Extremes- 93	22

B. Habitat Conditions

1. Water Conditions

Water levels have been favorable for both waterfowl feeding and management work this period. Soil moisture contained in the soils of the ryegrass field area were most desirable for equipment operation and seed germination at the time the operation was accomplished. Rains during the last of November and first half of December brought the level of the two fresh water impoundments up, covering most upper marsh areas. Before the September hurricane the staff gauge readings were 3.30 on the north pond and 3.90 on the south pond. By the end of December the readings were 4.80 for the north pond and 5.00 for the south pond. The water level by this time was almost the same as that recorded at the end of December a year ago.

Water levels over the shoals in Pamlico Sound have been more favorable for waterfowl utilization of food plants than in

1. Water Conditions - Continued

recent years. The sound tide has remained low much of the time and it has been quite evident in the use made of the shoal areas by Canada geese.

2. Food and Cover

At Pea Island Refuge the waterfowl is dependent on food supplies within the refuge area. These foods are produced on natural and managed areas. Available food supply is the key to success at Pea Island for wintering a waterfowl population.

The natural area supplying the greatest portion of food for wintering Canada geese is the shoal waters of Pamlico Sound. An aerial survey in December indicated that ten to fifteen percent of the shoal area produced submerged aquatics. Though this sounds like an unproductive area the size must be considered; if all of the food patches were concentrated together it is quite possible that a square mile of shoal would be covered.

The marshes within the fresh water impoundments produced good stands of emergent aquatics. Apparently a relative abundance of submerged aquatics were produced in the north pond. Submerged areas of the south pond appear quite unproductive. Marsh areas of the impoundments are still providing a source of food.

For one week the first of November about 100 Canada geese used the 20 acre jag millet field located on the east side of the south pond. The area was abandoned and it appeared as if the birds were through with the millet field. After heavy rains in late December brought the pond level high enough to flood about two-thirds of the field both geese and ducks flocked to the area. Several checks showed 500 to 1000 geese using the area.

The 60 acre ryegrass field located on the east side of the north pond has been utilized heavily since the last of November. The area was not seeded until the first of November, but the stand and growth produced has been the best yet produced in this field. Flocks of Canada geese ranging up to 2000 have used the area constantly. After rainy periods ducks also use the area frequently. On occasion flocks of snow geese have used the field. The field is browsed close, but there should still be many days available to the Canadas.

Although a bountiful crop of beach peas was produced, little has been used; this supply should help in the lean weeks ahead.

II. WILDLIFE

A. Migratory Birds1. Population and Behavior

The fall migration of waterfowl to Pea Island began on September 12 with the arrival of 60 blue-winged teal. The arrival of ducks continued at a slow pace until the last of October and first of November when a near peak population was attained. Again this year the ducks showed a decline; a peak population of about 9,000 was recorded this period as compared with a peak of 11,000 for the same period last year. Ducks on Pea Island use the impounded areas, the salt marsh ponds, the sound, and the millet and ryegrass fields. Black ducks are found scattered throughout the refuge in the small tidal creeks and along the sound shore.

About 300 Canada geese arrived on October 10. It was the first of November before the larger flocks began to arrive. The population has been close to the number recorded for the same period last year with a peak population of 8400 on the refuge the second week of December. The first snow geese arrived the last of October; the increase was gradual until a day before Thanksgiving when the population built up to 6800 from 1400 for the previous week. The peak population for this species is 8800, or a drop of about 2000 from the previous year. Snow geese, or 'white brant' as the local outer-beakers call them, have again used some of the salt-marsh cordgrass areas south of New Inlet. A flock of about 1000 were seen in the marsh south of field headquarters a few times late in December. This year the snow geese have worked between the marshes north of Oregon Inlet and the refuge. A few times large flocks have rafted-up in the sound directly west of Oregon Inlet.

Whistling swan use the two fresh water impoundments almost exclusively. A peak population of only 85 was recorded last year; this year the peak was 290 and has remained at a high level for most of the period since the first arrivals on November 7.

In the middle of December a fish kill occurred in Pamlico Sound. The fish were small and were identified as smelt. As the result of this fish kill tremendous flocks of gulls were present on the refuge as well as along the entire Hatteras Island. During this period about 12,000 gulls were on areas throughout the refuge. In the order of their abundance they were; ring-billed, laughing, herring, and black-backed gulls. Large flocks of these gulls were still present at the close of the period.

B. Upland Game Birds

The refuge now holds the distinction along with the southern portions of Hatteras Island as being the only place in North Carolina where ringneck pheasants have been successfully stocked. The pheasants on the refuge, estimated to be at least ten, moved on the refuge across the southern boundary line. The original stock on Hatteras Island were probably released by a gunning club in the Buxton-Hatteras area. These birds are seen quite frequently on the trails bordering the south pond.

C. Big Game Animals

No big game is found on the area.

D. Fur Animals, Predators, Rodents, and Other Mammals

Muskrats are seen regularly in the fresh water impoundments of the refuge. The population seems to remain constant. Otter also are seen occasionally. One family has used regularly in the borrow pit along the west dike of the north pond. This population also seems to change but little.

An abundance of small mammals (rats and mice) is present in the upper marches and on the dikes of the refuge. Although feral cats are plentiful on the area they may not be quite as detrimental as their reputation usually suggests. These cats may work as a control on the rats and mice thereby reducing the consumption of seeds which would be taken by rats and mice. In return, this source of food, small or great as it may be, will be left for the waterfowl.

E. Hawks, Eagles, and Blackbirds

Marsh hawks and duck hawks are the most abundant hawks on the refuge. They are probably of little importance to the management of the refuge since their numbers are few. They should be an effective control for the sick and crippled animals on the refuge.

Boat-tailed grackles are most abundant on the area. They are seen regularly along the highway passing through the refuge. Redwing blackbirds are present on the refuge at this season of the year, but the seager population is not enough to be destructive.

F. Other Birds

A white pelican was seen on the refuge on October 5. The

F. Other birds - Continued

pelican remained on the refuge until the last of November. It was last seen on November 30. This was a rare observation at the Island Refuge.

G. Fish

Mid-November brought a good run of channel bass along the beach. Sport fishing was fairly heavy for about three weeks during that period. The expected fall run of spotted weakfish never arrived. The coastal fisherman considers this phenomena very unusual since they have previously been able to expect to catch weakfish in the surf sometime during the fall months. To date, no catches have been reported along the entire latter's Island ocean front.

H. Diseases

Though no prediction can be made, the refuge has been fortunate in that no sick or dead Canada geese have been observed. One bufflehead duck was found dead; the cause of death is not known, but it was not from gun wound.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

1. Development Projects

No building or development projects are underway.

2. Maintenance

Routine refuge maintenance has been accomplished throughout the period including mowing and cutting brush out of the truck trails around the impoundments, odd repairs to tractors and tractor, repairs to plumbing system, and general cleanup of buildings and grounds.

B. Plantings

1. Aquatics and Marsh Plants

None were planted this period.

2. Cultivated Crops

Domestic ryegrass was planted on about 60 acres the first

F. Cultivated Ground - Continued

week of November on an area located along the east side of the north pond. The field was first mowed; 300 pounds per acre of basic fertilizer was spread followed by a seeding operation of 100 pounds of ryegrass seed per acre. Three weeks after planting 150 pounds per acre of ammonium nitrate was applied. This procedure produced a good browse crop which had been utilized regularly by a large flock of geese. Growing conditions were good for the success of the browse crop. Weather was warm and soil moisture was adequate for a high percentage of germination. The geese allowed the growth to get a good start; on a good portion of the area the ryegrass was 3 to 4 inches tall before the geese began to browse it. This method of operation should be continued as an annual management practice on the refuge.

G. Collections and Receipts

Eighteen mice and rats were collected in connection with a National Park Service study of the fauna of the outer banks. These will be identified by an authority and will provide additional information as to the existent animal life on the refuge.

H. Control of Vegetation

Twenty-four acres containing 95% *Typha domingensis* and 5% *T. angustifolia* were treated on June 14 by an airplane operation. The time of operation was from 6:20 to 7:50 A.M. Rate of application was 18.75 pounds per acre acid equivalent of ammonia. The spikes of the cattail had not developed in the north ground of cattail.

Nine days after treatment the plants had turned a medium brown; three weeks later the plants had begun to fall down rapidly. The last of four surveys made of the area on August 22 showed a 100% kill of all cattail on the area. Final results, of course, cannot be determined until next year.

The cost of the material for the operation was \$564.00 or 23.50 per acre. Except for the operating expense of the plane and the pilot, the full operation cost \$24.16 per acre for a total of \$578.00.

Approximately 15 acres of cattail was sprayed by ground operations from May 22 to June 30. This acreage was random patches ranging in size from 1/20 of an acre and smaller to areas up to an acre. The composition was 80% *Typha domingensis* and 20% *T. angustifolia*. Average height of the plants were

D. Control of Vegetation - Continued

six to eight feet and blades were 80 to 100 percent mature. 18.30 pounds of acid equivalent dalapon to 40 gallons of water was used for treatment. The results of this operation will not be known until next summer.

E. Planned Burning

None accomplished to date.

F. Fires

Unfortunately none have occurred.

IV. RESOURCES MANAGEMENT

A. Concessions

The concessions at the north end of Pea Island is under National Park Service permit. Pea Island Refuge has no official connection with the concessionaire.

B. Commercial Fishing

Commercial fishermen operate from the beach with nets. Their catches this fall have been mostly large striped bass.

V. FIELD INVESTIGATION AND APPLIED RESEARCH

No program which would actually be classified as investigative or of a research nature has been conducted on the refuge this period.

VI. PUBLIC RELATIONS

A. Recreational Uses

Sport fishermen used the beach along the refuge to some extent during the period. Sightseers, beach combers, amateur photographers, bird watchers, and people with outdoor interests constitute the visitors to the refuge. Approximate numbers for this period classified as sport fishermen and recreation are listed on form NR-6.

B. Refuge Visitors1. Tabulated Traffic Through The Refuge

Figures listed below are compiled from data furnished us by the National Park Service who maintain automatic traffic counters at Oregon Inlet.

	Vehicles	Passengers
September	17,075	59,756
October	8,658	28,362
November	4,975	18,930
December	<u>3,974</u>	<u>10,332</u>
Totals	34,675	107,379
Calendar year 1958 Total	108,970	346,700
Calendar year 1957 Total	108,643	321,340

2. Official Visitors

Listed below are official visitors to the refuge during the period September 1 to December 31, 1958.

Name and Organization	Date	Address
Mr. Gas Sultan, NPS, Chief Ranger	10/13	Manteo, N. C.
Mr. Robert F. Gibbs, NPS, Supt.	10/21	Manteo, N. C.
Mr. Phillip VanDyck, FWS, R.O.	10/22	Atlanta, Ga.
Mr. E. R. McMaster, FWS, Refuge Mgr.	10/25	Yazoo Refuge
Mr. James A. Sumrell, FWS, Game Agent	11/23	Harbinger, N. C.
Mr. Wade A. Register, N.C. Wildlife Prot.	11/28	Kill Devil Hills, N. C.
Dr. T. L. Quay, N.C. State College	11/29	Raleigh, N. C.
Mr. Verne Watson, NPS Naturalist	12/5	Rodanthe, N. C.
Mr. Lawrence S. Givens, FWS, R.O.	12/6	Atlanta, Ga.
Mr. Edwin E. Sell, FWS, R.O.	12/6	Atlanta, Ga.

C. Refuge Participation

Except for conducted tours of the refuge there is no outside participation to report.

F. Violations

One case was made on the refuge this period. John E. Herbert of Rodanthe, N. C. was apprehended for attempting to take migratory waterfowl after legal shooting hours, without a Migratory Bird Hunting Stamp, and for trespassing on Pea Island Refuge. He was tried before U. S. Commissioner Edwards in Washington, N. C. and fined \$100.00, \$50.00 suspended. The violation occurred on November 28, 1958.

VII. OTHER ITEMS

A. Personnel Change

Mr. L. B. Turner was transferred to Chassahowitzka Refuge after serving as refuge manager at Pea Island for almost ten years. Charles Noble replaced Mr. Turner as refuge manager on October 1, 1958.

B. Equipment Procured

A McCormick No. 27 Rotary Cutter was acquired new by the refuge. This is an important piece of equipment and has and will serve for better management of the refuge.

C. Oregon Inlet Ferry

Ferry operators state that Oregon Inlet is in the worst condition for ferry operation that has ever existed. During December when tides have been low ferries have been forced to discontinue service for from 1 to 5 hours until the tide rises enough to allow the ferries to cross some very shallow shoals near the north shore. At times this results in a loss of time to the refuge staff as well as the many other passengers.

D. Photographs

Pictures pertaining to the refuge will be found on the following pages.

Date submitted: Jan. 14, 1959

Respectfully submitted,

Approved: _____

Charles F. Noble

Charles F. Noble
Refuge Manager

DEC 1958



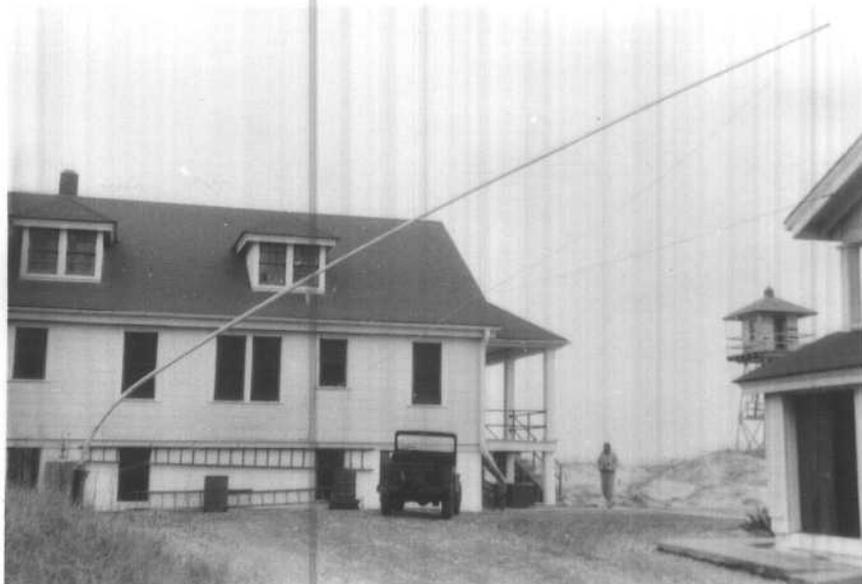
The new rotary mower doing a good job on the field.

DEC 1958



Mowing and spreading fertilizer at the same time.

DEC 1958



The September hurricane, Helene, bowed this flagpole.

DEC 1958



The October north-easter cut deep in the sand dunes.

DEC 1958



Mosquitoes were persistent in mid-November.

DEC 1958



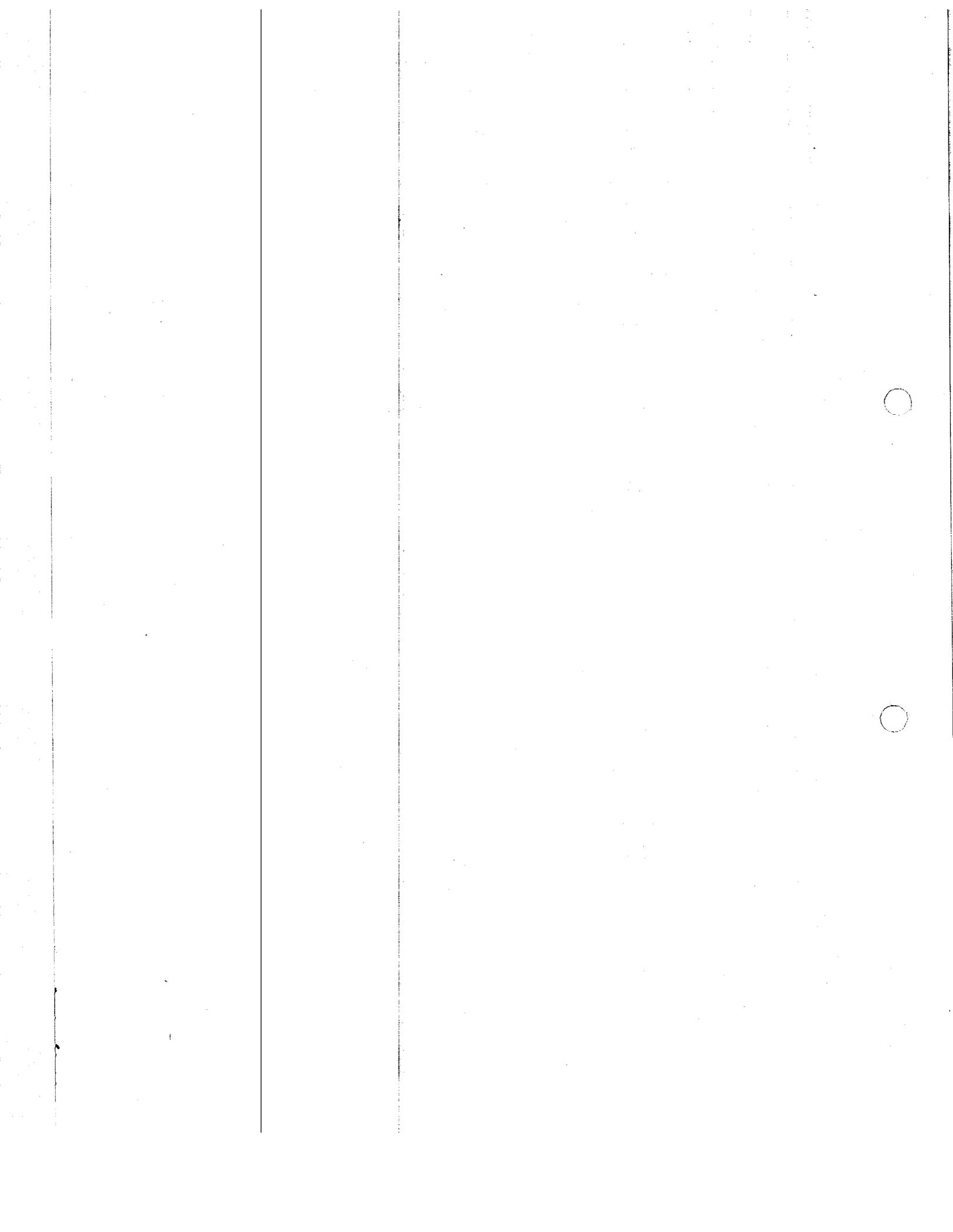
Richmond Natural History Society on field trip
to Pea Island Refuge.

W A T E R F O W L

REFUGE Pea Island Refuge

MONTHS OF Sept. 1 TO Dec. 31, 19 58

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
<u>Swans:</u>										
Whistling										12
Trumpeter										
<u>Geese:</u>										
Canada	10	10	10	10	10	300	1000	1500	2850	5300
Cackling										
Brant										
White-fronted										
Snow								1	125	196
Blue									2	5
Other										
<u>Ducks:</u>										
Mallard								20	30	50
Black	650	400	400	150	150	200	250	750	900	700
Gadwall	725	300	100	75	75	25	25	600	700	450
Baldpate			200	800	800	900	1200	1300	1700	1750
Pintail			25	500	600	750	900	1050	1100	1375
Green-winged teal						200	250	300	400	575
Blue-winged teal		60	250	200	200	50	15	10		
Cinnamon teal										
Shoveler										3
Wood										
Redhead										
Ring-necked										
Canvasback										X
Scaup										
Goldeneye										
Bufflehead								10	15	25
Ruddy								15	60	125
Other - Unid.						300	200	60	250	1800
<u>Coot:</u>										
						4	10	44	75	925



3 -1750a

Cont. NR-1

(Rev. March 1953)

W A T E R F O W L
(Continuation Sheet)

REFUGE Pea Island RefugeMONTHS OF Sept. 1 TO Dec. 31, 1958

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimate seen: total
	11	12	13	14	15	16	17	18		
<u>Swans:</u>										
Whistling	55	266	290	165	120	64	75	84	7,749	No production this period for any species
Trumpeter										
<u>Geese:</u>										
Canada	6100	6200	8000	8200	8400	6200	7750	8200	473,930	
Cackling										
Brant										
White-fronted										
Snow	325	1400	6800	7800	8800	7900	6800	7400	318,029	
Blue	6	10	14	10	14	14	16	12	697	
Other										
<u>Ducks:</u>										
Mallard	160	225	230	210	220	160	80	45	9,570	
Black	1025	950	1050	925	1025	1150	950	1050	85,325	
Gadwall	400	350	325	425	375	230	200	200	37,210	
Baldpate	1800	1700	1550	1625	1750	725	1025	750	135,525	
Pintail	1450	1200	1600	1900	1950	770	950	1350	119,590	
Green-winged teal	600	500	600	650	625	400	365	300	39,755	
Blue-winged teal				2					5,509	
Cinnamon teal										
Shoveler	40	50	80	60	175	125	90	120	5,836	
Wood										
Redhead			25	275	350	400	225	225	10,250	
Ring-necked				125	225	190	125	75	5,030	
Canvasback						4	50	20	478	
Scaup		400	700	650	700	200	200	175	20,825	
Goldeneye										
Bufflehead	40	250	225	375	325	750	800	850	23,955	
Ruddy	250	350	425	290	310	225	125	160	16,025	
Other- Unid.	1650	700	1700	1800	900	600	300	400	73,825	
<u>Coot:</u>	950	900	850	800	550	450	400	350	43,456	

(over)

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans	7,749	290	None
Geese	792,656	17,214	None
Ducks	588,708	9,512	None
Coots	43,456	950	None

SUMMARY

Principal feeding areas Panlico Sound shoals, ryegrass and millet fields, two fresh water impoundments, and salt marsh.

Principal nesting areas _____

Reported by Charles F. Noble, Refuge Manager

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 IslandMonths of Sept. 1to Dec. 31, 195 8

(1) Species Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total Estimate
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Number
I. Water and Marsh Birds:										
Great blue heron	Res.		14	11/2	9	12/29				20
Little blue heron	Res.		45	10/10	16	12/29				90
Black crowned night heron	Res.		75	10/10	10	12/29				160
Yellow crowned night heron	Res.		20	10/10	3	12/29				80
Louisiana heron	Res.		35	10/10	12	12/29				60
Snowy egret	Sum. Res.		110	10/10	7	12/29				200
American egret	Sum. Res.		160	10/10	5	12/29				250
Pied-billed grebe	Res.		250	11/16	75	12/29				350
Common loon	2	10/24	22	12/29	22	12/29				40
American bittern	4	10/24	10	12/29	10	12/29				25
Cormorants	20	10/24	125	11/16	4	12/29				150
Black skimmers	Sum. Res.		600	10/10	90	11/5				1000
Clapper rails	No accurate data.				2	12/29				700
Gannets	75	11/16	1500	12/16	150	12/23				3000
II. Shorebirds, Gulls and Terns:										
Royal tern	Sum. Res.		300	10/10	4	11/16				400
Common tern	Sum. Res.		600	10/10	2	11/16				800
Black tern	12	10/10	650	11/16	10	12/29				900
Least tern	Sum. Res.		400	10/10	10	11/16				700
Laughing gull	Res.		4000	12/29	4000	12/29				5000
Herring gull	Res.		2000	12/2	2200	12/29				4000
Black backed gull	15	10/10	700	12/29	700	12/29				800
Ring-billed gull	Res.		5000	12/29	5000	12/29				6000
Black bellied plover	25	10/10	70	11/16	10	12/29				150
Wilson plover	Sum. Res.		200	10/10	2	11/16				300
Yellow legs, great. & les.	Res.		800	10/10	90	12/29				1200
Sandpipers	Sum. Res.		8000	10/10	900	12/29				10,000
Ruddy turnstones	Sum. Res.		250	10/10	4	11/16				500
Sanderlings	Sum. Res.		1200	10/10	60	11/16				1500

(over)

(1)	(2)	(3)	(4)	(5)	(6)				
III. <u>Doves and Pigeons</u> : Mourning dove White-winged dove	Only an occasional dove is seen at Pea Island Refuge.								
IV. <u>Predaceous Birds</u> : Golden eagle Duck hawk Horned owl Magpie Raven Crow	1	10/12	4	11/24	1	12/24			6

Reported by Charles F. Noble

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 Months of Sept. 1 to Dec. 31, 19 58

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
						Hunting	For Re- stocking	For Research		
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs.'v'd.	Estimated Total	Percentage				Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	Dikes, Wax myrtle growths, and fresh marsh	-	-	-	-				10	This is a relatively new species for the refuge and little data has been obtained.

f

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.

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
			Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
Common Name	Cover types, total Acreage of Habitat	Number												
	No big game on the refuge.													

Remarks:

Reported by Charles F. Noble

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.

116008

Refuge Pea Island

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	_____	_____

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

Areas affected (location and approximate acreage) _____

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

Condition of vegetation and invertebrate life _____

Remarks _____

Kind of disease _____

Species affected _____

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

Number Recovered _____

Number lost None observed sick.

Source of infection _____

Water conditions Good.

Food conditions Fair

Remarks _____

PUBLIC USE

Refuge Pea Island

Calendar Year 1958

Total Use Visitor-Days	Hunting Use	Fishing Use	Miscellaneous Use
12,000	None	3600	8400

Where practical, by means of occasional spot checks, or other methods, show by percent and visitor-days the breakdown of the above figures and other related information:

Hunting (on refuge lands):	Percent	Visitor-Days	Acres	Miscellaneous:	Percent	Visitor-Days
Waterfowl	None	_____	_____	Recreation *	70 %	8400
Upland Game	None	_____	_____	Official	_____	_____
Big Game	None	_____	_____	Economic Use	_____	_____
Supervised by refuge _____ by State _____		No. of blinds _____		Other	30 %	3600

Hunting (off
 refuge lands): Estimated man-days of hunting on lands
 adjacent to the refuge 1200 (These figures
 should not be included in hunting-use totals above).

Fishing: 12 miles of ocean surf line
 Acres of ponds or lakes _____ ~~and miles of streams~~
 _____ open to fishing.

Comments:

*(including picnicking, swimming, boating,
 camping, viewing wildlife, and photographing)



PLANTINGS
(Marsh - Aquatic - Upland)

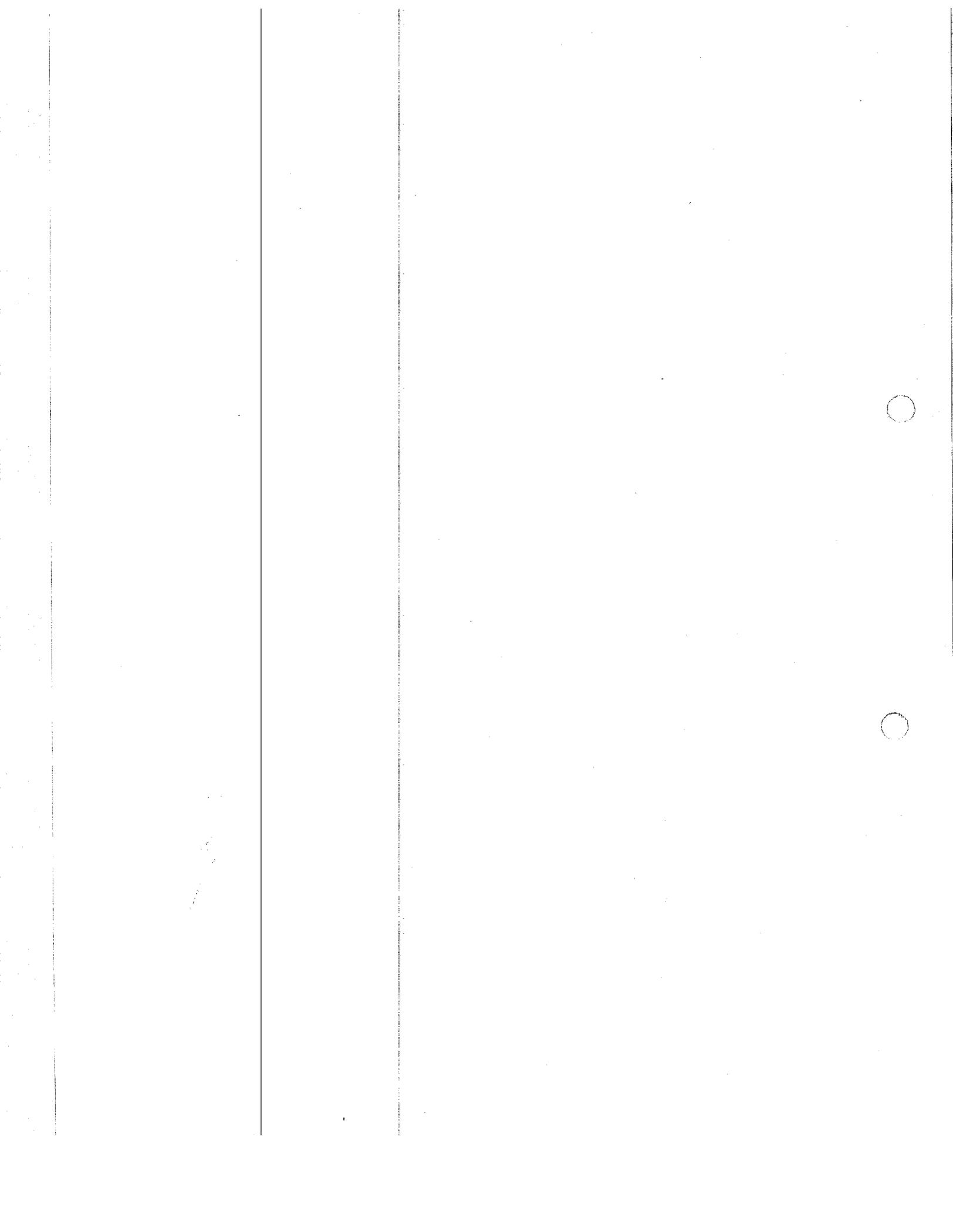
Refuge Pea Island

Year 1958

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 planting under these headings has been undertaken this period.								

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 Poa Island County Dare State North Carolina

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			
Japanese millet							20 acres	Seed crop for Waterfowl	20
Domestic ryegrass							60 acres	Winter goose browse	60
(Farming operation accomplished by refuge personnel.)									
								Total-	80
								Fallow Ag. Land	

No. of Permittees: Agricultural Operations 0 Haying Operations 0 Grazing Operations 0

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				80 acres
Hay - Wild				2. Acreage Cultivated as Service Operation				80 acres

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

Months of Sept. 1 through Dec. 31, 1958

(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	19 bu	19 bu.				None	19 bu.		Trapping	None

(8) Indicate shipping or collection points 1000 lbs. yellow corn purchased at Belcross, N. C.

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

(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.

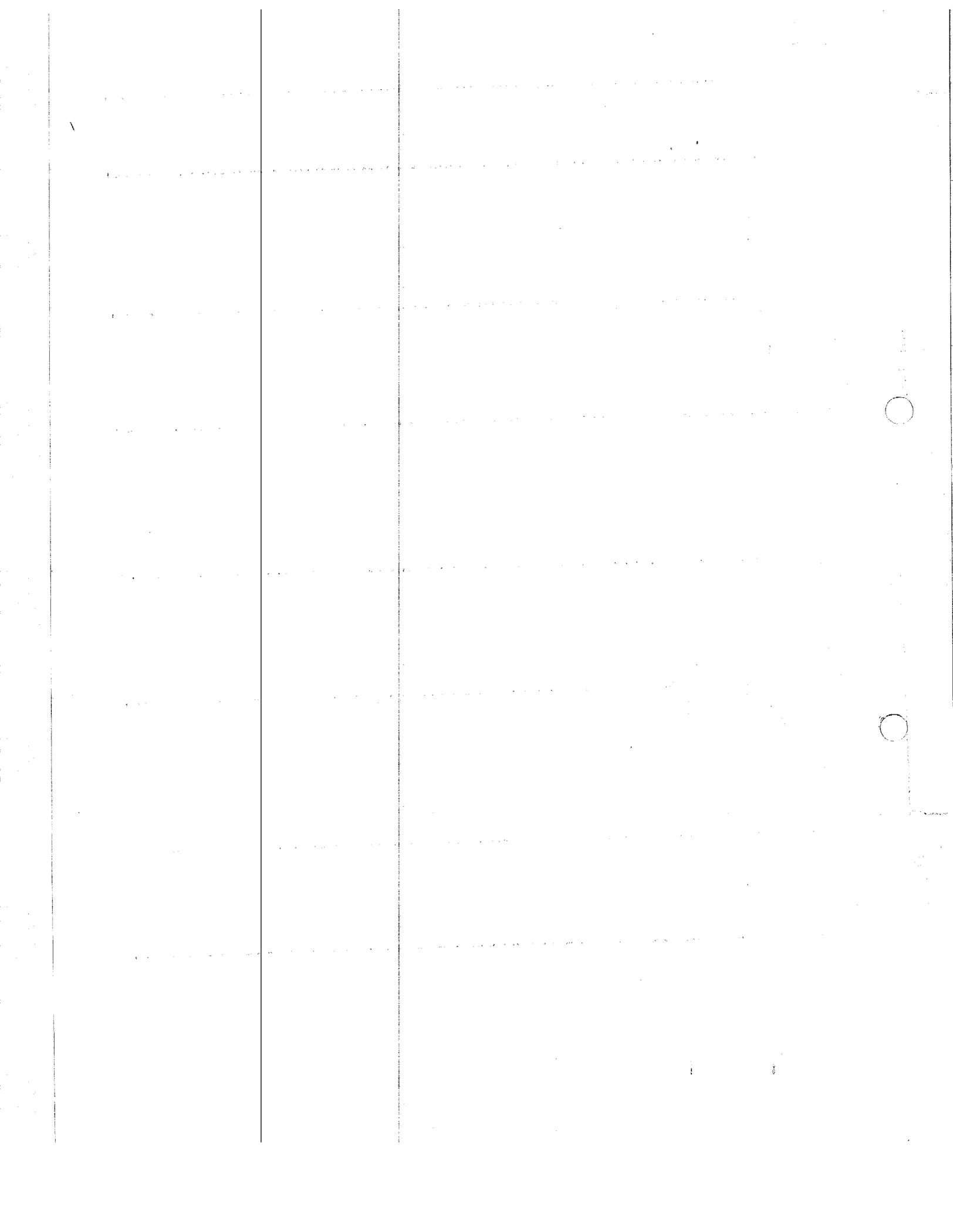
- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, 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.

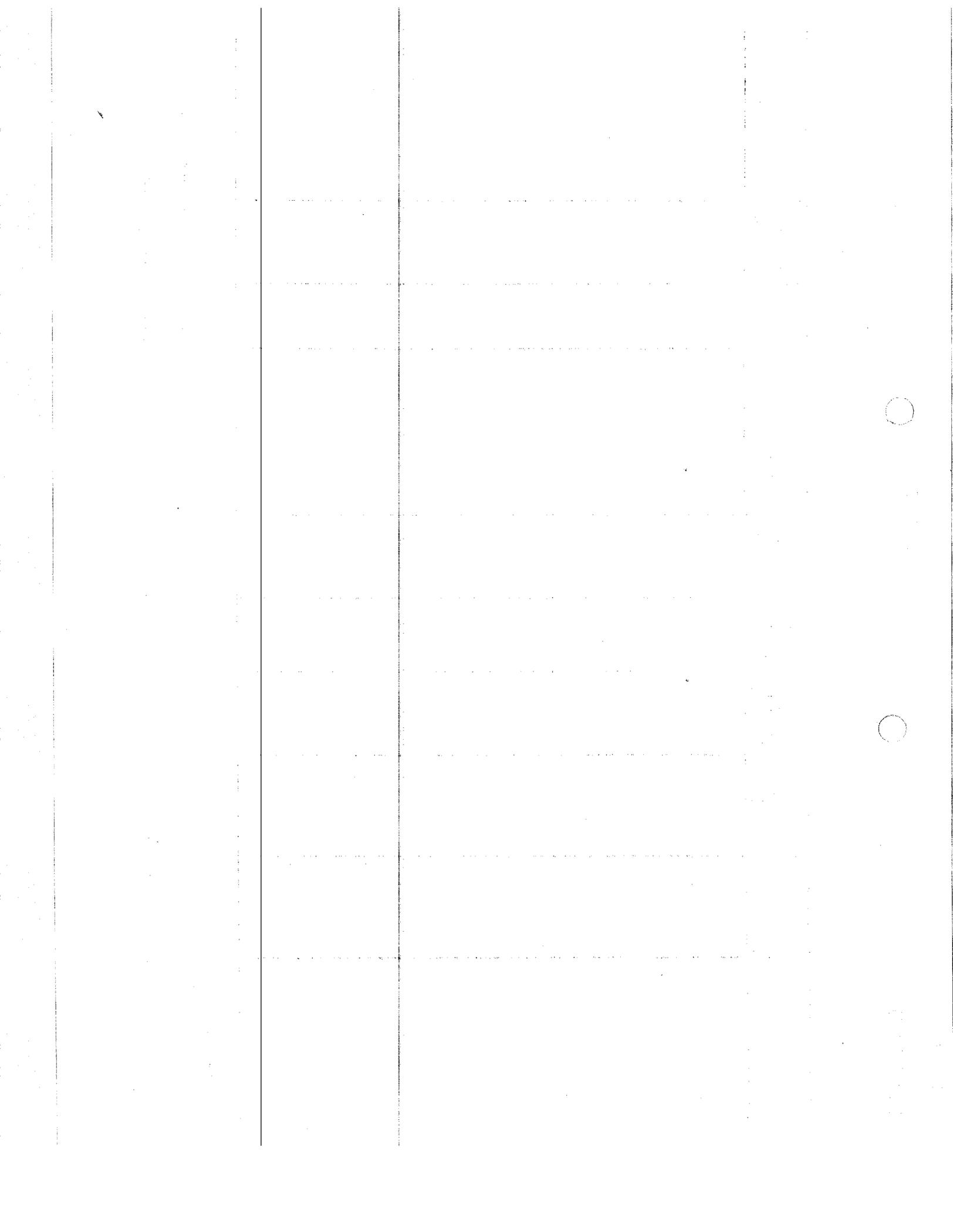
COLLECTIONS AND RECEIPTS OF PLANTING STOCK
(seeds, rootstocks, trees, shrubs)

Refuge Pea Island

Year 1958

Species	Collections				Receipts		Total Amounts on Hand	Amount Surplus
	Amount	Date or Period or Collection	Method	Unit Cost	Amount	Source		
	None for the year.							





TIMBER REMOVAL

Refuge Pea Island Year 1948

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
No timber on Pea Island Refuge.								

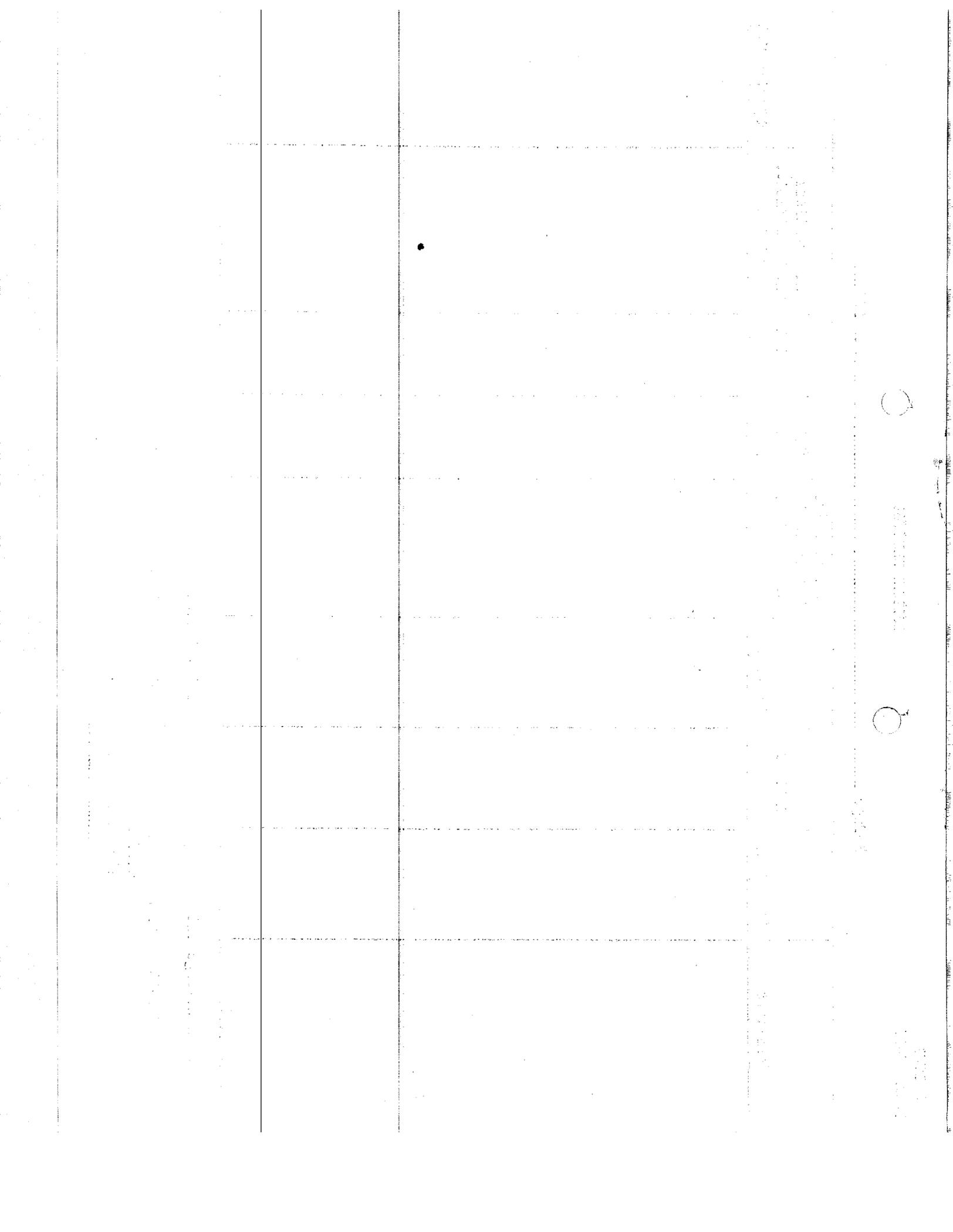
Total acreage cut over..... Total income.....

No. of units removed B. F. Method of slash disposal.....

Cords.....

Ties.....

.....



Regional Director, Atlanta, Ga.

Sept. 12, 1958

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

Narrative Report-Pea Island,

Please find submitted herewith Narrative Report covering the period May 1, to August 31, 1958.

It is believed that it will be found complete and covering all essential activities and accomplishments during the period.

In some instances it has been kept brief where certain items are reported on an annual basis as a summary with Dec. Report, and it is hoped that it will meet your office's approval.

Dennis B. Turner

Refuge Mgr.

PEA ISLAND NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

MAY 1, TO AUGUST 31, 1958

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PEA ISLAND NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

MAY 1, TO AUGUST 31, 1958

Lewis B. Turner, Refuge Manager
Houston C. Phillips, Refuge Aid

I. GENERAL

A. Weather Conditions

Following the extreme cold weather that occurred during the latter part of the winter months, Clear cool weather was the rule for the Coastal area during May and June with just below normal rainfall, July and August turned hot and temperatures remained somewhat above normal while rainfall was minus 2.26 for June and plus 2.28 for August.

on August 28 one hurricane "lazy Daisy" rambled up along the Coast line about 75 miles off shore but this was far enough that all the shore line felt was one tide app. three feet above normal with winds up to 40 MPH, Conditions cleared up rapidly and the period ended with fair weather with seasonal temperatures.

Data recorded in the table below was furnished us by the National Park Service who maintain an official Weather Station at Bodie Island Station three miles north of the Refuge area and reflect weather conditions as they actually exist on the Refuge.

Month, Actual	Precipitation		Temperatures	
	Dep. from Nor.		Max	Min
May	<u>3.34</u>	<u>-1.16</u>	<u>82</u>	<u>50</u>
June	<u>4.29</u>	<u>- .21</u>	<u>93</u>	<u>57</u>
July	<u>2.24</u>	<u>-2.26</u>	<u>95</u>	<u>66</u>
Aug.	<u>6.78</u>	<u>2.28</u>	<u>96</u>	<u>65</u>
Tot.	<u>16.65</u>	<u>-1.35</u>	<u>Extremes</u>	<u>96</u>
				<u>50</u>

B. Habitat1. Water Conditions

Water conditions for the period was much better than for the same period last year, More rainfall occurred which prevented the two impoundments from going completely dry as they did last summer although they dropped to a critical level before we had sufficient rain to do much good.

Waters of Pamlico sound remained clear and undisturbed for the entire period having had no wind of sufficient velocity to roil it up to and extent until Aug. 28, When the hurricane passed off shore but this did not last long enough to cause any lasting results, Salinity in the Sound remain at 58 to 65 ‰ Sea strength from New Inlet to Oregon Inlet and slightly lower south of New Inlet.

Listed below is Gauge readings for the end of each Month for the reporting period.

Month	North Pond	South Pond
May 31,	<u>4.40</u>	<u>4.28</u>
June 30,	<u>4.54</u>	<u>4.42</u>
July 31,	<u>3.60</u>	<u>3.68</u>
Aug. 31,	<u>4.12</u>	<u>4.20</u>

B. Food Conditions

An abundance of food has been available during the last four months for what waterfowl was present on the area which consisted of some 1500-1800 Black and Gadwall ducks including the young that was produced, Natural food plants such as all the aquatics, Smartweed, three square and millet has had an ideal climatic condition through out the summer months to thrive and a very good crop is now maturing.

Beach Pea which is one of the more important food species for Canada Geese and some species of Ducks during the winter months show promise of an excellent crop, This plant which seems to produce in cycles of about two years instead of annually is well distributed all over the Refuge area in the upper zones in which it normally grows on and is more abundant than usual.

There is never any scarcity of food available for other species of Birds that make up the summer population of Pea Island, Such as Gulls, Terns and Shore Birds as well as Herons, Egrets and Ibises, All of these birds have had a very successful summer, Feeding locally and not moving off the Refuge to and extent.

II. WILDLIFE

A. Migratory Birds1. Waterfowl

At the start of the period there was still remaining on the Refuge, 13 Canada Geese which has remained all summer and is still present.

Nesting species of Ducks consisting of Blacks, Gadwall and blue wing Teal, Maintained a population of app. 1200 until the hatch began and by the end of July there was about 1700 including the young, Black Ducks showed a decline in nesting activities from last summer but Gadwalls increased app. 40 %, Blue wing teal was about the same with three broods each season, Red Breasted Mergansers which has nested on the Refuge for the last two summers did not repeat this summer, No broods of these was counted, No reason can be given as to why they would use the area for two summers and then just not return.

2. Gulls, Terns, Shorebirds

Populations of the species listed above compared very favorably with last years numbers, Some decreased slightly while others showed some increase but no radical changes could be noted.

Laughing ~~III~~ Gulls had a very good nesting season with no high tides to cover the low lying islands they generally use for nesting sites, Our best estimates indicate that app. 1800 young was produced on two Island that had nesting colonies, Common Terns was widely scattered along the 12 miles of shore line with several nesting sites but not many nest in each location, Least terns nested in about the usual numbers but no accurate data is available on these.

Of the shore Birds, Only the Willets nest in any numbers on the Refuge, Total number of nest are unknown but we estimate app. 80 of these birds was hatched out this summer.

3. Water & Marsh Birds

No noticeable change could be noted in the population numbers of this group compared with last summer with the exceptions of Glossy Ibis which is a new comer to the Refuge for nesting, A few of these birds have been observed on the Refuge during summer Months for the last several years not to exceed a half dozen.

Of the group listed only Egrets, Herons and Ibis nest, This season we had two colonies with only Black crowned night Herons using one of the sites, Brood counts made at three intervals disclosed about 185 nest including 8 Glossy Ibis nests with a total production of over 600 young, Of which 22 were Glossy Ibis

B. Upland Game Birds

In former years there has been nothing to report under this heading, But in the last two years we have been seeing a few

Upland Game Birds Cont.

Ring Necked Pheasants, Generally only one or two, But this summer there is known to be two broods hatched off on the Refuge, One brood had 5 Young and the exact number of the other is not known but we estimate we now have at least 16 or more of these birds and it is expected they will increase rapidly in the next few years, Pheasants has been prevalent south of the Refuge for a good many years but hunting pressure has kept the number down to a bare minimum, But with air tight protection from hunting they should thrive on the Refuge.

G, Big Game Animals

Does not apply to Pea Island Refuge, No Big Game Animals are present on the area.

D. Fur Animals, Predators & Others

Animals existing on the Refuge under the above heading consist of Otter, Estimated to number about 35, Nutria, Which has become established on Pea Island within the last three years is still in evidence although we have been trapping some of these, and shooting others when the chance occurred, It is estimated there is probably at least 20 still on the Refuge

Muskrats which are abundant have in former years been estimated to number some 3000 or more with very little change so far as can be determined, We have recently submitted a Fur Management Plan to cover a Trapping and fur harvest program we expect to put into effect this coming trapping season which will be the initial operation on fur harvest on Pea Island and should furnish us with more information on population trends than we have had available in past years.

There has been no evidence to indicate there has been any outbreak of diseases among any of the Animal populations during the period.

Pea Island is very fortunate as to predatory Animals, There is No Bobcats, Raccoons, Opossums or skunks on the Island.

E. Hawks, Eagles, Owls & Other

Hawks, Owls and other predatory birds have been conspicuous by their absence, Only one Bald Eagle has been observed during the period, It remained in the North Pond section of the Refuge for a three week period during July and then moved on, A few crows nested along the south Dike in some high grown Myrtle and Locust, but the number was not to exceed about 40.

F, Other Birds

No unusual species of birds have been observed on the Refuge for the last four months.

Wildlife Cont.

G. Fish

Since there is no fish in the fresh waters of the two impoundments there is no fishing within this area, All of the Refuge west of the highway is fenced off and there is no fishing along the Sound side, But there is 12 miles of Surf line that is opened to the public the year round for surf fishing purposes and is one of the major attractions the Refuge has to offer for recreational uses

The last four Months has proven to be the best summer so far in several years, Almost ideal weather conditions has prevailed for most of the period which brought out large numbers of parties for sport fishing along the surf line, Success was somewhat erratic on some days when the Blue Fish was running most every body caught a fair number of fish, Flounder, Speckle Trout, Croakers and spots was plentiful during the first two Months and large numbers of these was caught, No commercial fishing was done under special use permit or otherwise during the period.

H. Reptiles

No Alligators occur on the Refuge and what few turtles and snakes prevalent is not considered numerous enough to report on, they pose no problems in our Management program.

I. Diseases

There has been no outbreak of Botulism or other diseases in the flocks of Birds or Animals on the Refuge during the period.

III. Refuge Development & Maint

A. Physical Developments

No new developments have been accomplished during the period

1. Maintenance

The Reroofing job on all the Station buildings was completed before the end of Aug. and the lookout Tower overhaul job has been started and about 30 % Completed, Maint. Schedules on all the Equipment has been maintained, These include Tractor, Trucks, Farming machinery, Boats, Power plants and pumping units, Two rooms of the residence was painted two coats and all fire fighting equipment was inspected, Refilled and repainted.

Development & Maint. Cont.

B. Plantings

Only one item coming under this heading has been accomplished this summer, "Cultivated Crops" during the first week of August 20 acres of Jap millet was planted out by Refuge personnel along the east side of the south Pond, This tract was harrowed down with a heavy tandem disc harrow two times, 300 Lbs of 8-8-8 fertilizers applied and the seed overcast on the surface, A very good stand was obtained and at this date looks very promising for a fall crop, But since this is the initial planting of Jap Millet on the Refuge it remains to be seen what success we will have, Soybean and Milo planted on this tract last summer proved a complete failure.

C. Collections & Receipts

None for the period, No specimens collected

D. Control of Vegetation

A summary report on these activities will be included in Dec. Narrative report.

E. Planned burning

None for the period.

F. Fires

No wildfires occurred on the Refuge area during the period.

IV. RESOURCES MANAGEMENT

No accomplishments under Headings "A" through "E", Grazing, Haying, Fur Harvest, Timber Removal, Commercial Fishing.

F. Other Uses

One concession owned by the National Park Service and located on the north end of Pea Island is under lease to a private operator and has been in operation through out the last four Months, Revenue accruing to our service is handled through Regional Offices and no data is available on amounts involved.

V. FIELD INVESTIGATION AND APPLIED RESEARCH

A. Field Investigations

Periodic brood counts was conducted on nesting Black and Gad-wall Ducks during the summer Months, Two Heron and Egrets rookries was checked several times during nesting seasons, the two islands

Field Investigations Cont.

used by laughing Gulls for nesting purposes was investigated twice during the summer to determine degree of success in hatching and numbers produced, Three surveys of pamalco sound was made during the summer by boat checking on the amount and condition of aquatics that exist on all the shoals within three miles of the shore line.

B. Applied research

No research was accomplished during the four Months being reported

VI. PUBLIC RELATIONS

A. Sport Fishing and Other Uses

Sport fishing was about on an equal with last summer or perhaps slightly above, Weather conditions was almost perfect during the entire period which accounts for the large numbers of people who daily used the 12 miles of shore line for surf casting, Success was fair to good most of the time, The time refuge personnel can expend on this activity is limited and no factual data is available as to the number of fish taken or poundage hauled out during the last four Months.

Other activities under recreational uses include Bathing, Beach combing, Photography shell collecting and just plain lazing around.

Camping at the newly established camping grounds administered by the NPS at the north end of the Island picked up this summer after completion of a comfort Station, floored platforms for campers tents and a small amount of mosquito control, since this is the first season that facilities has been available at this location useage was light compared to future use expected.

Listed below is our best estimates of the Refuge area for recreational uses for the last four Months.

Fishing,	Est. man days	7.200
Others	" " "	11.000

B. Refuge Visitors**1, Official**

Mr. Verde Watson,	NPS	5/9	Redanthe, N. C.
Mr. Carl V. Fermanich,	FWS	6/5	Atlanta, Ga.
Mr. W. G. Cahoon,	FWS	6/5	Mattamuskeet Refuge
Mr. Edwin Ball,	FWS	6/8-14	Atlanta, Ga.
Dr. Mimms	C. Fish.	7/20	Washington, D. C.
Mr. William Mimms	C	" 7/20	" "
Mr. V. M. Lubrick	GSA	8/4	Wilmington, N. C.
Mr. Charles F. Noble	FWS	8/2-5	Okefenokee Refuge

2, Unofficial

No list of unofficial visitors will be included since numbers involved make this impractical.

We had 1,242 registered visitors at the field Station during the reporting period, Of this number 30 was given conducted tours over the Refuge area on seven separate trips.

3, One way Traffic through the Refuge

Figures listed in the summary below was furnished us by the National Park Service who maintain automatic counters located at Oregon Inlet and represent one way traffic through the Refuge.

Month	Vehicles	Passengers
May,	9.448	21.730
June,	8.899	29.367
July,	28.252	98.882
Aug.	20.496	67.636
Tot.	<u>67.095</u>	<u>217.776</u>

C. Refuge Participation

No local meeting was attended or radio or TV appearances was made during the last four Months, Refuge leaflets No. 6 and bird list were distributed to all the tourist resorts along the Beach area from Kill Devel Hills south to Hatteras for visitor information in addition to these furnished at the field Station to over 1200 visitors.

D. Hunting

Does not apply to Pea Island.

E. Violations

No known serious violations have occurred, two random campers were moved to the regular camping area at the north end of the island, a few dogs was noted out of vehicles at the ferry landing and owners instructed to keep them confined, No legal cases was made during the period.

Date Submitted Sept. 12, 1958

By Hennis B. Turner

Approved Lawrence S. Guenard
Regional Refuge Supervisor

Title Refuge Manager

Sept. 16, 1958

WATERFOWL

REFUGE Pea Island

MONTHS OF May 1, TO Aug. 31, 19 58

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
<u>Swans:</u>										
Whistling										
Trumpeter										
<u>Geese:</u>										
Canada	88	70	32	13	13	13	13	13	13	13
Cackling										
Brant										
White-fronted										
Snow	21	21	21	2						
Blue										
Other										
<u>Ducks:</u>										
Mallard										
Black	500	500	470	475	475	500	500	500	600	600
Gadwall	450	450	450	500	550	550	550	550	550	550
Baldpate										
Pintail										
Green-winged teal										
Blue-winged teal				12	8	8	8	14	21	21
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
<u>Coot:</u>										

3

3

3 -1750a

Cont. NR-1

(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Sea IslandMONTHS OF ay 1, TO Aug. 31, 1968

(1) Species	(2) Weeks of reporting period								(3) Estimated	(4) Production	
	11	12	13	14	15	16	17	18	waterfowl days use	Broods: seen	Estimate total
<u>Swans:</u>											
Whistling											
Trumpeter											
<u>Geese:</u>											
Canada	18	12	12	12	12	12	12	12	2.635	0	0
Cackling											
Brant											
White-fronted											
Snow									455	0	0
Blue											
Other											
<u>Ducks:</u>											
Mallard											
Black	600	600	700	700	800	800	800	800	78.196	32	264
Gadwall	600	600	600	775	850	900	900	900	78.925	73	583
Baldpate											
Pintail											
Green-winged teal											
Blue-winged teal	20	20	20	24	41	48	30	4	2.093	3	26
Cinnamon teal											
Shoveler											
Wood											
Redhead											
Ring-necked											
Canvasback											
Scaup											
Goldeneye											
Bufflehead											
Ruddy											
Other											
<u>Coot:</u>											

(over)

	(5)	(6)	(7)	SUMMARY
	Total Days Use	Peak Number	Total Production	
Swans	:	:	:	Principal feeding areas <u>North & South Ponds</u>
Geese	3.090	109	0	
Ducks	167.121	1.748	878	Principal nesting areas <u>Islands within the two impoundments</u>
Coots	:	:	:	<u>and burms of dikes</u>
				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 Months of ay 1 to Aug. 31, 1958

(1) Species Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total Estimate Number
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	
I. Water and Marsh Birds:										
Egrets, Common			412	7/11/58			1	17	65	500
" Snowy			530	7/11			1	65	200	600
Hérons, Great Blue	Res.		8	7/11						
" Little Blue	Res.		65	7/11			1	22	80	200
" Louisiana	Res.		110	7/11			1	26	90	150
" Black Crowned	Res.		190	7/11			2	45	150	275
" Yellow Crowned			30	7/11						
Bittern, American					1	5/3				
Rails, Clapper	Res.	No data available								
Grebes, Piedbilled	Res.		12	6/13				3	9	25
Felicans, Brown	34	5/3	42	6/13						50
Cormorants, Double Crested			22	5/3						30
Osprey			3	5/3						5
Ibis, Glossy			30	6/13			1	8	22	35
II. Shorebirds, Gulls and Terns:										
Gulls, Herring	Res.		900	5/3						1000
" King Bill	Res.		175	5/3						200
" Laughing	Res.		3400	6/13			1	1250	1800	4500
" Great B. Backed					14	5/3				20
Terns Royal			240	6/13						400
" Caspian			45	6/13						100
" Common			800	6/13			4	150	275	1000
Least			750	6/13			3	120	225	900
" Black			950	7/11						2000
Black Skimmers			325	7/11						500
Gillets			235	7/11				7	80	400
Yellow Legs			750	7/11						1000
Turnstones			90	7/11						200
Sandpipers, All Species			8000	6/13						10,000

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove	An Occasional few passing through during May				
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow	None for the period A few nested in brush along the Dikes, Not to exceed 40				
Reported by <u>Louis H. 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.

3-1750b
 Form NR-1B
 (Rev. Nov. 1957)

UNITED STATES
 DEPARTMENT OF THE INTERIOR
 FISH AND WILDLIFE SERVICE
 BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Pea Island For 12-month period ending August 31, 1958

Reported by Lewis B. Turner Title Refuge Mgr.

(1) Area or Unit Designation	(2) Habitat			(3) Use-days	(4) Breeding Population	(5) Production
	Type	Acreage				
Area No. 1, all Cropland two fields	Crops	62	Ducks	11.795		
	Upland		Geese	212.190		
	Marsh		Swans			
	Water		Coots			
	Total	62	Total	223.985		
Area No. 2, All Upland, mostly sand dunes.	Crops		Ducks			
	Upland	2.652	Geese	141.460		
	Marsh		Swans			
	Water		Coots			
	Total	2.652	Total	141.460		
Area No. 3, All low lying marsh and sand flats	Crops		Ducks	412.833	1.200	873
	Upland		Geese	565.840		
	Marsh	3.168	Swans			
	Water		Coots			
	Total	3.168	Total	978.673	1.200	873
Area No. 4, All waters including pam- lico Sound	Crops		Ducks	754.897		
	Upland		Geese	495.111		
	Marsh		Swans	4.354		
	Water	19.400	Coots	52.045		
	Total	19.400	Total	1,306.407		
Totals	Crops	25.282	Ducks	2,650.525	1.200	873
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

(over)

INSTRUCTIONS

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge grand totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August Narrative Report.

- (1) **Area or Unit:** A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.

- (2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.

- (3) **Use-days:** Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form NR-1.

- (4) **Breeding Population:** An estimate of the total breeding population of each category of birds for each area or unit.

- (5) **Production:** Estimated total number of young raised to flight age.

UPLAND GAME BIRDS

Refuge Pea Island Months of May 1, to Aug. 31, 19 58

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

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.

Regional Director, Atlanta, Ga.

April 10, 1958

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

Narrative Report-Pea Island, Jan. Through April

Please find attached hereto Narrative Report covering the period, January 1 through April 30, 1958.

Considerable time went into the preparation of this report and it is thought to cover all subject matter worth reporting on within the last four Months at Pea Island Refuge.

Allen B. Turner

PEA ISLAND NATIONAL WILDLIFE REFUGE
NARRATIVE REPORT
JANUARY 1, TO APRIL 30, 1958

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PEA ISLAND NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

JANUARY 1, TO APRIL 30, 1958

Lewis B. Turner, Refuge Manager
Houston C. Phillips Refuge Aid

I, GENERAL

A. Weather Conditions

The period ending April 30, has been one of the most severe experienced by the Coastal area in the last 30 years with Temperatures ranging far below normal all through the Months of Jan. and Feb. falling below freezing most every night throughout these two Months.

Rainfall has been below normal for the period with a total of 14.42 which is minus 3.61 for the four Month period and some 10.00 inches below the period Sept. to Dec. last year.

March was some what warmer and April was seasonal most of the Month except for some foggy days and constantly changing temperatures but no extremes either way.

Data listed below was furnished us by the National Park Service who maintain an Official weather Station at Bodie Island and correctly reflects actual weather conditions as they exist in the area.

Month	Precipitation		Temperatures	
	Month	Dep. from Nor.	Max.	Min.
Jan.	<u>4.32</u>	<u>-.18</u>	<u>58</u>	<u>21</u>
Feb.	<u>3.98</u>	<u>-.52</u>	<u>70</u>	<u>12</u>
Mar.	<u>3.54</u>	<u>-.96</u>	<u>65</u>	<u>32</u>
April	<u>2.58</u>	<u>-1.95</u>	<u>79</u>	<u>38</u>
Tot.	<u>14.42</u>	<u>-3.61</u>	<u>79</u>	<u>12</u>
			Extremes	

B. Habitat Conditions1. Water Conditions

Although we have had less than normal Rainfall for the last four Months water conditions has remained very favorable for the period, With the frigid weather during Jan. and Feb. wind blew mostly out of the North West and we had no high Sea tides from the Ocean side and only two sound tides that covered the lower marginal area of the Refuge.

Waters in the Sound has remained clear and in good condition with salinity running about normal, Test run on March 13, showed the waters adjacent to the Refuge from New Inlet north to Oregon Inlet to range from 61 to 69 ‰ Sea straight.

Listed below is the gauge reading on both Impoundments at the end of each month for the period

Month	North Pond	South Pond
Jan.	5.04	5.16
Feb.	5.00	5.04
March	5.10	4.90
April	4.80	4.78

2. Food Conditions

In past years there has developed a critical shortage in the available supply of winter food during the last two Months of the season on the Refuge Area, This one was no exception, Food was in short supply from about Feb. 10, on through March, Weather conditions was such that some of the time the Geese and ducks could not feed in the Pamlico Sound area due to high tides caused by the constant North West Winds, Marsh burning was carried out on schedule but no Greenups occurred until about March 1, By that time the Waterfowl had scattered to other areas and the population had dropped radically, The exception was Greater Snow geese which had an abundance of food throughout the wintering season and remained on the Refuge about three weeks later than usual, The Ryegrass that was planted last fall did exceptionally well considering the severe cold weather that prevailed during the season, Canada Geese kept the field grazed down to the ground and from 600 to 1200 could be counted on the farming area almost daily the only draw back to this was there was not enough of it.

Salt Cord Grass, Spartina Alterniflora which accounts for 90% or more of the food consumed by greater Snow geese was abundant throughout the wintering Months and except for five days when the ground was frozen hard these birds had no shortage of food.

II. WILDLIFE

A. Migratory Birds1. Population and Behavior

The period started off with an average population of Geese numbering about 9000 Canadas and 9.500 Greater snows, Within a week after the hunting season closed there could be noted quite a decline in Canadas remaining on the Refuge area, and this continued up until Migration started the last week in Feb. by the end of March there was only about 1100 Canadas left and at the end of April there was still some 140 still left on the Area.

Snow Geese left Pea Island during the second week of Jan. and went back up to the Back Bay area until the population had dropped to about 2000, But when the hard freezeup occurred during the first two weeks of Feb. they returned and the population from then on until the last of March fluctuated from about 2000 to 6000, and at the end of April there was still 21 Snows on the Refuge and one immature white fronted Goose.

Ducks was very scarce, even during the first part of the winter, populations was app. 50 % below normal and at the first of Jan. the Refuge had only about 4800 ducks all species combined, they like the Geese started scattering out soon after the hunting season closed and at the end of March there remained only about 1800, most of these Black and Gadwall which nest on the Refuge and at the end of April there remained 900 of the birds.

Spring Migration of Black Backed, Herring and Ringbilled Gulls was about three weeks late in getting started this season, these species normally began to leave the Refuge about the first week in March but this years there was no Movement worth noting until the last week in March, It is believed Pea Island had the greatest number of Gulls this winter in the last ten years, The beach line from Oregon Inlet south for a distance of 6 Miles was solid with Gulls from about March 8 to 20 and a special census that was made one Sunday ran to over 17.000 Gulls on the Beach area alone, By the second week in April most of these had migrated north and Laughing Gulls was arriving from further south at the end of April there remained only a few of the former species and laughing Gulls had increased to app. 4000.

Common terns was noted for the first time on April 8, and since that date has increased to about a normal population along with a few Royals which was late in arriving and had not increased very much by the end of April.

Shore birds, including Willets, Yellow legs, Sandpipers and sanderlings were about on schedule, The first of these were observed on March 18 and at the end of the period had increased to about a normal population

Hérons and Egrets began arriving at about the same time as Shore birds but was slow to show much increase and at the end of April we still a below normal number of these birds but was still coming in.

B. Upland Birds

Does not apply to Pea Island with the exception of an occasional few doves migrating through during the Months of Oct. and April.

C. Big Game Animals

Does not apply to Pea Island Refuge.

D. Fur Animals

Populations of fur bearing Animals on the Refuge area does not fluctuate to any great extent as far as can be determined, Muskrat is the most plentiful with an estimated number of App. 3000 on the entire area.

Otter remain in an almost static condition as to numbers, We estimate there is about 30-35 of these Animals on the Refuge and does not seem to increase as the years go by.

Nutria, which become established on the Refuge within the last three year has increased rapidly, control measures were started in June of 1957 and since that date 34 have been destroyed, Some trapped and the rest shot, At the present time there is very little sign of Nutria to be found, We expect to continue this program on through the summer and longer if necessary to keep these Animals from becoming destructive to Marsh habitat.

E. Hawks, Eagles and Crows

Marsh Hawks are the most numerous on the Refuge during the winter Months, Numbering from 8-15 most of the time, These Birds is not thought to be very destructive to other species of wildlife to any great extent, they have been observed chasing Coots on several occasions and are known to prey on Clapper Rail on rare occasions.

Duck Hawks are also winter residents on the Refuge in small numbers generally from 4-6, These Birds do prey on Coots and other species and at times have been observed catching ducks, Black Ducks seem to be their favorite.

Bald Eagles are generally present during the winter with from 1 to 3 in numbers, They are rarely seen preying on Waterfowl but do cause a lot of disturbance among the flocks of Canada and Snow Geese at times, The Geese will always get up when Eagles fly near them and it is common to see several hundred Geese in the air from Eagle activity.

Fish Crows are the only Crows that commonly use the Refuge, They Generally appear during Feb. in small numbers and some of them nest in the brush along the south Dike during the Spring and summer, there is never more than 30 to 45 present on the area.

F. Fish

Sport fishing was at a stand still along the 12 miles of Surf line during the first three Months of the period, The extreme cold weather during feb. Delayed fishing activities due to the water remaining cold for about three weeks longer than usual, A few parties came in during the last week of April but success was very poor, No run of fish occurred along the Surf during the entire period.

Estimated number of man day fishing fell off app. 50 % from last year total with an estimated 610

G. Reptiles

There is no Alligators on the Refuge, There is two species of Turtles found on the area, Alligator or Snapping, and Streaked head or Mobileian, Neither of which occurs in many numbers compared to other areas futher south, Snakes consist of Water moccasin and Pig Snakes, No Rattlers or Cotton Mouths have been observed.

H. Diseases Botulism & Other

The Disease which commonly effect the wintering flocks of Canada Geese during the latter part of the season increased somewhat this winter, A total of 41 dead of sick Geese was found during the winter Months, 6 of these was reported in Dec. Narrative, This compares with 27 last year and it is suprising there was not a serious outbreak during the severe weather during Feb. when feeding conditions was at it worst, No Botulism or other disease occurred during the winter.

III. REFUGE DEVELOPMENT AND MAINT.

A. Physical Developments

No new Developments of a physical nature has been undertaken or completed during the reporting period.

2. Refuge Maintenance

This activity accounts for a major portion of the time expended by Refuge personnel during the period, Maint. schedules have been maintained on all the equipment including Tractor, Trucks, Light Plants, Pumping units and other, Repairs to the fence line, Boat was hauled and the bottom painted, Interior of the publicity Office was cleaned sanded down and two coats of paint applied, All trapping equipments was hauled in any necerrasy repairs made and stored until next season.

The reroofing job on all the Buildings at the field Station is about 50% completed, Some of this work is being done on contract as it turned out to be more than Refuge personnel could do and keep up all other work programs on schedule.

B. Plantings

1. Aquatic & Marsh Plants

None accomplished during the last four Months.

2. Cultivated Crops

No farming operations has been carried out this period.

C. Collections & Receipts

None for the period, No specimens collected.

D. Control of Vegetation

No herbicide or mechanical control work was accomplished during the winter Months.

E. Wildfires, Controlled Marsh Burning

No wildfires occurred on the Refuge area during the last four Months.

Controlled Marsh burning was continued under the approved burning plan in effect for the last several years for the purpose of furnishing green browse for Canada Geese and some species of Ducks during the last two Months of the Season, Four Units was burned off during Jan.

Unit No. 8 containing 138 Acres was burned off on Jan 10, this unit was covered with Cordgrass, *Spartina Patens* app. 75 % mixed with a thin stand of Wax Myrtle on the upper portion which was semi-dune type, the remainder being low marsh type, The burning was done with a due North Wind at app. 20 MPH, Got a fair to good burn on most of the area.

Unit 8-A was burned the same day under the same wind conditions this unit consist of 100 acres all being low Marsh type with very little brush, Being almost 100 % Cordgrass with a fringe of Needle Grass, *Juncus* along the lower border, Got an excellent burn on this entire unit.

Unit No. 5, containing 160 acres located between the two ponds on the east side was burned on Jan. 24 with an east wind app. 15 MPH, dominant vegetative growth on this unit was cordgrass 85 % mixed with three Square, *C. Americanis* 15 %, Very little brush, Obtained an excellent burn on this entire tract.

Unit N. 9, Containing app. 105 Acres located just west of sand ridge ledge was burned off on Jan. 24, with an east wind at about 20 MPH, This unit is low marsh type covered with cordgrass app. 70 % with some Wax Myrtle and misc. weeds mixed 30 %, Secured a very good burn on this unit except a very narrow fringe of Needle grass along the water front which we have had no luck in burning on Pea Island

Wildfires, Controlled Marsh Burning Cent.

Although the burning program was carried out on schedule and a total of 508 acres was burned off, we did not get a normal amount of useage by Waterfowl due to the very cold weather during the Month of Feb. which prevented the burns from greening up on schedule, The Geese did start using the areas about the 10th of March but there was very little in the way of food available even at that late date but improved rapidly thereafter furnishing an abundance of green browse through the rset of March and the first week in April when most of the Geese started migrating.

IV. RESOURCES MANAGEMENT

A. Economic Uses

1, Commercial

Pea Island Refuge has only one source useage whereby our collects any revenue, This being the Concession owned by the National Park Service and located at the North End of the Island at Oregon Inlet, This establishment is leased out to a private operator who manages it during the summer Months, Accounting of revenue derived from this concession is handled through Regional offices and no data is available on amounts involved.

2, Non-Commercial

One special use Permit was issued this period to Mr. T. L. Quay of the N. C. State college to cover the collection of 150 Muskrats for scientific purposes by means of trapping, He succeeded in trapping 102 rats during the third week of Jan. which he took back to Raleigh with him.

V. FIELD INVESTIGATION OR APPLIED RESEARCH

A.X Field Investigations

Work involved in field investigations was confined to canvassing the Refuge area for sick or dead Geese at weekly intervals, conducting weekly census on Waterfowl and trapping and banding activities which was continued on through March.

Success in the trapping program was far short of last years operations due to an extremely bad winter from a weather angle and also populations of ducks present on the Refuge was app. 45 % short of last season numbers.

The following tabulation shows numbers trapped and banded also repeats caught by Species.

Field Investigation Cont.

Canada Geese Trapped,

Geese Banded,	124
Geese released to Mattamuskeet for Transfer	37
Geese repeats, Already Banded	63
Total Trapped	<u>234</u>

Ducks trapped,

Black Ducks, Banded	55
Pintail Ducks, "	6
Mallard Ducks, "	15
Redhead Ducks, "	17
Seaup Ducks, "	47
Ringneck Ducks, "	8
Ruddy Duck, "	1
Total Trapped	<u>149</u>
Coats, "	147
Total all Species	<u>520</u>

VI. PUBLIC RELATIONS

A. Recreational Uses1. Sport Fishing and other

Use of the Refuge area for recreational uses has been at an all time low for the last four Months, Jan. and Feb. was so cold and windy no visitors showed up for sport fishing or other activities as they normally do, March was almost as bad but parties began coming in after the first of April for surf fishing and general sight seeing, Success at sport fishing along the surf was very poor, No good runs of fish has occurred to date, Estimated number of man days fishing and other recreational uses is listed below.

Fishing, Man days Est.	610
Other	985

Recreational Uses Cont.2. One way traffic Through the Refuge

Figures listed below was compiled from data furnished us by the National Park Service who maintain automatic counters at Oregon Inlet and reflect one way Traffic through the Refuge during the last four Months.

Month,	Vehicles,	Passengers
January,	1.105	2.652
February,	961	3.652
March,	1.673	5.019
April,	3.461	10.383
Tot.	<u>7.200</u>	<u>21.706</u>

Figures listed above show a 42.8 % decrease in travel through the refuge for the same period last year, Most of this it is thought can be attributed to the very severe weather conditions that existed during the first three Months of the period.

B. Refuge Visitors

OFFICIAL,

Mr. T. L. Quay, Zoologist	1/31	Raleigh, N. C.
Mr. A. H. Harris,	1/31	Raleigh, N. C.
Mr. R. K. Rudolph, FWS, Bio.	3/12	Mattamuskeet, Ref.
Mr. L. S. Givens, FWS, Sup.	4/9	Atlanta, Ga.
Mr. Robert Webb, FWS, Bio.	4/17	Atlanta, Ga.

UNOFFICIAL,

No list of unofficial visitors will be submitted, There was 57, Registered Visitors to the Refuge during the last four Months, This compares with 144 for the same period last year.

C. Violations

The only serious violation that has occurred during the period was the theft of app. 400 lbs of copper Wire from the fence line near the south end of the Refuge on the Night of Jan.6-7 by parties unknown, The FBI, local County Sheriff and Refuge personnel have attempted to apprehend the violators but have had no luck to date,

Eight full nights of Patrol work has been expended since the theft occurred in an effort to catch them in the act as was done two years ago, But there has been no repeat and no more wire has been taken.

Date Submitted May 10, 1958

Approved

Lawrence L. Beard
Regional Refuge Supervisor
WASHINGTON OFFICE

By

Jessie B. Turner
Refuge Manager

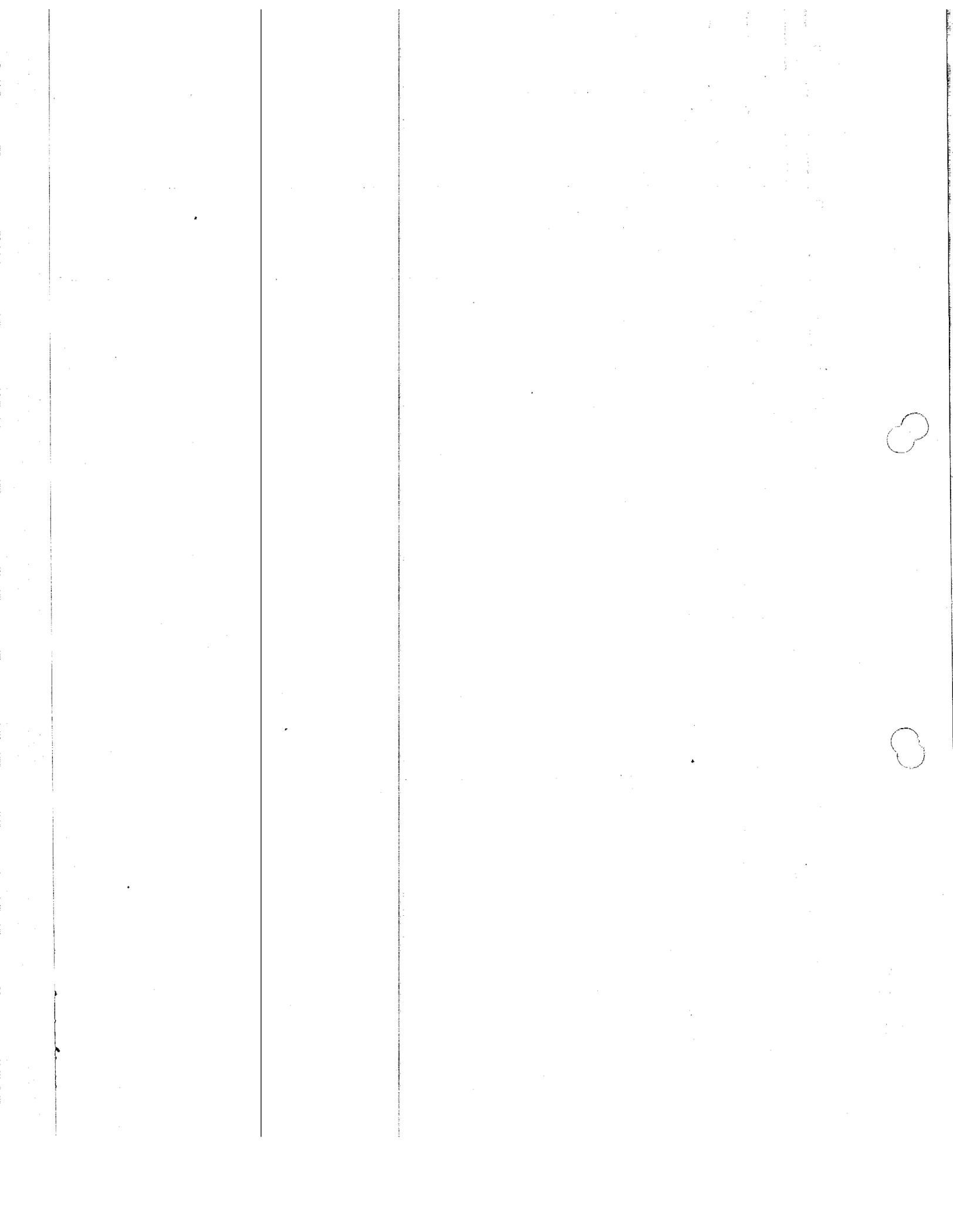
MAY 13 1958

W A T E R F O W L

REFUGE Pea Island

MONTHS OF Jan. 1, TO April 30, 1958

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling Trumpeter	12	17	9	14	23	23	9	17	63	40
Geese:										
Canada	7.000	8.700	8.300	7.800	7.400	6.800	6.800	6.300	4.200	1.800
Cackling Brant										
White-fronted										
Snow	270	1.700	2.100	1.800	2.000	950	1.100	1.900	380	42
Blue	6	6	6	6	3	1			2	
Other										
Ducks:										
Mallard	14	45	51	65	31	38	28	17	8	4
Black	1.100	1.050	1.050	900	750	700	750	750	650	600
Gadwall	330	400	370	420	200	300	320	375	400	470
Baldpate	650	630	575	400	480	430	400	480	220	134
Pintail	980	1.100	980	870	625	385	460	400	130	68
Green-winged teal	400	400	535	450	320	280	145	120	270	200
Blue-winged teal	10	22	8		3				38	7
Cinnamon teal										
Shoveler	35	165	200	300	65	72	34	65	45	12
Wood										
Redhead	48	200	230	125	25	140	160	144	35	10
Ring-necked	400	470	320	300	180	200	240	180	120	45
Canvasback		2	4	6	1			3	2	
Scaup	300	285	320	300	215	280	230	234	200	130
Goldeneye										
Bufflehead	4	7	6	2				2		
Ruddy	62	90	75	180	105	90	108	220	55	38
Other/identified	450	665	300	550	200	230	200	380	180	110
Coot:	400	420	480	375	260	275	284	220	134	140



3 -1750a

Cont. NR-1

(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE

Pea Island

MONTHS OF

Jan. 1,

TO

April 30, 1958¹⁹

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimate seen : total		
	11	12	13	14	15	16	17	18				
<u>Swans:</u>												
Whistling Trumpeter	65	12	7							2.149		
<u>Geese:</u>												
Canada	1.100	950	900	900	380	200	140			487.690	0	0
Cackling												
Brant												
White-fronted												
Snow	42	45	30	30	30	21	21			48.769	0	0
Blue										210	0	0
Other												
<u>Ducks:</u>												
Mallard										2.184	0	0
Black	9	2								82.495	0	0
Gadwall	600	570	485	480	450	450	450			48.300	0	0
Baldpate	520	500	500	525	470	400	400			32.116	0	0
Pintail	80	35	42	28	4					43.260	0	0
Green-winged teal	70	90	22							39.039	0	0
Blue-winged teal	240	185	40	12						2.765	0	0
Cinnamon teal		85	150	30	5							
Shoveler										7.098	0	0
Wood	8	8	2									
Redhead										7.896	0	0
Ring-necked	4	4		4						17.864	0	0
Canvasback	60	25	8							119	0	0
Scaup										18.767	0	0
Goldeneye	85	50	55	10	7							
Bufflehead										147	0	0
Ruddy										7.616	0	0
Other	32	20	9	4						24.990	0	0
Unidentified	60	200	35	10								
<u>Coot:</u>												
	112	140	165	40	12	4	4			24.255	0	0

(over)

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans	2.149	63	0
Geese	536.689	10.400 0	0
Ducks	334.649	5.531	0
Coots	24.255	480	0

SUMMARY

Principal feeding areas _____
 Families Sound and the two fresh _____

Water Impoundments _____
 Principal nesting areas _____

Loss not apply to this Report

Reported by _____
 Lewis E. 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 IslandMonths of Jan. 1. to April 30. 1958

(1) Species Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total Estimate
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Number
I. Water and Marsh Birds:										
Herons, Great Blue	Res 3	1/10	7	4/30						12
" Little Blue	Res 2	1/10	31	4/30						45
" Louisiana	Res 2	1/10	28	4/10						50
" Black Crowned	Res 11	1/10	37	4/10						65
" Yellow Crowned	7	3/28	14	4/30						45
Egrets, American	Res 2	1/10	28	3/30						80
" Snowy	Res 3	1/10	72	4/30						110
Bittern, American			9	1/10						15
Loons, Common	all Winter		45	1/10						75
Trebes, Piedbilled,	Res		90	1/10						200
Commorants	40	2/28	750	3/28						900
Felicans	2	2/28	45	3/28						110
II. Shorebirds, Gulls and Terns:										
Gulls, Black Backed	all win.		640	3/23						800
" Herring	Res "		15,800	3/23						17,000
" Ringbill	Res		2,000	3/23						25 00
Terns, Common	380	4/8	800	4/30						2,000
Caspian	4	4/8	34	4/30						200
Terns, Royal	18	4/8	130	4/30						200
" Least	2	4/8	40	4/30						125
Yellow Legs, Great-Less	Res		480	4/30						600
Willetts	16	3/18	180	4/30						300
Flovers, Wilson	9	3/18	90	4/30						200
" Black Bellied	34	1/10			2	3/18				50
Sandpipers, All Species	Comb.		4,300	4/30						5,000

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove	An Occasional few passing through during the Month of April				
IV. <u>Predaceous Birds:</u> Golden eagle					
Duck hawk Horned owl Magpie Raven Crow	an average of 4-6 during the winter months				
	A few nesting along the dikes of the south pond, Est. 40 on the Refuge				
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 Pea Island Months of Jan. 1. to April 30., 1945

(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 Refuge during the month of April	Pea Island			with the exceptions of an				occasional few	Doves passing through

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 Refuged Furs Shipped	Furs Donated		Furs Destroyed
								Permit Number	Trappers Share	Refuge share				
Muskarts	<u>Scirpus, An Cattail</u> other three Square and grasses 1500 Acr.	1500 Est. .05					102	4-58-2						Est. 3.000
Otter	Range all over the Refuge area, 5.880 Acr.	167												Est. 35
Nutria	Same as Muskrat area listed above 1500 Acr	100			* 34								34	Est. 15

* 34 of ~~these~~
these Animal has
been destroyed by
trapping and shooting
by Refuge personnel.

* List removals by Predator Animal Hunter

REMARKS:

Reported by Lewis B. Turner

INSTRUCTIONS

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

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