

WATERFOWL
 (Continuation Sheet)

REFUGE Pea Island NW Refuge

MONTHS OF May 1 TO August 31, 1971

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods : Estimated seen : total	
	11	12	13	14	15	16	17	18			
Swans:											
Whistling	1	1	1	1	1	1	1	1	123		
Trumpeter											
Geese:											
Canada	12	12	12	12	12	12	12	12	1,502		
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard	9	9	9	9	9	9	9	9	977	1	3
Black	260	260	260	260	260	350	500	650	33,435	25	110
Gadwall	460	510	515	515	515	650	700	800	46,495	88	383
Baldpate											
Pintail											
Green-winged teal											
Blue-winged teal	10	10	10	10	100	125	25	50	625		
Cinnamon teal							300	900	12,519	1	4
Shoveler											
Wood											
Redhead											
Ring-necked											
Canvasback											
Scaup											
Goldeneye											
Bufflehead											
Ruddy											
Other											
Coot:											

(Over)

	(5) Total Days Use	:	(6) Peak Number	:	(7) Total Production	SUMMARY
Swans	<u>123</u>	:	<u>1</u>	:		Principal feeding areas <u>North and South Ponds.</u>
Geese	<u>1,502</u>	:	<u>25</u>	:		
Ducks	<u>94,081</u>	:	<u>2,409</u>	:	<u>500</u>	Principal nesting areas <u>Islands, ridges, and dikes in and</u>
Coots	<u>108</u>	:	<u>12</u>	:		<u>around North and South Ponds</u>
						Reported by <u>N. F. Williamson, Jr.</u> <u>N. F. Williamson, Jr., Refuge Manager</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
(Aug. 1952)

MIGRATORY BIRDS
(Other than Waterfowl)

Refuge Pea Island

Months of May 1 to August 31 19 70

(1) Species Common Name	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total
	Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Use
<u>I. Water and Marsh Birds:</u>										
Pied-billed Grebe	10	5/8	25	7/3 - 8/28	25	8/28				2,160
Glossy Ibis	30	5/15	150	7/1 - 8/23	150	8/23	1	30	90	11,130
American Bittern	1	5/8		Only sighting						8
Great Blue Heron	5	5/8	10	6/5 - 8/23	10	8/23				1,075
Common Egret	15	5/8	26	6/5 - 7/22	10	8/28	1	5	15	2,255
Snowy Egret	50	5/8	50	5/1 - 5/22	10	8/28	1	7	28	2,470
Louisiana Heron	30	5/8	66	7/1 - 8/23	66	8/23	1	13	39	4,092
Little Blue Heron	10	5/8	150	7/20 - 8/28	150	8/28	1	8	32	7,110
Green Heron	2	5/8	5	7/1 - 8/28	5	8/28				430
Cattle Egret	5	5/15	60	7/1 - 8/28	60	8/28	1	5	20	3,950
Black-crowned Night Heron	30	5/8	100	7/1 - 8/28	100	8/28	1	15	45	8,030
<u>II. Shorebirds, Gulls, and Terns:</u>										
Great Black-backed Gull	200	5/8	200	5/1 - 6/30	20	8/28				13,440
Herring Gull	500	5/8	500	5/1 - 6/30	25	8/28				32,050
Laughing Gull	400	5/8		Entire Period						49,200
Ring-billed Gull	400	5/8	400	5/1 - 5/31	20	8/3				14,240
Bonapart's Gull	200	5/8		Entire Period						24,600
Royal Tern	18	6/1	30	7/1 - 8/28	30	8/28	1	6	12	2,400
Common Tern	18	6/1	30	7/1 - 8/28	30	8/28	1	6	15	2,400
Avocet	25	6/1	25	6/1 - 8/28	25	8/28				2,300
Black-necked Stilt	5	5/8	50	6/1 - 7/31	20	8/28		8	28	3,825
Sanderling	200	5/8	200	Entire Period						24,600
Willet	100	5/8	350	6/1 - 8/28	350	8/28		100	300	35,300
American Oystercatcher	20	5/31	30	7/1 - 8/28	30	8/28		5	10	2,480
Black Skimmer	10	6/1	150	7/1 - 8/28	150	8/28		20	80	4,700

	(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u>						
Mourning dove	10	5/1	10	Entire Period		1,230
White-winged dove						
IV. <u>Predaceous Birds:</u>						
Golden eagle						
Duck hawk						
Horned owl						
Magpie						
Raven						
Fish Crow	60	5/8	60	Entire Period		7,380
Marsh Hawk	1	5/8	1	5/1-5/31	1 5/29	31
Sparrow Hawk	2	5/8	2	5/8-6/30	2 6/30	122
Osprey	1	5/9	1	Entire Period		123
Barn Owl	2	5/11	2	Entire Period		246

Reported by

H. F. Williamson, Jr.

INSTRUCTIONS (See Sec. 7532, Wildlife Refuges Field Manual)

- (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 or 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 Guliiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first migration record for the species for the reporting period.
- (3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.
- (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 species days use (average population X no. days present) of refuge during the reporting period.

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

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Pea Island NW Refuge

For 12-month period ending August 31, 1970

Reported by George W. Peyton

Title Assistant Refuge Manager

(1) Area or Unit Designation	(2) Habitat			(3) Use-days	(4) Breeding		(5) Production
	Type	Acreage			Population		
Unit 1.	Crops	0	Ducks	14,439			
South Boundary	Upland	339	Geese	20,001			
to New Inlet	Marsh	1,216	Swans	97			
	Water	9,700	Coots				
	Total	11,255	Total	34,537			
Unit 2.	Crops	0	Ducks	10,746			
New Inlet to	Upland	220	Geese	19,226			
North dike of	Marsh	664	Swans	29			
North Pond	Water	2,000	Coots	7			
(South side)	Total	2,884	Total	30,008			
Unit 3.	Crops	100	Ducks	152,327	350		417
Pools 1 & 2	Upland	436	Geese	92,680			
and New Field	Marsh	215	Swans	3,249			
	Water	580	Coots	21,472			
	Total	1,331	Total	269,728	350		417
Unit 4.	Crops	0	Ducks	16,917	50		83
North dike of	Upland	320	Geese	22,968			
North Pond to	Marsh	3,000	Swans	125			
Oregon Inlet	Water	13,732	Coots	1,595			
	Total	17,052	Total	41,605	50		83
Totals for	Crops	100	Ducks	194,429			
Refuge	Upland	1,315	Geese	154,675			
	Marsh	5,095	Swans	3,500			
	Water	26,012	Coots	23,074			
	Total	32,522	Total	375,678	400		500
	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 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.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Pea Island NW Refuge Months of May 1 to August 31, 19 70

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Ring-neck Pheasant	Dikes, wax myrtle and bayberry thickets, uplands, and marshes (3,830 acres)	9.57	30	240	1-1	0	0	0	400	Several birds were killed on the highway.

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.

3-1730
Form NR-1
(Rev. March 1953)

w8

FILE COPY

WATERFOWL

REFUGE Pea Island NW Refuge

MONTHS OF January 1 TO April 30, 19 70

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling Trumpeter	85	61	30	6	12	4	47	13	54	60
Geese:										
Canada	5,200	3,900	3,013	2,221	2,860	2,043	3,233	1,395	3,339	778
Cackling Brant										
White-fronted										
Snow	6,110	4,397	4,184	4,819	3,155	2,750	4,383	925	20	145
Blue	20	25	11	28	25		5	11		3
Other										
Ducks:										
Mallard	232	252	175	194	195	50	30	45	50	30
Black	3,325	2,314	2,876	3,215	3,055	1,749	845	385	344	668
Gadwall	615	187	225	175	155	35	40	15	30	229
Baldpate	106	45	168	115	225	5	5	20	10	
Pintail	3,245	691	1,290	1,180	1,575	220	75	50	35	2
Green-winged teal	1,075	500	825	1,100	880	300	85	150	2,175	195
Blue-winged teal	25									
Cinnamon teal										
Noveler	390	150	317	246	210	115	180	100	65	117
Wood										
Redhead	600	1,075	208	25	50				4	
Ring-necked	550	875	150	50	50		10	10		22
Canvasback	500	963	419	155	600	600	79	15		
Scaup	1,110	4,075	2,140	1,025	450		20	40		
Goldeneye										
Bufflehead	417	70	50	525	200	85	25	50	5	25
Ruddy	585	215	444	175	275	310	355	180	225	14
Other Hooded Merganser		25	6							
Red-breasted Merganser										2,500
White-winged Scoter					20					
Surf Scoter					10					
Coot	2,450	525	550	300	500	300	150	145	100	95

3-17504
 Cont. NR-1
 (Rev. March 1953)

WATERFOWL
 (Continuation Sheet)

REFUGE Pea Island NW Refuge

MONTHS OF January 1 TO April 30, 1970

(1) Species	(2) Weeks of reporting period								(3) Estimated:	(4) Production	
	11	12	13	14	15	16	17	18	waterfowl: days use	Broods: seen	Estimated total
<u>Swans:</u>									3,692		
Whistling	57	11	2	1	1	1					
Trumpeter											
<u>Geese:</u>									190,646		
Canada	491	575	350	290	290	100	100	50			
Cackling											
Brent											
White-fronted		1	1							14	
Snow	51	59	72	117	150	100	100	50		196,477	
Blue	1	1	1	2	2	2				879	
Other											
<u>Ducks:</u>									8,032		
Mallard	25		2								
Black	176	277	104	59	59	100	100	100		124,657	
Gadwall	127	111	89	89	100	100	100	100		14,894	
Baldpate					10	10				4,609	
Pintail	5	2								45,610	
Green-winged teal	278	962	630	200	550	50	10	5		65,475	
Blue-winged teal			3	2	50	25	10	12		753	
Cinnamon teal											
Shoveler	250	260	81	67	50					16,676	
Wood											
Redhead		1								11,311	
Ring-necked	11	5	9	14						10,092	
Canvasback										21,317	
Scaup	15	23								57,846	
Goldeneye											
Bufflehead	11	12	7	6						8,958	
Ruddy		2								17,120	
Other Hooded Merganser										217	
Red-breasted Merganser		2								17,514	
Coot:	95	140	27	81	100	25	25	25		29,556	
White-winged Scoter										110	
surf Scoter										79	
Common Scoter	7										

(Over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production	SUMMARY
Swans	3,622	134		Principal feeding areas <u>North and South Pond and New</u>
Geese	388,016	11,330		<u>Field</u>
Ducks	425,278	12,775		Principal nesting areas <u>Not applicable</u>
Coots	29,556	2,450		

Reported by N. F. Williamson, Jr., 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
(Aug. 1952)

MIGRATORY BIRDS
(Other than Waterfowl)

Refuge Pea Island NW Refuge Months of January 1 to April 30 1970

(1) Species Common Name	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total
	Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Use
<u>I. Water and Marsh Birds:</u>										
Pied-billed Grebe	77	1/9	77	1/1-2/15	10	4/28				4,282
Double-crested Cormorant	50	3/10	100	3/20-4/10	15	4/28				2,900
Glossy Ibis	4	3/26	15	4/15-4/30	15	4/28				305
American Bittern	1	2/20	2	3/26-4/30	2	4/28				103
Great Blue Heron	1	1/15	5	3/20-4/30	5	4/28				288
Common Egret	2	3/13	15	4/15-4/30	15	4/28				291
Snowy Egret	4	1/9	50	4/1-4/30	50	4/28				1,856
Louisiana Heron	2	2/13	30	4/1-4/30	30	4/28				992
Little Blue Heron	1	3/26	5	4/1-4/30	5	4/28				160
Green Heron	1	4/2	2	4/10-4/30	2	4/24				50
Cattle Egret	2	4/29	Only Sighting							2
Black-crowned Night Heron	24	1/10	30	4/1-4/30	30	4/28				3,060
<u>II. Shorebirds, Gulls, and Terns:</u>										
Great Black-backed Gull	100	1/10	210	3/15-4/30	210	4/28				17,060
Herring Gull	55	1/10	575	3/15-4/30	575	4/28				30,520
Laughing Gull	100	4/10	400	4/15-4/30	400	4/30				6,500
Ring-billed Gull	170	1/10	500	3/15-4/30	500	4/30				35,580
Bonaparte's Gull	40	4/10	200	4/15-4/30	200	4/30				3,200
Black-necked Stilt	5	4/15	25	4/15-4/30	5	4/28				500
Common Snipe	40	1/10	40	1/10-2/29	5	4/10				2,565
Dunlin	75	2/20	75	2/20-4/30	75	4/28				5,175
Sanderling	200	2/20	200	2/20-4/30	200	4/28				13,800
American Oyster Catcher	4	4/10	4	4/10-4/30	4	4/28				80

(over)

(1)	(2)		(3)		(4)		(5)			(6)
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove	4	4/1	4	4/1-4/30	4	4/30				120
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow Fish Marsh Hawk Cooper's Hawk Sparrow Hawk Osprey Barn Owl	5 5 1 4 1 1	3/16 1/10 1/15 1/3 4/10 1/22	50 5 1 4 1 2	4/1-4/30 1/1-2/15 1/10-2/25 1/3-2/15 4/10-4/30 1/1-4/30	50 1 1 2 1 1	4/30 4/30 2/25 4/27 4/24 4/24				1,575 304 46 232 20 240

Reported by **N. F. Williamson, Jr.**

INSTRUCTIONS (See Sec. 7532, Wildlife Refuges Field Manual)

- (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 Galliformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first migration record for the species for the reporting period.
- (3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.
- (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 species days use (average population X no. days present) of refuge during the reporting period.

3-1752

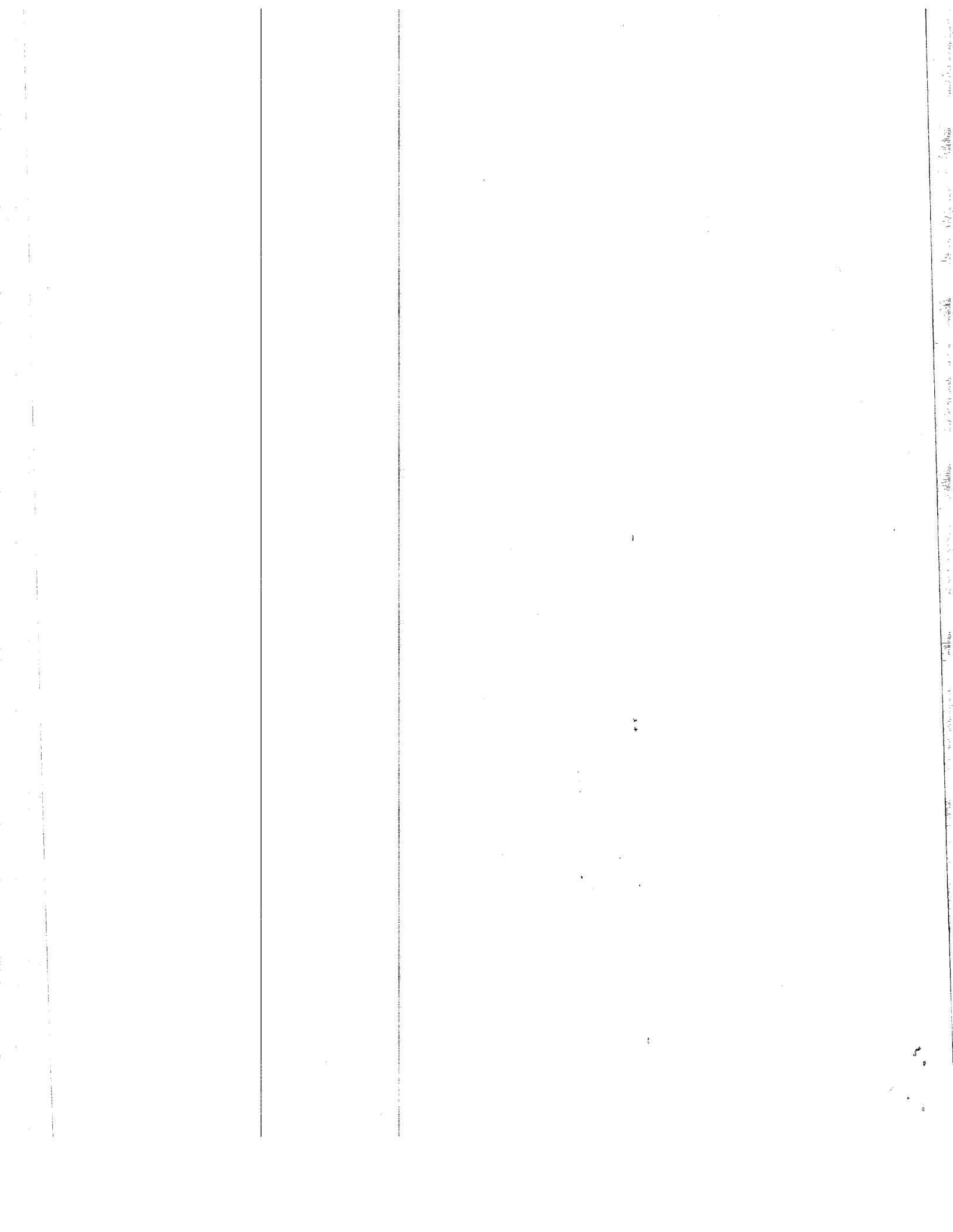
(Form NR-2)

(April 1946)

UPLAND GAME BIRDS

Refuge Pea Island NW RefugeMonths of January 1 to April 30, 1970

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
			Number broods observed	Estimated Total		Hunting	For re- stocking	For Research		
Common Name	Cover types, total acreage of habitat	Acres per Bird			Percentage				Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	Dikes, wax myrtle thickets, uplands and marshes (3,830 acres)	21.3			1-1	0	0	0	175	



3-1754

Form NR-4

(June 1945)

SMALL MAMMALS

Refuge Pea Island NW RefugeYear ending April 30, 1970

(1) Species Common Name	(2) Density		(3) Removals					(4) Disposition of Furs					(5) Total Popula- tion	
	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re- stocking	For Re- search	Share Trapping			Total Refuge Furs Shipped	Furs Donated		Furs Destroyed
								Permit Number	Trappers Share	Refuge share				
Muskrat	Impoundments and adjacent marsh areas (1,500 acres)	2	N	O	N	E								786
Otter	Entire Refuge and associated tidal creeks (5,880 acres)	392	N	O	N	E								15
Nutria	Impoundments and adjacent marsh areas (1,500 acres)	42.9	N	O	N	E								35
Mink	Entire Refuge (5,880) acres	588	N	O	N	E								10

* List removals by Predator Animal Hunter

REMARKS:

Reported by N. F. Williamson, Jr., Refuge Manager

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.)

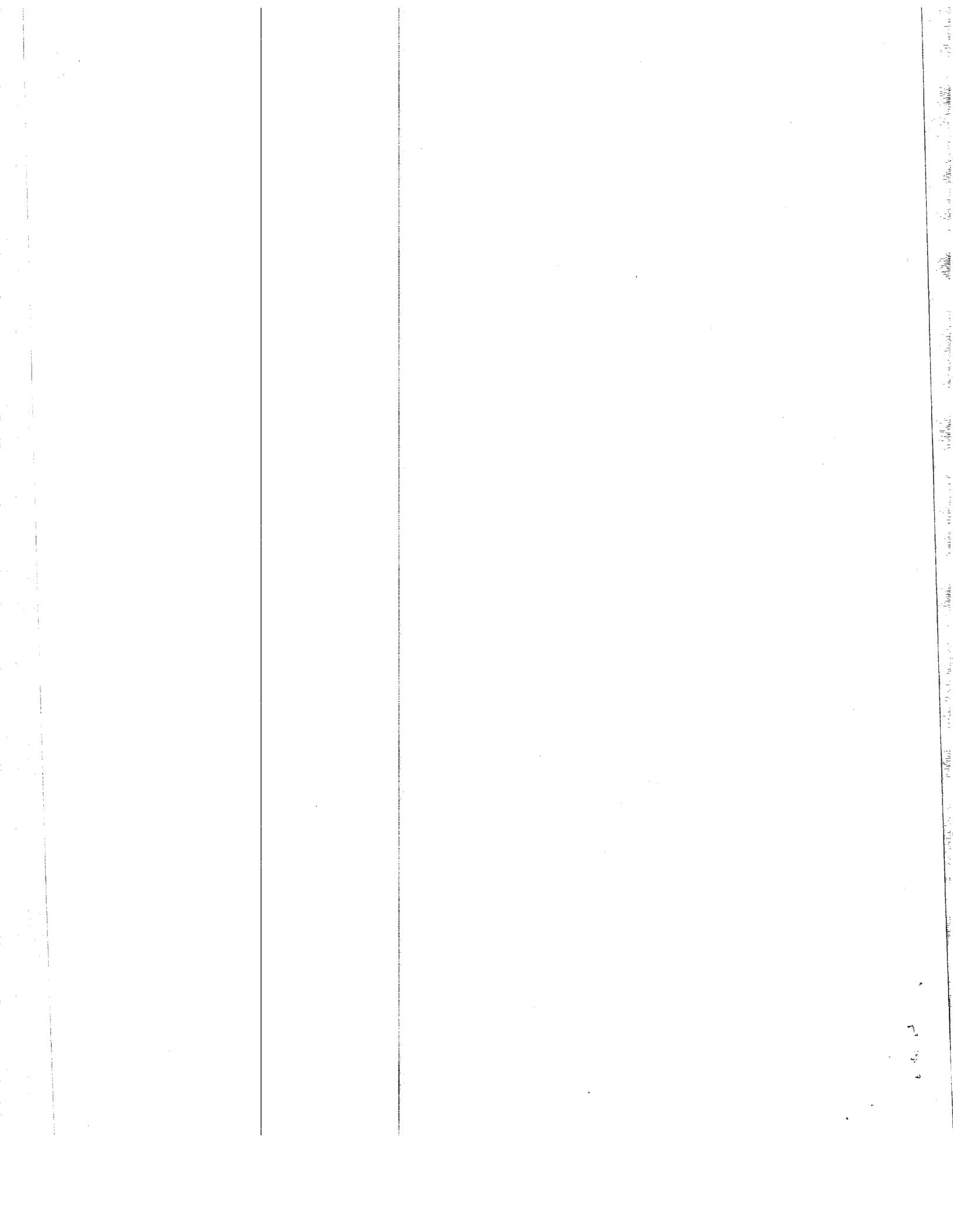
- (1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate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

WATERFOWL

REFUGE PEA ISLAND

MONTHS OF May 1 TO August 31, 1968

(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	25	20	22	16	11	8	2	13	2	2
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
<u>Ducks:</u>										
Mallard	4	2	2	2	2	2	1			
Black	210	113	160	75	111	140	111	28	30	17
Gadwall	90	60	20	42	40	40	41	35	56	35
Baldpate										
Pintail						2		2	2	1
Green-winged teal	50									
Blue-winged teal	30	30	10	4		1	2	2	3	3
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
<u>Coot:</u>	25	20	20	5	3	3	2		4	4



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

WATERFOWL
 (Continuation Sheet)

REFUGE PEA ISLAND

MONTHS OF May 1, 1968 TO August 31, 1968

(1) Species	(2) Weeks of reporting period								(3) Estimated: waterfowl: days use	(4) Production: Broods: Estimated seen : total	
	11	12	13	14	15	16	17	18			
<u>Swans:</u>											
Whistling											
Trumpeter											
<u>Geese:</u>											
Canada	2	11	11	11	12	12	11	11	1,388		
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
<u>Ducks:</u>											
Mallard	1				3		2		135	1	5
Black	15	37	40	61	155	176	103	170	10,235	8	38
Gadwall	24	56	50	60	103	77	95	85	6,793	29	197
Baldpate											
Pintail								100	756		
Green-winged teal									200		
Blue-winged teal	3			22	100	25	200	300	5,055		
Cinnamon teal											
Shoveler											
Wood											
Redhead											
Ring-necked											
Canvasback											
Scaup											
Goldeneye											
Bufflehead											
Ruddy											
Other											
<u>Coot:</u>	4								555		
					(Over)						

	(5)	(6)	(7)
	<u>Total Days Use</u>	<u>Peak Number</u>	<u>Total Production</u>
Swans			
Geese	<u>1,388</u>	<u>25</u>	
Ducks	<u>23,174</u>	<u>655</u>	<u>240</u>
Coots	<u>555</u>	<u>25</u>	

SUMMARY

Principal feeding areas entire refuge, Pamlico Sound shoals, fresh water impoundments, salt marshes, sand dunes and ryegrass field.

Principal nesting areas islands, ridges and dikes in and around impoundments.

Reported by William C. Good
 William C. Good, 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
(Aug. 1952)

MIGRATORY BIRDS
(Other than Waterfowl)

Refuge Pea Island

Months of May 1

to August 31

19 68

(1) Species Common Name	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total Estimated Use
	Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	
<u>I. Water and Marsh Birds:</u>										
Great Blue Heron	3	7-18	3	8-31	3	8-31				135
Green Heron	2	5-1	11	7-18	1	8-10		3	5	476
Little Blue Heron	3	5-1	75	7-18	15	8-31	1	20	35	3,813
Cattle Egret	6	5-1	28	8-31	28	8-31				2,091
Common Egret	10	5-1	58	7-18	20	8-31	1	15	8	3,567
Snowy Egret	20	5-1	35	7-18	30	8-31	1	10	5	3,444
Louisiana Heron	20	5-1	55	7-18	15	8-31	1	20	15	3,690
Black-crowned Night Heron	20	5-1	50	7-18	10	8-31	1	8	8	3,321
Yellow-Crowned Night Heron	7	5-10	7	5-10	4	8-31				622
American Bittern	1	8-10	1	8-10	1	8-17				8
Glossy Ibis	4	5-1	36	5-29	2	8-10				1,428
<u>II. Shorebirds, Gulls, and Terns:</u>										
Willet	75	5-1	100	7-18	30	8-31		20	40	8,364
Gt. Yellowlegs	50	5-1	30	8-10	30	8-10				4,080
Ls. Yellowlegs	75	5-1	40	8-10	40	8-10				6,936
Dowitcher	20	5-1	300	8-2	200	8-31				21,279
Am. Avocet	40	5-1	75	8-31	75	8-31	1	1	1	8,364
Black-Necked Stilt	3	5-1	60	7-17	2	8-31	2	15	30	4,059
Great Black-backed Gull	600	5-1	600	5-1	25	8-31				38,376
Herring Gull	1,500	5-1	1,500	5-1	500	8-31				123,000
Laughing Gull	50	5-1	400	6-10	100	8-31				22,509
Common Tern	20	5-1	200	7-18	110	8-20	2	60	60	12,320
Least Tern	10	5-1	220	7-18	2	8-31	2	67	67	9,471
Black Tern	2	6-14	35	7-18	15	8-31				1,343
Black Skimmer	17	5-1	75	8-31	75	8-31	1	7	12	5,658

(over)

	(1)	(2)	(3)	(4)	(5)	(6)	
III. <u>Doves and Pigeons:</u>							
Mourning dove	3	5-6	15	7-17	2	8-31	826
White-winged dove							
IV. <u>Predaceous Birds:</u>							
Golden eagle							
Duck hawk							
Horned owl							
Magpie							
Raven							
Crow	50	5-1	75	7-31	75	8-31	8,241
Osprey	1	5-31	1	8-31	1	8-31	123
Marsh Hawk	1	5-7	1	6-14	1	6-14	39

Reported by *W. J. P. Gurd*

INSTRUCTIONS (See Sec. 7532, Wildlife Refuges Field Manual)

- (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 migration record for the species for the reporting period.
- (3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.
- (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 species days use (average population X no. days present) of refuge during the reporting period.

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, 1968

Reported by William C. Good Title Refuge Manager

(1) Area or Unit Designation	(2) Habitat		(3) Use-days	(4) Breeding Population	(5) Production	
	Type	Acreage				
Unit 1. South boundary to New Inlet	Crops	0	Ducks	119,506	2	5
	Upland	339	Geese	49,080		
	Marsh	1,216	Swans			
	Water	9,700	Coots	5,574		
	Total	11,255	Total	204,160		
Unit 2. New Inlet to North Dike of North Pond (outside)	Crops	0	Ducks	128,148		
	Upland	220	Geese	85,890		
	Marsh	664	Swans	430		
	Water	2,000	Coots	12,992		
	Total	2,884	Total	227,460		
Unit 3. Pools 1 and 2 and New Field	Crops	320	Ducks	918,333	110	235
	Upland	216	Geese	564,415		
	Marsh	215	Swans	25,200		
	Water	580	Coots	86,901		
	Total	1,331	Total	1,594,849		
Unit 4. North Dike of North Pond to Oregon Inlet	Crops	0	Ducks	85,532		
	Upland	320	Geese	36,810		
	Marsh	3,000	Swans	147		
	Water	13,732	Coots	5,891		
	Total	16,052	Total	128,680		
Subtotals for the refuge.	Crops	320	Ducks	1,261,519		
	Upland	1,095	Geese	736,195		
	Marsh	4,095	Swans	26,077		
	Water	26,012	Coots	111,358		
	Total	31,522	Total	2,155,149		
	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 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.

3-1752
 Form NR-2
 (April 1946)

UPLAND GAME BIRDS

Refuge Pea Island Months of May 1 to August 31, 1968

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
			Number broods obs'd.	Estimated Total		Hunting	For Re- stocking	For Research		
Common Name	Cover types, total acreage of habitat	Acres per Bird			Percentage				Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	dikes, wax myrtle growth, uplands and marshes	22	20	180	1M - 3F	N	O	N	250	Estimates based on observations during moving operation of dike berms and the New Field

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.

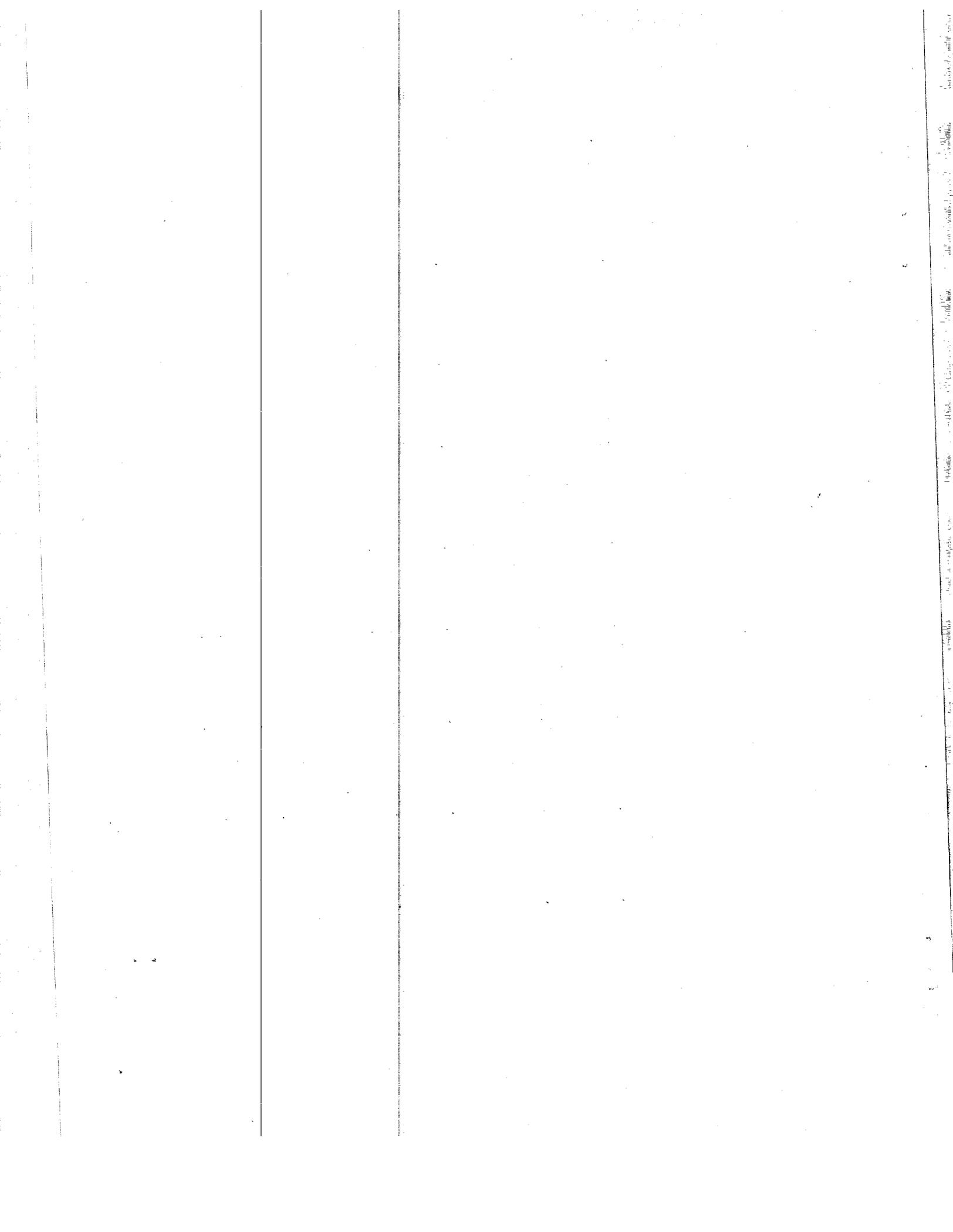
* Only columns applicable to the period covered should be used.

WATERFOWL

REFUGE Pea Island

MONTHS OF January 1 TO April 30, 1968

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling	125	50	10	20			10	4		3
Trumpeter										
Geese:										
Canada	1,700	2,400	3,300	2,100	1,900	1,700	1,650	1,400	800	600
Cackling										
Brant										
White-fronted										
Snow	5,700	5,100	4,400	1,000	100	75	75	75	50	25
Blue	10		10							
Other										
Ducks:										
Mallard	150	200	150	125	150	150	150	50	35	50
Black	250	1,400	1,250	1,150	1,125	1,125	1,100	1,050	600	800
Cadwall	50	75	100	300	250	300	300	250	200	150
Baldpate	125	250	350	500	500	400	300	250		50
Pintail	2,500	2,500	2,650	1,200	700	350	600	500	225	150
Green-winged teal	300		450	1,500	1,000	700	750	650	250	275
Blue-winged teal										25
Cinnamon teal										
Shoveler	350	250	350	150	150	150	150	200	150	375
Wood										
Redhead		1,000						50		
Ring-necked	100		1,000	500	500	500	200			
Canvasback	20									
Scaup	150	1,500		1,100	500	500	400	350	100	150
Goldeneye			2,000	1,500						
Bufflehead	200	550	550	250	250	650	600	200	100	200
Ruddy	250	300	600	300	300	300	300	300	75	100
Other Hooded Merg.	35		65	60	35	15	50	25		
Redbreasted Merg.			10	30	25	25	40	25		10
Wid. Coot	300	5,000	300							
	500	300	300	100	100	75	100	150	50	50



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

WATERFOWL
 (Continuation Sheet)

REFUGE

Pea Island

MONTHS OF January 1 TO April 30, 1968

(1) Species	(2) Weeks of reporting period								(3) : Estimated: Production	
	11	12	13	14	15	16	17	18	waterfowl: : days use	Broods: Estimated : seen : total
<u>Swans:</u>										
Whistling Trumpeter	30								1,647	
<u>Geese:</u>										
Canada	600	1,190	780	475	425	400	150	40	149,370	
Cackling Brant										
White-fronted Snow	60	75	50	30	12				112,264	
Blue Other	2								114	
<u>Ducks:</u>										
Mallard	25	6	12	8	2	6	6	4	8,783	
Black	725	626	675	400	281	350	310	260	96,389	
Gadwall	125	90	120	112	83	90	90	90	18,925	
Baldpate		10	10			10			18,160	
Pintail	100	4	13	4	6				78,014	
Green-winged teal	200	165	275	200			75	50	47,330	
Blue-winged teal	50	2	5	20	37	40	30	30	1,348	
Cinnamon teal										
Shoveler	175	85	80	25	10				18,200	
Wood Redhead									7,350	
Ring-necked Canvasback	50	25	15						20,130	
Scaup Goldeneye	100			25					33,975	
Bufflehead	225	25	40	75	25	5			26,400	
Ruddy Hooded Merg.	100	50	10						20,645	
Red-breasted Hooded Merg.		5							1,960	
Red-breasted Merg.	50	10	65	20	30	50			2,730	
<u>Coot:</u>	60	54		100	100	100	75	50	15,098	
Unid.					(Over)				38,900	

3-1751
Form NR-1A
(Aug. 1952)

MIGRATORY BIRDS
(Other than Waterfowl)

Refuge Pea Island

Months of January 1 to April 30 19 68

(1) Species Common Name	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total
	Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Use
I. Water and Marsh Birds:										
Horned Grebe	10	4-5	25	4-11	25	4-11				105
Pied-Billed Grebe	5	1-2								35
Common Loon	4	4-11	12	4-17	1	4-30				120
Gannot	8	1-1	400	3-29	400	3-29				17,980
Double-crested Cormorant	200	3-12	200	3-12	100	4-27				7,050
Great Blue Heron	4	1-2	16	1-24	2	4-30				840
Green Heron	2	4-11	2	4-11	2	4-30				40
Little Blue Heron	3	4-11	20	4-30	20	4-30				230
Cattle Egret	2	4-25	2	4-30	2	4-30				12
Common Egret	5	1-1	50	4-30	50	4-30				3,328
Snowy Egret	7	1-1	40	4-30	40	4-30				2,844
Louisiana Heron	5	1-1	30	4-30	30	4-30				2,112
Black-crowned Night Heron	2	1-1	50	4-30	50	4-30				3,146
Yellow-crowned Night Heron	1	4-27	1	4-30	1	4-30				4
American Bittern	1	1-1	4	1-26	1	1-26				52
Glossy Ibis	2	1-1	20	4-30	20	4-30				1,331
II. Shorebirds, Gulls, and Terns:										
American Oyster-catcher	2	3-22	10	4-11	6	4-30				240
Black-bellied Plover	50	1-1	200	4-11	20	4-30				10,890
Common Snipe	80	1-1	80	1-1	2	4-27				4,840
Willet	2	2-4	75	4-30	75	4-30				3,350
Greater Yellowlegs	4	1-1	50	4-11	40	4-30				3,751
Lesser Yellowlegs	10	1-1	75	4-11	50	4-30				5,445
Least Sandpiper	50	4-26	50	4-30	50	4-30				250
American Avocet	15	1-1	60	1-18	2	4-30				3,388
Black-Necked Stilt	2	4-26	4	4-30	4	4-30				15
Great Black-backed Gull	100	1-1	400	4-30	400	4-30				30,250
Herring Gull	200	1-1	700	4-30	700	4-30				54,450
Black Headed Gull	50	3-12	400	4-5	400	4-5				5,625
Laughing Gull	200	1-1	300	4-30	300	4-30				30,250
Bonaparte's Gull	10	3-12	50	(over) 4-5	50	4-5				750

	(1)	(2)	(3)	(4)	(5)	(6)	
III. <u>Doves and Pigeons:</u>							
Mourning dove	1	2-26	2	4-30	2	4-30	123
White-winged dove							
IV. <u>Predaceous Birds:</u>							
Golden eagle							
Duck hawk							
Horned owl							
Magpie							
Raven							
Crow (Fish)	3	2-10	50	4-30	50	4-30	2,147
Marsh Hawk	3	1-1	3	1-1	1	4-26	234
Osprey	2	3-29	2	3-29	1	4-27	45
Pigeon Hawk	1	2-15	2	4-27	2	4-27	110
Sparrow Hawk	4	1-1	4	2-7	4	2-7	152
Barn Owl	1	1-15	1	1-15	1	3-15	61

Reported by *Wm. E. Smith, Alton, Mo.*

INSTRUCTIONS (See Sec. 7532, Wildlife Refuges Field Manual)

- (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 migration record for the species for the reporting period.
- (3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.
- (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 species days use (average population X no. days present) of refuge during the reporting period.

3-1752
 Form NR-2
 (April 1946)

UPLAND GAME BIRDS

Refuge Pea Island Months of January 1 to April 30, 19 68

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total		Hunting	For Re- stocking	For Research		
Common Name					Percentage				Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	Dikes, wax myrtle thickets, Uplands and Marshes (1125 acres)	11.25	None		1M, 3F		None		100	

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, 1968

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs					(5) Total Popula- tion	
								Share Trapping			Total Refuge Furs Shipped	Furs Donated		Furs Destroyed
								Permit Number	Trappers Share	Refuge share				
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re- stocking	For Re- search							
Muskrat	Impoundments and adjacent marsh areas (1,500 acres)	1.5	N	O	N	E							1,000	
Otter	Entire Refuge and associated tidal creeks (5,880 acres)	294	N	O	N	E							20	
Nutria	Same as for muskrat (1,500 acres)	1.5	N	O	N	E							100	
Mink	Entire Refuge (5,880 acres)		N	O	N	E							10	

* List removals by Predator Animal Hunter

REMARKS:

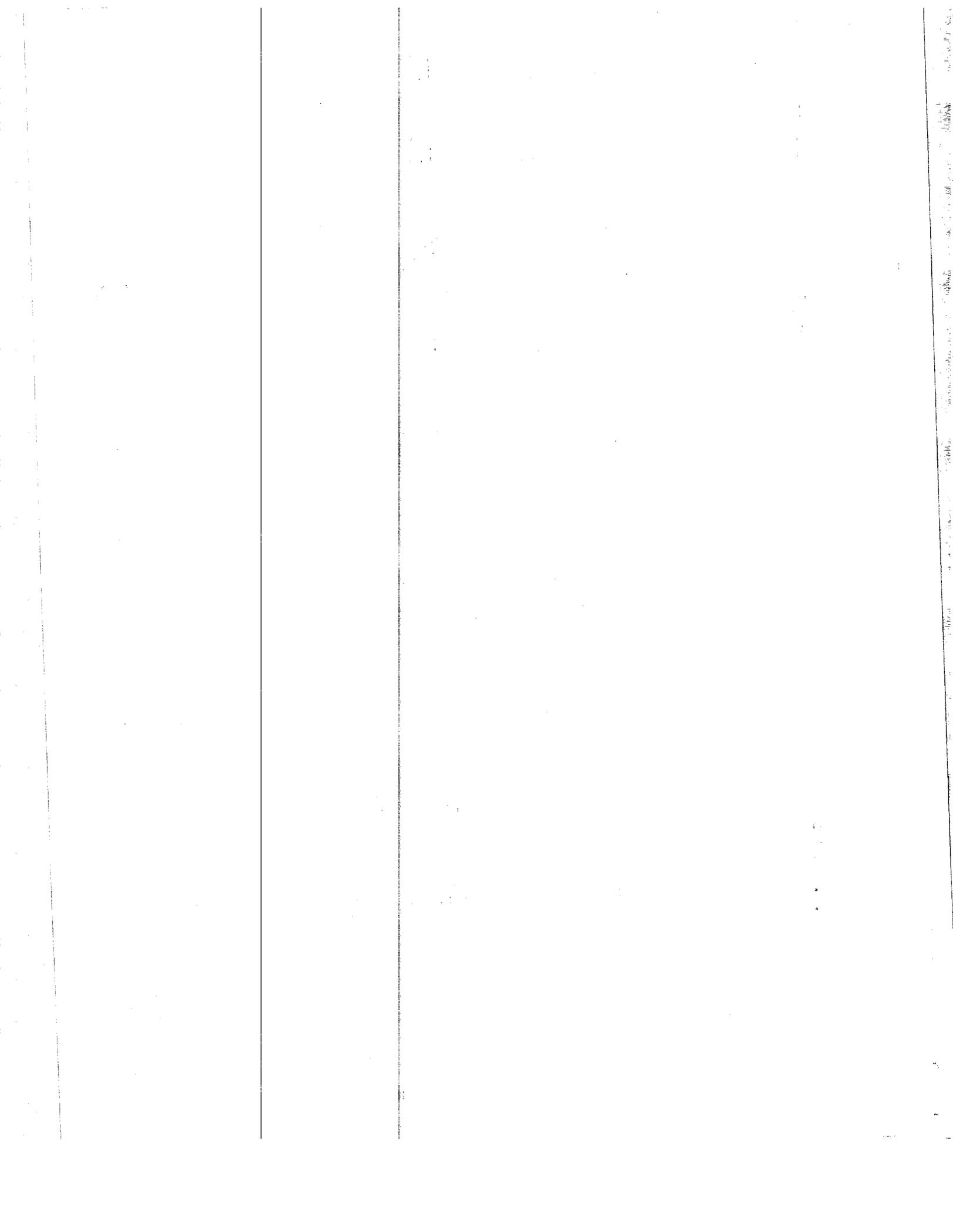
William C. Good

Reported by William C. Good, Refuge Manager

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.



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

WATERFOWL
 (Continuation Sheet)

REFUGE Pea Island N.W. Refuge

MONTHS OF May 1 TO August 31, 196

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods : Estimated seen : total	
	11	12	13	14	15	16	17	18			
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	6	6	6	6	4	4	4	4	888		
Cackling											
Brant											
White-fronted											
Snow	3	3	3	3	3	3	3	3	521		
Blue											
Other											
Ducks:											
Mallard											
Black	220	220	220	220	250	300	400	450	20,575	16	100
Gadwall	400	425	435	450	450	450	400	450	38,545	17	284
Baldpate											
Pintail											
Green-winged teal							10	25	370		
Blue-winged teal							80	300	3,125		
Cinnamon teal											
Shoveler											
Wood											
Redhead											
Ring-necked											
Canvasback											
Scaup											
Goldeneye											
Bufflehead									78		
Ruddy											
Other											
Common Merganser	8	8	8	8	0	0	0	0	448	1	6
Coot:									71		

(Over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production	SUMMARY
Swans	_____	_____	_____	Principal feeding areas <u>North and South Pond and New Field.</u>
Geese	<u>1,409</u>	<u>17</u>	_____	_____
Ducks	<u>71,241</u>	<u>990</u>	<u>389</u>	Principal nesting areas <u>Island, ridges, and dikes in and</u>
Coots	<u>71</u>	<u>20</u>	_____	<u>around North and South Ponds.</u>

Reported by George W. Peyton

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
(Aug. 1952)

MIGRATORY BIRDS
(Other than Waterfowl)

Refuge **Pea Island**

Months of

May 1

to **August 31**

19 **69**

(1) Species Common Name	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total
	Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Use
<u>I. Water and Marsh Birds:</u>										
Pied-billed Grebe	3	8/22	100	8/27-8/31	100	8/29				757
Glossy Ibis	30	5/12	50	5/31-7/24	3	8/29	1	8	12	3,014
American Bittern	1	8/22	1	only sighting						30
Great Blue Heron	10	5/12	10	5/12-8/21	10	8/29				1,230
Common Egret	25	5/12	30	6/1-7/31	15	8/29	1	3	6	3,070
Snowy Egret	75	5/12	80	7/1-8/1	15	8/28		6	10	9,535
Louisiana Heron	30	5/12	100	7/1-8/1	25	8/28	1	20	40	5,705
Little Blue Heron	15	5/12	100	7/1-8/1	30	8/28		27	54	4,940
Green Heron	10	5/12	15	7/1-8/1	5	8/28				1,230
Cattle Egret	5	5/12	60	6/1-8/31	60	8/29				5,675
Black-crowned Night Heron	15	5/12	60	7/1-8/1	25	8/29		12	24	3,550
Clapper Rail	1	6/4	1	6/4-8/19	1	8/19				123
Gallinule	1	8/19		only sighting						10
<u>II. Shorebirds, Gulls, and Terns:</u>										
American Oystercatcher	1	5/15	8	6/1-8/1	8	8/1	2	4		527
Black-billed Plover	25	8/1	25	8/1-8/31	25	8/25				775
Willet	500	5/1	500	5/1-7/31	100	8/29		75	150	49,100
Short-billed Dowitcher	5	7/1	15	7/15-8/1	5	8/25				450
Sanderling	25	5/12	75	7/1-8/31	75	8/25				6,175
Black-necked Stilt	15	5/12	25	6/1-8/1	5	8/25		8	24	2,295
Great Black-backed Gull	350	5/12	350	5/1-6/1	5	8/25				11,310
Laughing Gull	300	5/12	300	5/1-7/15	75	8/25				27,325
Bonapart's Gull	250	5/12	250	5/1-6/1	25	8/25				10,050
Common Tern	100	5/12	200	7/1-8/1	25	8/25		16	30	18,500
Least Tern	20	5/12	50	7/1-8/1	5	8/15		2	3	2,905
Black Skimmer	20	5/12	250	7/1-8/31	250	8/29				16,520

(over)

(1)	(2)		(3)		(4)		(5)		(6)
II. <u>Doves and Pigeons:</u>									
Mourning dove	6	5/1	6	5/1-8/31	6	8/28			738
White-winged dove									
IV. <u>Predaceous Birds:</u>									
Golden eagle									
Duck hawk									
Horned owl									
Magpie									
Raven									
Fish Crow	70	5/12	70	5/1-6/1	30	8/28			4,930
Marsh Hawk	3	5/1	3	5/1-5/29	1	8/28			124
Osprey	1	Entire period							123

Reported by

INSTRUCTIONS (See Sec. 7532, Wildlife Refuges Field Manual)

- (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 migration record for the species for the reporting period.
- (3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.
- (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 species days use (average population X no. days present) of refuge during the reporting period.

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, 1969

Reported by George W. Feyton Title Assistant Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type Acreage	(3) Use-days	(4) Breeding Population	(5) Production
Unit 1. South boundary to New Inlet	Crops 0 Upland 337 Marsh 1,216 Water 7,700 Total 11,253	Ducks 33,145 Geese 136,127 Swans Coots 1,725 Total 171,197	2 2	4 4
Unit 2. New Inlet to north dike of North Pond (Sound side)	Crops 0 Upland 220 Marsh 664 Water 2,001 Total 2,885	Ducks 35,145 Geese 13,700 Swans 14 Coots 8,750 Total 156,789		
Unit 3. Pools 1 & 2 and New Field	Crops 320 Upland 216 Marsh 215 Water 500 Total 1,351	Ducks 1,106,205 Geese 788,482 Swans 15,079 Coots 146,161 Total 1,755,867	200	370
Unit 4. North dike of North Pond to Oregon Inlet	Crops 0 Upland 320 Marsh 3,000 Water 13,732 Total 17,052	Ducks 15,700 Geese 74,165 Swans 2,100 Coots 5,800 Total 131,565	1	10
Totals for refuge	Crops 320 Upland 1,095 Marsh 5,095 Water 26,012 Total 32,522	Ducks 1,255,219 Geese 788,482 Swans 17,213 Coots 152,481 Total 2,223,395	206	384
	Crops Upland Marsh Water Total	Ducks Geese Swans Coots Total		
	Crops Upland Marsh Water Total	Ducks Geese Swans Coots 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 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.

3-1752
 Form NR-2
 (April 1946)

UPLAND GAME BIRDS

Refuge Pea Island Months of May to August, 1969

(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 specificoally requested. List introductions here.
Ring-neck Pheasant	Dikes, wax myrtle and bayberry thickets, uplands, grass and marsh (5,000)	16.6	15	180	1-1	0	0	0	300	

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.

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

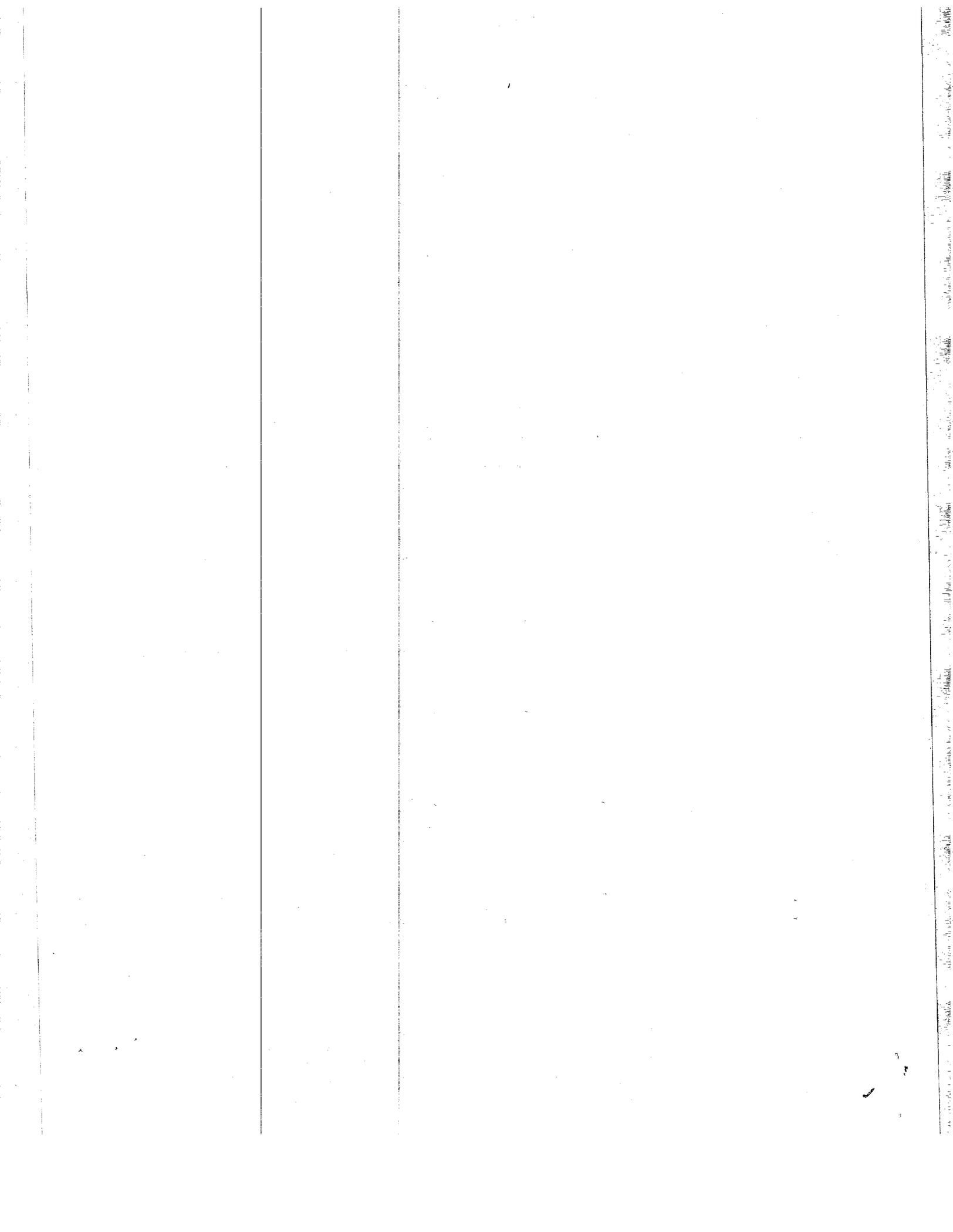
WATERFOWL

REFUGE Pea Island N.W. Refuge

MONTHS OF January 1 TO April 30, 1969

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling Trumpeter	50	100	5	5	35	10	12	10	6	25
Geese:										
Canada	2,100	2,200	1,800	1,500	1,200	1,500	1,000	800	800	800
Cackling Brant										
White-fronted Snow	7,000	7,000	5,000	4,000	3,000	5,000	500	350	100	200
Blue	15	15	15	15	75	15	12	10		6
Other										
Ducks:										
Mallard	75	100	50	50	150	75	100	50	75	75
Black	1,300	1,400	1,500	1,500	1,800	1,200	900	1,000	800	1,000
Gadwall			50	50	100	300		5	10	
Baldpate	450	400	200	100	75			50	200	150
Pintail	1,300	1,300	300	400	300	300		100	250	200
Green-winged teal	500	500	300	200	100	600	400	300	500	300
Blue-winged teal								500	50	50
Cinnamon teal										
Shoveler	300	250	600	200	100	400	200	600	10	25
Wood			100							
Redhead	200	220	150	50		5	20	10	10	
Ring-necked	150	150	200	50	50	400	200	150	300	300
Canvasback	25		15			5	10	10	10	10
Scaup			300	200	250	600	300	200	400	300
Goldeneye										
Bufflehead	600	600	150	150	50	200	150	100	100	100
Ruddy	300	400	500	100	50	150	75	50	100	75
Other H. Merganser	50	25	50	50			25	25		25
Red br. Merganser	50						50	50		
Common Merganser		25	100	50					50	50
Am. Coot	1,100	1,300	1,100	800	600	1,000	500	500	300	500

FILE COPY



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

WATERFOWL
 (Continuation Sheet)

REFUGE Pea Island N.W. Refuge

MONTHS OF January 1 TO April 30, 196

(1) Species	(2) Weeks of reporting period								(3) Estimated	(4) Production	
	11	12	13	14	15	16	17	18	waterfowl days use	Broods seen	Estimated total
Swans:											
Whistling Trumpeter	10	10	10	10	5	1			1,978		
Geese:											
Canada	800	500	500	300	150	50	50	50	109,450		
Cackling Brant											
White-fronted Snow	150	100	100	25	10	5	7	7	208,957		
Blue Other	6	2	4						1,285		
Ducks:											
Mallard	50	50	50	25	20				6,700		
Black	1,000	800	600	500	400	75	100	100	107,325		
Gadwall		100	100	100	100	100	100	100	7,785		
Baldpate	100	65	50	50	20	10	10	10	12,200		
Pintail	200	150	100	25	50				30,200		
Green-winged teal	300	150	100	100	50	50	10	10	29,760		
Blue-winged teal	25			50		100	20	20	5,645		
Cinnamon teal											
Shoveler	25	20	10						18,280		
Wood									700		
Redhead									4,055		
Ring-necked	300	150	150	150	100	50			19,430		
Canvasback	10								590		
Scaup	300	100	100	50	20	70			22,330		
Goldeneye											
Bufflehead	100	275	250	150	100	50	20	10	17,815		
Ruddy	75	75	75	75	50	25			3,075		
Other H. Merganser	25	10							2,235		
Red Br. Merganser									2,070		
Common Common Merganser	50	10							2,345		
American Coot:	500	300	300	300	300	200	100	25	56,700		

(Over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production	SUMMARY
Swans	<u>1,978</u>	<u>100</u>	<u>0</u>	Principal feeding areas <u>Impoundments, Fresh and saltmarshes,</u>
Geese	<u>319,692</u>	<u>9,215</u>	<u></u>	<u>ryegrass fields and Pamlico Sound shoals.</u>
Ducks	<u>292,541</u>	<u>5,375</u>	<u></u>	Principal nesting areas <u>No nesting this season.</u>
Coots	<u>56,700</u>	<u>1,300</u>	<u>0</u>	

Reported by George W. Peyton, Acting 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
(Aug. 1952)

MIGRATORY BIRDS
(Other than Waterfowl)

Refuge Pea Island Refuge

Months of January 1

to April 30

19 69

(1) Species Common Name	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total
	Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Use
<u>I. Water and Marsh Birds:</u>										
Pied-Billed Grebe	5	3/10	10	3/31-4/15	2	4/18				390
Common Loon	2	4/1	6	4.15-4/20	2	4/25				80
Gannot	4	1/2	50	2/1-2/28	50	2/28				1,524
Double-Crested Cormorant	25	3/10	50	3/15-4/15	25	4/30				2,050
Glossy Ibis	7	4/1	30	4.15-4/30	30	4/30				555
American Bittern	1	3/20	5	4/1-4/30	5	4/28				161
Great Blue He ron	2	1/23	15	3/20-4/30	15	4/25				727
Common Egret	5	1/23	30	4/1-4/30	30	4/25				1,295
Snowy Egret	6	3/10	75	3/25-4/30	75	4/25				2,790
Louisiana Heron	1	3/31	30	4/15-4/30	30	4/30				611
Little Blue Heron	4	3/31	15	4/15-4/30	15	4/30				289
Green Heron	2	3/31	15	4/15-4/30	15	4/30				257
Cattle Egret	2	4/25	2	4/25-4/30	2	4/25				10
Yellow-Crowned Night Heron	1	3/31	Only Sighting							
<u>II. Shorebirds, Gulls, and Terns:</u>										
Great Black-Backed Gull	100	1/1	400	3/15-4/30	400	4/30				25,800
Herring Gull	200	1/1	700	3/15-4/30	700	4/30				47,000
Black Headed Gull	50	3/12	300	3/15-4/30	300	4/30				13,950
Laughing Gull	700	1/1	300	3/15-4/30	300	4/30				28,600
Ring-Billed Gull	125	1/30	100	2/15-2/28	4	4/5				6,694
Black-Necked Stilt	2	4/10	15	4/20-4/30	15	4/30				4,960
Common Snipe	80	1/1	80	1/1-2/28	4	4/20				190
Least Sandpiper	50	4/26	50	4/26-4/30	50	4/30				200
Greater Yellowlegs	4	1/1	50	4/11-4/30	50	4/30				1,354
Lesser Yellowlegs	10	1/1	75	4/11-4/30	75	4/30				2,435
Black-Bellied Plover	50	1/1	100	4/11-4/30	100	4/30				7,554
American Oystercatcher	2	3/30	6	4/10-4/30	6	4/30				140

(over)

(1)	(2)		(3)	(4)		(5)		(6)
II. <u>Doves and Pigeons:</u>								
Mourning dove	1	2/26	6	4/1-4/30	6	4/30		213
White-winged dove								
IV. <u>Predaceous Birds:</u>								
Golden eagle								
Duck hawk								
Horned owl								
Magpie								
Raven								
Crow (Fish)	3	2/10	75	4/1-4/30	75	4/30		2,397
Marsh Hawk	3	1/1	3	1/1-4/30	3	4/30		360
Pigeon Hawk	2	2/28	2	2/28-4/30	2	4/30		124
Sparrow Hawk	4	1/1	4	1/1-2/7	2	4/30		316
Osprey	2	3/29	2	2/29-4/5	1	4/27		37
Barn Owl	1	1/5	2	1/15-3/15	2	3/15		131

Reported by *George W. Peyton* Refuge
George W. Peyton, Acting Manager

INSTRUCTIONS (See Sec. 7532, Wildlife Refuges Field Manual)

- (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 migration record for the species for the reporting period.
- (3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.
- (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 species days use (average population X no. days present) of refuge during the reporting period.

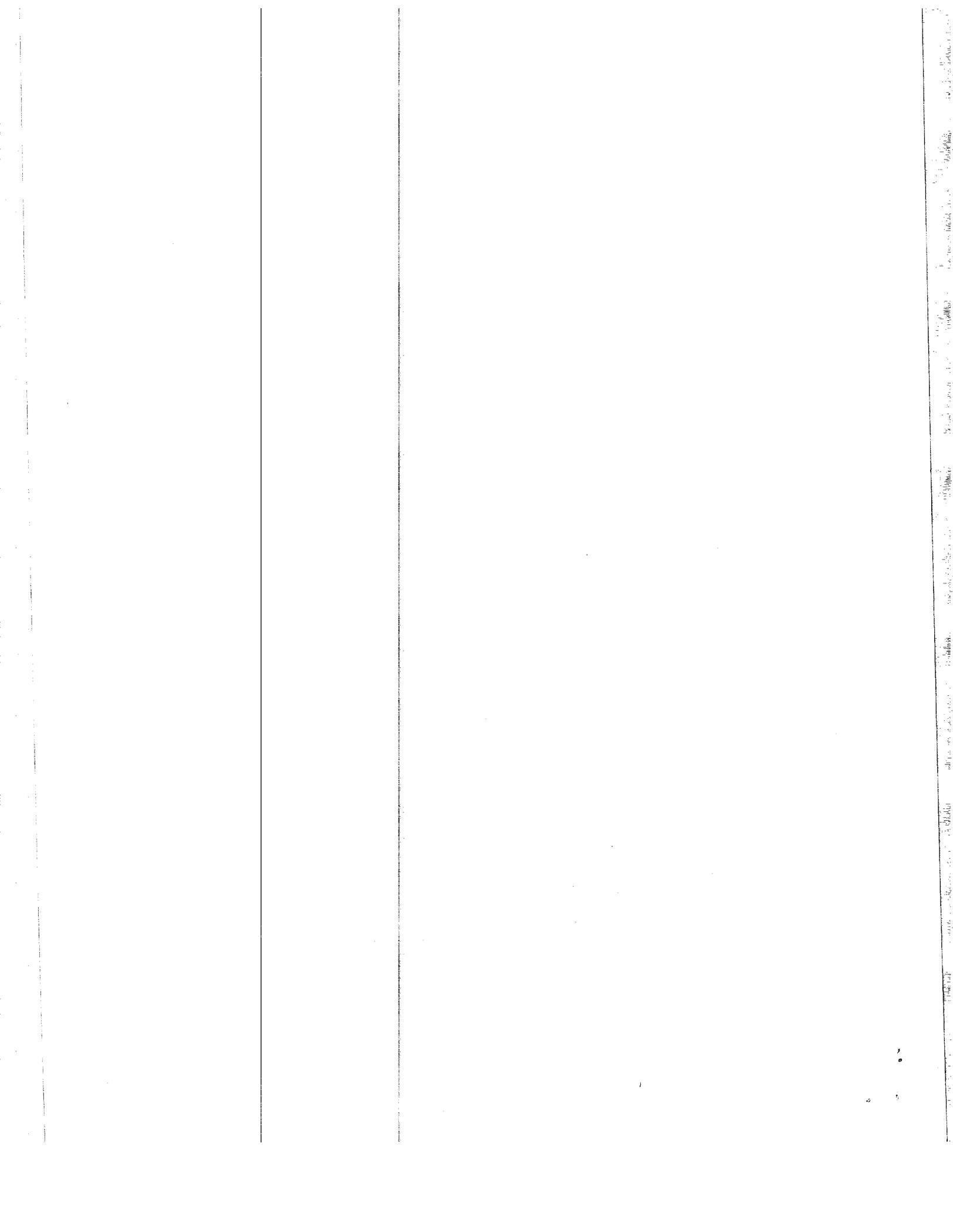
3-1752
 (Form NR-2)
 (April 1946)

UPLAND GAME BIRDS

Refuge Pea Island

Months of January 1 to April 30, 1969

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
			Number broods observed	Estimated total		Hunting	For Re- stocking	For Research		
Common Name	Cover types, total acreage of habitat	Acres per Bird			Percentage				Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	Dikes, wax myrtle thickets, uplands and marshes (1125 acres)	10	None		1M, 3F	N	o	N E	115	



3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Pea Island

Year ending April 30, 1969

(1) Species Common Name	(2) Density		(3) Removals					(4) Disposition of Furs					(5) Total Popula- tion	
	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re- stocking	For Re- search	Share Trapping			Total Refuge Furs Shipped	Furs Donated		Furs Destroyed
								Permit Number	Trappers Share	Refuge share				
Muskrat	Impoundments and adjacent marsh areas (1,500 acres)	1	N	O	N E									1,500
Otter	Entire Refuge and associated tidal creeks (5,880 acres)	294	N	O	N E									20
Nutria	Impoundments and adjacent marsh areas (1,500 acres)	2	N	O	N E									750
Mink	Entire Refuge (5,880 acres)	196	N	O	N E									30

* List removals by Predator Animal Hunter

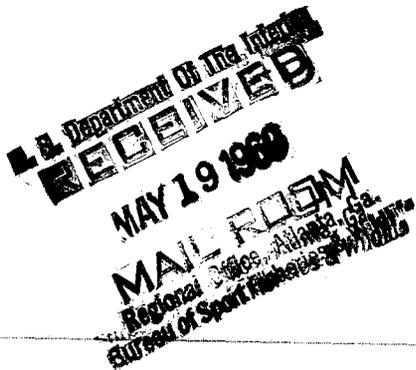
REMARKS:

George W. Peyton
Reported by George W. Peyton, Acting Refuge Manager

INSTRUCTIONS

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

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



PEA ISLAND NATIONAL WILDLIFE REFUGE

Narrative Report

January 1 to December 31, 1969

Refuge Personnel

N. F. Williamson, Jr.
G. W. Peyton
Marvin C. Toler
Mrs. Helene K. McGinnis

Refuge Manager
Asst. Refuge Manager
Maintenance
Clerk-Typist (Part-Time)

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I. GENERAL

A. Weather Conditions.

Relatively normal weather conditions prevailed throughout the year. Cold and windy during early months, hot and windy during the summer and mild and windy during the fall months.

One snow storm hit the area in early March, but temperatures were not below normal.

All major storms missed the refuge this year. Hurricane Gerda came closest, about 45 miles off-shore, but only dumped 1.70 inches of rainfall on the area, no wind.

Drought conditions prevailed here from August thru October. Rainfall during this period was 8.04 inches below normal.

Temperatures were about normal throughout the year with a low of 23 degrees in January and a high of 98 degrees in July.

The following data were obtained from the National Park Service. The National Park Service operates an official weather station on Bodie Island about 11 miles north of refuge headquarters.

	<u>Precipitation</u>			<u>Temperatures</u>	
	<u>1969</u>	<u>Normal</u>	<u>Dev. from Normal</u>	<u>Max.</u>	<u>Min.</u>
Jan.	2.92	3.76	- .84	68	23
Feb.	3.51	4.01	- .50	58	24
Mar.	5.06	4.03	+ 1.03	70	24
Apr.	3.95	2.29	+ 1.66	78	38
May	1.14	2.91	- 1.77	92	48
June	7.63	2.90	+ 4.73	95	61
July	9.75	4.36	+ 5.39	98	65
Aug.	6.12	7.21	- 1.09	93	59
Sept.	3.08	6.96	- 3.88	94	54
Oct.	1.73	4.80	- 3.07	84	47
Nov.	4.71	3.03	+ 1.68	75	28
Dec.	3.64	3.32	+ .32	69	27
Total	53.24	49.58	+ 3.66	98	23

B. Habitat Conditions.

1. Water

The refuge maintains two impoundments for the production of native aquatics with rainfall being the only source of water. Due to lack of rainfall and high evaporation in August, September and October, approximately 20 to 30% of the ponds floors were exposed. Ponds were flooded again from heavy rains in November and December.

Silver Nitrate titrations were conducted throughout the year to determine salinities of both impoundments. Salinity in per cent sea strength and gauge readings at time of salinity tests are as follows:

Water Salinity Tests During 1969
(Readings in % Sea Strength)

Date	<u>North Pond</u>			<u>South Pond</u>			
	North End	At Gauge	Gauge Reading	At Gauge	West Side	Pamlico Sound Tidal Creek	Gauge Reading
1/17	6.52	6.36	2.34	1.55	1.71	58.22	1.80
2/17	5.74	6.21	2.44	1.71	1.71	49.67	1.72
3/14	5.74	5.43	2.50	1.55	1.55	51.23	2.32
4/15	6.83	5.90	2.00	1.55	1.55	72.76	1.94
5/20	6.99	7.14	1.48	2.17	2.02	66.75	1.52
6/17	7.76	7.61	1.32	3.73	2.64	65.19	.88 (dry)
7/18	6.52	6.68	1.46	2.78	2.33	71.40	1.10
8/18	6.99	5.74	1.66	2.33	2.02	53.56	1.52
9/15	8.07	7.30	1.38	3.88	3.10	85.38	.98
10/21	9.00	3.38	1.28	* 8.85	5.43	82.28	.94
11/17	9.31	9.00	1.48	6.68	3.88	71.40	1.36
12/17	8.85	8.23	1.70	6.22	5.43	58.99	1.64

* Reason for extremely high salinity is believed to be due to seepage from high sea tides and low water level in pond.

Higher salinity readings for the North Pond reflect pumping activity associated with dune construction in 1965-66.

2. Food and Cover

Fall ryegrass planting consisted of 90 acres planted in New Field in early October. Seeding rate was 50# per acre with 400# 10-20-20 fertilizer per acre. Due to lack of rainfall, germination was slow. Browse was not available until mid-November. Both Canada and snow geese have used browse heavily. late

Production of native waterfowl foods was fair to good on most areas of the refuge.

Vegetation surveys were run in North, South and Salt Ponds and New Field again in 1969 by Biologist Florschutz and refuge personnel.

A five point vegetation sampler was used at 30 ft. intervals along the transect lines for sampling. The four lines run in 1969 totaled 9,350 ft. along which 314 stops were made with 1,570 points being sampled. A summary of the 1969 data and comparison between 1969 and previous years are as follows:

TABLE 1

North Pond Vegetation Transect Line Comparison
1964, 1968, 1969 (56 stops, 280 sample points)

Species or Group	1969 Percent	1968 Percent	1964 Percent
Muskgrass (<u>Chare</u> spp.)	76.7	87.6	57.0
Sago Pondweed (<u>Potamogeton pectinatus</u>)	15.2	10.6	30.8
Dwarf Spikerush (<u>Eleocharis parvula</u>)	0.6	--	--
Spikerushes (<u>Eleocharis</u> spp.)	--	0.9	3.2
Bare Ground	7.5	0.9	8.9
TOTALS	100.0	100.0	99.9

As can be seen in Table 1 there was a reduction in Muskgrass production but an increase in production of sago in 1969.

Also very good stand of millets, panicums, giant foxtail, chufa and three-square was produced on part of the islands in this pond. Overall food production rated good.

South Pond

There was a drastic drop in muskgrass production, 81.1 percent of samples in 1968 compared to 15.1 percent in 1969, in this pond. The incidence of bare ground increase in 1969 over 1968, 58.1 to 3.6 percent. Production of submergents was poor, while excellent production of panicum, millets and giant foxtail occurred on the islands in this pond.

TABLE 2

Vegetation Transect Line Comparison
1964, 1968, 1969 (59 stops, 295 sample points)

Species or Group	1969 Percent	1968 Percent	1964 Percent
Muskgrass (<u>Chara spp.</u>)	15.1	81.1	55.6
Spikerushes (<u>Eleocharis spp.</u>)	8.1	4.6	0.9
Water Hyssop (<u>Bacopa monniera</u>)	6.8	1.1	---
Sago Pondweed (<u>Potamogeton pectinatus</u>)	6.4	8.5	30.9
Dwarf Spikerush (<u>Eleocharis parvula</u>)	4.2	---	---
Widgeongrass (<u>Ruppia Maritima</u>)	1.0	0.8	---
American three-square (<u>Scirpus americanus</u>)	---	0.3	0.3
Unidentified	---	---	3.3
Bareground	58.1	3.6	9.3
TOTALS	100.0	100.0	100.0

Salt Pond

The south transect line run in 1968, was omitted in 1969, because no management practices occurred on the area and little vegetation changes noted.

TABLE 3

Salt Pond Vegetation Transect Line Comparisons
1968 - 1969 (107 stops, 535 sample points)

Species or Group	1969 Percent	1968 Percent
Glasswort (<u>Salicornia</u> sp.)	19.0	15.4
Filamentous Algae	13.8	35.8
Saltmarsh cordgrass (<u>Spartina alterniflora</u>)	2.3	1.5
Saltgrass (<u>Distichlis spicata</u>)	1.2	---
Panic Grass (<u>Panicum</u> sp.)	0.9	1.0
Dwarf Spikerush (<u>Eleocharis parvula</u>)	0.2	---
Lezuminasae spp.	---	2.1
Unknown Grass (Gromivaea)	---	1.7
Spikerush (<u>Eleocharis</u> spp.)	---	0.5
Bare Ground	62.6	42.0
TOTALS	100.0	100.0

The results of the north transect line is in Table 3. Very little food production in the survey area.

New Field

A profuse plant community is found in this area, see Table 4, with Spartina spp. being the most abundant.

No quantitative data were obtained on food production. However, the Ponds, New Field and the natural marshes produced good quantities of waterfowl foods. The natural marshes on the sound side produced good stands of both s. patens and s. alterniflora and some three-square - s. robustus.

Fresh water marshes, between dunes and road, produced some fair stands of both s. robustus and s. americanus, some millets and panicums.

Bayberry bushes produced an abundant crop this year. Dune peas produced a good crop.

Shoals in Pamlico Sound had excellent growth of submergents.

TABLE 4

New Field Vegetation Transect Line Comparisons
Pea Island National Wildlife Refuge
1968-69

Species or Group	1969		1968
	Number	Percent	Percent
Saltmeadow Cordgrass (<u>Spartina patens</u>)	132	22.9	22.2
Horseweed (<u>Conyza canadensis</u>)	80	13.9	5.8
Saltmarsh Cordgrass (<u>Spartina alterniflora</u>)	44	7.6	11.1
American Three-square (<u>Scirpus Americanus</u>)	38	6.6	1.8
Panic Grass (<u>Panicum</u> sp.)	25	4.3	1.1
Saltgrass (<u>Distichlis spicata</u>)	16	2.8	3.7
Groundsel-bush (<u>Baccharis halimifolia</u>)	15	2.6	6.6
Wax Myrtle (<u>Myrica cerifera</u>)	15	2.6	---
Smartweed (<u>Polygonum</u> sp.)	13	2.2	---
Chufa (<u>Cyperus</u> spp.)	10	1.7	4.1
Pennywort (<u>Hydrocotyle</u> sp.)	9	1.6	0.5
Aster (<u>Aster</u> sp.)	9	1.6	3.6
Spikerush (<u>Eleocharis</u> sp.)	7	1.2	2.4
Broomsedge (<u>Andropogon virginicus</u>)	6	1.0	---
Saltmarsh Bulrush (<u>Scirpus robustus</u>)	5	0.9	2.6
Fleabane (<u>Pluchea camphorata</u>)	5	0.9	1.0
Glasswort (<u>Salicornia</u> sp.)	5	0.9	1.1
Goldenrod (<u>Solidago</u> sp.)	4	0.7	---
Wild Millet (<u>Echinochloa crusgalli</u>)	3	0.5	0.2
Toadflax (<u>Linaria canadensis</u>)	3	0.5	---
Sea-oxeye (<u>Iva frutescens</u>)	3	0.5	0.6
Filamentous Algae	1	0.2	0.5
Morning Glory (<u>Ipomoea</u> spp.)	1	0.2	1.3
Foxtail (<u>Setaria</u> sp.)	1	0.2	0.1
Beach Pea (<u>Lathyrus maritimus</u>)	1	0.2	0.1
Italian Ryegrass (<u>Lolium multiflorum</u>)	---	---	0.4
Water Hyssop (<u>Bacopa Monniera</u>)	---	---	0.2
Needlerush (<u>Juncus roemerianus</u>)	---	---	0.2
Slender Bulrush (<u>Scirpus heterochaetus</u>)	---	---	0.2
Polkweed (<u>Phytolacca americana</u>)	---	---	0.1
Unidentified	---	---	6.5
Bare Ground	126	21.8	22.0
TOTALS	577	100.1	100.0

II. WILDLIFE

A. Migratory Birds.

1. Waterfowl

Total waterfowl use days for 1969 showed an increase over 1968. Total use days for 1969 were 2,435,088 compared to 1,934,952 in 1968. These figures represent 22,891 use days by swans; 1,020,804 by geese; 1,218,559 by ducks and 105,193 by coots. This compares to 16,574 for swan; 671,794 for geese; 1,141,391 for ducks and 105,193 for coots in 1968.

Duck production for 1969 showed an increase over 1968. Total estimated production for 1969 was 340. This production included 284 gadwalls, 50 blacks and 6 common mergansers.

One (common) teal was observed on December 30 by Paul W. Sykes, Jr. during the annual Christmas bird count.

2. Wading Birds, Gulls, Terns and Shore Birds

This year as in past years the refuge had heavy use from these groups of birds. The main influx of birds which nested in the rookery in the North Pond began about April 15. This rookery contained the following number of nests on July 7; little blue heron 27, Louisiana heron 20, black-crowned night heron 12, American egret 3, snowy egret 2 and glossy ibis 2. Eighteen nests were unidentified at this time. Nesting began about two weeks later in 1969 than in 1968.

Some nest predation by boat-tailed grackles was observed by Mr. William McVaugh, while conducting research in the rookery.

The following birds were found nesting on the nesting bars in North Pond; common tern, least tern, black-necked stilt and American oystercatcher.

Several young flightless black-necked stilts were observed on the berm road north of North Pond.

B. Upland Game Birds

The ring-necked pheasant, only upland game bird on the refuge, has become quite abundant. It is found over the entire refuge.

C. Big-Game Animals

No big game animals are found on the refuge.

D. Fur Animals, Predators, Rodents and other Mammals

Muskrat, otter, mink and nutria are all found on the refuge. The muskrat population seems to be rather high from the number that are killed on the highway and also from the number of lodges found on the refuge. They are starting to do some damage to refuge structures and roads.

Otters are rarely sighted but their slides and droppings are often sighted.

Several nutria sightings were made during the year. They were seen in New Field ditch, and North and South Ponds. One road kill was noted during the year.

Several feral cats were also observed on the refuge.

No predator animals other than feral cats are found on the refuge.

E. Hawks, Eagles, Owls, Crows, Ravens and Magpies

Marsh and sparrow hawks are the most abundant hawks found on the refuge. Marsh hawks were quite abundant during waterfowl season.

Osprey were seen quite regularly on the refuge from February to September.

Barn owls are often seen on the refuge. Two road kills were observed during the month of November.

F. Other Birds

The 1969 Christmas bird count was conducted by Mr. Paul Sykes, Jr. and party. Figures on number of species have not been received.

G. Fish

Sport fishing and commercial fishing were both real productive this year. The last week in October and the first week in November several hundred pounds of weakfish were caught by sport fisherman from the surf. In mid-November large blue fish hit the beach and stayed until Thanksgiving. Sport fishermen and commercial fishermen both made real big hauls at this time. At least two 22 pound bluefish were caught on hook and line at that time. Several large striped bass were also caught then.

H. Reptiles

Snapping turtles are abundant in the fresh water ponds.

Diamondback terrapins are abundant in the sound and creeks.

Occasionally a black racer or watersnake is seen.

I. Diseases

Although a few geese were found dead on the refuge no serious disease outbreaks were noted.

One snow goose and one herring gull was found hanging in highline wires crossing the refuge. A few snow geese have been hit by cars along the highway.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

The parking area around the new public comfort station was completed.

The inside of the residence was repainted.

Sheets of plywood were placed over the openings in the eaves of the residence to stop some of the draft through the attic.

The usual maintenance and routine work was carried out as necessary.

B. Plantings

1. Aquatics and Marsh Plants

None.

2. Trees and Shrubs

None.

3. Upland Herbaceous Plants

None.

4. Cultivated Crops

Ninty acres of ryegrass were planted in New Field. Fifty pounds of ryegrass seed and 400 pounds of 10-20-20 per acre was applied to this area.

Handwritten notes:
P
10
100 lbs ryegrass?
Jm

C. Collections and Receipts

Mattamuskeet Refuge and Pungo Refuge provided shelled corn for the 1969-70 banding program. Two hundred and ten bushels were received for this purpose.

D. Control of Vegetation

No chemical control of vegetation was carried out this year.

Approximately ten miles of roads and trails were mowed to keep woody vegetation from intruding in on them.

E. Planned Burning

No planned burning was conducted this year.

F. Fires

Nothing to report.

IV. RESOURCES MANAGEMENT

A. Grazing

None.

B. Haying

None.

C. Fur Harvest

None.

D. Timber Removal

None.

E. Commercial Fishing

All fishing is done in navigable waters so no permit is required.

F. Other Uses

None.

V. FIELD INVESTIGATION OR APPLIED RESEARCH

The second year of a two year waterfowl nesting study was completed this year.

Breeding pair counts showed an estimated 60 to 70 pairs of nesting waterfowl, (18 black duck, 45 gadwall and 2 blue-winged teal). Two active nests were found and 48 broods were observed. Three hundred and forty flying young (84% gadwall, 15% black and 1% American merganser) were produced. Thirty-one young gadwalls were caught and banded. This study was conducted by Assistant Manager Peyton with much assistance from Messers, Florschutz and Williamson. The results were reported to the Regional office as Wildlife Management Study No. 1, Project: Pea Island 1, 68-69.

Mr. William McVaugh, Jr., Homestead, Florida conducted research on nesting colonial birds during the nesting periods. He is photographing young birds in different stages of growth and then transferring them onto canvas. He is operating under Permit No. 4-68-69.

Banding quotas for the 1968-69 season:

Post-season Banding:
 Canada geese 300
 Black duck 200
 Mallard as can

In addition to the post-season banding as many young black ducks and gadwall as possible were banded in connection with the duck production study.

Banding accomplishments were:

Post-season:
 Mallard 1
 Black 128
 Ringneck 23
 Pintail 6
 Canvasback 1
 Canada geese 33

Pre-season:
 Gadwall 31

VI. PUBLIC RELATIONS

A. Recreational Uses

Most of the recreational uses on the refuge centered around Oregon Inlet; fishing and camping, and the refuge impoundments; bird watching, photography, nature walks, etc.

Period of heaviest use is from June thru November. The Visitors Log at Refuge headquarters shows that 1,295 visitors stopped by the office for a variety of reasons. These visitors represented some 31 states, the District of Columbia and Canadian provinces.

Total Public Use for 1969 was 170,837, compared to 91,758 for 1968.

B. Refuge Visitors

Some of the many names taken from our Visitors Log.

John Hardister, Wildlife Service	Raleigh, N.C.
W.O. Stieglitz, Asst. Regional Supervisor	Atlanta, Ga.
Doug Morris, N.P.S.	Manteo, N.C.
Vince Mrazek, N.P.S.	Manteo, N.C.
Otto Florschutz, Jr., East Coast Biologist	Washington, N.C.
Warren Lupton, M&E	Washington, N.C.
J. W. Perkins, M&E	Manteo, N.C.
Burkett Neely, BSF&W	Mattamuskeet Refuge
Charlie Noble, BSF&W	St. Vincent Refuge
Dave Fletcher, N.P.S.	Ocracoke, N.C.
Dennis E. McGinnis, N.P.S.	Manteo, N.C.
Clay Caudill, N.P.S.	Buxton, N.C.
Kitteridge Wing, N.P.S. Supt. Cape Hatteras National Seashore	Manteo, N.C.
Bob Cheesman, N.P.S.	Manteo, N.C.
G.L.Sutherland, BSF&W	Washington, D.C.
Jim Taylor, Engineering	Atlanta, Ga.
Bob Gilmore, BSF&W	Back Bay Refuge
John Fields, BSF&W	Pungo Refuge
Dr. Kenneth C. Parker, Carnegie Museum	Pittsburg, Pa.
Paul W. Sykes, Jr., BSF&W	Delray Beach, Fla.
Bob Spake, N.C. Ext. Ser.	Manteo, N.C.
H. F. Lawson, Engineering	Atlanta, Ga.
Ken Butts, Regional Office	Atlanta, Ga.
Conley Moffet, Regional Office	Atlanta, Ga.
Jerry Holloman, BSF&W	Noxubee Refuge
F. Eugene Hester, Unit Leader, N.C. Fisheries	Raleigh, N.C.
Ralph Andrews, BSF&W	Patuxent, Md.
James A. Kerwin, BSF&W	Patuxent, Md.
Ed Crozier, BSF&W	Minneapolis, Minn.
Luther Bridgeman, Dare County Health Dept.	Manteo, N.C.
John Tyler, N.P.S.	Nagshead, N.C.
Frank Hanna, N.P.S.	Buxton, N.C.
Nevin Wescott, N.P.S.	Manteo, N.C.

C. Refuge Participation

Refuge Personnel attended Technical Action Panel, T.A.P., meetings monthly.

Refuge personnel gave numerous tours to interested parties, school and scout groups.

D. Hunting

There is no hunting on the refuge. Hunting pressure along the refuge has been moderate with fair hunter success.

E. Violations

No case prosecuted this year.

F. Safety

Twelve Safety Meetings were held at Refuge headquarters.

All Regional Office Safety materials were discussed at meetings. Some topics discussed were; safe driving, fire fighting, tips on handling material, know your electricity, chain saw operation and others.

There were no accidents during the year at this station. The last lost-time accident occurred on January 21, 1958. There has been a total of 4,343 calendar days with a total of 61,163 man-hours worked since last lost-time accident.

Future plans are to continue with our monthly Safety meetings and correct any hazardous conditions that might occur before an accident happens.

Acquisition of protective clothing, boots, rain suits, gloves, safety goggles, etc., as needed.

VII. OTHER ITEMS

A. The Refuge Office was moved from the Evans Building in Manteo to the service building on Pea Island in February.

Mr. George Peyton reported for duty on March 4, 1969. Mr. Peyton came to Pea Island from Chactaw Refuge.

Mr. Bill Good, Manager here since 1962, transferred to Pee Dee Refuge on April 4, 1969.

Mr. N. F. Williamson, Jr. reported for duty on June 1, 1969 as Refuge Manager.

B. Photographs

C. Credits

Sections II, III, IV and Forms were prepared by Assistant Refuge Manager Peyton.

Date:

Submitted By:

January 22, 1970

N. F. Williamson, Jr.

Walter O. Stieglitz

Approval: _____

Assistant Regional Supervisor

1-27-90



30# Snapping turtle trapped in North Pond. 18 turtles were trapped and dissected in connection with Wildlife Management Study. (R-1-4)



Planting ryegrass in New Field. Both seed and fertilizer are put down in one application. Obtained a fair stand with fair production. (R-1-16)



Dune erosion, Mile Post 9. Extremely high sea tide and high north-east winds severely eroded sections of beach on the refuge. (R-2-4)



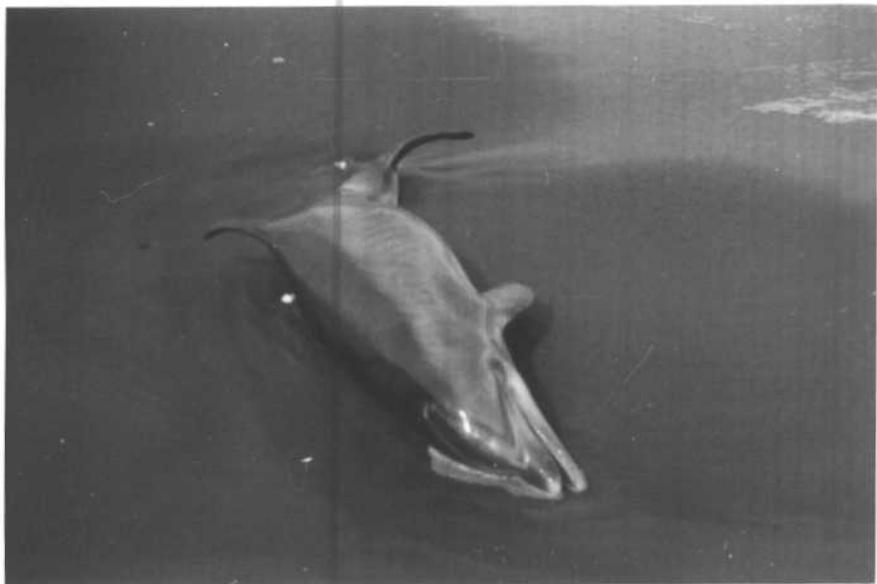
Tide almost came thru outer row of dunes. Had water been about 8" higher it would have been over the top of Mile Post 9. (R-2-10)



Not only nature damages the dunes. The above photo shows where commercial fishermen crossed the dunes with 4x4 vehicle dragging boat trailer loaded with dory and nets. (R-2-22)



Road made across man made dunes, Mile Post 9 project, by visitors to the refuge. Closed area signs were put up, traffic slowed down but has not stopped completely. (R-2-20)



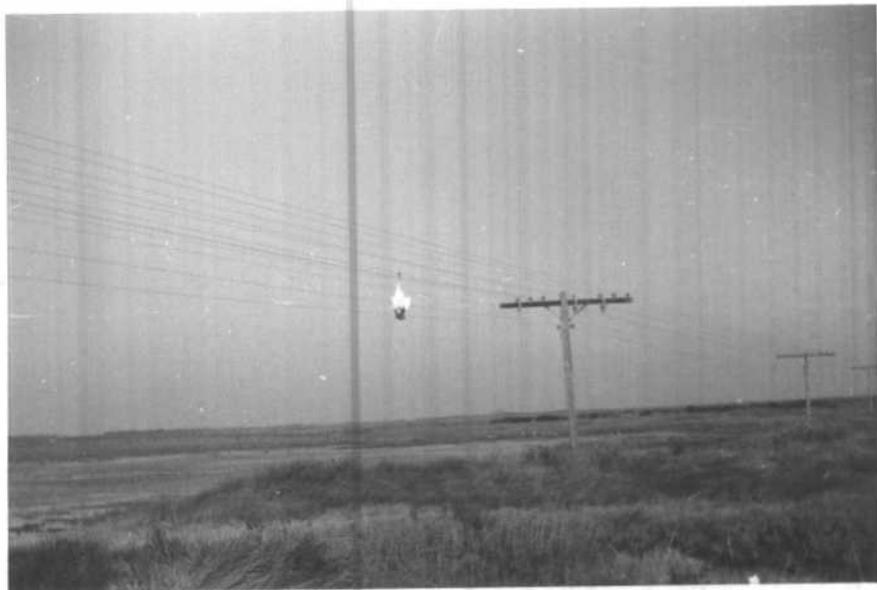
Porpoise washed ashore just after Hurricane Gerda passed out way,
45 miles off shore. (R-1-19)



Rare Pigmy Sperm Whale washed ashore just south of the refuge.
These specimens were picked by the Smithsonian Institute. (R-2-33)



Gull caught on power line that transverses entire length of refuge.
Power lines that cross refuge should be buried. (R-2-17)



Snow goose hit old Coast Guard telephone line and hung itself.
GSA has this line up for sale. Maybe it will be torn down before
long. (R-2-25)



Snow geese feeding along highway N.C.12. Location is just east of North Pond between highway and sand dunes. (R-2-24)



Muskrat house - same location as above. (R-2-28)



Nutria killed along Highway N.C. 12 adjacent to New Field.
Population seems to be increasing. (R-2-27)

W A T E R F O W L

REFUGE Pea Island N.W. Refuge

MONTHS OF January 1 TO April 30, 1969

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling Trumpeter	50	100	5	5	35	10	12	10	0	25
Geese:										
Canada	2,100	2,200	1,800	1,500	1,200	1,500	1,000	800	800	800
Cackling Brant										
White-fronted										
Snow	7,000	7,000	5,000	4,000	3,000	5,000	500	350	100	200
Blue	15	15	15	15	75	15	12	10		6
Other										
Ducks:										
Mallard	75	100	50	50	150	75	100	50	75	75
Black	1,300	1,400	1,500	1,500	1,800	1,200	900	1,000	800	1,000
Gadwall			50	50	40	300		5	10	
Baldpate	450	400	200	100	75			50	200	150
Pintail	1,300	1,300	300	400	300	300		100	250	200
Green-winged teal	500	500	300	200	100	600	400	300	500	300
Blue-winged teal								500	50	50
Cinnamon teal										
Shoveler	300	250	600	200	100	400	200	600	10	25
Wood			100							
Redhead	200	220	150	50		5	20	10	10	
Ring-necked	150	150	200	50	50	400	200	150	300	300
Canvasback	25		15			5	10	10	10	10
Scaup			300	200	250	600	300	200	400	300
Goldeneye										
Bufflehead	600	600	150	150	50	200	150	100	100	100
Ruddy	300	400	500	100	50	150	75	50	100	75
Other H. Merganser	50	25	50	50			25	25		25
Red br. Merganser	50						50	50		
Common Merganser		25	100	50					50	50
Am. Coot	1,100	1,300	1,100	800	600	1,000	500	500	500	500



WATERFOWL
 (Continuation Sheet)

REFUGE Pea Island N.W. Refuge

MONTHS OF January 1 TO April 30, 196

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods : Estimated seen : total	
	11	12	13	14	15	16	17	18			
Swans:											
Whistling	10	10	10	10	5	1			1,978		
Trumpeter											
Geese:											
Canada	800	500	500	300	150	50	50	50	109,450		
Cackling											
Brant											
White-fronted											
Snow	150	100	100	25	10	5	7	7	208,957		
Blue	6	2	4						1,285		
Other											
Ducks:											
Mallard	50	50	50	25	20				6,700		
Black	1,000	800	600	500	400	75	100	100	107,325		
Gadwall		100	100	100	100	100	100	100	7,785		
Baldpate	100	65	50	50	20	10	10	10	12,200		
Pintail	200	150	100	25	50				30,200		
Green-winged teal	300	150	100	100	50	50	10	10	29,760		
Blue-winged teal	25			50		100	20	20	5,645		
Cinnamon teal											
Shoveler	25	20	10						18,280		
Wood									700		
Redhead									4,055		
Ring-necked	300	150	150	150	100	50			19,430		
Canvasback	10								590		
Scaup	300	100	100	50	20	70			22,330		
Goldeneye											
Bufflehead	100	275	250	150	100	50	20	10	17,815		
Ruddy	75	75	75	75	50	25			3,075		
Other H. Merganser	25	10							2,235		
Red Br. Merganser									2,070		
Common Common Merganser	50	10							2,345		
American Coot:	500	300	300	300	300	200	100	25	56,700		

(Over)

	(5)	(6)	(7)	SUMMARY
	<u>Total Days Use</u>	<u>Peak Number</u>	<u>Total Production</u>	
Swans	<u>1,978</u>	<u>100</u>	<u>0</u>	Principal feeding areas <u>Impoundments, Fresh and saltmarshes,</u>
Geese	<u>319,692</u>	<u>9,215</u>		<u>ryegrass fields and Pealico Sound shoals.</u>
Ducks	<u>292,541</u>	<u>5,375</u>		Principal nesting areas <u>No nesting this season.</u>
Coots	<u>56,700</u>	<u>1,300</u>	<u>0</u>	

Reported by George W. Payton, Acting 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).

W A T E R F O W L

REFUGE Pea Island N.W. Refuge

MONTHS OF May 1 TO August 31, 1969

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
	Swans:									
Whistling Trumpeter										
Geese:										
Canada	10	10	10	10	10	10	10	10	6	6
Cackling Brant										
White-fronted										
Snow	7	7	7	7	7	7	3	3	3	3
Blue										
Other										
Ducks:										
Mallard										
Black	100	150	100	150	185	200	210	220	220	220
Gadwall	100	150	150	150	150	175	200	250	300	350
Baldpate	10	10								
Pintail										
Green-winged teal	10	10								
Blue-winged teal	20	15								
Cinnamon teal										
Noveler										
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead	5	3	2	2	2					
Ruddy										
Other										
Common Merganser			2	2	2	2	0	0	0	0
American Coot	12	5								



WATERFOWL
 (Continuation Sheet)

REFUGE **Pea Island N.W. Refuge**

MONTHS OF May 1 TO August 31, 1969

(1) Species	(2) Weeks of reporting period								(3) Estimated:	(4) Production	
	11	12	13	14	15	16	17	18	waterfowl:	Broods:	Estimated
									days use:	seen:	total
<u>Swans:</u>											
Whistling Trumpeter											
<u>Geese:</u>											
Canada	6	6	6	6	4	4	4	4	888		
Cackling											
Brant											
White-fronted											
Snow	3	3	3	3	3	3	3	3	521		
Blue											
Other											
<u>Ducks:</u>											
Mallard											
Black	220	220	220	220	250	300	400	450	28,575	16	50
Gadwall	400	425	435	450	450	450	400	450	38,545	17	284
Baldpate											
Pintail											
Green-winged teal							10	25	370		
Blue-winged teal							80	300	3,125		
Cinnamon teal											
Shoveler											
Wood											
Redhead											
Ring-necked											
Canvasback											
Scaup											
Goldeneye											
Bufflehead										78	
Ruddy											
Other											
<u>Common Merganser</u>	8	8	8	8	0	0	0	0	448	1	6
<u>Coot:</u>									72		
					(Over)						

	(5)	(6)	(7)
	Days Use	Peak Number	Total Production
Swans			
Geese	1,409	17	
Ducks	71,241	900	340
Coots	71	20	

SUMMARY

Principal feeding areas North and South Pond and New Field.

Principal nesting areas Island, ridges, and dikes in and around North and South Ponds.

Reported by George W. Peyton

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

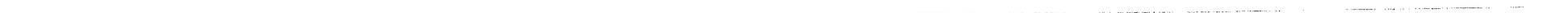
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- (7) Total Production: A summary of data recorded under (4).

W A T E R F O W L

REFUGE Pea Island

MONTHS OF September 1 TO December 31, 1969

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
	Swans:								14	160
Whistling Trumpeter										
Geese:										
Canada	3	4	4	8	8	525	886	1,580	3,284	4,425
Cackling Brant										
White-fronted										
Snow	2	2	2	2	2	10	35	4	904	2,575
Blue									12	25
Other										
Ducks:										
Mallard		5	75		45	12	50	19	67	100
Black	500	720	700	39	1,227	1,065	176	218	1,213	2,295
Gadwall	480	1,080	597	159	600	595	155	158	1,325	315
Baldpate		15	125	845	4,450	810	1,851	2,225	2,850	6,720
Pintail		260	814	880	6,400	1,640	1,786	1,070	1,520	7,365
Green-winged teal	25	255	200	279	1,730	349	110	290	500	1,875
Blue-winged teal	300	840	2,064	163	800	238	255	61		260
Cinnamon teal										
Noveler					11					
Wood								6		4
Redhead									25	25
Ring-necked								21	300	75
Canvasback										
Scaup									60	50
Goldeneye										
Bufflehead								2		320
Ruddy						10		108	45	89
Other										
White-winged Scoter									75	50
Coot		5				80	105	845	894	3,775



WATERFOWL
 (Continuation Sheet)

REFUGE **Pea Island**

MONTHS OF September 1 TO December 31, 1969

(1) Species	(2) Weeks of reporting period								(3) Estimated: Production		(4) waterfowl: Broods: Estimated	
	11	12	13	14	15	16	17	18	days use	seen	total	
	Swans:											
Whistling	232	198	174	97	80	90	84	85	20,913			
Trumpeter												
Geese:												
Canada	1,847	4,797	4,108	4,093	4,478	5,402	4,648	5,200	301,497			
Cackling												
Brant												
White-fronted												
Snow	3,370	7,685	7,138	6,711	10,169	8,870	5,891	6,110	396,152			
Blue	100	25	20	25	25	25	25	20	2,054			
Other												
Ducks:												
Mallard	150	117	155	77	50	78	155	232	9,013			
Black	1,567	2,139	2,165	614	1,260	1,822	1,354	3,325	150,728			
Gadwall	150	100	30	15	14	14	50	615	43,049			
Baldpate	1,025	916	925	190	370	200	106	1,560	172,211			
Pintail	725	1,387	963	755	1,710	2,728	2,036	3,245	237,253			
Green-winged teal	4,000	5,008	3,200	1,030	5,550	950	1,125	1,075	115,694			
Blue-winged teal	20	6						25	34,849			
Cinnamon teal												
Shoveler	10	12	12	250	45	209	224	390	6,971			
Wood	15								175			
Redhead	25	105		61	126	300	125	600	10,044			
Ring-necked	50		47	55	10	50		550	6,456			
Canvasback	40	10		20	77	100	30	500	2,139			
Scaup	150	383	295	752	932	500	306	1,110	28,436			
Goldeneye												
Bufflehead	100	151	130	190	60	180	66	417	10,061			
Ruddy	165	391	600	384	589	750	322	585	26,511			
Other white-winged		15							63			
Common Merganser	4											
Coot:	3,029	1,519	1,642	1,800	1,095	1,000	820	2,450	126,063			
hooded Merganser				20					140			
Common Teal								1	4			

(Over)

	(5)	(6)	(7)	SUMMARY
	Days Use	Peak Number	Total Production	
Swans	<u>20,913</u>	<u>970</u>		Principal feeding areas <u>Pallico Sound shoals, fresh water</u>
Geese	<u>699,703</u>	<u>14,972</u>		<u>impoundments, salt pond, salt marsh and ryegrass field.</u>
Ducks	<u>854,777</u>	<u>19,573</u>		Principal nesting areas <u>N/A</u>
Coots	<u>126,063</u>	<u>3,775</u>		

Reported by _____

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

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- (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
(Aug. 1952)

MIGRATORY BIRDS
(Other than Waterfowl)

Refuge Pea Island Refuge Months of January 1 to April 30 19 69

(1) Species Common Name	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total Estimated Use
	Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	
I. Water and Marsh Birds:										
Pied-Billed Grebe	5	3/10	10	3/31-4/15	2	4/18				390
Common Loon	2	4/1	6	4.15-4/20	2	4/25				80
Cannot	4	1/2	50	2/1-2/28	50	2/28				1,524
Double-Crested Cormorant	25	3/10	50	3/15-4/15	25	4/30				2,050
Glossy Ibis	7	4/1	30	4.15-4/30	30	4/30				555
American Bittern	1	3/20	5	4/1-4/30	5	4/28				161
Great Blue Heron	2	1/23	15	3/20-4/30	15	4/25				727
Common Egret	5	1/23	30	4/1-4/30	30	4/25				1,295
Snowy Egret	6	3/10	75	3/25-4/30	75	4/25				2,790
Louisiana Heron	1	3/31	30	4/15-4/30	30	4/30				611
Little Blue Heron	4	3/31	15	4/15-4/30	15	4/30				289
Green Heron	2	3/31	15	4/15-4/30	15	4/30				257
Cattle Egret	2	4/25	2	4/25-4/30	2	4/25				10
Yellow-Crowned Night Heron	1	3/31	Only Sighting							
II. Shorebirds, Gulls, and Terns:										
Great Black-Backed Gull	100	1/1	400	3/15-4/30	400	4/30				25,800
Herring Gull	200	1/1	700	3/15-4/30	700	4/30				47,000
Black Headed Gull	50	3/12	300	3/15-4/30	300	4/30				13,950
Laughing Gull	700	1/1	300	3/15-4/30	300	4/30				28,600
Ring-Billed Gull	125	1/30	100	2/15-2/28	4	4/5				6,694
Black-Necked Stilt	2	4/10	15	4/20-4/30	15	4/30				4,960
Common Snipe	80	1/1	80	1/1-2/28	4	4/20				190
Least Sandpiper	50	4/26	50	4/26-4/30	50	4/30				200
Greater Yellowlegs	4	1/1	50	4/11-4/30	50	4/30				1,354
Lesser Yellowlegs	10	1/1	75	4/11-4/30	75	4/30				2,435
Black-Bellied Plover	50	1/1	100	4/11-4/30	100	4/30				7,554
American Oystercatcher	2	3/30	6	4/10-4/30	6	4/30				140

(over)

(1)	(2)		(3)		(4)		(5)			(6)
II. <u>Doves and Pigeons:</u> Mourning dove White-winged dove	1	2/26	6	4/1-4/30	6	4/30				213
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow (Fish) Marsh Hawk Pigeon Hawk Sparrow Hawk Osprey Barn Owl										
	3	2/10	75	4/1-4/30	75	4/30				2,397
	3	1/1	3	1/1-4/30	3	4/30				360
	2	2/28	2	2/28-4/30	2	4/30				124
	4	1/1	4	1/1-2/7	2	4/30				316
	2	3/29	2	2/29-4/5	1	4/27				37
	1	1/5	2	1/15-3/15	2	3/15				131

Refuge
Reported by George W. Peyton, Acting Manager

INSTRUCTIONS (See Sec. 7532, Wildlife Refuges Field Manual)

- (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 migration record for the species for the reporting period.
- (3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.
- (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 species days use (average population X no. days present) of refuge during the reporting period.

3-1751
Form NR-1A
(Aug. 1952)

MIGRATORY BIRDS
(Other than Waterfowl)

Refuge Pea Island

Months of

May 1

to August 31

19 69

(1) Species Common Name	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total Estimated Use
	Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	
I. Water and Marsh Birds:										
Pied-billed Grebe	3	8/22	100	3/27-8/31	100	8/29				757
Oleazy Ibis	30	5/12	50	5/31-7/24	3	8/29	1	8	12	3,014
American Bittern	1	8/22	1	only sighting						30
Great Blue Heron	10	5/12	10	5/12-8/21	10	8/29				1,230
Common Egret	25	5/12	30	6/1-7/31	15	8/29	1	3	6	3,070
Snowy Egret	75	5/12	80	7/1-8/1	15	8/28		6	10	9,535
Louisiana Heron	30	5/12	100	7/1-8/1	25	8/28	1	20	40	5,795
Little Blue Heron	15	5/12	100	7/1-8/1	30	8/28		27	54	4,940
Green Heron	10	5/12	15	7/1-8/1	5	8/28				1,230
Cattle Egret	5	5/12	60	6/1-8/31	60	8/29				5,675
Black-crowned Night Heron	15	5/12	60	7/1-8/1	25	8/29		12	24	3,550
Clapper Rail	1	6/4	1	6/4-8/19	1	8/19				123
Gallinule	1	8/19		only sighting						10
II. Shorebirds, Gulls, and Terns:										
American Oystercatcher	1	5/15	8	6/1-8/1	8	8/1	2	4		527
Black-billed Plover	25	8/1	25	8/1-8/31	25	8/25				775
Willet	500	5/1	500	5/1-7/31	100	8/29		75	150	49,100
Short-billed Dowitcher	5	7/1	15	7/15-8/1	5	8/25				150
Sanderling	25	5/12	75	7/1-8/31	75	8/25				6,175
Black-necked Stilt	15	5/12	25	6/1-8/1	5	8/25		8	24	2,295
Great Black-backed Gull	350	5/12	350	5/1-6/1	5	8/25				11,310
Laughing Gull	300	5/12	300	5/1-7/15	75	8/25				27,325
Bonapart's Gull	250	5/12	250	5/1-6/1	25	8/25				10,050
Common Tern	100	5/12	200	7/1-8/1	25	8/25		16	30	18,500
Least Tern	20	5/12	50	7/1-8/1	5	8/15		2	3	2,905
Black Skimmer	20	5/12	250	7/1-8/31	250	8/29				16,520

(over)

(1)	(2)	(3)	(4)	(5)	(6)					
II. <u>Doves and Pigeons:</u> Mourning dove White-winged dove	6	5/1	6	5/1-8/31	6	8/28				738
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Fish Crow Marsh Hawk Osprey										
	70	5/12	70	5/1-6/1	30	8/28				4,930
	3	5/1	3	5/1-5/29	1	8/28				124
	1	Entire period								123

Reported by

INSTRUCTIONS (See Sec. 7532, Wildlife Refuges Field Manual)

- (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 migration record for the species for the reporting period.
- (3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.
- (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 species days use (average population X no. days present) of refuge during the reporting period.

3-1751
Form NR-1A
(Aug. 1952)

MIGRATORY BIRDS
(Other than Waterfowl)

Refuge Pea Island

Months of September 1

to December 31

1969

(1) Species Common Name	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total
	Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Use
<u>I. Water and Marsh Birds:</u>										
Pied-billed Grebe	100	9/4	100	9/1-10/31	20	12/21				7,320
American Flamingo	1	11/10	1	11/10-11/28	1	11/28				18
Glossy Ibis	30	9/4	30	9/1-9/15	2	11/14				570
American Bittern	1	9/4	5	9/1-10/10	3	12/18				446
Great Blue Heron	10	9/4	10	9/1-11/30	3	12/18				1,003
Common Egret	15	9/4	15	9/1-9/30	1	12/18				542
Snowy Egret	15	9/4	15	9/1-11/30	5	12/23				1,520
Louisiana Heron	25	9/4	25	9/1-10/15	5	12/30				1,510
Little Blue Heron	30	9/4	30	9/1-9/30	2	10/31				962
Green Heron	5	9/2	5	9/1-9/15	1	9/20				90
Cattle Egret	60	9/2	60	9/1-9/30	5	11/10				2,005
Black-crowned Night Heron	35	9/4	35	9/1-10/31	10	12/23				2,745
Clapper Rail	2	9/4	5	9/1-9/30	1	11/10				195
Gallinule	2	9/4	2	9/1-10/15	2	9/15				90
<u>II. Shorebirds, Gulls, and Terns:</u>										
Great Black-backed Gull	75	9/4	500	9/15-11/15	100	12/31				36,225
Herring Gull	75	9/4	500	9/15-11/15	75	12/31				34,675
Laughing Gull	75	9/4	150	9/15-11/15	50	12/31				12,575
Bonapart's Gull	25	9/4	25	9/1-11/15	10	12/31				2,360
Common Tern	25	9/4	25	9/1-9/20	25	9/20				500
Least Tern	5	9/4	5	9/1-9/10	5	9/10				50
Black Skimmer	250	9/1	250	9/1-10/15	3	12/15				11,433
Avocet	50	10/15	50	10/15-12/15	50	12/15				3,050
Black-necked Stilt	5	9/4	5	9/1-9/30	5	9/30				150
Short-billed Dowitcher	5	9/4	5	9/1-9/15	5	9/15				75
Sanderling	75	9/4	150	9/15-11/15	15	12/31				10,965
Willet	100	9/4	100	9/1-9/20	5	10/15				2,100
Ruff	2	9/4	2	only sighting						2
Black-bellied Plover	25	9/4	25	9/1-9/30	5	10/31				905

(1)	(2)	(3)	(4)	(5)	(6)					
II. - <u>Doves and Pigeons:</u>										
- Mourning dove	5	9/14	10	9/20-10/31	2	12/18				632
White-winged dove										
IV. <u>Predaceous Birds:</u>										
Golden eagle										
Duck hawk	1	10/7	1	10/7-10/10	1	10/10				3
Horned owl										
Magpie										
Raven										
Crow (Fish)	30	9/1	30	9/1-9/30	10	12/15				1,660
Marsh Hawk	1	9/4	5	11/15-12/31	5	12/24				306
Sparrow Hawk	2	9/4	Entire Period							214
Osprey	1	10/10	Only Sighting							7
Barn Owl	1	10/15	10	9/1-12/31	3*	11/12				1,220
			est.							

* Birds killed on highway.

Reported by

INSTRUCTIONS (See Sec. 7532, Wildlife Refuges Field Manual)

- (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 migration record for the species for the reporting period.
- (3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.
- (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 species days use (average population X no. days present) of refuge during the reporting period.

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 NW Refuge

For 12-month period ending August 31, 1969

Reported by George W. Peyton

Title Assistant Refuge Manager

(1) Area or Unit Designation	(2) Habitat			(3) Use-days	(4) Breeding Population	(5) Production
	Type	Acreage				
Unit 1. South boundary to New Inlet	Crops	0	Ducks	33,145	2	4
	Upland	139	Geese	138,129		
	Marsh	1,216	Swans			
	Water	9,700	Coots	1,925		
	Total	11,255	Total	171,199	2	4
Unit 2. New Inlet to north dike of North Pond (Sound side)	Crops	0	Ducks	66,199		
	Upland	320	Geese	93,786		
	Marsh	664	Swans	14		
	Water	2,800	Coots	3,750		
	Total	2,384	Total	168,749		
Unit 3. Pools 1 & 2 and New Field	Crops	320	Ducks	1,106,205	200	326
	Upland	216	Geese	484,402		
	Marsh	215	Swans	15,099		
	Water	580	Coots	146,161		
	Total	1,331	Total	1,751,867	200	326
Unit 4. North Dike of North Pond to Oregon Inlet	Crops	0	Ducks	49,700	4	10
	Upland	320	Geese	74,165		
	Marsh	3,000	Swans	2,100		
	Water	13,732	Coots	5,600		
	Total	17,052	Total	131,565	4	10
Totals for refuge	Crops	320	Ducks	1,255,249	206	340
	Upland	1,095	Geese	788,482		
	Marsh	5,095	Swans	17,213		
	Water	26,012	Coots	162,145		
	Total	32,522	Total	2,223,389		340
	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 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 January 1 to April 30, 1969

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
			Number observed	Estimated Total		Hunting	For Re- stocking	For Research		
Common Name	Cover types, total acreage of habitat	Acres per Bird			Percentage				Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	Dikes, wax myrtle thickets, uplands and marshes (1125 acres)	10	None		1M, 3F	N	O	N E	115	



3-1752

Form (-2

(April 1946)

UPLAND GAME BIRDS

Refuge Pea IslandMonths of Mayto August, 1969

(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								Pertinent information not specifically requested. List introductions here.
Ring-neck Pheasant	Dikes, wax myrtle and bayberry thickets, wetlands, grass and marsh (5,000)	16.6	15	180	1-1	0	0	0	500	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

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

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

Refuge Pea IslandMonths of September to December, 1949

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
			Number broods observed	Estimated Total		Hunting	For Re- stocking	For Research		
Common Name	Cover types, total acreage of habitat	Acres per Bird			Percentage				Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	Dikes, wax myrtle and bayberry thickets, upland grass and marsh (5,000 a.)	18			1-1	0	0	0	275	



3-1753

Form R-3

(June 1945)

BI(NAME

Refuge ~~Pea Island~~Calendar Year ~~1969~~

(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	
Common Name	Cover types, total Acreage of Habitat	Number											
	Pea Island has no big game animals.												

Remarks:

Reported by W. F. Williamson, Jr. Refuge Manager

INSTRUCTIONS

Form NR-3 - BIG GAME

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

3-175
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Pea Island

Year ending April 30, 1969

(1) Species Common Name	(2) Density Cover Types & Total Acreage of Habitat Acres Per Animal		(3) Removals					(4) Disposition of Furs					(5) Total Popula- tion		
			Hunting	Fur Harvest	Predator Control *	For Re- stocking	For Re- search	Share Trapping			Total Refuge Furs Shipped	Furs Donated		Furs Destroyed	
								Permit Number	Trappers Share	Refuge share					
Muskrat	Impoundments and adjacent marsh areas (1,500 acres)		1	N	O	N	E								1,500
Otter	Entire Refuge and associated tidal creeks (5,880 acres)		294	N	O	N	E								20
Nutria	Impoundments and adjacent marsh areas (1,500 acres)		2	N	O	N	E								750
Mink	Entire Refuge (5,880 acres)		196	N	O	N	E								30

* List removals by Predator Animal Hunter

REMARKS:

Reported by George W. Peyton, Acting Refuge Manager

INSTRUCTIONS

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

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

DISEASE

Refuge Pea Island Year 19 69

Botulism

Lead Poisoning or other Disease

Period of outbreak None Noted

Kind of disease None Noted

Period of heaviest losses _____

Species affected _____

Losses:

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

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

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

Number Recovered _____

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

Number lost _____

Source of infection _____

Areas affected (location and approximate acreage) _____

Water conditions _____

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

Food conditions _____

Condition of vegetation and invertebrate life _____

Remarks _____

Remarks _____



Refuge name
Fee Island
 State
North Carolina

MONTHLY RECREATIONAL USE REPORT

State Code **33** (1-2) Congressional District Code **01** (3-4) Refuge Code **140** (5-7) Report Yr. Mo. Calendar Year **1969** Period (8-11)

ACTIVITY	Code	VISITS FOR THE MONTH	
		Total Number	Total Hours
Hunting: Big Game	01		
Upland Game	02		
Waterfowl	03		
Other Migratory	04		
Other	05		
Bow	06		
Fishing: Salt Water	07	60,270	183,210
Warm Water	08		
Cold Water	09		
Environmental Education	10		
Wildlife Photography	11	749	1,328
Wildlife Observation	12	58,800	42,850
Conducted Programs	13		
Field Trials	14		
Wildlife Trails	15	5,470	5,105
Wildlife Tours/Routes	16	72	252
Visitor Contact Stations	17	1,516	331
Camping (wildlife related)	18		
Picnicking (wildlife related)	19		
Wildlife Interpretive Center	20		
On Site Programs	21		

ACTIVITY	Code	VISITS FOR THE MONTH	
		Total Number	Total Hours
On-Site Programs	22		
*Miscellaneous Wildlife	23		
Swimming	24	550	1,550
Boating	25		
Water Skiing	26		
Camping	27	13,300	302,040
Group Camping	28	310	960
Picnicking	29	1,850	3,700
Horseback Riding	30		
Bicycling	31		
Winter Sports	32		
Fruit, Nut and Vegetable Collecting	33		
*Miscellaneous Non-Wildlife	34	28,927	28,744
Peak Load Day	35	1,500	
Actual Visits	36	170,837	
Fee Area Use	37		
Number of Fee Areas	38		(14-18)
Fee Collections	39	\$	
Collection Costs	40	\$	

* Miscellaneous non-wildlife includes beachcombing and surfing.

3-1757
 Form NR-7
 (Rev. June 1960)

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

(1)

Refuge Pea Island

Year 19 69

Species	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
						Not	Applicable						

- (1) Report agronomic farm crops on Form NR-8
- (2) C = Collections and R = Receipts
- (3) Use "S" to denote surplus

Total acreage planted:

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

Remarks: _____



3-1758 ()
 Form NR-6
 (Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Pas 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			
Common Ryegrass					90	135 tons	90	winter goose browse	90
								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				90
Hay - Wild				2. Acreage Cultivated as Service Operation				90

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 January through December, 195

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Yellow Corn	223 bu.	210 bu.	433 bu.			258 bu.	258 bu.	175 bu.		175 bu.	
Common ryegrass	0	5,100 lb.	5,100 lb.		5,100 lb.		5,100 lb.	0			

(8) Indicate shipping or collection points 35 bu. corn from Mattamuskeet Refuge and 175 bu. corn from Pungo Refuge. Ryegrass seed from Griggs Lumber & Produce, Point Harbor, N.C.

(9) Grain is stored at Pea Island Headquarters.

(10) Remarks For Goose trapping bait.

*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.

TIMBER REMOVAL

Refuge ~~Pea~~ Island

Year 1968

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
			Not Applicable					

Total acreage cut over.....

Total income.....

No. of units removed B. F.....

Method of slash disposal.....

Cords.....

Ties.....



ANNUAL REPORT OF PESTICIDE APPLICATION

Proposal Number	Reporting Year
	1969

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		No Pesticides	Applied					

10. Summary of results (continue on reverse side, if necessary)

