Pea Island National Wildlife Refuge

Narrative Report

January 1 to December 31, 1968

Refuge Personnel

William C. Good	Refuge Manager
Marvin C. Toler	Maintenanceman
Mrs. Helene K. McGinnis	Clerk-Typist (Part-Time)

TABLE OF CONTENTS

		PAGE
I.	GENERAL	1
	A. Weather Conditions	1
	B. Habitat Conditions	1
	1. Water	1
	2. Food and Cover	3
II.	WILDLIFE	6
	A. Migratory Birds	6
	1. Waterfowl	6
	2. Other Birds	6
	B. Upland Game Birds	7
	C. Big-Game Animals	7
	D. Fur Animals, Predators, Rodents & Other Mammals	7
	E. Hawks, Eagles, Owls, Crows, Ravens & Magpies	7
	F. Other Birds	8
	G. Fish	8
	H. Diseases	8
III.	REFUGE DEVELOPMENT AND MAINTENANCE	8
	A. Physical Development	8
	B. Plantings	9
	1. Aquatics and Marsh Plants	9
	2. Trees and Shrubs	9
	3. Upland Herbaceous Plants	9
	4. Cultivated Crops	9
	C. Collections and Receipts	9
	D. Control of Vegetation	10
	E. Planned Burning	10
	F. Fires	10
IV.	RESOURCES MANAGEMENT	10
V.	FIELD INVESTIGATION OR APPLIED RESEARCH	10
VI.	PUBLIC RELATIONS	12
	A. Recreational Uses	12
	B. Refuge Visitors	12
	C. Refuge Participation	15
	D. Hunting	16
	E. Violations	17
	F. Safety	17
VII.	OTHER ITEMS	18
	A. Items of Interest	18
	B. Photographs	18
	C. Signature	18

I. GENERAL

A. Weather Conditions.

Relatively normal weather conditions prevailed throughout 1968. There were two light snow storms in February and March. Two major storm systems passed through the area, one June 1-3 and the other October 19-20, both with hurricane force winds and extensive rain. An October storm damaged the impoundment wakefield wall system in several locations. A Southwester on November 12 flooded the refuge low lands with 5 to 7 foot tides and stopped traffic through the refuge for 24 hours. A minor drought developed in early July and extended into early September but no damage resulted in the aquatic growth in the impoundments.

Temperatures were near normal throughout the year.

The following data taken from the Weather Station operated by The National Park Service on Bodie Island, reflects conditions on the refuge. Bodie Island is three miles North of Pea Island.

Month	Precipitation				Temperatures	
	This Mo.	Normal	Dev. from Normal		Max.	Min.
Jan.	4.40	3.76	+1.14		62	21
Feb.	2.43	4.01	-1.58		62	18
Mar.	3.09	4.03	- .94		79	26
Apr.	3.27	2.29	+ .98		79	36
May	6.77	2.91	+3.86		82	43
June	1.96	2.90	- .94		91	58
July	5.60	4.36	+1.24		97	64
Aug.	.96	7.21	-6.25		101	67
Sept.	8.14	6.96	+1.18		90	56
Oct.	10.00	4.80	+5.20		87	38
Nov.	4.54	3.03	+1.51		78	31
Dec.	2.34	3.32	- .98		67	22
Total	53.50	49.08	+4.42	Extremes	101	18

Rainfall for 1967 measured 47.30.

B. Habitat Conditions.

1. Water

The refuge maintains two impoundments for the production of native

acquatics and rainfall is the only source of water for them. In early July a minor drought developed exposing 70-80 % of the pool floors but they recovered in early September with adequate rain.

Native pastures south of New Inlet were flooded by Pamlico Sound tides from Hurricane "Gladys" on October 19-20 and from a southwester on November 12. No damage resulted from this flooding action.

No extensive or extended turbulance developed on Pamlico Sound shoals during the year. Water levels remained within normal limits to produce abundant food on the shoals.

Gauge readings of the two impoundments follow:

Gauge Readings

	North Pond	South Pond
January 15	2.58	2.40
February 15	2.28	2.18
March 14	2.26	1.98
April 15	2.08	1.78
May 15	1.86	1.52
June 17	1.82	1.64
July 19	1.92	1.62
August 15	1.48	1.00
September 17	1.90	1.64
October 17	1.58	1.46
November 18	2.58	2.46
December 19	2.40	2.06

Silver Nitrate titrations were conducted throughout the year to determine salinities of both impoundments. The readings are as follows:

Water Salinity Tests During Period
(Readings in % of Sea Strength)

	North Pond			South Pond		
Date	North End	At Gauge	Gauge Reading	North End	On West Side	Gauge Reading
1/19	9.79	9.79	2.54	3.57	3.26	2.32
2/29	9.73	8.54	2.30	3.26	3.10	2.02
3/14	9.16	9.00	1.98	2.95	2.95	2.26
4/14	9.31	9.73	2.08	3.10	2.95	1.78
5/15	10.10	10.87	1.86	3.73	3.88	1.52
6/21	11.02	10.25	1.82	3.73	3.57	1.52
7/12	9.79	9.16	1.90	3.73	2.95	1.56
8/30	Samples from borrow pits - ponds dry					
	13.51	16.14	dry	6.99	dry	dry
9/17	9.16	6.36	1.90	1.86	2.79	1.64
10/17	10.41	10.10	1.58	2.79	2.64	1.46
11/19	6.68	6.83	2.70	2.02	1.71	2.40
12/19	7.14	8.23	2.40	1.71	1.71	2.06

Higher salinity readings of the North Pond reflect pumping activity associated with Nesting Bar construction and new dune construction, carried out during 1965-66. Also reflected are lowered water conditions during the drought of mid-summer.

2. Food and Cover

The 220 acres of ryegrass planted in the New Field area during the Fall of 1967 recovered well and produced adequate spring goose browse.

The 1968 Fall ryegrass planting on 250 acres was started September 16 following application of ground limestone in July and August. Preparation for seeding consisted of mowing. 12,500# of seed and 28 tons of 10-20-20 fertilizer were used. Planting was carried out on the upper 2/3 rds. of the field, leaving approximately 100 acres of spartina alterniflora undisturbed.

A heavy browse was evident by mid-November with resulting goose usage.

Production of native vegetation was excellent in spite of the mid-summer drought conditions.

The two impoundments maintained sufficient water levels to produce good quantities of submergents.

A newly developed fourth area of food production was created in April when sand was plugged in the old drains in the wash areas to the north of the North Pond. This new 600 acre Salt Pond which is open on the north end depends on rainfall and Pamlico Sound water. This area produced fair to good quality food with no soil manipulation.

Biologist Florschutz and Assistant Refuge Manager Holloman made a vegetation survey of the Refuge on July 16, 17 and 18. Transect lines were established in the New Field and in the Salt Pond. Lines were relocated in the North Pond due to construction. A five-point vegetation sampler was used at 30 ft. intervals along the transect lines for sampling. 2,080 points in 415 stops on nearly 2½ miles of transect lines were examined.

A summary of these findings follows:

North Pond

Approximately 1,710 ft. of line with 59 stops and 295 sample points

Chara spp. (2)	87.6 %
Potamogeton pectinatus	10.6 %
Eleocharis spp. (2)	0.9 %
Bare ground	0.9 %

South Pond

Approximately 1,890 ft. of line with 65 stops and 325 sample points (South transect line only run this year)

Chara spp. (2)	81.1 %
Potamogeton pectinatus	8.5 %
Eleocharis spp. (2)	4.6 %
Ruppia maritima	0.8 %
Bacopa sp. (1)	1.1 %
Scirpus Americanus	0.3 %
Unidentified Plants	0 %
Bare ground	3.6 %

Salt Pond

Approximately 1,800 ft. of line with 62 stops and 310 sample points on the South Line.

Approximately 3,360 ft. of line with 114 stops and 570 sample points on the North Line.

	South Line	North Line
Salincornia sp. (1)	27.4 %	15.4 %
Filamentous Algae	18.1 %	35.8 %
Spartina alterniflora	3.3 %	1.5 %
S. patens	2.7 %	0 %
Distichlis spicata	2.7 %	0 %
Leguminosae (1)	0.3 %	2.1 %
Panicum sp. (1)	0 %	1.0 %
Graminae (1)	0 %	1.7 %
Eleocharis sp. (1)	0 %	0.5 %
Bidens sp (1)	0.3 %	0 %
Bare ground	45.2 %	42.0 %

New Field

Approximately 3,390 ft. of line with 115 stops and 575 points running through three ecological land zones caused by differences in land elevation.

Spartina patens	22.2 %
Spartina alterniflora	11.1 %
Baccharis halimifolia	6.6 %
Compositae (2 spp.)	5.8 %
Leguminosae (3 spp.)	5.5 %
Cyperus spp. (2)	4.1 %
Distichlis spicata	3.7 %
Aster sp. (1)	3.6 %
Scirpus robustus	2.6 %
Eleocharis spp. (2)	2.4 %
Scirpus Americanus	1.8 %
Ipomoea spp. (2)	1.3 %
Panicum sp. (1)	1.1 %
Salicornia sp. (1)	1.1 %
Pluchea camphorata	1.0 %
Umbelliferae (2 spp.)	1.0 %
Iva frutescens	0.6 %
Hydrocotyle sp. (1)	0.5 %

Algea (1)	0.5 %
Lolium multiflorum	0.4 %
Echinochloa crusgalli	0.2 %
Bacopa sp. (1)	0.2 %
Juncus roemarianus	0.2 %
Scirpus heterochaetus	0.2 %
Setaria sp. (1)	0.1 %
Phytolacca americana	0.1 %
Lathyrus martimus	0.1 %
Bare ground	22.0 %

No readings were taken in the borrow ditches or borrow areas on any of these lines. These areas plus spoil ditches, natural creeks, shallow sound flats and natural marshes will provide additional food supply for 1968-69 along with the Pamlico Sound Shoals.

II. WILDLIFE

A. Migratory Birds

1. Waterfowl

Waterfowl use days for 1968 show a slight decline over 1967 figures. Total use days for 1968 were 1,934,952 while 1967 figures show 2,573,736. This decline is partially due to a mild open fall.

Duck production for 1968 shows a slight increase over 1967 figures. Production still remained below the figures for the 1950's. Produced were: 5 mallard, 38 black duck and 194 gadwall. The 1967 production figure was: 134. The brood composition of the 240 ducks produced this year is as follows: 1 mallard, 8 black duck and 29 gadwall. Production was mainly limited to both fresh water impoundments.

2. Other Birds

Estimated use of the refuge by other birds as compared to 1967 was as follows:

	1967	1968
Marsh and Water Birds	98,740	66,308
Shorebirds, gulls, terns	485,420	516,200
Doves	770	1,348
Predaceous Birds	23,197	12,354
TOTAL	608,127	596,210

Colonial bird nesting in the rookeries was seriously disturbed by the June 1-3 storm system which passed through the area. Chicks were shaken from the nests or drowned by the heavy rain. A second nesting was undertaken and proved successful.

Shorebirds, gulls and terns were also disturbed by the same storm but renested with satisfactory results.

B. Upland Game Birds

The only upland game bird using the refuge is the ring-neck Pheasant with principal use from New Inlet to Oregon Inlet.

C. Big-Game Animals

The refuge has no big-game animals.

D. Fur Animals, Predators, Rodents and other Mammals

The refuge is used by muskrat, otter, mink and nutria. The most abundant is muskrat. Otter sightings are uncommon but slides and droppings are not uncommon. The sighting of nutria is rare and they are found north of the North Pond. Feral cats also use the refuge. No predation has been noted.

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

The Marsh and Sparrow Hawks are the most abundant frequent visitors

to the refuge. Fish crows are common during spring and summer.

F. Other Birds

Mr. Paul W. Sykes, Jr. and party conducted the annual Christmas census on the refuge. Figures have not yet been received on the results of this project.

G. Fish

Commercial fisherman used the New Inlet access area for fishing in Pamlico Sound. Bluefish, spanish mackeral, mullet, gray trout and speckled trout were taken with haul and set nets in a very successful season.

Both surf and bank sport fisherman made good catches of spot, flounder, trout and croaker. Sport fishing from the Bonner Bridge was heaviest during the summer visitor's season.

H. Diseases

An occasional Canada goose was observed suffering from what appeared to be lead poisoning.

A few greater snow geese were lost due to collision with the 34.5 K.V.W. high tension lines or by cars on N.C. 12.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

The New Inlet small boat access area was completed. A Marle parking area was also completed for use by small boat owners fishing in Pamlico Sound.

The National Park Service completed sand plugs to five drains in the sand flat area north of the North Pond in April to allow for development of this area into a salt water pond for aquatics.

A new Public Comfort Station, well and sanitation field were installed at the south dike of the North Pond in conjunction with the Park Service overlook. A parking area is under development at this same site.

158 tons of ground limestone was placed on the New Field.

Experimental strips were disced in the New Salt Pond to expose organic matter and increase vegetation. An experimental plot south of New Inlet was desired to control wax myrtle and to increase lesser growing vegetation for goose browse.

Fire lines were disced. Building and equipment maintenance was also carried out.

B. Plantings

1. Aquatics and Marsh Plants

None.

2. Trees and Shrubs

None.

3. Upland Herbaceous Plants

None.

4. Cultivated Crops

250 acres of ryegrass were planted in the New Field. This is the only planted crop at this refuge. 50# p/ac of seed and 250# p/ac of 10-20-20 was used for this work.

C. Collections and Receipts

Back Bay Refuge again provided shelled corn for the 1968-69 Banding Program. 223 bu. were recieved for this purpose.

D. Control of Vegetation

Spot treatment of typha domingensis and t. angustifolia in both impoundments was carried out in July. Treatment on these areas was with Dalapon at 18.5 lbs. a/c per acre. Cost per acre was $126.00.

E. Planned Burning

Fire lines were plowed from Oregon Inlet to the boundary line at Rodanthe. No burning had been done as of 12/31 due to wet grounds.

F. Fires

Nothing to report.

IV. RESOURCES MANAGEMENT

No resources harvesting permits were issued and no income from refuge resources was received. Fishing requires no permit since it is done in navigational waters.

V. FIELD INVESTIGATION OR APPLIED RESEARCH

Water salinity tests were continued on both impoundments with relation to sea salting from the March 1962 storm.

Soil Conservation Service and refuge personnel made additional experimental plantings on March 26, 1968 on the nesting bars within the North Impoundment. Plantings were made of the following:

Elymus villosus
Elymus virginicus
Hordeum bulbosum
Echinochloa holubii
Panicum amarulum

No evaluation of these plantings was made after planting since Mr. Karl E. Graetz, Plant Material Specialist, S.C.S., suffered a heart attack in September and has been unable as yet to return to the refuge.

Three dead greater snow geese were collected for Dr. T. E. Lundy, East Carolina University, Greenville, N.C. for study skins. Collection was at the direction of the Regional office.

Dr. Henry D. Haberyan, Wilson, N.C. operating on Scientific Collecting Permit No. 4-67-13, live trapped and banded non-game birds. This permit was extended for one year by Regional Director Carlson to permit additional activity by Dr. Haberyan.

Mr. William McVaugh, Jr., Homestead, Florida, operating on Permit No. 4-68-9, conducted research on nesting Colonial Birds during the spring and summer nesting periods. Mr. McVaugh will return for additional work prior to the 1969 nesting season.

Banding quotas for the 1967-68 season were:

Post-season Banding:
300 Canada geese
200 Black duck
No quotas on other ducks

Banding accomplishments were as follows:

300 Canada geese
200 Mallard
21 Ringneck
15 Pintail
1 Bufflehead
1 Redhead
6 Lesser Scaup

Banding was accomplished with the flying net traps on geese and walk-in type traps on ducks.

A duck nesting study centered around Gadwall production was conducted by Assistant Manager Holloman during the summer months. Breeding pair counts indicated a possible 50-60 pairs (1/2 black ducks, 1/2 gadwall, 1 mallard, 1 blue-winged teal). Five active nests were found but 30 broods were observed. Of the 240

young produced 82% were gadwall, 15% black duck and 3% mallard. The second phase of this study will be conducted during the summer of 1969. Messers Florschutz and Good assisted Mr. Holloman with this study, and the results have been reported to the Regional office as Wildlife Management Study No. 1, Project: Pea Island 1, 68-69.

VI., PUBLIC RELATIONS

A. Recreational Uses

Recreational uses center around the refuge impoundments, Oregon Inlet and the Atlantic Ocean shoreline. These diversified uses are jointly controlled by the Bureau and the National Park Service under the "Memoranda of Understanding". A summary of activities for the year is reported on Form 3-123 as part of this section.

The period of heaviest use is during the summer months and the lightest during the winter months due to extreme weather conditions. The visitor's log at the Field office and Manteo Refuge office show 848 visitations from the following states and foreign countries: Alabama 4; California 3; Connecticut 29; District of Columbia 23; Florida 5; Georgia 7; Illinois 12; Indiana 2; Kentucky 2; Maryland 50; Massachussets 17; Michigan 11; Mississippi 1; New Jersey 62; New York 68; North Carolina 257; Ohio 41; Oklahoma 2; Pennsylvania 41; South Carolina 14; Texas 4; Virginia 165; Washington 4; West Virginia 4; Wisconsin 5; Germany 6; England 4; Wales 1; Tiawan 2.

B. Refuge Visitors - Official

Date	Purpose	Name and Organization	Address
1/2	C	Robert I. Spake, N.C. Ext. Serv.	Manteo, N.C.
1/2	C	Mrs. Nellie G. Perry, N.C. Ext. Serv.	Manteo, N.C.
1/4	V	Carl C. Lamb, N.P.S.	Richmond, Va.
1/4	V	Robert D. Cheesman, N.P.S.	Manteo, N.C.
1/8	C	Steve Basnight,Jr., Dare Co. ESEA Title I	Manteo, N.C.
1/8	C	Philip House, Farm Home Admin.	Columbia, N.C.
1/8	E	C.S. Sawyer, S.C.S.	Columbia, N.C.

Date	Purpose	Name and Organization	Address
4/24	G	Hallie Gray, Home Ec. Extension agent	Manteo, N.C.
5/9	VT	Manteo High School Biology Class 21 students, 2 adults	Manteo, N.C.
5/13	VT	Hunter Hanting, Eu . Taiwan Forestry Bureau	Taipei, Taiwan
5/13	VT	E.C. Rudle, N.P.S.	Washington, D.C.
5/22	CI	Michio Oi, N.P.S. Japan	Toyko, Japan
5/22	CI	Harry A. Goodwin, U.S.F.W.S.	Washington, D.C.
5/22	CI	Gerald M. Nugent, U.S.F.W.S.	Washington, D.C.
5/22	CI	T. R. Swam, N.P.S.	Washington, D.C.
5/22	CI	V. J. Lucas, N.P.S.	Washington, D.C.
5/22	CI	Jerry D. Shimoda, N.P.S.	Hyde Park, N.Y.
5/28	C	Charles L. Lehming, Jr. S.C.S.	Raleigh, N.C.
5/28	C	W. O. Lambeth, S.C.S.	Edenton, N.C.
5/29	CI	C. Edward Carlson, U.S.F.W.S.	Atlanta, Ga.
5/29	CI	George J. Ross, U.S.F.W.S.	Edenton, N.C.
6/7	C	W. W. Harvey, M.D., Dare Co. Comm.	Manteo, N.C.
6/7	CI	Otis G. Pauley, U.S.F.W.S.	Atlanta, Ga.
6/7	CI	Henry P. Joyner, U.S.F.W.S.	Atlanta, Ga.
6/12	VT	Girl Scout Troop 512 - 35 girls and 5 adults	Richmond, Va.
7/31	CI	Ward W. Daniels, U.S.F.W.S.	Folkston, Ga.
7/15	V	E. M. Barry, Md. Game and Fish Comm.	Annapolis, Md.
7/17	C	T. R. Pike, Lt. JG, U.S.C.G.	Buxton, N.C.
7/17	C	H. L. Beacham, CWO-2, U.S.C.G.	Oregon Inlet, N.C.
7/31	CI	Larry W. Adcock, N.C. Wildlife Res. Comm.	Waynesville, N.C.
7/31	CI	J. P. Brown, N.C. Wildlife Res. Comm.	Hoffman, N.C.
7/31	CI	Sam F. Poole, N.C. Wildlife Res. Comm.	Kinston, N.C.
7/31	CI	Wen Jeffries, N.C. Wildlife Res. Comm.	Yanceyville, N.C.
7/31	CI	Charlie Woodhouse, N.C. Wildlife Res. Comm.	Holly Springs, N.C
7/31	CI	Ted R. Mitchell, N.C. Wildlife Res. Comm.	Raleigh, N.C.
7/31	CI	Clifford L. Sampson, N.C. Wildlife Res. Comm.	Candler, N.C.
7/31	CI	Thad Cherry, N.C. Wildlife Res. Comm.	Sanford, N.C.
7/31	CI	Tom Monschein, N.C. Wildlife Res. Comm.	Elkin, N.C.
7/31	CI	Grady F. Barnes, N.C. Wildlife Res. Comm.	Newbern, N.C.
7/31	CI	Andrew J. Weber, N.C. Wildlife Res. Comm.	Raleigh, N.C.

Date	Purpose	Name and Organization	Address
1/8	E	Steven S. Sawyer, student	Columbia, N.C.
1/8	E	Mrs. Nancy Whaley	Manteo, N.C.
1/8	E	Johnathan Whaley, student	Manteo, N.C.
1/9	VT	N.C. District Soil and Water Consv. meeting in NagsHead - 35 ladies Mrs. Rose G. Phillips, leader	Nags Head, N.C.
1/18	VT	John McLock, Cornell Univ.	Ithaca, N.Y.
1/18	VT	Sam Patton, Cornell Univ.	Ithaca, N.Y.
1/18	VT	Thomas D. Cain, Cornell Univ.	Ithaca, N.Y.
1/23	VT	Cub Pack 161, BSA - 21 Cub Scouts and 7 adult leaders - Bill Guard, Leader	Kitty Hawk, N.C.
1/27	VT	George L. Richardson, WVEC-TV	Hampton, Va.
1/27	VT	Larry Hope, WVEC-TV	Hampton, Va.
1/27	VT	Louis B. Ensly, WVEC-TV	Hampton, Va.
1/27	VT	Thomas R. Sutton, WVEC-TV	Hampton, Va.
2/7	E	Mrs. Virginia P. Wescott	Manteo, N.C.
2/7	E	J. Stewart Wescott, student	Manteo, N.C.
2/7	E	Mrs. Gerald Perry	Kitty Hawk, N.C.
2/7	E	L. Michael Harrell	Kitty Hawk, N.C.
2/9	VT	Bill Ellis, National Geographic	Washington, D.C.
2/14	C	John Lively, N.C. Forest Service	Manteo, N.C.
2/17	VT	Richmond Natural Historical Society 16 members - F.R. Scott, leader	Richmond, Va.
2/19	CI	Otto Florschutz, U.S.F.W.S.	Washington, N.C.
2/27	C	Gaylord Godwin, Coastland Times Publishing Co.	Manteo, N.C.
3/2	VT	4-H Oaks, 4-H Club, 12 members, 4 edults, Johnny B. Hooper, leader	Salvo, N.C.
3/2	VT	Cub Pack 151, BSA - 40 Scouts and adult leaders, John Lively, leader	Manteo, N.C.
3/5	E	Maywood Lee, student	Manteo, N.C.
3/11	CI	Victor W. Kay, U.S.F.W.S.	Atlanta, Ga.
3/12	CI	Edward W. Aschman, N.P.S.	Richmond, Va.
3/12	CI	Chester L. Brooks, N.P.S.	Washington, D.C.
3/12	CI	R.S. Leding, N.P.S.	Washington, D.C.
3/12	CI	Arthur Beyer, N.P.S.	Philadelphia, Pa.
3/19	CI	Walter O. Stieglitz, U.S.F.W.S.	Atlanta, Ga.
3/19	CI	Phillip G. VanDyck, U.S.F.W.S.	Atlanta, Ga.
3/19	CI	Eugene M. Smith, U.S.F.W.S.	Atlanta, Ga.
3/26	C	Karl E. Gratz, S.C.S.	Raleigh, N.C.

Date	Purpose	Name and Organization	Address
7/31	CI	Charles E. Hill, N.C. Wildlife Res. Comm.	Morganton, N.C.
7/31	CI	R. H. Eggleston, N.C. Wildlife Res. Comm.	Burlington, N.C.
7/31	CI	Hal S. Atkinson, Jr., N.C. Wildlife Res. Comm.	Lumberton, N.C.
7/31	CI	J. M. Collins, N.C. Wildlife Res. Comm.	Morganton, N.C.
7/31	CI	George Burdick, N.C. Wildlife Res. Comm.	Colerain, N.C.
7/31	CI	T. Steward Critcher, N.C. Wildlife Res. Comm.	Raleigh, N.C.
7/31	CI	Frank B. Barick, N.C. Wildlife Res. Comm.	Raleigh, N.C.
7/31	CI	David L. Taylor, N.C. Wildlife Res. Comm.	Albemarle, N.C.
8/8	V	John F. Hardister, U.S.F.W.S.	Raleigh, N.C.
8/10	V	L. T. Quay, N.C. State Univ.	Raleigh, N.C.
9/1	CI	Peter Hope Jones, Dyffryn Ardudwy	Merioneth, North Wales
10/16	CI	George L. Wiseman, U.S.F.W.S.	Atlanta, Ga.
11/2	VT	Lenoir Co. Community College, 18 college science club members	Kinston, N.C.
11/2	VT	Pembroke State College, 22 college science club members	Pembroke, N.C.
11/20	VT	Chmelf L. Parson, BBC Natural History Unit	Bristol, England
11/20	VT	Luther C. Goldman, U.S.F.W.S.	Washington, D.C.

Visitation Code is as follows:

C - Cooperation
V - Visitation
VT - Visitation and Tour
CI - Conference and Inspection
E - Equal Employment Opportunity

C. Refuge Participation

Refuge Manager Good taught an American Red Cross Standard First Aid Course for 21 members of the Manteo Fire Department in January. He

also gave a colored slide talk to 21 club members of the Outer Banks Garden Club in Nags Head.

Refuge Manager Good served as consultant to the North Carolina Department of Community Colleges, Raleigh, on August 27 relative to establishment of a cirriculum known as Wildlife Management Technology at Haywood Technical Institute, Clyde and Wayne Community College, Goldsboro.

A colored slide talk was given by Mr. Good to the Cape Hatteras Garden Club, Frisco, on October 11 to 54 club members and guests.

Mr. Good served as consultant to the Pamlico Soil and Water Conservation District at their meeting on November 13 with the Soil Conservation Service River Basin - Water Shed Planning team, Raleigh.

All male memoers of the refuge staff attended monthly meetings of the Dare County Peace Officers' Association, Manteo. Mr. Holloman was treasurer for the year.

Mr. Good attended the monthly meetings of the Technical Action Panel (TAP) throughout the year.

Refuge guided tours were conducted throughout the year and are recorded in the list of official visitors.

From time to time, stranded motorists were assisted by staff personnel when they were trapped by high tides traveling the highway through the Refuge.

B. Hunting

No hunting is permitted on the refuge.

The National Park Service operated a controlled public hunt on Bodie Island three miles North of the refuge. A summary of the 1967-68 season is as follows:

Hunters	Geese	Ducks	Coot	Total	Killed/Hunter ratio
1,646	27	1,540	12	2,427	.96

E. Violations

No violation cases were made on the refuge during the year.

F. Safety

There were no accidents during the year. The last lost time accident occurred on January 21, 1959.

Storm suits, boots and gloves were replaced as required. A GRAMCO safety canopy was installed on the Case 310 E tractor. Quarterly fire inspections were made.

Monthly safety meetings were held. Discussion leaders and subjects were as follows:

Date	Leader	Subject
1/29	Mr. Good	Cannon net firing mechanisms.
2/29	Mr. Good	Safe practices for driving on ice and snow.
3/29	Mr. Toler	Safe material handling.
4/20	Mr. Good	Booklet "How to Survive in the Age of Discovery".
5/24	Mr. Good	Material from RO dealing with safety shoes.
6/21	Mr. Good	Mr. Brook's death as reported in Mr. Givens' memorandum of 6/14/68.
7/31	Mr. Good	Administrative Manual, Atlanta Regional Release 24-4, dealing with motor vehicle operation.
8/30	Mr. Good	Material hauling from Dray Publications, Deerfield, Mich.
9/30	Mr. Holloman	Truck operation with material on pallets.
10/31	Mr. Good	Fire prevention at home and at work.
11/27	Mr. Good	Controlled burning methods and precautions.
12/31	Mr. Good	Region 4 "Safety" memo 70 dealing with Region 4 accidents.

VII. OTHER ITEMS

A. Items of Interest

Mr. Jerry L. Holloman, Assistant Refuge Manager, made a lateral transfer to Noxubee N.W.R., Brooksville, Mississippi on December 20.

Mrs. Helene A. McGinnis, clerk-typist, was changed from (conditional-intermittent) to part-time by the Regional office.

B. Photographs

Photographs for the year follow the signature.

C. Signature

Date completed February 6, 1969.

Respectfully submitted,

William C. Good

William C. Good, Refuge Manager

Approval:

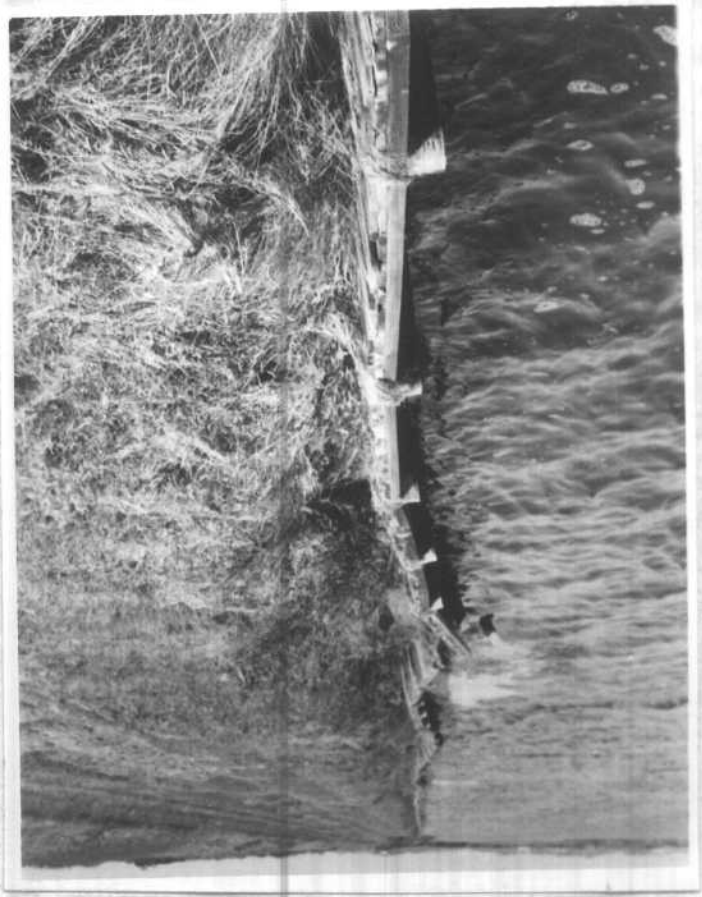
Walter O. Stieglitz

Assistant Regional Supervisor

FEB 10 1969

Drift on North Impoundment Berm from
October 19-20 Southwester

Damage to Wakefield Wall of North
Impoundment from October 19-20 Southwester



Closeup of Damage to Wakefield Wall

Broken Wakefield Wall with associated
washout of dike berm

New Saltwater Impoundment showing North
Pond Dike in foreground

New Saltwater Impoundment with Trapped
Pamlico Sound Water

New Walk-in duck trap in North Pond

Mr. Toler with ducks in holding box
taken in walk-in trap

Holding and transport boxes with ducks
from walk-in trap

New Saltwater Impoundment showing test
discing strips in old wash
flats

Closeup of disc cut in New Saltwater Impoundment wash flat. Turned material on left.

Damaged Wakefield Wall, South Impoundment, from October 19-20 Southwester

Close-up of damaged South Impoundment
Wakefield Wall looking West

Close-up of damaged South Impoundment
Wakefield Wall looking East

New Public Comfort Stations

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

WATERFOWL

REFUGE [illegible] MONTHS OF [illegible] 1 TO [illegible] 30, 19[illegible]

(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,[illegible]	3,300	2,100	1,[illegible]	1,7[illegible]	1,[illegible]	1,[illegible]	[illegible]	[illegible]
Cackling										
Brant										
White-fronted										
Snow	1,7[illegible]	5,1[illegible]	[illegible]	1,[illegible]	1[illegible]	25	75	25	50	25
Blue	1[illegible]		10							
Other										
Ducks:										
Mallard	150	200	150	125	150	150	150	50	35	50
Black	350	1,[illegible]	1,[illegible]	1,150	1,125	1,12[illegible]	1,1[illegible]	1,[illegible]	[illegible]	[illegible]
Gadwall	50	75	150	300	250	300	300	250	200	150
Baldpate	125	250	350	500	500	400	300	250		50
Pintail	2,500	2,500	2,[illegible]50	1,200	700	350	500	500	225	150
Green-winged teal	300		450	1,500	1,000	700	750	450	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,[illegible]	500	500	500	200			
Canvasback	20									
Scaup	150	1,500		1,100	500	500	400	350	100	150
Goldeneye			2,[illegible]	1,500						
Bufflehead	200	550	500	250	250	250	250	200	100	200
Ruddy	250	300	600	300	300	300	300	300	75	100
Other hooded merg.	35		65	50	35	15	50	25		
Redbreasted merg.			10	30	25	25	20	25		10
Mid.	300	5,000	300							
Coot	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, 1966

(1) Species	(2) Weeks of reporting period: 11	12	13	14	15	16	17	18	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:											
Whistling	30								1,047		
Trumpeter											
Geese:											
Canada	500	1,190	75	175	125	100	100	10	162,370		
Cackling											
Brant											
White-fronted											
Snow	60	75	50	30	12				112,281		
Blue	2								144		
Other											
Ducks:											
Mallard	25	6	12	8	2	6	6	4	3,733		
Black	725	620	875	400	201	300	310	200	90,399		
Gadwall	125	95	120	112	83	31	95	90	15,975		
Baldpate		10	10			10			[illegible]		
Pintail	100	4	13	4	6				75,000		
Green-winged teal	200	105	275	200			75	50	67,250		
Blue-winged teal	50	2	5	20	37	40	30	30	1,300		
Cinnamon teal											
Shoveler	175	85	80	25	10				10,200		
Wood											
Redhead									7,350		
Ring-necked	50	25	15						25,130		
Canvasback									120		
Scaup	100			25					33,975		
Goldeneye									21,500		
Bufflehead	225	25	20	12	25	5			20,000		
Ruddy	100	50	10						20,845		
Hooded Merg.		5							1,260		
Red-breasted Merg.	50	10	65	20	30	50			2,730		
Coot:	60	54		100	100	100	75	50	15,098		
Unid.									38,900		

(Over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	1,647	125	
Geese	261,778	7,713	
Ducks	164,859	13,000	
Coots	15,098	500	

SUMMARY

Principal feeding areas Impoundments, fresh and salt marshes, ryegrass field and Pamlico Sound shoals..

Principal nesting areas

Reported by William C. Ford
William C. Ford, 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).

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge [illegible] Months of [illegible] to [illegible], 19[illegible]

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
[illegible]-necked pheasant	[illegible]ikes, wax myrtle thickets, [illegible]plands and marshes (1125 acres)	11.25	[illegible]		1[illegible], 3[illegible]		[illegible]		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 Population
								Share Trapping						
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	
Muskrat	Impoundments and adjacent marsh areas (1,500 acres)	1.5	N	O	N	N								1,000
Otter	Entire Refuge and associated tidal creeks (5,880 acres)	294	N	O	N	N								20
Nutria	Same as for muskrat (1,500 acres)	1.5	N	O	N	N								100
Mink	Entire Refuge (5,880 acres)		N	O	N	N								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 headingslisted.

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

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

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

32715

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

WATERFOWL

REFUGE [illegible] MONTHS OF [illegible] TO [illegible], 19[illegible]

(1) Species	(2) Weeks of reporting period 1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	[illegible]	[illegible]	[illegible]	[illegible]	11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			
Black	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Gadwall	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Baldpate										
Pintail						[illegible]		[illegible]	[illegible]	[illegible]
Green-winged teal	[illegible]									
Blue-winged teal	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
Coot:	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]

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

WATERFOWL
(Continuation Sheet)

REFUGE PEA ISLAND MONTHS OF Aug 1, 1968 TO August 31, 19 68

(1) Species	(2) Weeks of reporting period: 11	12	13	14	15	16	17	18	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimate total
Swans:											
Whistling											
Trumpeter											
Geese:	2	11	11	11	12	12	11	11	1,388		
Canada											
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:	1				3		2		135	1	5
Mallard	15	37	40	81	151	176	100	170	10,235	8	38
Black	24	56	50	60	103	77	95	85	6,793	27	197
Gadwall											
Baldpate								100	756		
Pintail									200		
Green-winged teal	3			22	100	25	200	300	5,055		
Blue-winged teal											
Cinnamon teal											
Shoveler											
Wood											
Redhead											
Ring-necked											
Canvasback											
Scaup											
Goldeneye											
Bufflehead											
Ruddy											
Other											
	4								555		
Coot:											

(over)

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

SUMMARY

Principal feeding areas entire refuge, Pacifico 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, 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).

Interior Duplicating Section, Washington, D. C. 37944
1953

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	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total
Common Name	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
Gannet	3	1-1	400	3-29	400	3-29				17,200
Double-crested Cormorant	200	3-12	200	3-12	100	4-27				7,050
Great Blue Heron	4	1-2	16	1-21	2	4-30				340
Green Heron	2	4-11	2	4-11	2	4-30				40
Little Blue Heron	3	4-11	24	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				10,800
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				94,450
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)	50	4-5				750

(1)	(2)		(3)		(4)		(5)		(6)
III. Doves and Pigeons:									
Mourning dove	1	2-26	2	4-30	2	4-30			123
White-winged dove									
IV. Predaceous Birds:									
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 John P. Ford, Refuge Mgr.

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

(2) First Seen: The first 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 68

(1) Species	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Use
I. Water and Marsh Birds:										
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	3,913
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	14	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	18	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
II. Shorebirds, Gulls, and Terns:										
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
Lg. 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)				(5)		(6)
III. Doves and Pigeons:									
Mourning dove	3	5-6	15	7-17	2	8-31			826
White-winged dove									
IV. Predaceous Birds:									
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 [illegible]

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

(2) First Seen: The first 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 1968

(1) Species	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Use
I. Water and Marsh Birds:										
Great Blue Heron	4	9-1	4	9-1	1	12-19				275
Green Heron	2	10-4	2	10-4	2	10-4				2
Little Blue Heron	25	9-3	25	9-3	10	10-4				543
Cattle Egret	24	9-3	24	9-3	3	10-4				419
Common Egret	13	9-3	13	9-3	5	12-13				909
Snowy Egret	20	9-3	20	9-3	2	12-13				1,111
La. Heron	10	9-3	10	9-3	1	12-9				534
Blk-Crowned Night Heron	5	9-3	5	9-3	4	12-5				419
Yellow Crowned Night Heron	2	9-23	2	9-23	1	10-4				18
American Bittern	2	10-10	2	10-10	1	12-5				84
Glossy Ibis	9	9-1	9	9-1	1	10-4				170
II. Shorebirds, Gulls, and Terns:										
Ls. Yellowlegs	4	9-17	10	10-4	2	11-4				261
Dowitcher	100	9-3	100	9-3	25	10-4				1,938
Am. Avocet	65	9-3	65	9-3	10	11-26				3,150
Gr. Black-backed Gull	25	9-3	50	12-19	50	12-19				4,013
Herring Gull	500	9-3	500	9-3	300	12-19				42,800
Ring-billed Gull	50	9-17	500	11-15	400	12-19				29,798
Laughing Gull	100	9-3	100	9-3	75	11-4				5,515
Forster's Tern	25	11-15	25	11-15	25	11-15				25
Black Skimmer	150	9-3	250	10-24	50	11-4				9,450

(over)

(1)	(2)		(3)				(5)		(6)
III. Doves and Pigeons:									
Mourning dove	2	9-3	10	10-23	1	12-3			399
White-winged dove									
IV. Predaceous Birds:									
Golden eagle									
Duck hawk									
Horned owl									
Magpie									
Raven									
Crow									
Sharp-skinned Hawk	2	10-15	2	10-15	2	10-15			2
Red-tailed Hawk	1	11-19	1	11-19	1	11-19			1
Marsh Hawk	1	9-17	5	10-7	2	12-19			251
Osprey	1	9-17	9	10-7	1	10-24			140
Pigeon Hawk	2	9-12	5	10-10	1	10-22			110
Sparrow Hawk	1	9-20	20	10-15	2	12-19			698

Reported by Wm. C. Bond

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

(2) First Seen: The first 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 Type	Acreage		(3) Use-days	(4) Breeding Population	(5) Production
Unit 1. South boundry to New Inlet	Crops	0	Ducks	149,506	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	447		
	Water	13,732	Coots	5,891		
	Total	16,052	Total	128,680		
Subtotals for the refuge.	Crops	320	Ducks	1,281,519		
	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.

Interior Duplicating Section, Washington, D. C. 27580

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge [illegible] Months of [illegible] 1 to [illegible] 31, 19[illegible]

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	Dikes, [illegible] myrtle growth, uplands and marshes	22	20	100	[illegible] - 31	[illegible]	[illegible]		250	Estimates based on observations during moving operation of like terms and the [illegible] 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.

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

WATERFOWL

REFUGE Pea Island MONTHS OF September 1 TO December 31, 1968

(1) Species	(2) Weeks of reporting period 1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling								11	75	175
Trumpeter										
Geese:										
Canada	11	13	13	13	50	535	500	875	1,000	1,200
Cackling										
Brant										
White-fronted										
Snow						7		7	600	1,000
Blue									15	25
Other										
Ducks:										
Mallard	2	5	10	20	25	50		35	25	100
Black	185	160	206	310	500	435	390	650	675	700
Gadwall	70	50	30	20		2				
Baldpate				200	2,000	10,000	9,000	7,000	5,000	4,500
Pintail	350	1,100	3,500	4,000	5,550	7,000	6,525	6,000	3,500	3,000
Green-winged teal					900	1,000	800	1,000	800	750
Blue-winged teal	600	900	500	1,510	1,925	40	25			50
Cinnamon teal										
Shoveler							10		50	50
Wood						4		25		
Redhead								5		
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead									25	250
Ruddy					5	6	5	5	75	
Other Com. Scooter										275
Red.b. Merganser										
Hooded Merganser										
Am. Coot			20	25	50	50	150	350	1,200	1,600

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

WATERFOWL
(Continuation Sheet)

REFUGE Pea Island MONTHS OF September 1 TO December 31, 1968

(1) Species	(2) Weeks of reporting period 11	12	13	14	15	16	17	18	(3) Estimated waterfowl days use	(4) Production Broods seen	Estimated total
Swans:											
Whistling	200	375	400	400	300	100	75	50	14,927		
Trumpeter											
Geese:											
Canada	1,375	1,125	1,400	1,400	1,800	2,100	2,250	2,100	115,920		
Cackling											
Brant											
White-fronted											
Snow	2,100	1,450	7,000	7,000	6,000	6,500	7,000	7,000	291,648		
Blue	15	15	15	15	15	15	15	15	1,060		
Other											
Ducks:											
Mallard	50	25	50	50	50	75	75	75	4,754		
Black	700	625	700	750	775	1,600	1,600	1,300	80,627		
Gadwall	5	65			10				1,764		
Baldpate	3,500	1,200	1,000	800	600	600	600	450	47,350		
Pintail	3,000	850	1,500	1,000	800	1,000	1,150	1,300	352,675		
Green-winged teal	500	350	400	400	300	500	500	500	58,900		
Blue-winged teal	50								39,200		
Cinnamon teal											
Shoveler	75		100	75	50	300	300	300	7,970		
Wood		24							371		
Redhead		25			25	200	200	200	3,785		
Ring-necked		5	50	75	75	100	150	150	3,635		
Canvasback		5				25		25	285		
Scaup		150	200	200	300	500			9,450		
Goldeneye											
Bufflehead	200	350	400	400	400	750	650	600	25,775		
Ruddy	250	175	200	200	150	300	300	300	11,197		
Other Com. Scooter									1,925		
Red-b. Merganser	150	50			25	50	50	50	2,365		
Hooded Merganser		10		20	15	75	50	50	1,340		
Coot:	1,500	1,675	1,700		1,500 (Over)	1,200	1,300	1,100	89,540		

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	14,927	400	
Geese	408,628	9,265	
Ducks	653,358	18,537	
Coots	89,540	1,700	

SUMMARY

Principal feeding areas Pamlico Sound shoals, Fresh water impoundments, salt marshes, sand dunes and ryegrass.

Principal nesting areas

Reported by

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).

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Pea Island Months of Sept. 1 to December 31, 19 68

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	Dikes, myrtle growth, uplands and marshes (1125) acres	3.74			1M - 4F	NONE	-	-	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.

3-1753
Form NR-3
(June 1945)

BIG GAME

Refuge **Pea Island** Calendar Year **1968**

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

Remarks:

Reported by Wm C. Ford

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.

17060

3-1755
Form NR-5

DISEASE

Refuge Pea Island Year 19 68

Botulism

Period of outbreak _____

Period of heaviest losses _____

Losses:

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

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

Areas affected (location and approximate acreage) _____

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

Condition of vegetation and invertebrate life _____

Remarks _____

Lead Poisoning or other Disease

Kind of disease Winter kill and lead poisoning

Species affected Snow and Canada geese

Number Affected

Species	Actual Count	Estimated
Snow geese	10	40
Canada geese	5	20

Number Recovered _____

Number lost _____

Source of infection _____

Water conditions Adequate

Food conditions Ryegrass fields heavily browsed. Native foods adequate on wild pastures and in Pamlico Sound.

Remarks Some snow goose loss due to impact with power line and highway accidents. No disease loss.

Bureau of Sport Fisheries and Wildlife
Division of Wildlife Refuges

MONTHLY PUBLIC USE REPORT

SUMMARY OF PUBLIC USE

Refuge name: **Pea Island**

State: **North Carolina**

(This block completed by Washington Office)

State Code 33 (1-2) | Congressional District Code 01 (3-4) | Refuge Code 440 (5-7) | Report Period Yr. Mo. (8-11) **Calendar Year 1968**

(Card Columns) 12-13		14-18	19-25
ACTIVITY	Code	VISITS FOR THE MONTH Total Number	Total Hours
Hunting: Big Game	01		
Upland Game	02		
Waterfowl	03		
Other Migratory	04		
Bow	05		
Fishing: Salt Water	06	26,091	103,610
Warm Water	07		
Cold Water	08		
Bird and Animal Calling	09		
Wildlife Photography	10	335	1,712
Wildlife Observation	11	15,787	25,799
Dog Training	12		
Field Trials	13		
Wildlife Trails and Walks	14	7,465	11,261
Wildlife Tours	15	197	378
Wildlife Scenic Veh. Rts.	16		
Camping (related to above)	17		
Picnicking (related to above)	18		
Wildlife Interpretive Center	19	2,876	1,438
*Miscellaneous Wildlife	20	5,397	10,794
Beach combing			

(Card Columns) 26-27		28-32	33-39
ACTIVITY	Code	VISITS FOR THE MONTH Total Number	Total Hours
Swimming	21	10,641	31,123
Boating	22		
Water Skiing	23		
Camping	24	16,608	398,592
Group Camping	25		
Picnicking	26	6,116	6,116
Horseback Riding	27		
Bicycling	28		
Skiing, Sledding, etc.	29		
Ice Skating	30		
Fruit, Nut & Veg. Collecting	31		
Non-Recreational Use (inspections, audits, etc.)	32	83	309
Actual Visits	33	91,758	
Peak Load Day	34	1,070	
* Miscellaneous Non-Wildlife	35	564	4,224
Tel. Cable installation			
Highway maintenance			
Refuge Construction			

Form 3-123
(March 1968)

*Use blank spaces to indicate the types of activities summarized under miscellaneous codes 20 and 33.

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

(1)

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

Refuge Pea Island Year 19 68

	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
Species	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
panicum amarulum	3,000' row	R	3/26	SCS	nc	0	Bar #1	strip	3,000'		3/26	see below	
p. amarulum and Am. beachgrass BN 8360	3,800' row	R	3/26	SCS	nc	0	Bar #4	strip	3,800'		3/26	see below	
Wax myrtle	350'	R	3/26	SCS	nc	0	Bar #4	strip	350'		3/26	see below	
p. amarulum (Kill Devil Hills)	175'	R	3/26	SCS	nc	0	Bar #4	strip	175'		3/26	see below	
Echinochloa holubii (MS 924)	600'	R	3/26	SCS	nc	0	Bar #4	strip	600'		3/26	see below	
Hordeum bulbosum BN 13718	200'	R	3/26	SCS	nc	0	Bar #4	strip	200'		3/26	see below	

(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: _____

(cont.)

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

(1)

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

Refuge Pea Island Year 19 68

	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
Species	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
Hordeum bulbosum BN 1338, BN 3569, BN 1916	525'	R	3/26	SCS	nc	0	Bar #4	strip	525'		3/26	see below	
Elymus villosus	450'	R	3/26	SCS	nc	0	Bar #4	strip	450'		3/26	see below	
Elymus virginicus	150'	R	3/26	SCS	nc	0	Bar #4	strip	150'		3/26	see below	

(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: The nesting bars within the north impoundment were numbered from West to East. The western most bar was #1. The eastern most bar was #5. All plantings are tests and are discussed in V. of this report.
Readings relative to survival not made due to illness of Mr. Karl Gratz, SCS.

3-1756
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge **Pea 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 Waterfowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
Annual Ryegrass							250	**Annual ryegrass for winter goose browse**	250
								(Farming accomplished by refuge personnel)	
								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				250
Hay - Wild				2. Acreage Cultivated as Service Operation				250

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.

INT.-DUP. SEC., WASH., D.C.91767

3-1570
NR-8a

REFUGE GRAIN REPORT

Refuge Pea Island Months of January through December, 1968

(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 hybrid corn	200 bu.	223bu.	423 bu.			200 bu.	200 bu.	223 bu.		200 bu.	
COMMON RYE GRASS		12,500#	12,500#		12,500#		12,500#	0			

(8) Indicate shipping or collection points Back Bay Refuge

(9) Grain is stored at Pea Island Field Headquarters

(10) Remarks For trapping purposes

*See instructions on back.

REFUGE GRAIN REPORT

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

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

(1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR–9.

(3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.

(4) A total of columns 2 and 3.

(6) Column 4 less column 5.

(7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.

(8) Nearest railroad station for shipping and receiving.

(9) Where stored on refuge: "Headquarters granary," etc.

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

3-1761
Form NR-11
(2/46)

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
Nothing to report.								

Total acreage cut over.....

Total income.....

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

Cords.....

Ties.....

.....

Method of slash disposal.....

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PERSTICIDE APPLICATION

Refuge	Proposal Number	Reporting Year
Pea Island	1	1968

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)
7/15 - 7/26	Cattail	North and South Ponds, USCG Station and ditches and bar pits along N.C. Highway #12.	3	Dalapon (2, 2 Dichloropropionic Acid)	~~18 lb.~~ 60 lb.	18.5 lb. ac. sq.	~~90~~ 270 gal. water	gun jet

10. Summary of results (continue on reverse side, if necessary) (1) .20 inches rainfall on 7/15 and .07 on 7/20. (2) 7/25 drooping and leaf spot noted on first treated plants. (3) 9/16 85 to 90% apparent kill with no regrowth. (4) 9/30 95% apparent kill. (5) Chemical cost $20.00. Equipment and labor $318.00. Per acre cost $126.00. Approximately 1,500 acres were checked for spot cattail growth with 3 acres being actually treated. Resulting in a fairly high per acre cost.

35500

Glidden

ARCHITECTURAL

PRODUCTS DIVISION

MONOSTRUCTURE

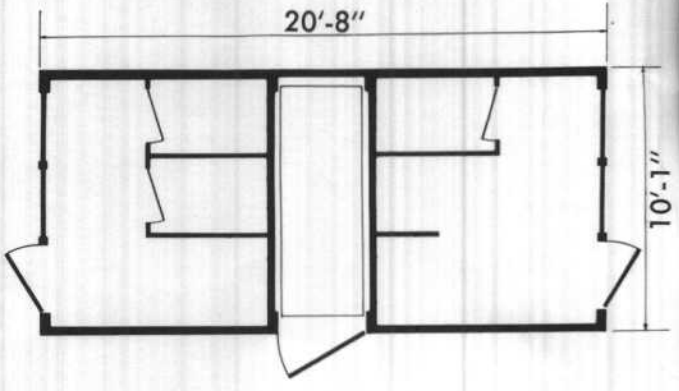
Packaged Building Unit

INSTANT COMFORT STATION

A PACKAGED COMFORT STATION

DESIGNED FOR REST AREAS IN PARKS, CAMPS AND THRUWAYS.

Uniquely new in architectural concept . . . factory engineered for quick, easy assembly even in remote areas!



A

Building package is delivered to site ready for immediate assembly on concrete foundation. Prefabricated package is an advantage because unit can be delivered and erected even in inaccessible areas!

B

Components are engineered so perfectly that assembly is fast and easy even with unskilled labor. The main load bearing members, prefinished plywood boxed beams and columns are quickly joined.

C

The wall, and roof panels, and interior partitions are quickly installed to complete erection of structure, ready for installation of plumbing.

a packaged building unit for quick, easy, on-site erection

A structurally superior comfort station offering an unbeatable number of advantages: contemporary design, superior construction, freedom from maintenance, and fast, easy assembly!

Impervious, hard surfaced, sandwich panels of acrylic modified polyester require minimum maintenance and care. Panels are termite free, rotproof, rustproof. Non-absorbent surfaces are easily cleaned and will not retain odors. No painting or surface preparation required!

Structurally sound, load-bearing sandwich panels are durable, weather resistant and provide insulation. They are stabilized against ultra-violet degradation, and capable of withstanding wind loads of conventional proportions! Easily assembled, quickly, efficiently, economically by unskilled labor because each component is produced to exact tolerances, resulting in proper fitting joints, no wasted motion, no lost time at job site! Reduces number of joints, number of pieces, and number of processes in erection! Actually cuts expenses by reducing costs of shipping, handling, and the labor of assembling as compared to heavier masonry construction materials. One wall panel saves the time and labor of laying approximately 48 concrete blocks, providing a maintenance free wall with many qualities superior to those of masonry construction!

Easily delivered to remote areas, impossible and difficult to reach with other construction materials. Perfect for public areas, such as, metropolitan parks, thruways, camps, roadside parks, beaches, amusement parks, trailer camps, playgrounds, school and athletic fields.

MONOSTRUCTURE PANELS

Monostructure paneling is distinguished from other large one-piece plastic sheets of building material by its sandwich structure. It is structurally stronger because two large sheets of plastic building material are molded to a lightweight core sandwiched between them. This construction provides an unusually strong and structurally sound building panel. The Monostructure Instant Comfort Station consists of two types of sandwich paneling.

for the skylights . . . PANELUX

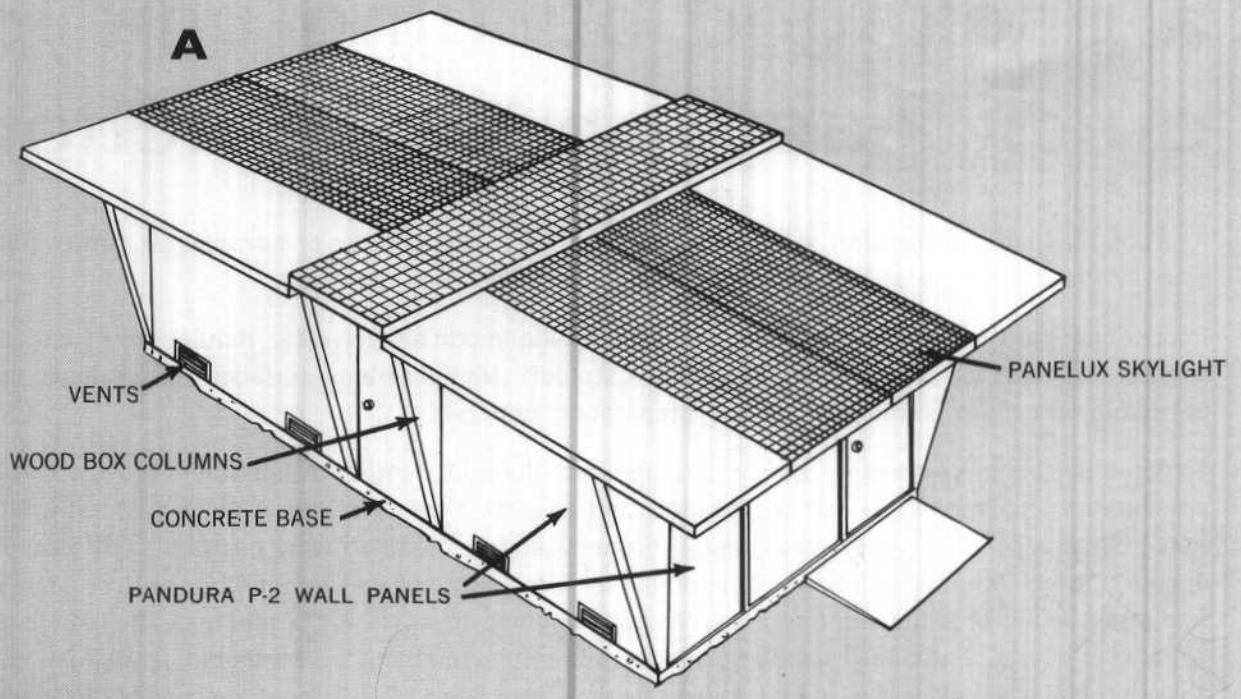
A load-bearing, high strength, translucent structural sandwich panel that makes up part of the roof, functions as a skylight. Its faces of acrylic modified polyester are reinforced with glass fiber and molded to a rectilinear pattern core of chemically treated, reinforced cellulose. It is shatterproof, has high thermal insulating properties, and offers controlled light diffusion. Further distinction may be given to the design through the optional use of color cells placed at random.

for the walls, roof, and interior partitions . . . PANDURA P-2

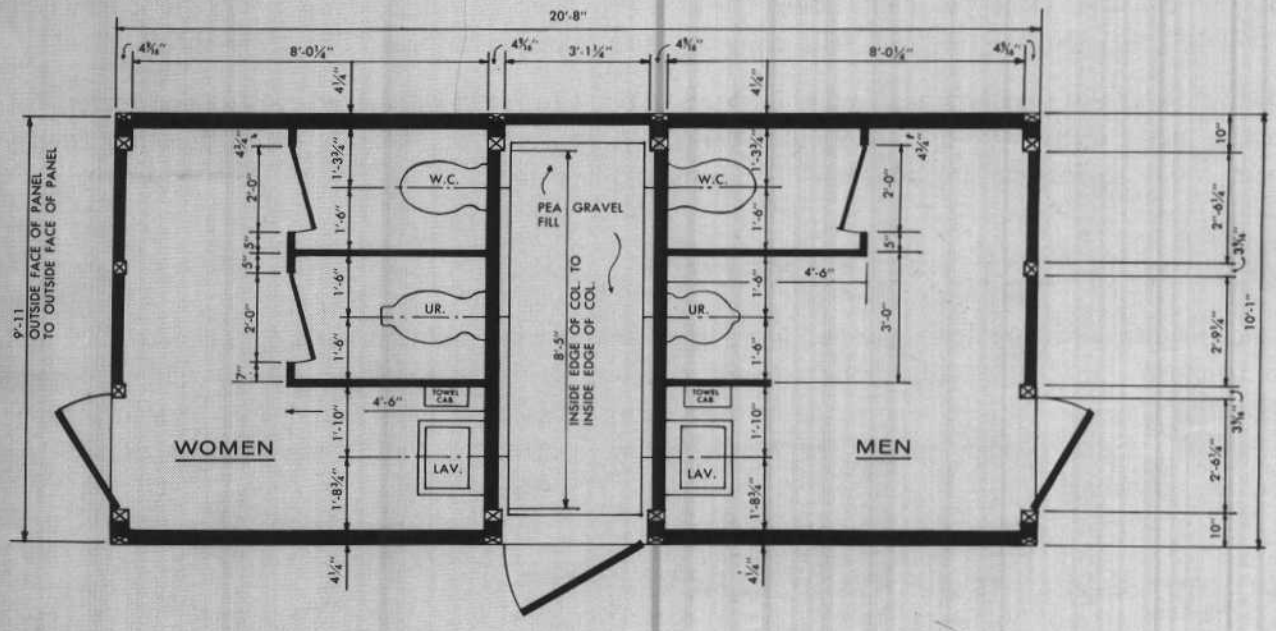
A load-bearing, high strength, opaque, structural sandwich panel which functions as walls, as part of the roof, and also as interior partitions. Its faces are acrylic modified polyester, reinforced with glass fiber. The plastic faces are molded to a plywood core. Color is actually molded into this chemical and weather resistant surface. Pandura P-2 imparts an unusually high degree of hardness and abrasion resistance.

Drawing A below, illustrates the way Panelux and Pandura P-2 panels have been used to achieve an efficient roof, that lets in light and resists exterior elements. Drawing B illustrates the floor plan of this advanced comfort station.

A



B



For further information contact:

Glidden ARCHITECTURAL PRODUCTS DIVISION

THE GLIDDEN COMPANY

STATION N • P. O. BOX 19923 • ATLANTA, GEORGIA 30325

JAN INDUSTRIES, INC.
Architectural Products Division

MONOSTRUCTURE -
INSTANT COMFORT STATION

PRICE LIST NO. 104
Effective 10/1/67
(Prices and specifications subject to change without notice).

Stock #	Capacity (See Note #2)	Outside Dimensions	Approximate Shipping Wt.	PRICE*
MS-4	4 flush units (standard: 2 waterclosets, 2 urinals) 2 lavatories	10'4"x20'10"	5,400 lbs.	$4,030.
MS-6	6 flush units (standard: 2 water closets, 4 urinals) 2 lavatories	13'4"x20'10"	6,900 lbs.	4,860.
MS-8	8 flush units (standard: 4 water closets, 4 urinals) 4 lavatories	19'4"x20'10"	7,500 lbs.	5,790.
MS-10	10 flush units (standard: 5 water closets, 5 urinals) 4 lavatories	22'4"x20'10"	8,200 lbs.	6,772.

NOTE:

1. Unit prices include all necessary building panels, partitions and doors as shown in detail drawings as well as related accessories: Box columns and beams, trim lumber, louvers, screening, caulking and complete hardware for doors and toilet partitions.

2. Standard units shipped with PANELUX Translucent roof panels in 3"x6" grid with combination of emerald and blue color cells spaced at random. Plumbing area roof panels manufactured only with 3"x3" cell without color. Standard PANDURA colors are Glade Green, #200; Tanbark, #300 and White, #100.

3. To be furnished by others: Plumbing fixtures and accessories, rough plumbing material, construction of the concrete slab foundation and labor.

*TERMS: 1% 10th Day, Net 30
F.O.B. Atlanta, Georgia