

Pea Island National Wildlife Refuge

Narrative Report

January 1 to December 31, 1964

Refuge Personnel

William C. Good	Refuge Manager
Houston C. Phillips	Wildlife Aid
Marvin C. Toler	Maintenanceman
Mrs. Valerie C. Good	Clerk-Typist (Intermittent)
Mrs. Gloria D. Landino	Clerk-Typist (Intermittent)
Ward W. Daniels	Construction Representative (Branch Engineering - Atlanta)

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I. GENERAL

A. Weather Conditions.

Strong winds prevailed throughout much of the year on the Outer Banks of North Carolina. Northeasters and Southwesters, common to this area, brought in local storms of normal duration and intensity. These storms were scattered throughout the year and caused considerable shifting of the Outer Dune System.

A drought developed during the summer months and was broken by the hurricane rains of September. The rainfall for the year measured 6.84 inches above normal in spite of the summer drought. Hurricane Gladys (September 22-23) was the most destructive hurricane of the season and caused extensive damage to the Sand Dune System on the ocean front.

Temperatures for the year were normal with a high of 97 degrees and a low of 22 degrees reported by the National Park Service Bodie Island Weather Station.

The following data is taken from the Weather Station operated by the National Park Service on Bodie Island, 3 miles north of Pea Island and reflects conditions on the Refuge.

<u>Month</u>	<u>Precipitation</u>			<u>Temperatures</u>	
	<u>This Mo.</u>	<u>Normal</u>	<u>Dev. from Normal</u>	<u>Max.</u>	<u>Min.</u>
Jan.	6.02	3.26	+2.76	65	22
Feb.	6.12	4.01	+2.11	60	25
Mar.	2.83	4.03	-1.20	72	22
Apr.	4.18	2.29	+1.89	84	30
May	1.34	2.91	- .57	90	38
June	3.18	2.90	+ .28	97	59
July	7.25	4.36	+2.89	92	63
Aug.	3.30	7.21	-3.91	91	59
Sept.	9.10	6.96	+2.14	89	56
Oct.	8.01	4.80	+3.11	82	41
Nov.	1.08	3.03	-1.95	78	40
Dec.	<u>3.51</u>	<u>3.32</u>	<u>+ .20</u>	<u>68</u>	<u>24</u>
Total	55.94	49.08	+6.84	Extremes 97	22

B. Habitat Conditions.

1. Water

Pea Island has two impoundments for the production of native foods. These ponds are dependent on rainfall for water and are maintained at or near a reading of 4.50 above sea level. There was adequate water in both ponds from January to April to maintain full capacity. Drought conditions developed in May and extended through August. The south half of South Pond (Pool #1) became exposed but enough moisture remained to prevent the loss of growing plant life on the pool floor. Hurricane rains of September brought water levels back to normal.

Staff gauge readings for both ponds follow with 1963 readings for comparative purposes:

Gauge Readings

	<u>North Pond</u>		<u>South Pond</u>	
	<u>1963</u>	<u>1964</u>	<u>1963</u>	<u>1964</u>
Jan.	4.96	4.14	4.90	4.42
Feb.	4.70	4.54	4.70	4.58
Mar.	4.44	4.42	4.40	4.50
Apr.	4.20	4.50	4.10	4.44
May	4.08	3.84	3.90	3.80
June	3.98	3.60	3.90	3.38
July	3.38	3.60	Dry	3.56
Aug.	Dry	3.40	Dry	3.74
Sept.	Dry	4.18	Dry	4.48
Oct.	Dry	4.52	Dry	4.62
Nov.	3.30	4.20	3.90	4.22
Dec.	3.70	4.46	3.85	4.28

Normal fluxuations of water levels in Pamlico Sound existed throughout the year and no extended turbulent water conditions developed on the Sound shoals.

Water salinity tests to evaluate the sea water content of both ponds were carried out throughout the year. The silver nitrate titration method was used to determine the following readings:

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

Date	<u>North Pond</u>			<u>South Pond</u>		
	<u>North End</u>	<u>At Gauge</u>	<u>Gauge Reading</u>	<u>North End</u>	<u>On West Side</u>	<u>Gauge Reading</u>
1/10	7.45	7.61	4.20	8.23	6.99	4.28
2/14	6.21	5.74	4.46	5.90	5.94	4.46
3/12	4.97	5.90	4.42	5.90	5.59	4.60
4/14	4.66	4.66	4.56	4.66	4.19	4.76
5/13	5.28	5.28	4.18	6.21	5.28	4.34
6/12	6.83	6.36	3.58	7.76	7.76	3.66
7/22	10.56	8.07	3.28	6.68	10.41	3.50
8/21	11.34	9.31	3.48	7.76	8.38	3.56
9/21	7.30	5.43	4.26	4.97	3.88	4.52
10/2	6.36	6.21	4.10	4.97	5.12	4.58
11/23	6.21	6.52	4.18	5.28	5.43	4.28
12/10	5.43	5.12	4.20	4.66	4.35	4.20

2. Food and Cover

Approximately 70 acres of common ryegrass recovered from heavy goose feeding and severe winter weather conditions to provide a much needed spring browse. This fall approximately 140 acres of common ryegrass was planted and has been very heavily browsed by both Canada and Snow geese. Much of this 140 acre browse has been eaten out and will not supply spring browse.

The impoundments produced satisfactory stands of aquatics even under summer drought conditions. These aquatics are sago pondweed, widgeon grass, redhead grass, wild celery, smart weed, marsh grass and wild millet. Extensive feeding by swan, geese and ducks resulted in an eat-out by early Spring due to poor production. This summer's growth appears adequate to carry these feeding flocks until spring migration.

The marsh acres produced good to heavy stands of American three-square, robust three-square, *Spartina alterniflora* and wild millet this season.

Heavy but scattered stands of widgeon grass and shoal grass were produced this season in Pamlico Sound.

Satisfactory stands of Beach Pea were produced on the sand dunes and higher elevations in the wild pastures.

No artificial feeding has been required.

II. WILDLIFE

A. Migratory Birds.1. Waterfowl

The total use days for waterfowl reflects the fluctuation of populations using the refuge during the past three years. Tabled below for comparison are the 1962, 1963, and 1964 figures:

	1962	1963	1964
Swans	<u>17,450</u>	<u>7,847</u>	<u>53,823</u>
Geese	1,082,299	1,021,580	931,513
Ducks	649,789	723,029	1,055,256
Coot	85,810	25,661	90,048
Total	<u>1,835,348</u>	<u>1,778,117</u>	<u>2,130,640</u>

Production figures are as follows:

	1962	1963	1964
Black duck	<u>60</u>	<u>46</u>	<u>35</u>
Gadwall	150	220	136
Blue-winged teal	20	0	0
Total	<u>230</u>	<u>266</u>	<u>171</u>

2. Other Birds

Total estimated numbers using the refuge are as follows:

	1962	1963	1964
Marsh & Water birds	<u>9,526</u>	<u>9,224</u>	<u>9,675</u>
Shore birds, gulls & Terns	41,458	32,393	10,100
Doves & Pigeons	95	165	250
Predaceous birds	319	207	239
Total	<u>51,398</u>	<u>41,989</u>	<u>20,264</u>

Production figures for Marsh and Water Birds are as follows:

	1962	1963	1964
Little blue heron	<u>25</u>	<u>60</u>	<u>15</u>
Louisiana heron	175	170	125
Black-crowned night heron	125	120	30
Yellow-crowned night heron	2	0	0
Common egret	36	40	30
Snowy egret	155	160	60
Glossy ibis	100	80	140
Total	<u>618</u>	<u>630</u>	<u>400</u>

The above figures show a **decided** increase in total waterfowl use. The figures for swan, ducks and coot show an increase in these populations while the figures for geese reflect a smaller population.

Waterfowl production figures reflect summer drought conditions.

Use figures for other birds reflect drought conditions, an increase in use of the beaches by visitors, severe storm conditions and the opening of the Herbert C. Bonner Bridge over Oregon Inlet in November 1964.

B.. Upland Game Birds

Ring-necked pheasants which are quite common on the refuge, are found around the ponds or in the wild pastures along State Highway 12. These are the only upland game birds on the refuge and these numbers remain fairly constant.

C. Big-Game Animals

Pea Island Refuge has no big game animals.

D. Fur Animals, Predators, Rodents and Other Mammals

The refuge fur animal population is composed of Muskrat, Otter, Mink and Nutria. All populations are small in number. No predation has been noted. An occasional feral cat has been observed in the neighborhood of the Coast Guard Station, Pea Island Camp Ground and Pea Island Coast Guard Station.

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

Hawks are cold weather visitors to the refuge and are often observed. The Fish Crow is quite common to the area. No Eagles have been observed over the refuge. No predator pressure by hawks has been noted.

F. Other Birds

No additions or changes in the Refuge Bird List are required. A Sand Hill Crane was observed on April 14 on the refuge. An American Flamingo was sighted by a visitor on December 14. Two Eastern Greylag geese were observed and reported on December 30.

G. Fish

No fishing is done on the refuge. Surf fishing at Oregon Inlet and along the ocean front is carried out under the supervision of the National Park Service. Results of this fishing is reported as only fair for the year. Sport fishing from the Marina at Bodie Island was very active with fair results reported.

H. Diseases

There is no indication of any diseases in any refuge population. An occasional Canada goose is recovered suffering from lead poisoning. These birds use the Bodie Island Hunting area and then return to Pea Island for refuge.

III. REFUGE DEVELOPMENT & MAINTENANCE

A. Physical Development

A commercial power line was installed in mid summer. Construction on a shop-office building, oil storage, fertilizer storage, residence and water system was started in July. H.A. Hodgkin and Sons, Greensboro, N.C. are prime contractors. The fence along the highway was removed and the salvage transferred to the National Park Service in November.

Maintenance of buildings, posting, fire line plowing, equipment repair, cattail spraying, marsh burning, banding, farming and fence removal made up the maintenance and operations program.

B. Plantings

1. Aquatics and Marsh Plants

No plantings were made.

2. Trees and Shrubs

No plantings were made.

3. Upland Herbaceous Plants

No plantings were made.

4. Cultivated Crops

Cultivated crops are limited to common ryegrass plantings. Approximately 70 acres were planted in the fall of '63. Approximately 140 acres were planted this past October. This enlarged planting was based on a successful 10 acres planted last fall in wild pasture land between the North and South Ponds. The expanded planting was made in this same wild pasture with good success. 10-20-20 fertilizer was applied at time of planting and granular ammonium nitrate was used to top dress these pastures.

C. Collections and Receipts

Nothing to report.

D. Control of Vegetation

Spot treatment of typha domingensis and t. angustifolia in both ponds was carried out in mid July. Eight acres were treated at 165 lbs. acid equivalent per acre at an estimated material cost of \$112.50. Dalapon was used to treat these growths.

Three acres of brush along both pond edges were treated with 2,4-D in mid July at an estimated cost of \$86.00.

E. Planned Burning

1. General

Units 1, 2, 9 and 10 were burned in January 1964. A total of 660 acres were burned without incident. Previous burning on units 1 and 2 was carried out in December 1959. Unit 9 was last burned in January 1958 and unit 10 was burned in January 1957. Costs for the January 1964 burn were \$3.51 per acre and included labor, material and transportation. The purpose of burning is to remove "duff" from sound flooding of wild salt grass pastures.

2. Conditions prior to burning

Scattered duff and drift from sound flooding was well scattered over the area. Normal vegetation was scattered and light due to poor soil type. Scattered clumps of wax myrtle were present also.

3. Conditions following burning

Approximately 70% of the drift and duff was destroyed. The wax myrtle clumps were thinned out and the under duff destroyed. New growth from marsh grasses developed following the burn.

F. Fires

Nothing to report.

IV. RESOURCES MANAGEMENT

No resources harvesting permits are in force and no financial income from refuge resources is received. No permit is required for fishing since it is carried out in navigational waters of Pamlico Sound or on the ocean front.

V. FIELD INVESTIGATIONS

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

Inspections were made of both impoundments by Regional Office personnel relative to food production with reference to sea salting and other factors.

VI. PUBLIC RELATIONS

A. Recreational Uses

These uses include sightseeing, wildlife observations, photography, surf fishing and beach combing. Our visitors came from 39 different states and 8 foreign countries. The recorded visitations at the visitor's center are as follows:

Alabama 5, Arkansas 5, California 10, Connecticut 52, Delaware 21, Dist. of Columbia 29, Florida 9, Georgia 11, Idaho 4, Illinois 18, Indiana 4, Iowa 8, Kansas 2, Kentucky 15, Louisiana 6, Maine 2, Maryland 73, Massachusetts 24, Michigan 36, Minnesota 8, Mississippi 3, Missouri 8, Montana 2, Nevada 2, New Hampshire 9, New Jersey 88, New York 128, North Carolina 212, Ohio 94, Oklahoma 4, Pennsylvania 133, Rhode Island 4, South Carolina 5, Tennessee 42, Texas 1, Vermont 4, Virginia 302, Washington 1, West Virginia 30.

Foreign visitors:

Argentina 2, Australia 5, Canada 19, England 10, France 1, Germany 1, Italy 2, Scotland 1, F.P.O., N.Y., N.Y. 2.

Total recorded visitations: 1,457

Other visitations on the ocean front are estimated as follows:

Fishing 1,266 and miscellaneous 3,764.

No record is kept on visitors surf fishing at Oregon Inlet, on the Bonner Bridge, or sight seeing at the Park Service overlooks on the North Pond. Park Service estimates for total visitations to the Cape Hatteras Complex are as follows:

1963 - 873,281

1964 - 1,070,535

These visitations are recorded by traffic counter with the following multipliers:

- 1963 - 2.6 for weekdays and 2.7 for Saturday, Sunday and Holidays.
- 1964 - 2.5 for weekdays and 2.7 for Saturday, Sunday and Holidays.

B. Refuge Visitors - Official

<u>Date</u>	<u>Purpose</u>	<u>Name and Organization</u>	<u>Address</u>
1/7	PL	Blaine Stockton, REA	Buxton, N.C.
	I	H.R. Craddock, Com. Fisherman	Mann Harbor, N.C.
1/9	S&M	Clyde S. Sawyer, S.C.S.	Columbia, N.C.
1/17	I	Charles W. Miller, F.B.I.	Elizabeth City, N.C.
1/22	BC	James A. Taylor, F & WS	Atlanta, Ga.
	BC	Eugene M. Smith, Jr., F & WS	Atlanta, Ga.
1/23	VI	Merton Radway, F & WS	Boston, Mass.
	VI	Thomas Horn, F&WS	Boston, Mass.
2/6	VI	John D. Findley, F&WS	Atlanta, Ga.
	VI	Lawrence S. Givens, F&WS	Atlanta, Ga.
2/17	I	C.L. Midgett, Com. Fisherman	Manns Harbor, N.C.
3/8	V	Don Owen, F&WS	Basom, N. Y.
3/11	BC	E.S. White, Well Driller	Belcross, N.C.
	BC	Eugene M. Smith, Jr., F&WS	Atlanta, Ga.
3/13	BC	N.E. Myers, H.A. Hodgin & Sons	Greensboro, N.C.
	BC	J. M. Hudson, Well Driller	Pantego, N. C.
	BC	I. J. Spear, Plumber	Creswell, N.C.
	BC	David R. Wilder, Elec. Contractor	Raleigh, N.C.
	BC	John D. Welch, Heating Contractor	Moyock, N.C.
3/19	VI	Philip G. Van Dyck, F&WS	Atlanta, Ga.
	BC	Eugene M. Smith, Jr., F&WS	Atlanta, Ga.
3/19	BC	James A. Taylor, F&WS	Atlanta, Ga.
4/1	SM	Edward R. Smith, S.C.S.-	Raleigh, N.C.
	V	Marvin Mann, Party Boat Captain	Manteo, N.C.
4/7	VI	Milford K. Thurber, F&WS	Atlanta, Ga.
4/23	I	Roger E. Hanes, N.C. State	Manteo, N.C.
5/5	VI	Art Hughlett, F&WS	Minneapolis, Minn.
	VI	Donald R. Ambrosen, F&WS	Back Bay, Va.
5/30	V	Major Hartman, F&WS	Dover, Del.
6/10	V	F. Nelson Swink, Jr., F&WS	Harrisonburg, VA.
6/21	V	Robert G. Prescott, Jr., F&WS	New Holland, N.C.
7/6	I	Arthur W. Cooper, N.C. State College	Raleigh, N.C.
7/9	V	Mr. & Mrs. R. B. Strath, Cornell Univ.	Odessa, N.Y.
7/11	V	Russell E. Wilson, F&WS	Paris, Tenn.
7/17	V	J.L. Murphy, USMC (Ret)	Kill Devil Hill, N.C.
7/20	V	J. Warren Corderman	Vestal, N.Y.

<u>Date</u>	<u>Purpose</u>	<u>Name and Organization</u>	<u>Address</u>
7/27	V	Lawrence L. Swain, Dare Co. Commissioner	Manteo, N.C.
8/17	V	Carl V. Fermanich, F&WS	Washington, D.C.
	I	E. Douglas Waits, N.C. State College	Raleigh, N.C.
	I	Arthur N. Cooper, N.C. State College	Raleigh, N.C.
8/19	BC	Leland H. Barrineau, F&WS	Atlanta, Ga.
	BC	Billy F. Horton, F&WS	Atlanta, Ga.
8/24	V	P.W. Sikes, Jr., N.C. State College	Raleigh, N.C.
9/28	VI	Edwin W. Ball, F&WS	Atlanta, Ga.
	VI	Sumner Dow, F&WS	Hardeeville, S.C.
9/28&29	CI	Lawrence S. Givens, F&WS	Atlanta, Ga.
	CI	James A. Taylor, F&WS	Atlanta, Ga.
	CI	Billy F. Horton, F&WS	Atlanta, Ga.
	CI	H. Reese Smith, N.P.S.	Philadelphia, Pa.
	CI	Joseph Karban, N.P.S.	Philadelphia, Pa.
	CI	W. Miikell, N.P.S.	Richmond, Va.
	CI	Karl T. Gilbert, N.P.S.	Manteo, N.C.
	CI	Dennis E. McGinnis, N.P.A.	Manteo, N. C.
10/13	V	Vernon Cunningham, F&WS	Raleigh, N.C.
1/15	VI	Robert E. Lines, F&WS	Atlanta, Ga.
	VI	N.F. Tansill, F&WS	Atlanta, Ga.
11/5	VI	Willie G. Cahoon, F&WS	New Holland, N.C.
	VI	Robert E. Prescott, Jr. F&WS	New Holland, N.C.
	VI	James M. Dale, F&WS	Plymouth, N.C.
11/6	VI	Paul W. Conner, F&WS	Atlanta, Ga.
11/11/	VI	Edward Nash, N.P.S.	Manteo, N.C.
	VI	Dr. Peter Bruon, Fla. State Univ.	Gainesville, Fla.
11/16	VI	Sumner Dow, F&WS	Hardeeville, S.C.
11/24	V	George A. Daniels, Dare Co.	
		Mosquito Cont. Comm.	Manteo, N.C.
12/2	V	Duncan E. Kincheloe, Jr., Sterling Chem. Co.	Raleigh, N.C.
12/21	CG	James E. O'Hara, USCG	Portsmouth, N.C.

Coding following the visitor's names are:

PL - Power Line Construction
 I - Information
 SM - Soil & Moisture Agreements
 BC - Building Construction Program
 VI - Visitations & Inspection of Refuge
 V - Visitations
 CI - Conference & Inspection, Dune Damage
 CG - Coast Guard Spoils Deposit

C. Refuge Participation

Refuge Manager Good and Maintenance man Toler attended the monthly meetings of the Dare County Peace Officers' Association. Mr. Good is Treasurer of the group.

Mr. Good met with the Pamlico Soil and Moisture Conservation District Board on May 7 at Mattamuskeet Refuge and again on November 5 in Manteo relative to signing a Soil and Moisture Agreement.

Messrs. Good and Toler attended the Law Enforcement Training School at Mattamuskeet Refuge on August 3 - 5. They also attended a small arms training school at Cape Hatteras National Seashore on October 26.

Refuge Manager Good and Chief Park Ranger, A. E. Stark, N.P.S., concluded a standard course in American Red Cross First Aid on April 4 for Village, County, State and Federal law enforcement officers. Messrs. Phillips and Toler hold Standard First Aid certificates and Mr. Good an Instructor's First Aid certificate..

The refuge staff assisted Oregon Inlet Coast Guard personnel with exercise "Webfoot" on December 16 by conducting a beach patrol along the refuge ocean front. This exercise was a test of the Coastal Alert System.

D. Hunting

Pea Island has no managed hunt area. The results of waterfowl hunting on Bodie Island, Cape Hatteras National Seashore, north of Oregon Inlet are as follows:

Season	Hunters	Geese	Ducks	Coots	Total
1964-64	1,707	47	1,048	121	1,216
1963-64	1,668	191	1,438	227	1,856
1962-63	1,308	65	1,158	281	1,504

The percent of success for 1964-65 was .71 per hunter day.

Ducks taken at Bodie Island were as follows:

Widgeon	137	Green-winged Teal	162
Gadwall	88	Common merganser	3
Blue-winged Teal	2	Canvasback	3
Hooded merganser	24	Black	176
Lesser Scaup	11	Pintail	249
Ruddy Duck	4	Cinnamon Teal	3
Shoveler	73	Ring-necked	5
Mallard	91	Bufflehead	16
		Fulvous Tree Duck	1

The above figures were supplied by the Ranger Division, Cape Hatteras National Seashore.

E. Violations

On several occasions refuge personnel have recovered dead Snow and Canada geese which were killed by rifle fire. One lot of 12 Snow geese were killed in the outer dunes at mile post 14.5 and then stacked on the highway shoulder.

The refuge farming lands parallel the highway and the feeding geese provide temptation to violators even though there is heavy traffic over the highway. Both Snow and Canada geese feed on the highway right-of-way and in the dune system adjoining the highway.

Survalance by refuge personnel, U.S. Game Management Agents, National Park Rangers and State Wildlife Officers has reduced disturbance to feeding geese but has not resulted in complete control of violation problems.

On November 2 a conference between U.S. Game Management Agent George J. Ross, Chief Ranger A. E. Stark and Refuge Manager Good was held relative to law enforcement problems on both the refuge and Cape Hatteras National Seashore since the problems of one area are common to the other area.

Following are the violation cases for the calender year:

- (1) May 11, George Barnett, theft of personal property.
May 12, Pleadged guilty in Dare County Recorder's Court. Sentenced to 30 days by Judge J.M. Van Note. Sheriff's Department case on information supplied by maintenanceman Toler and Dr. Paul D. Boyle.
- (2) November 28, St. Clair Midgett, Jr., trespass.
December 10, pleaded guilty before U.S. Commissioner L.T. Gallop, Elizabeth City, N.C., Fined \$5.00.
Refuge Manager Good's case.
- (3) December 16, Sam Bunn Davis, trespass and possession of weapon on Pea Island N.W.R.
December 17, pleaded guilty before U.S. Commissioner L.T. Gallop, Elizabeth City, N.C. Fined \$5.00
Refuge Manager Good's case.

National Park Service Rangers, U.S. Game Management Agents and State Wildlife Protectors made 10 violation cases on Bodie Island during the 1964-65 hunting season.

F. Safety

Monthly Safety Meetings were held at the Field Headquarters throughout the year. Discussion leader and subjects were:

<u>Date</u>	<u>Leader</u>	<u>Subject</u>
January	Mr. Phillips	Handling of cannon net trap mortars
February	Mr. Good	Protective (Safety) Equipment
March	Mr. Good	Safety slides, How to Stop Shock & Hand Tools
April	Mr. Toler	Booklet "The a-b-c's of On-The-Job-Safety"
May	Mr. Good	Safe handling and lifting of bagged seed and fertilizer
June	Mr. Good	National Safe Boating Week
July	Mr. Toler	Safe operation of bulldozers and tractors on soft sand
August	Mr. Good	Safety precautions relative to approach of Hurricane Cleo
September	Mr. Good	Safety lenses for glasses
October	Mr. Good	Fire Prevention Week
November	Mr. Good	Safe motor vehicle travel, safe use of hand tools
December	Mr. Toler	Safe handling of fire arms

There were no accidents during the year. Approximately 40,176 man hours have been worked since the last lost time accident which occurred on January 21, 1959. We have worked approximately 2,476 calendar days since this accident.

Gloves and storm suits were purchased during the year for use of station personnel.

VII. OTHER ITEMS

A. Items of Interest

Mrs. Valerie C. Good was terminated as Clerk, temporary intermittent on May 6, 1964.

Mrs. Gloria D. Landino was appointed Clerk, temporary intermittent on June 5, 1964.

Mr. Ward W. Daniels was appointed Construction Representative on July 17, 1964.

The sea going tug VALKYRIE, bound from Port Everglades, Florida to Norfolk, Va. went aground on the north tip of Pea Island on March 20. Several weeks of effort by a salvage company re-floated her.

The Army hopper dredge HYDE cleaned the entrance to Oregon Inlet during August and September.

On May 11 Dr. Paul D. Boyle, Broughton Hospital, Morganton, N.C. reported a theft of \$20 from his parked car to Maintenance man Toler. Mr. Toler and Dr. Boyle recovered the money from George Barnett, Frisco, N.C. who was found crouched in the adjacent sand dunes. Mr. Barnett was sentenced to 30 days by Judge J. M. Van Note, Recorder's Court, Manteo, on May 12. The case was handled by the Dare County Sheriff's Department upon information from Mr. Toler and Dr. Boyle.

On June 23 the Rev. L. L. Thompson and family were injured in a rear end collision on Highway 12 near Oregon Inlet. Refuge Manager Good assisted Coast Guard personnel from Oregon Inlet Station with first aid and then summoned police and ambulance needs via a National Park Service radio unit. Responding to the call were State Police, Dare County Sheriff's Office and National Park Service Rangers. Treated at Albemarle Hospital, Elizabeth City, N.C. were Rev. and Mrs. Thompson and son Larry. Rebecca, the 3 year old daughter, was treated at Norfolk General Hospital for a skull fracture.

Extensive dune damage by Hurricane Gladys, September 22-23 to the dune system at Mile Post 9 was inspected by representatives of the National Park Service and Fish and Wildlife Service on September 29.

Fish and Wildlife Service representatives were:

Lawrence S. Givens, Refuge Supervisor, Atlanta.
Billy F. Horton, Regional Engineer, Atlanta.
James A. Taylor, Ass't. Regional Engineer, Atlanta
William C. Good, Refuge Manager, Pea Island

National Park Service representatives were:

H. Reese Smith, Chief Engineer, Eastern Office, Division of Design and Construction, Philadelphia
Joseph Karban, Hydraulic Engineer, Eastern Office, Division of Design and Construction, Philadelphia
W. Miikell, Regional Chief, Division of Maintenance, Southeast Regional Office, Richmond
Karl T. Gilbert, Superintendent, Cape Hatteras National Seashore
Dennis E. McGinnis, Chief of Operations, Cape Hatteras National Seashore

Dune damage consisted of serious wind erosion, severe weakening

and over-wash of the existing dunes. A complete break in the dune would do serious damage to the North Pond (Pool No. 2) and to the associated cultivated browse area.

The group concurred that it would be necessary to relocate the highway (N.C. 12) in order to construct a protective dune. Several sketches of the proposed treatment were prepared by the National Park Service and were forwarded to the Regional Office for consideration. The estimated cost of \$262,000 for protective work is as follows:

\$150,000 for dune reconstruction
\$ 57,000 for highway relocation
\$ 55,000 for relocation of 37.5 acres of browse area.

B. Photographs

Photographs for the year follow the signatures.

C. Signature

Date completed January 28, 1965.

Respectfully submitted,

William C. Good
William C. Good, Refuge Manager

Approval:

(sgd) Lawrence S. Givens

Regional Refuge Supervisor

FEB 1 1965

MAY 64



Snow Geese killed by violator, Jan. '64.

JAN 65



The tug VALKARIE aground at Oregon Inlet, Jan. '64.

JAN 65



Army dredge HYDE cleaning Oregon Inlet,
May '64.

JAN 65



Contractor closing dune break with sand from ocean, May '64.

JAN 65



N.P.S. contractor repairing break, May '64.

JAN 65



Break in repaired outer dune, May '64

JAN 65



Breaking ground for new Headquarters, July '64

JAN 65



Overflow campers at Pea Island Campground on July 4, 1964.

JAN 65



July 4th at Pea Island Campground, July '64

JAN 65



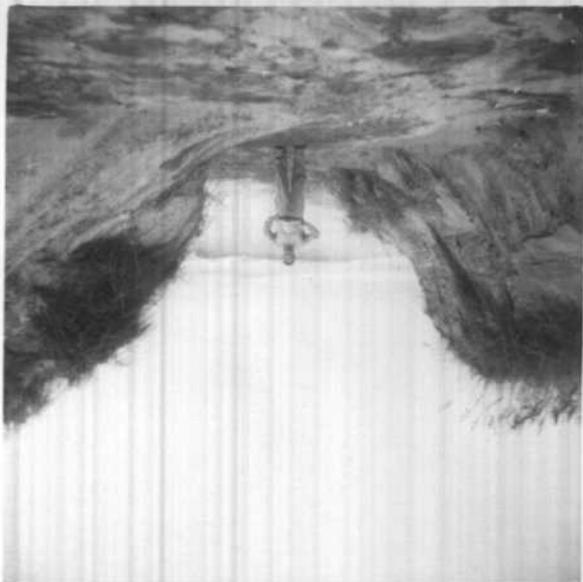
Full house at Pea Island Campground on July 4, 1964

JAN 65



Clearing brush for new goose pasture between Pool 1 and Pool 2

Dune damage at overlook area at North
Pond from Hurricane Gladys, Sept. '67



JAN 65

Dune damage south of Mile Post 9
from Hurricane Gladys, Sept. '67



JAN 65

Cut dune at Mile Post 9.1 from
Hurricane Gladys, Sept. '67



JAN 65

Damaged sand fence at Mile Post 9.1
from Hurricane Gladys, Sept. '67



JAN 65

JAN

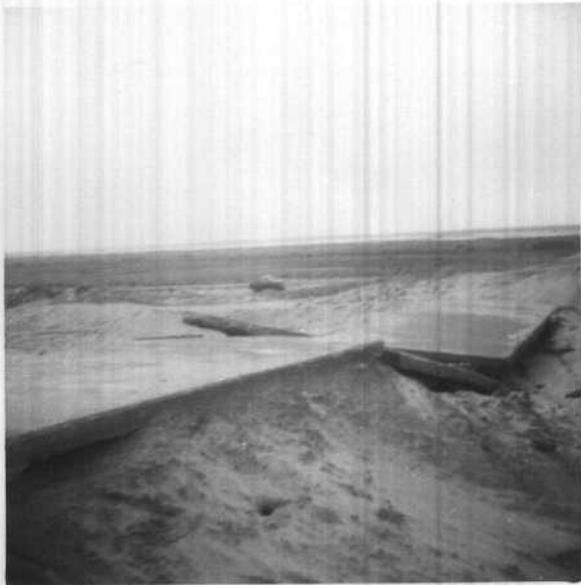
65



Dune damage at overlook on North Pond
from Hurricane Gladys, Sept. '65

JAN

65



Damaged overlook walk, Sept. '64

JAN

65



Dune damage at overlook area at North
Pond from Hurricane Gladys, Sept. '64

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

REFUGES., R.O.

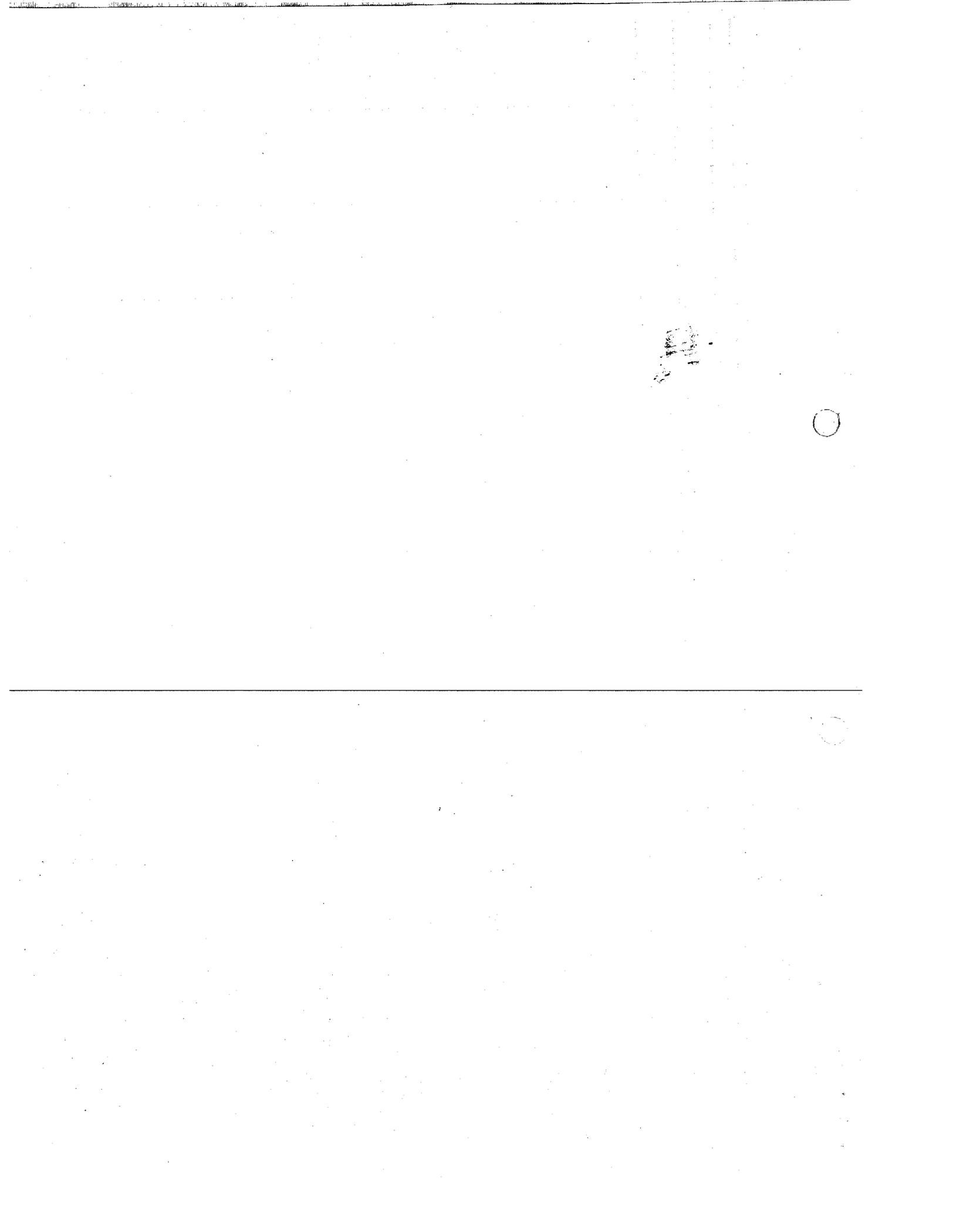
FILE COPY

W A T E R F O W L

REFUGE Pea Island

MONTHS OF January 1 TO April 30, 1964

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling Trumpeter	35	129	65	130	50	120	120	42	26	26
Geese:										
Canada	8000	6051	5010	3500	4500	2800	2500	2315	1600	1500
Cackling Brant										
White-fronted Snow	5500	2677	2450	1000	1500	500	500	280	200	150
Blue Other	35	10	5							
Ducks:										
Mallard	125	63	55	35	25					
Black	1000	450	340	350	400	125	200	430	250	250
Gadwall	150									
Baldpate		605	550	100	100	50	100	100	100	100
Pintail	2000	1543	1430	750			150	30	50	20
Green-winged teal	150	1000	890	200			150		100	
Blue-winged teal										
Cinnamon teal										
Shoveler	30			100	100	15		40	30	
Wood										
Redhead	3000	2500	2500							
Ring-necked Canvasback	200									
Scaup	10			15	25			30	100	20
Goldeneye										
Bufflehead	150			15	20				20	
Ruddy	20			30	30					
Other H. Merganser	50									
C. Merganser	200			200	300				150	2000
Unidentified	350	75								
Coot:	200	16	165	20	100	30	50	35	50	50



3 -1750a

Cont. NR-1

(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Pea Island

MONTHS OF January 1 TO April 30, 1964

(1) Species	(2) Weeks of reporting period							Period : Totals : 28	(3) Estimated waterfowl days use	(4) Production : Broods: Estimated : seen : total	
	11	12	13	14	15	16	17				
<u>Swans:</u>											
Whistling	3							746	5,222		
Trumpeter											
<u>Geese:</u>											
Canada	300	250	100					38,426	268,982		
Cackling											
Brant											
White-fronted											
Snow	125	30	5					14,917	104,419		
Blue								50	350		
Other											
<u>Ducks:</u>											
Mallard		5						308	2,156		
Black	60	125	100					4,080	28,560		
Gadwall	25	30						205	1,435		
Baldpate			45					1,850	12,950		
Pintail								5,773	41,811		
Green-winged teal	125							2,615	18,305		
Blue-winged teal	75	20	40					135	745		
Cinnamon teal											
Shoveler								315	2,205		
Wood											
Redhead								1,000	10,000		
Ring-necked								200	1,400		
Canvasback											
Scaup			20					220	1,540		
Goldeneye											
Bufflehead								205	1,435		
Ruddy								80	560		
Other H. Merganser								50	350		
C. Merganser	1500	121200	100					5,650	39,550		
Unidentified								425	2,975		
<u>Coot:</u>	150		5					371	6,097		

(over)

	(5)	(6)	(7)	SUMMARY
	Total Days Use	Peak Number	Total Production	
Swans	5,222	130		Principal feeding areas _____
Geese	373,751	13,535		_____
Ducks	212,177	7,435		Principal nesting areas _____
Coots	6,097	200		_____
				Reported by _____

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

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

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

FILE COPY

W A T E R F O W L

REFUGE Pea Island Refuge

MONTHS OF May 1 TO August 31, 1964

(1) Species	(2) Weeks of reporting period									Givens Key Rudolph Van Dyke Dun 10/2 Carter Henkle Lankford Denton Forrester Aderhold Phillips Pace Burke File
	1	2	3	4	5	6	7	8	9	
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	5	2	4	3	5	8	4	7	6	
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard										
Black	124	120	118	124	168	164	164	168	172	168
Gadwall			6	12	24	64	120	170	180	180
Baldpate										
Pintail										
Green-winged teal										
Blue-winged teal	100	50	50	25	25	25	40	50	60	70
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
Coot:	10	20	10	20		4	4	4	4	

Int. Dup. Sec.,



3 -1750a

Cont. NR-1

(Rev. March 1953)

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

REFUGE Pea Island RefugeMONTHS OF May 1 TO August 31, 19 64

(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											
Geese:											
Canada	4	3	2	4	2	2	4	4	525		
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard			6	4	6	6	6	6	238		
Black	178	178	160	140	140	130	120	120	18,612	6	35
Gadwall	180	180	200	180	200	150	200	200	15,732	25	136
Baldpate											
Pintail											
Green-winged teal				6	6	8			140		
Blue-winged teal	50	50	50	75	125	100	150	150	8,715		
Cinnamon teal											
Shoveler											
Wood											
Redhead											
Ring-necked											
Canvasback											
Scaup											
Goldeneye											
Bufflehead											
Ruddy											
Other											
Coot:									532		

(over)

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans			
Geese	525	8	
Ducks	4,343	477	171
Coots	532	20	

SUMMARY

Principal feeding areas Fresh water impoundments

Principal nesting areas Dikes, marsh and islands within impoundments for gadwall, entire refuge for black ducks.

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).

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

WATERFOWL

REFUGE Pea Island

MONTHS OF September 1 TO Dec. 31, 19 64

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling Trumpeter								21	26	37
Geese:										
Canada	2		2	2	23	536	1463	300	2361	5410
Cackling Brant										
White-fronted Snow				1		1	30	35	700	1020
Blue Other							8	8	12	12
Ducks:										
Mallard	4			7	4		14	16	5	125
Black	120	200	13	130	175	130	167	180	147	140
Gadwall	200	30								
Baldpate		1200	120	1800	1300	4000	2294	2820	3325	5820
Pintail		200	1802	2310	3725	1655	612	20	1380	1580
Green-winged teal		175	125	275	195	160	105	185	275	225
Blue-winged teal	150	135	65	200	65					
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked Canvasback								4		
Scaup										
Goldeneye										
Bufflehead										
Ruddy								35	28	95
Other			64	60					85	
Coot:		1	2			23	33	195		1050

Int. Dup. Sec.,



3 -1750a

Cont. NR-1

(Rev. March 1953)

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

REFUGE Pea IslandMONTHS OF September 1 TO Dec. 31, 19 64

(1) Species	(2) Weeks of reporting period								(3) Estimated	(4) Production	
	11	12	13	14	15	16	17	18	waterfowl days use	Broods:Estimated seen	total
Swans:											
Whistling	58	75	1,323	1,506	1,253	1,004	955	685	18,601		
Trumpeter											
Geese:	7,800	12,800	4,344	3,620	3,811	3,861	3,976	4,245	381,392		
Canada											
Cackling											
Brant											
White-fronted											
Snow	1,580	5,600	4,439	4,587	4,185	546	540	600	173,448		
Blue	35	52	49	37	27	8	6	15	1,483		
Other								2	14		
Ducks:											
Mallard	135	235	26	27	18	13	14	25	4,676		
Black	225	240	430	246	396	201	297	425	27,314		
Gadwall					3	4			1,659		
Baldpate	6,510	10,520	4,720	2,850	2,100	1,600	1,658	1,575	378,014		
Pintail	5,300	5,800	2,062	2,220	1,370	940	1,045	965	230,902		
Green-winged teal	365	550	1,840	2,467	1,025	720	785		66,304		
Blue-winged teal		300							6,419		
Cinnamon teal											
Shoveler				36					252		
Wood											
Redhead			14		2,000	1,375	2,530	2,000	54,433		
Ring-necked				2,450	630	360	140	100	25,760		
Canvasback					20	15	23	28	602		
Scaup	25	35	195	239	662	555	570	400	18,735		
Goldeneye											
Bufflehead				365	24	136	140	140	5,635		
Ruddy	105	155			20	20	53	40	3,857		
Other				6					1,505		
Coot:	1,250	2,050	2,420	1,085	1,210	723	810	1,010	83,419		

(over)

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans	48,601	1,506	
Geese	557,237	18,452	
Ducks	826,127	17,835	
Coots	83,419	2,420	

SUMMARY

Principal feeding areas Entire Refuge, Pamlico Sound shoals, fresh water impoundments, salt marshes, sand dunes and ryegrass fields.

Principal nesting areas None this period

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
(Nov. 1945)MIGRATORY BIRDS
(other than waterfowl)Refuge Pea IslandMonths of January 1 to April 30

1954

(1) Species Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total Estimated Number
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	
I. Water and Marsh Birds:										
Cattle Egret	1	4/1	2	4/30	2	4/30				4
Great Blue Heron	2	1/15	5	4/30	5	4/30				10
Little Blue Heron	2	1/27	20	4/30	20	4/30				30
Louisiana Heron	4	4/9	15	4/30	15	4/30				120
Black-crowned Night Heron	2	4/1	8	4/30	8	4/30				150
Common Egret	8	4/1	20	4/30	20	4/30				50
Snowy Egret	10	3/31	30	4/30	30	4/30				40
Glossy Ibis	8	3/31	28	4/30	28	4/30				30
Common Loon	4	2/14	50	4/30	50	4/30				75
Double-crested Cormorant	75	2/1	1000	3/30	100	4/30				4000
Black Skimmer	5	3/31	50	4/30	50	4/30				400
Gannet	5	2/5	150	4/30	150	4/30				500
American Bittern	1	1/15	8	4/30	8	4/30				10
Dowitcher	2	4/10	2	4/10	2	4/10				2
II. Shorebirds, Gulls and Terns:										
Common Tern	10	3/31	200	4/10	150	4/30				400
Royal Tern	2	4/6	40	4/30	40	4/30				60
Least Tern	1	4/6	30	4/10	20	4/30				100
Herring Gull	150	1/2	1800	3/30	30	4/30				2500
Ring-billed Gull	150	1/2	2000	4/30	2000	4/30				4000
Laughing Gull	14	4/1	200	4/30	200	4/30				300
Willet	10	4/1	150	4/30	150	4/30				200
Black-necked Stilt	2	4/10	20	4/30	20	4/30				30
American Avocet	30	4/9	30	4/9	30	4/9				40
Oyster Catcher	2	3/31	4	4/9	4	4/9				10
Yellowlegs, Great & Less.	30	4/15	150	4/30	150	4/30				250
Sandpiper, All Spec.	30	1/27	2500	4/30	2500	4/30				3000

(over)

(1)	(2)		(3)		(4)		(5)		(6)
III. <u>Doves and Pigeons:</u>									
Mourning dove	12	4/10	25	4/30	25	4/30			40
White-winged dove									
IV. <u>Predaceous Birds:</u>									
Golden eagle									
Duck hawk	1	1/7	4	2/28	1	4/30			4
Horned owl									
Magpie									
Raven									
Crow	10	1/7	20	4/30	20	4/30			40
Marsh Hawk	1	1/7	6	4/30	6	4/30			10


 Reported by... William C. Good, Refuge Manager...

INSTRUCTIONS

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

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge Pea Island Refuge

Months of May 1 to August 31 1956

(1) Species Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total Estimated Number
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	
I. Water and Marsh Birds:										
Cattle Egret	1	5/5	1	5/5	1	5/5				3
Great Blue Heron	4	5/5	4	5/5	1	8/28				5
Little Blue Heron	20	5/5	20	5/5	18	8/28	1	5	15	35
B-c Night Heron	10	5/5	40	6/10	25	8/28	1	8	30	50
Common Egret	25	5/5	40	6/10	10	8/28	1	12	30	50
Snowy Egret	20	5/5	80	6/10	3	8/28	1	20	60	90
Glossy Ibis	35	5/5	175	6/10	10	8/28	1	40	140	200
D-c Cormorant	100	5/5	100	6/10	100	6/10				200
Black Skimmer	40	5/5	50	6/10	10	8/28				100
Gannet	150	5/5	150	5/5	10	6/10				200
American Bittern	10	5/5	15	6/10	15	6/10				20
Louisiana Heron	20	5/5	50	6/10	15	8/28	1	40	125	160
Sand hill Crane	1	5/14	1	5/14	1	5/14				1
II. Shorebirds, Gulls and Terns:										
Common Tern	140	5/5	140	5/10	10	8/28				200
Royal Tern	40	5/5	40	5/5	5	6/10				60
Least Tern	20	5/5	20	6/10	5	8/28				50
Herring Gull	30	5/5	30	5/5	2	8/28				75
Ring-billed Gull	2000	5/5	3000	6/10	1500	8/28				4000
Laughing Gull	200	5/5	400	6/10	250	8/28				500
Willet	150	5/5	150	5/5	25	8/28				300
Black-necked Stilt	20	5/5	100	6/10	20	8/28				50
American Avocet	25	5/5	25	5/5	15	8/28				50
Yellowlegs, Gt & Less	200	5/5	250	6/10	150	8/28				300
Sandpiper, All spec	2500	5/5	3000	6/10	250	8/28				3000

(over)

(1)	(2)		(3)		(4)		(5)		(6)
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove	10	5/5	50	8/28	50	8/28			60
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow	10	5/5	20	6/10	5	8/28			30

William C. Good
Reported by William C. Good, Refuge Manager

INSTRUCTIONS

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

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

MIGRATORY BIRDS
(Other than Waterfowl)

Refuge Pea Island

Months of September 1 to December 31 19 51

(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:										
Louisiana Heron	18	9/9	18	9/9	3	12/21				300
Little Blue Heron	5	9/9	5	9/9	5	9/9				200
Black crowned night Heron	6	10/26	16	12/21	16	12/21				150
Snowy Egret	43	9/9	43	9/9	5	11/27				200
Common Egret	13	9/9	13	9/9	6	10/26				150
Least Bittern	5	9/9	5	9/9	5	9/9				20
Great Blue Heron	2	9/9	2	9/9	2	12/21				50
American Bittern	6	10/26	7	12/21	2	12/21				50
Pied billed Grebe	38	9/9	38	9/9	38	9/9				50
Gannet	800	11/27	800	11/27	200	12/21				2000
Common Loon	3	12/21	3	12/21	3	12/21				50
Long Billed Curlew	1	9/9	1	9/9	1	9/9				20
II. Shorebirds, Gulls, and Terns:										
Laughing Gull	300	9/9	300	9/9	25	11/27				2000
Herring Gull	450	9/9	4500	12/21	4500	12/21				3000
Ring billed Gull	600	12/21	600	12/21	600	12/21				2000
Royal Tern	30	9/9	30	9/9	30	9/9				200
Least Tern	2	9/9	2	9/9	2	9/9				50
Black Tern	16	9/9	16	9/9	16	9/9				300
Great Black back Gull	1	9/9	50	11/27	30	12/21				200
American Oyster Catcher	2	9/9	2	9/9	2	9/9				100
Greater Yellowlegs	6	9/9	30	10/26	30	10/26				1000
Millet	40	9/9	40	9/9	40	9/9				300
Black bellied Plover	50	9/9	50	9/9	10	10/26				50
Black Skimmer	75	9/9	375	10/26	60	11/21				500

(over)

	(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u>						
Mourning dove	45	9/9	45	9/9	5	12/21
White-winged dove						150
IV. <u>Predaceous Birds:</u>						
Golden eagle						
Duck hawk						
Horned owl						
Magpie						
Raven						
Crow, fish	6	9/9	6	9/9	6	9/9
Peregrine Falcon	1	10/26	1	10/26	1	12/21
Osprey	1	9/9	1	9/9	1	9/9
Marsh Hawk	1	9/9	6	10/26	5	12/21
Pigeon Hawk	30	9/9	30	9/9	3	12/21
Sparrow Hawk	10	9/9	10	9/9	6	12/21
						150
						5
						5
						25
						60
						10

William C. Good

Reported by Wm. C. Good, Refuge 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.

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

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Pea Island Refuge

For 12-month period ending August 31, 1964

Reported by William C. Good

Title Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type	(3) Acreage	(4) Use-days	(5) Breeding Population	(6) Production
Unit 1.	Crops		Ducks	432,325	
All unimpounded	Upland	592	Geese	532,345	
area from New	Marsh	2,664	Swans		
Inlet north to	Water	16,000	Coots		
Oregon Inlet	Total	17,256	Total	1,015,170	
Unit 2.	Crops	68	Ducks	160,942	40
Pool No. 2	Upland	98	Geese	266,172	96
(North Pond)	Marsh	74	Swans	7,314	
An Impoundment	Water	400	Coots	23,576	
	Total	640	Total	458,004	
Unit 3.	Crops		Ducks	80,471	30
Pool No. 1	Upland	50	Geese	106,469	75
(South Pond)	Marsh	145	Swans	1,828	
An Impoundment	Water	180	Coots	5,894	
	Total	375	Total	194,662	
Unit 4.	Crops		Ducks	80,471	
All unimpounded	Upland	339	Geese	159,703	
area from New	Marsh	1,216	Swans		
Inlet to the	Water	9,700	Coots		
south boundary	Total	11,309	Total	240,174	
Sub-totals	Crops	68	Ducks	804,709	
for the	Upland	1,133	Geese	1,064,689	
refuge.	Marsh	4,099	Swans	9,142	
	Water	26,280	Coots	29,470	
Grand Total	Total	31,580	Total	1,908,010	
	Crops		Ducks		
	Upland		Geese		
	Marsh		Swans		
	Water		Coots		
	Total		Total		
	Crops		Ducks		
	Upland		Geese		
	Marsh		Swans		
	Water		Coots		
	Total		Total		

(over)

INSTRUCTIONS

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

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

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

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

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

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

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.

3-1752

Form NR-2

(April 1946)

UPLAND GAME BIRDS

Refuge Pea Island RefugeMonths of May 1 to August 31, 19 64

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks	
						Hunting	For Re- stocking	For Research			
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'vd.	Estimated Total	Percentage				Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.	
Ring-necked Pheasant	Dikes, wax myrtle growth, uplands and marshes.	15.1	5	60	Im - 4f	N	O	N	E	350	

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.

3-1752
 Form NR-2
 (April 1946)

UPLAND GAME BIRDS

Refuge Pea Island Months of September 1 to Dec. 31, 19 64

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Ring-necked Pheasant	Dikes, wax myrtle growth, uplands and marshes	2.75			1:1.48				200	Pertinent information not specifically requested. List introductions here.

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 1964

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

Remarks:

Reported by William C. Good
William C. Good, 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.

116008

3-1754

Form NR-4

(June 1945)

SMALL MAMMALS

Refuge Pea IslandYear ending April 30, 64

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs					(5) Total Popula- tion
								Share Trapping			Total Refuge Furs Shipped	Furs Donated	
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			
Muskrat	Impoundments and adjacent area (1500 acres)	1.5											1000
Otter	Range over all of the land and marsh area and tidal creeks (5880 acres)	588											10
Nutria	Impoundments and adjacent area (1500 acres)	15											100
Mink	Entire refuge area (5880 acres)	588											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.

DISEASE

Refuge Pea Island Year 19 64

Botulism

Lead Poisoning or other Disease

Period of outbreak _____

Period of heaviest losses _____

Losses:

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

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

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

Areas affected (location and approximate acreage) _____

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

Condition of vegetation and invertebrate life _____

Remarks _____

Kind of disease Winter kill and lead poisoning

Species affected Snow and Canadian geese

Number Affected Species	Actual Count	Estimated
<u>Snow Geese</u>	<u>5</u>	<u>10</u>
<u>Canada Geese</u>	<u>3</u>	<u>10</u>
_____	_____	_____

Number Recovered _____

Number lost 0

Source of infection _____

Water conditions Adequate

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

Remarks _____



PUBLIC RELATIONS

(See Instructions on Reverse Side)

Refuge Pea Island

Calendar Year 1961

1. Visits

a. Hunting 0 b. Fishing 1266 c. Miscellaneous 3764 d. TOTAL VISITS 5000

1a. Hunting (on refuge lands) Closed

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl			
Upland Game			
Big Game			
Other			

Number of permanent blinds _____
 Man-days of bow hunting included above _____
 Estimated man-days of hunting on lands adjacent to
 refuge _____

1b. Fishing (area open to fishing on refuge lands)

TYPE OF AREA	ACRES	MILES
Ponds or Lakes		
Streams and Shores		13 ocean shore

1c. Miscellaneous Visits

Recreation 1457 Official 69
 Economic Use 2238 Industrial 0

2. Refuge Participation (groups)

TYPE OF ORGANIZATION	On Refuge		Off Refuge	
	NO. OF GROUPS	NUMBER IN GROUPS	NO. OF GROUPS	NUMBER IN GROUPS
Sportsmen Clubs				
Bird and Garden Clubs				
Schools				
Service Clubs				
Youth Groups				
Professional-Scientific	1		1	2
Religious Groups				
State or Federal Govt.			1	X
Other				

3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Press Releases	1	Radio Presentations	0
Newspapers (P.R.'s sent to)	0	Exhibits	0
TV Presentations	0	Est. Exhibit Viewers	0

INSTRUCTIONS

Item 1: Total of a, b, and c, equal d.

"Visit" - definition. Any person who is on refuge lands or waters during a day or part thereof for the purpose of: hunting, fishing, bird-watching, recreation, business or economic use, official visit, or similar interest. INCLUDE - those who stop within the refuge while traveling on a public highway because of an interest in the area. EXCLUDE - persons engaged in oil or other industry not directly related to the refuge, persons using refuge as most direct route or principal avenue of traffic, and those boating on navigable rivers or the Intercoastal Canal, unless they stop to observe wildlife on the refuge.

Computing visits. Where actual counts are impractical, "sampling" is used with midweek and weekend samples varied by season or weather. A conversion factor of 3.5 (of passengers per car) is used when accurate figures are not available. Each refuge will develop a conversion factor for boats based on range of usage. Count a camper once for each 24-hour period or fraction thereof.

Item 1a: Acres - of refuge open for each type of hunting.

Managed hunts require check in and out of hunters, issuance of permits, or assignment of blinds.

Other - INCLUDE crow, fox, and similar hunting.

Lands adjacent to refuge. Normally considered within 1 mile or less of boundary, unless established sampling procedures cover a wider area. For big game hunting, the distance may be greater.

Item 1b: Acres of streams open to fishing, if practical; otherwise just miles open. Information on "shores" is primarily for coastal fishing.

Item 1c: Recreation. INCLUDE photography, observing wildlife, picnicking, swimming, boating, camping, visitor center use, tours, etc. TOTAL Recreation, Official, and Economic Use visits under Item 1.

Industrial. INCLUDE persons engaged in industry, i.e., oil industry or factories. EXCLUDE these from Item 1.

Item 2: INCLUDE the "On Refuge" groups in Items 1c and 1. In "Off Refuge" column include only those group meetings in which refuge employees actually participate. EXCLUDE these from Items 1c and 1.

Item 3: Exhibits - INCLUDE displays, fairs, parades, and exhibits OFF the refuge; EXCLUDE those ON.

Refuge Sea Island

Calendar Year 1961

Facilities

Picnic areas **1 tables **10 fireplaces **0 toilets **1
areas:

drinking water no shelters no

Swimming: designated areas no bathhouses no

Boating: launching sites no rental facilities no

service facilities no

are motors allowed _____ maximum horsepower _____

Camping: permitted **Yes or not permitted _____

tent camps **Yes total capacity **16

group camps no total capacity _____

hunter camps no total capacity _____

trailer camps **Yes

lodges no capacity _____

cabins no motels _____ total units _____

Tours: Season none frequency _____

self-guided nature trails no is trail leaflet available? _____

self-guided auto tour route no is tour leaflet available? _____

All tours are pre-arranged and are usually limited to groups.

Access estimate number in public use 3
points:

General - Brief statement of two to five lines on recreational opportunities available on refuge (suitable for inclusion in refuge leaflets or briefing reports). 13 miles of ocean front and inlet are available to surf fishing. Adequate opportunities prevail in winter for bird photography and observation. One overlook platform is open to the public and is situated on an impoundment dike; nearby there is a paved parking area.

(Over)

INSTRUCTIONS

Supply numbers wherever appropriate. These may be estimated if necessary.

Where operation and maintenance is supervised by this Bureau, but the responsibility of a concessioner, group, or agency, indicate by a single *. Where supervision of such activities is by another Federal Bureau indicate by two **.

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

(1)

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

Refuge Pea Island Year 19 64

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
None							None						

- (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-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 Water-fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
			Acres	Bu./Tons	Acres	Bu./Tons			
Annual Ryegrass							110	Annual ryegrass for winter goose browse	110
								(Harvest 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				110
Hay - Wild				2. Acreage Cultivated as Service Operation				110

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, 1964

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
None											

(8) Indicate shipping or collection points _____

(9) Grain is stored at _____

(10) Remarks _____

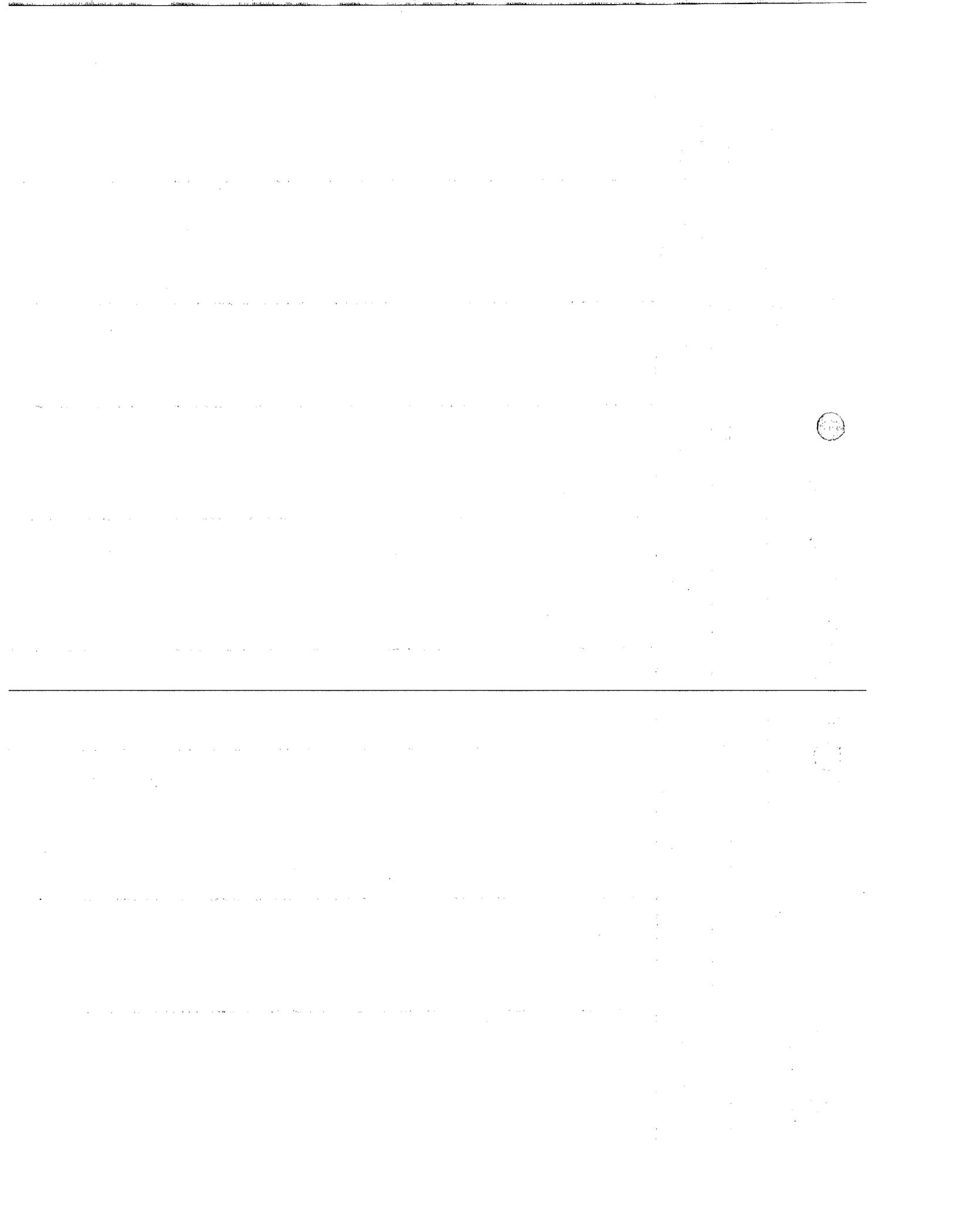
*See instructions on back.

REFUGE GRAIN REPORT

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

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

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



HAYING AND GRAZING

Refuge Sea Island Year 1964

Permittee	Permit No.	Unit or Location	Actual Acreage Utilized	Animal Use Months	Tons of Hay Harvested	Period of Use From - To	Rate	Total Income	Remarks
None									

Totals: Acreage grazed _____ Animal use months _____ Total income Grazing _____
 Acreage cut for hay _____ Tons of hay cut _____ Total income Haying _____



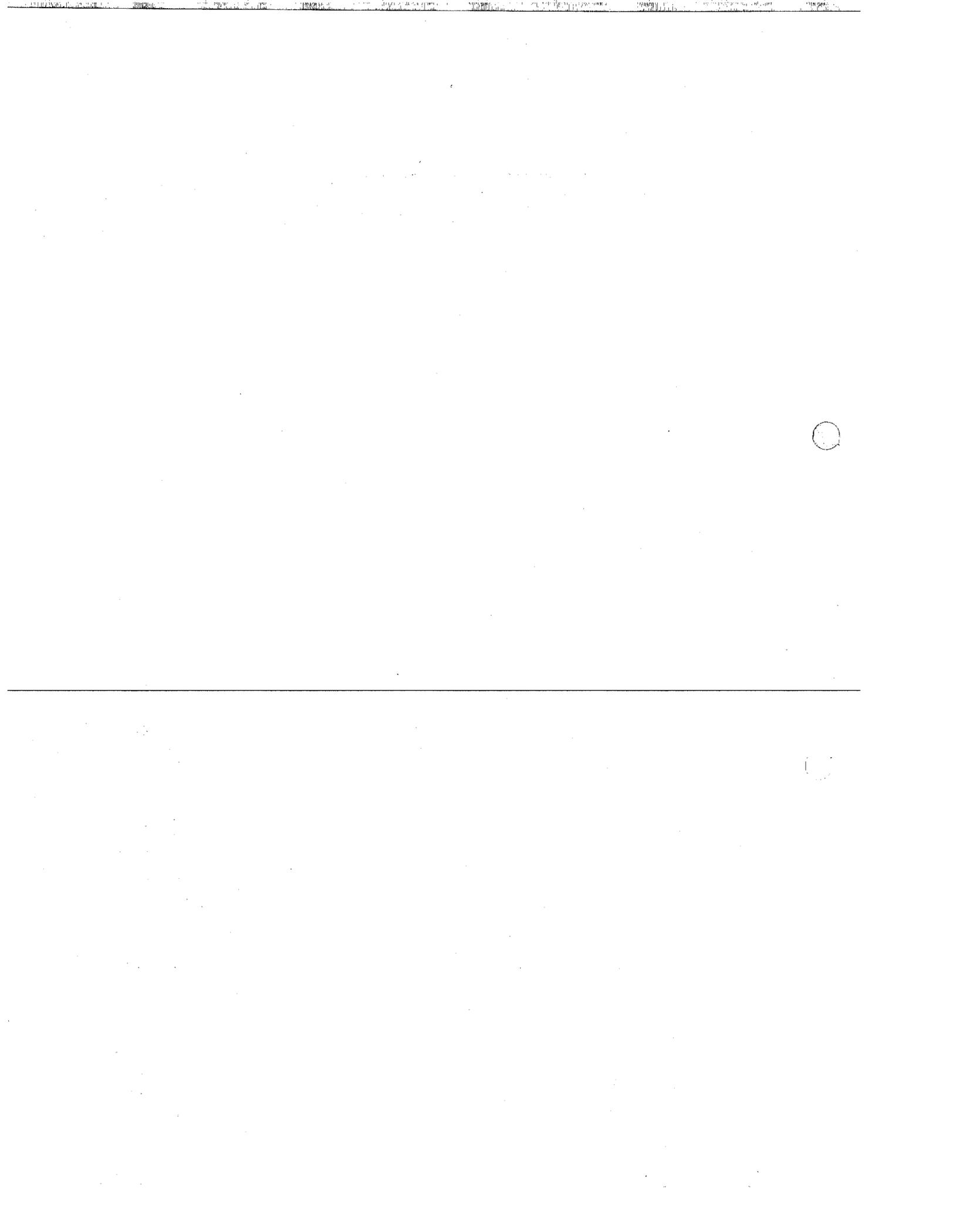
TIMBER REMOVAL

Refuge Pea Island Year 194 x 64

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
None								

Total acreage cut over _____ Total income _____

No. of units removed B. F. _____ Method of slash disposal _____
 Cords _____
 Ties _____



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

Bureau of Sport Fisheries and Wildlife

Refuge

Pea Island

ANNUAL REPORT OF PESTICIDE APPLICATION

Proposal Number

1

Reporting Year

1964

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)
7/8	Mixed brush incl Wax Myrtle	South Pond Berm	5	2,4-D low volatile ester	4 gal.	13 lb. ac.ec.	50 gal. water	gun jet
7/11 & 12	Cattail	North Pond & South Pond	8	Dalapon (2,2 Dichloropropionic Acid)	25 lb.	13.5 lb.ac.ec.	100 gal. water	gun jet

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

Brush - (1) 7/9 first rainfall of 1.30 (2) 7/15 first observation (3) 7/15 first effect noted (4) leaf turn (5) 7/19 70% apparent kill (6) 8/2 90% apparent kill and no regrowth, 8/26 90% kill & no regrowth (10) chemical cost \$10.80, labor \$46.00, equipment \$18.80, total cost \$86.00 per acre cost \$17.20.

Cattail - (1) 7/13 first rainfall of .03 (2) 7/15 first observation (3) 7/19 first effect noted (4) leaf spot & twisting of stem (5) 7/26 75% apparent kill (6) 8/2 90% apparent kill & no regrowth, 8/26 95% kill with 1% new growth (10) Chemical cost \$91.50, labor \$20.00, equipment \$11.00, total cost \$142.50, per acre cost \$17.81.

