PEA ISLAND NATIONAL WILDLIFE REFUGE

Narrative Report

January 1 to December 31, 1972

Refuge Staff

N. F. Williamson, Jr.	Refuge Manager
T. M. Wilkins	Assist. Refuge Manager
Marvin C. Toler	Maintenanceman
Beverly Daniels	Clerk-Typist (Part Time)

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I. GENERAL

A. Weather Conditions

The year started with exceptionally warm temperatures, with highs ranging in the 60's and lows in the 40's. On January 15, a cold front moved into the area bringing 15 to 20 mph winds, rain, and a low of 8 degrees. The following day brought snow, frozen ponds and icy sound waters.

February and March weather was normal with slightly below normal rainfall.

April brought above normal rainfall and below normal temperatures.

May and June weather was nice with highs ranging in the 70's and 80's. May rainfall was 2.35 inches above normal while June was 1.70 inches below normal.

July and August brought some warm weather with highs of 98 and 95 respectively. Rain in July was 5.67 above normal while August rain was 4.14 below normal.

Weather for the remaining months was nice with above normal rainfall. Temperatures ranged from a high of 89 in September to a low of 22 in December.

The following weather data were obtained from the National Park Service's weather station located on Bodie Island about 11 miles north of the refuge headquarters.

	Precipitation			Temperatures	
	1972	*Normal	Dev. from Normal	Max.	Min.
Jan.	3.43	4.80	-1.37	68	08
Feb.	4.81	4.64	+0.17	69	24
Mar.	3.58	2.88	+0.70	73	28
Apr.	3.85	3.14	+0.71	81	31
May	6.30	3.95	+2.35	82	45
June	2.86	4.56	-1.70	90	47
July	11.82	6.15	+5.67	98	63
Aug.	1.86	6.00	-4.14	95	63
Sept.	3.74	5.19	-1.45	89	60
Oct.	8.33	3.34	+4.99	85	43
Nov.	8.91	3.12	+5.79	76	41
Dec.	4.35	3.53	+0.82	70	22
Total	63.84	51.30	+12.54	98	08

*Normal precipitation is the average for the 10 year period, 1960-69.

B. Habitat Conditions

1. Water

Water levels in the fresh water impoundments remained normal to slightly above normal. This was due to good rainfalls at regular intervals.

Salinity readings were lowest during January and December. Highest salinity readings were measured in July and October with October having the lowest water levels.

Silver Nitrate titrations were conducted throughout the year to determine salinities. Salinity tests and gauge readings are as follows:

Water Salinity Tests During 1972
(Readings in % sea strength)

	North Pond		South Pond		Pamlico Sound		New Field
Date	North End	At Gauge	At Gauge	West Side	Tidal Creek	Salt Pond	At Gauge
1/21	3.73	3.42	1.71	1.71	35.71	36.49	-
2/14	3.73	3.57	1.86	1.71	62.09	62.09	-
3/16	3.88	3.73	3.10	3.42	66.75	69.85	33.38
4/17	4.04	3.88	4.19	3.88	52.01	57.44	27.63
5/17	3.88	3.73	3.57	3.10	58.22	50.45	19.09
6/15	4.04	4.04	3.57	3.42	58.22	55.11	15.83
7/18	4.81	4.50	4.66	9.00	42.70	53.56	16.92
8/17	4.66	4.35	3.88	3.73	52.78	41.92	13.20
9/14	5.12	4.50	4.66	4.35	66.75	65.19	16.76
10/17	5.59	4.97	6.05	6.21	69.85	65.19	19.40
11/17	4.66	4.50	3.73	4.04	65.19	49.67	13.35
12/18	3.88	3.73	3.57	3.42	29.49	55.11	0.78

Gauge Readings

Date	North Pond	South Pond	New Field
1/21	2.06	2.20	-
2/14	2.14	2.12	-
3/16	2.02	2.04	-
4/17	2.04	1.78	-
5/17	2.02	2.06	-
6/15	1.92	1.38	-
7/18	1.68	1.80	1.26
8/17	1.68	1.76	1.30
9/14	1.38	1.74	1.16
10/17	1.30	1.62	1.10
11/17	2.36	1.92	1.76
12/18	2.32	2.18	2.00

2. Food and Cover

Approximately 100 acres of rye grass were planted, 45 at the south end and 55 in New Field, during the later part of September. Production of green browse was fair. The fields have had light use due to an excellent growth of widgeongrass and other aquatics which were readily available in the sound. Strong easterly winds allowed easy feeding on the sound shoals and deeper sound troughs.

Production of natural foods was well above normal in the fresh water impoundments. Good to excellent food was produced over much of the remaining refuge acreage. Intermittent high sound tides have allowed waterfowl to feed in the upper marsh areas.

Vegetation surveys were run in North Pond, South Pond, New Field, and Salt Flat areas by Biologist Florschutz and refuge personnel. A five point vegetation sampler was used at 30 foot intervals along established transect lines. The four lines ran in 1972 totaled 10,020 feet, along which 338 stops were made and 1,690 samples taken. A summary of the 1972 data and data from previous years are as follows:

TABLE 1

North Pond Vegetation Transect Line Comparisons
1969 - 72

Species or Group	1972 %	1971 %	1970 %	1969 %
Muskgrasses (*Chara* spp.)	63.0	7.5	69.7	76.7
Widgeongrass (*Ruppia maritima*)	31.9			
*Spikerushes (*Eleocharis* spp.)	2.6	8.6	4.4	0.6
Sago Pondweed (*Potamogeton pectinatus*)	0.4		4.9	15.2
Water Hyssop (*Bacopa Monnieria*)		3.4		
Miscellaneous		2.6		
Bare Ground	2.0	77.9	21.0	7.5
Totals	100.0	100.0	100.0	100.0

The sharp increase of desirable vegetation was probably due to the higher water levels maintained throughout the critical growth period. Widgeongrass made a healthy showing this year making up a high percentage of available foods for the first time.

TABLE 2

South Pond Vegetation Transect Line Comparisons
1969 - 72

Species or Group	1972 %	1971 %	1970 %	1969 %
Muskgrasses (*Chara* spp.)	68.9	70.2	55.6	15.1
Widgeongrass (*Ruppia maritima*)	12.9	0.3		1.0
Sago Pondweed (*Potamogeton pectinatus*)	7.1	5.4	5.3	6.4
*Spikerushes (*Eleocharis* spp.)	5.5	12.0	13.4	12.3
Water Hyssop (*Bacopa Monnieria*)	4.2	4.6	8.0	6.8
Miscellaneous		2.7	1.5	0.3
Bare Ground	1.3	4.9	16.3	58.1
Totals	99.9	100.1	100.1	100.0

*Includes *Eleocharis parvula*

Widgeon grass showed a significant increase while spikerushes decreased.

TABLE 3

Salt Pond Vegetation Transect Line Comparisons
1969 - 72

Species or Group	1972 %	1971 %	1970 %	1969 %
Glassworts (*Salicornia* spp.)	28.4	28.9	24.9	19.0
Saltgrass (*Distichlis spicata*)	4.0	1.5	1.5	1.2
Saltmarsh Cordgrass (*Spartina alterniflora*)	2.5	2.1	2.9	2.3
Filamentous Algae		26.6	11.4	13.8
Miscellaneous		0.1	1.3	1.1
Bare Ground	65.2	40.8	58.0	62.6
Totals	100.1	100.0	100.0	100.0

Bare ground increased at the expense of undesirable filementous algae.

TABLE 4

New Field Vegetation Transect Line Comparisons
1969 - 72

Species or Group	1972 %	1971 %	1970 %	1969 %
Saltmeadow Cordgrass (Spartina patens)	23.4	15.7	22.5	22.9
Three-square (Scirpus Americanus)	9.8	4.5	4.1	6.6
Spikerushes (Eleocharis spp.)	8.4	5.9	5.3	1.2
Saltgrass (Distichlis spicata)	8.0	5.6	2.5	2.8
Widgeongrass (Ruppia maritima)	5.5			
Morning Glory (Ipomea spp.)	3.8	1.4	2.1	0.2
Muskgrasses (Chara spp.)	2.2			
Saltmarsh Cordgrass (Spartina alterniflora)	2.2	4.8	2.7	7.6
Groundselbush (Baccharis halimiflora)	1.7	0.5	4.7	2.6
Horseweed (Conyza canadensis)	1.6	3.7	6.8	13.9
Saltmarsh Bulrush (Scirpus robustus)	1.6	0.6	0.5	0.9
Smartweeds (Polygonum spp.)	1.3	1.9	1.3	2.2
Seaside Goldenrod (Solidago sempervirens)	1.0	1.0	2.6	0.7
Pennywort (Hydrocotyle sp.)	0.9	0.1		1.6
Blackberry (Rubus spp.)	0.7		0.5	
Sandgrass (Triplasis purpurea)	0.7			
Broomsedge (Andropogon virginicus)	0.6	5.2	3.2	1.0
Hightide Bush (Iva frutescens)	0.6	0.5	0.5	
Round Rush (Juncus spp.)	0.6			
Wax Myrtle (Myrica cerifera)	0.6	0.5	7.8	2.6
Aster (Aster sp.)	0.4			1.6
Beakrush (Rynchospora spp.)	0.3		0.1	
Dwarf Spikerush (Eleocharis parvula)	0.3	0.1		
Wild Millet (Echinochloa crusgalli)	0.3	8.8	7.6	0.5
Flat Sedges (Cyperus spp.)	0.1	7.8	3.1	1.7
Marsh Pink (Rosa sp.)	0.1			
Needlerush (Juncus roemerianus)	0.1	0.1	0.3	
Panic Grass (Panicum spp.)	0.1	4.5	3.0	1.3
Sea Ox-eye (Borrichia frutescens)	0.1	0.3	0.3	0.5
Miscellaneous		12.2	6.9	2.9
Bare Ground	22.9	14.4	11.8	21.8
Totals	99.9	100.1	100.2	100.1

New Field management was entirely different this year as water was retained in the lower half throughout the summer. The result was evident in the appearance of beds of widgeongrass and some muskgrasses. Much of the upper half was not affected. Dense myrtle and groundsel bush patches are still present along higher areas of the field. Three-square and spikerushes were most prevalent in the middle transition zone between summer water and the upper zone of myrtle and groundsel bushes.

II. WILDLIFE

A. Migratory Birds

1. Waterfowl

Total use days for all groups of waterfowl except swan decreased in 1972. Use day data were as follows:

Use Days

Species	1970	1971	1972
Swans	15,903	24,759	29,820
Geese	1,122,736	1,176,835	1,026,311
Ducks	1,764,245	1,798,554	1,690,805
Coots	213,475	449,966	249,529
Total	3,116,359	3,450,114	2,996,465

Total use days for 1972 were 453,649 less than in 1971 and 119,894 less than in 1970. Swan use continued to increase while Canada and snow goose use continued to decline. Coot numbers were very low with use days down some 200,437 from 1971. Canvasback and redhead numbers were very low this year. Lower snow goose numbers may be credited to the almost complete reproduction failure. Of 818 aged snows, only 1.3 percent were young-of-the year. Although swan use was up, immatures accounted for only 3.9 percent of 409 aged birds.

Ground and aerial pair counts conducted on May 12 and 16 indicated larger breeding populations than in 1971 for both gadwalls and blacks, but production was down this year. An estimated 339 young were produced consisting of 53 black ducks and 286 gadwalls. Last year's (1971) production included 10 mallards, 160 black ducks, 1 green-wing teal, 6 blue-wing teal, 4 red-breasted mergansers, and 650 gadwalls for a total of 831 young.

A Ross' goose visited the refuge during the early part of 1972 and was last seen in March. On December 18, the Ross' goose showed up again and is still around.

On December 28, a common teal was reported in the salt flats just north of North Pond.

2. Wading Birds, Gulls, Terns and Shore Birds

The wading bird rookery consisted of two small islands and part of a larger island in North Pond. Estimated production was 30 little blue herons, 50 black-crowned night herons, 40 Louisiana herons, 8 glossy ibis,

10 common egrets, 20 cattle egrets and 30 snowy egrets. Production was lower this year due to destruction of nest and eggs by exceptionally high winds and stormy weather during their first nesting attempt.

All tern and skimmer nesting attempts on the refuge failed this year. On June 6, a colony of nesting least terns was discovered on the higher beach at mile post 16. The colony contained approximately 60 nests and was the largest found. Total destruction by predation, rain, high tides and high winds account for the nesting failures. Only one least tern chick was seen during the nesting period. Other nesting was scattered.

Nesting willets were numerous throughout the refuge with some nests discovered in the sand dune area. Black-necked stilts and oystercatchers also nested on the refuge.

Virginia, clapper, king and sora rails were seen on several occasions.

Marbled Godwits and avocets were common in fall and winter.

Great black-backed, herring, ring-billed and laughing gulls were numerous at times.

B. Upland Game Birds

Ring-necked pheasants and morning doves are the only upland game birds present on the refuge. No nests were found, but it is believed that doves nested on the refuge this year. A pheasant census was run by State and refuge personnel on September 12, 1972. An estimate of 998 birds on 4,455 acres of suitable habitat, or one bird per four acres was derived from the survey. This seems a bit high, probably due to the fact that suitable habitat was overestimated.

C. Big Game Animals

None occur on refuge.

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

Muskrat numbers remain high. They continue to do some damage to dikes and dike berms.

Nutria were seen numerous times in all water impoundments. Some dike damage was attributed to these large rats.

Otter have been seen on several occasions this year. A group of three were seen in North Pond throughout the summer and fall.

No mink were seen this year.

Feral cat numbers are high and have become a threat to some wildlife, especially young pheasant. Number of cats are reduced at every opportunity.

E. Hawks, Eagles, Owls, Crows

Marsh hawks ranked as the most abundant in this category with a peak of 20. Sparrow hawks were second. Peregrine falcon sightings were down from last year. Other hawks observed this year were; pigeon, red-tailed, sharp-shinned, and cooper's.

Oysprey sightings were down this year, but several were observed fishing in and around North Pond.

Several barn owls and one short-eared owl were seen on the refuge. Five road-killed barn owls were found.

Common and fish crows were seen on the refuge. Fish crows were abundant and are believed to be responsible for much egg predation.

F. Other Birds

The Christmas Bird Count, held on December 30, 1972, showed 124 species on the refuge. The most unusual were the common teal and Ross' goose also seen on the 1971 count. Several additional species were known to be present on the refuge at the time of the count.

Accidentals to be added to the bird list are the anhinga, Baird's sandpiper, common shellduck, and red-bellied woodpecker.

Other unusual birds were white ibis, European widgeon, snowy plover, long-billed curlew, flamingo, and white-fronted goose.

G. Fish

Fishing was poor again this year. A few good catches of bluefish and rock were made by commercial fishermen along the beach.

H. Reptiles

Snapping turtles were numerous in the fresh water impoundments along with yellow-bellied sliders and diamondback terrapins. Diamondback terrapins were also abundant in sound waters and tidal creeks.

Eastern glass lizards and six-lined racers were occasionally seen.

Water snakes, blackracers and eastern hognose snakes were seen on the refuge. No poisonous snakes were observed on the refuge.

Loggerhead sea turtle activity on the beach increased significantly this year. Ten natural nests were found on Pea Island beaches. The first nest was discovered on June 16 and the last reported nest was found on July 17. Seven of these nests were placed in an exclosure built on the

upper beach. This was done to protect the nests from rough ocean tides and vehicular traffic on the beach. A total of 850 eggs were accounted for. Number of eggs per nest ranged from a high of 138 to a low of 72, an average of 85 eggs. Approximately 72 days were required for the young turtles to hatch and emerge. From these 850 eggs, 545 turtles were released, 241 eggs were infertile, and 64 were dead. Death was primarily due to overwash which drowned many of the newly hatched turtles.

At 9:00 a.m. on August 14, we received a telephone call advising us that a turtle had come ashore on the beach in Nags Head, about 20 miles north of the refuge, and that people were bothering the turtle and disturbing the nest. We moved the nest to the refuge exclosure along with the other nests. The clutch was laid too late, however, and did not hatch. Of the 129 eggs in the nest, 37 were infertile. In the fertile eggs, embryo's formed and developed, but cool temperatures slowed growth and all embryo's, except 8, were dead when checked on November 22. These eight were approximately 2/3 normal size at 103 days, some 31 days more than the normal hatching time.

I. Diseases

Very few sick or dead ducks were noted on the refuge.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

New decking of observation platforms.

Replaced old boundary signs.

Erected oysprey nesting platform.

Marked off parking areas with posts to prevent dune crossings.

Minor maintenance on vehicles, air-cooled engines, pumps, boats, outboard motors, and farm equipment as needed.

Scraping and painting of buildings.

Mowing of dike roads, general maintenance of water control structures, and other general maintenance as needed.

B. Plantings

1. Aquatics

None.

2. Trees & Shrubs

None.

3. Upland Herbaceous Plants

None.

4. Cultivated Crops

Approximately 100 acres of common ryegrass was planted for green browse. This consisted of 55 acres in New Field and 45 acres at the south end of the refuge. Distribution was approximately 50 pounds of ryegrass seed and 400 pounds of 10-20-20 fertilizer per acre.

C. Collections and Receipts

One-hundred and seventy-five bushels of shelled corn was received from Pungo NWR to be used in our banding program.

D. Control of Vegetation

Dike roads were mowed several times during the summer. This allowed visitors to walk around North Pond and prevented incrouchment of undesirable shrubs such as waxmyrtle, bayberry and groundselbush.

E. Planned Burning

We were unable to get burning done until late January due to the extremely wet condition of the marsh.

In January, the New Field area was burned, approximately 150 acres, for the second successive year.

Approximately 400 acres were burned south of refuge headquarters.

Areas burned had a dense growth of grasses, Spartina spec., needle rush, beach grass, waxmyrtle, groundselbush, bayberry, etc.. Most areas burned very hot, resulting in a good burn. Some of the lower areas, primarily needle rush, burned very little. A good kill on myrtle and bayberry; fair kill on groundselbush resulted.

Immediately following the burn, we had good growth on grasses, particularly beach grass. New growth was grazed heavily by both Canada and snow geese.

During the winter months, the burned areas were used heavily by snow geese.

F. Fires

Three fires were reported on the refuge. These were small, covering

approximately five acres and were all in the dune area. One was caused by sparks from a habacchi pot, one from the exhaust of a stuck jeep and the cause of the third is unknown, but believed to have been started by campers.

IV. RESOURCES MANAGEMENT

A. Grazing

None on refuge.

B. Haying

None on refuge.

C. Fur Harvest

None on refuge.

D. Timber Removal

None on refuge.

E. Commercial Fishing

All fishing is in State controlled navigable sound water and along the beach. No refuge permit is required for fishing.

F. Other Uses

None.

V. FIELD INVESTIGATION OR APPLIED RESEARCH

Dr. William Campbell of North Carolina State University continued his study on insects affecting vegetation found along coastal dune areas. This study is concerned with a scale which kills American beach grass. He is operating under Permit #4-70-10.

North Carolina Wildlife Resources Commission personnel and refuge personnel conducted a census to determine the pheasant population on Pea Island NWR. This was done to determine whether or not the removal of 40 birds would be detrimental to the Pea Island population. The removal of 40 birds was approved. Subsequently 26 hens and 14 roosters were trapped and released on Pungo NWR as part of a study being conducted by the NCWRC.

Mr. Bob Downing, Research Biologist, visited the refuge on several occasions in conjunction with a study on nesting terns and wading birds.

Mr. Erwin Klass, Patuxent, visited the refuge on May 8-11 for the purpose of collecting eggs from various species in connection with a study on pesticides affecting eggshell thickness.

As part of a five year program in conjunction with Chincoteague and Back Bay refuges on the northward extension of the breeding range of the Atlantic loggerhead sea turtle, ten nests containing 1,115 eggs were transferred from Cape Romain NWR to Pea Island on August 17. The largest nest contained 137 eggs while the smallest contained 35 eggs. The nests were placed in a prepared exclosure. Each nest was enclosed by a wire cylinder to prevent ghost crab and other predation. The nests were checked each day and all emerged turtles were released. Of the 1,115 eggs, 827 young turtles were released, 106 eggs were infertile and 182 died.

Waterfowl banding on Pea Island is limited to post-season banding of Canada geese and black ducks and pre-season banding of locally raised gadwalls and black ducks.

Refuge banding accomplishments were:

Post-season:	
Canada geese	125
Black ducks	7
Spring:	
Canada geese	2
Pre-season:	
Black ducks	4
Gadwall	97

Pre-season banding is done primarily to supply information on local nesting gadwalls.

VI. PUBLIC RELATIONS

A. Recreational Uses

Refuge recreational use of 1,154,169 was down from 1971 when 1,169,888 visitors were reported. Sightseeing and saltwater fishing accounted for the larger percentages of refuge use. May through July showed over 200,000 visitors while April, August and September showed 94,471; 107,940; and 56,065 respectfully.

B. Refuge Visitors

Otto Florschutz, B.S.F.&W.	Washington, N. C.
Phil & Jean DuMont, B.S.F.&W.	Washington, D. C.
C. L. Moffett, Regional Office	Atlanta, Ga.
Dan Connelly, N.C.W.R.C., Biologist	Edenton, N. C.
Frank Johnson, B.S.F.&W.	Atlanta, Ga.
Margaret Brickle, N. C. Travel Bureau	Raleigh, N. C.
Stephen Ann-Armytage, Sports Illustrated	New York
Mark W. Alger, Bureau of Budget	Falls Church, Va.
Jack Donnelly, N.C.W.R.C., Biologist	Edenton, N. C.
Bob & Pat Downing, B.S.F.&W.	Blackburg, Va.
Don Harke, Wildlife Services	Raleigh, N. C.
Ted R. Mitchell, N.C.W.R.C.	Raleigh, N. C.
Erwin Klaas, Patuxent Wildlife Res. Center	Laurel, Md.
R. G. Alexavaut	Perth, West Australia
Lt. Col. & Mrs. J. W. Mawson	Wellington, New Zealand
John P. Davis, Refuge Manager	New Holland, N. C.
Sam Poole, N.C.W.R.C.	Kinston, N. C.
A. Sidney Haynes, N.C.W.R.C.	Lumberton, N. C.
Mrs. John W. Aull, Director, Audubon Society	Dayton, Ohio
Dr. & Mrs. Carl W. Buchheister	Bethesda, Md.
Bill A. Grabill, B.S.F.&W.	Plymouth, N. C.
D. Warren Lupton, G.M.A.	Washington, N. C.
Dr. H. Hanson, Ill. Natural Hist. Survey	Urbana, Ill.
Charles Johnson, Writer, Photographer	New York
Steve Joyner, B.S.F.&W.	New Holland, N. C.
Carroll Hanson, Staff Photo. Sports Afield	
Joel Arrington, N. C. Travel Bureau	Raleigh, N. C.
John Fields, Refuge Manager	Plymouth, N. C.
Gerald Perry, N. C. Fisheries Comm.	Kitty Hawk, N. C.
Walt Chason, Game Protector	Manteo, N. C.
Terry Waterfield, Game Protector	Buxton, N. C.
Dr. T. L. Quay, N. C. State University	Raleigh, N. C.
Dr. William Campbell, N. C. State University	Raleigh, N. C.
Vince Mrajek, N.P.S.	Manteo, N. C.
Jim Henning, N.P.S.	Manteo, N. C.
Robert Cheeseman, N.P.S.	Manteo, N. C.
Bob Barbee, Superintendant, N.P.S.	Manteo, N. C.
Jim Pugh, Naturalist, N.P.S.	Manteo, N. C.
Balfour Baum, N.P.S., Bodie Island	Nags Head, N. C.

C. Refuge Participation

Several interested groups were given tours and talks by refuge personnel.

D. Hunting

No hunting is allowed on refuge.

E. Violations

A total of 32 cases were made this year. Illegal camping accounted for 15 cases and driving off designated roadway citations were issued to eight vehicle operators. All these cases were disposed of with forfeiture of $25. collateral. One case of illegal possession of firearms on a refuge was disposed of with a $100. fine. Another case of possessing a loaded firearm and protected bird (snow goose) was disposed of with $160. in fines. Three minors were put on five years probation for possessing firearms on the refuge. Two cases were dismissed because the defendants could not be found. Two cases are still pending.

F. Safety

Monthly safety meetings were held at refuge headquarters. Regional safety materials were covered and discussed. Safety films were also shown and discussed. Defensive driving, fire prevention, proper use of hand tools, and other safety precautions were discussed.

The last lost time accident was January 21, 1958. As of December 31, 1972, there has been 5,427 calendar days since the last lost time accident with approximately 83,203 man-hours worked.

Future plans are to continue with our monthly safety meetings and to correct any hazardous conditions that might occur before an accident happens. Protective clothing and equipment will be acquired as needed.

VII. OTHER ITEMS

A. Items of Interest

Assistant Manager Peyton transferred to Chincoteaque NWR on June 11. Tim Wilkins, Mr. Peyton's replacement, reported for duty on June 5.

Messers Williamson, Toler and Wilkins attended a defensive driving course held at Buxton, N. C. on August 22 and 23.

Mrs. Daniels, Refuge Clerk, attended a DIPS workshop in Atlanta on May 3.

Mr. N. F. Williamson, Refuge Manager, attended the Coastal Marsh and Estuary Symposium at the Louisiana State University on July 17 and 18.

B. Photographs

Photographs are on pages following signature.

C. Credit

This entire report was prepared by Tim Wilkins, Assistant Refuge Manager.

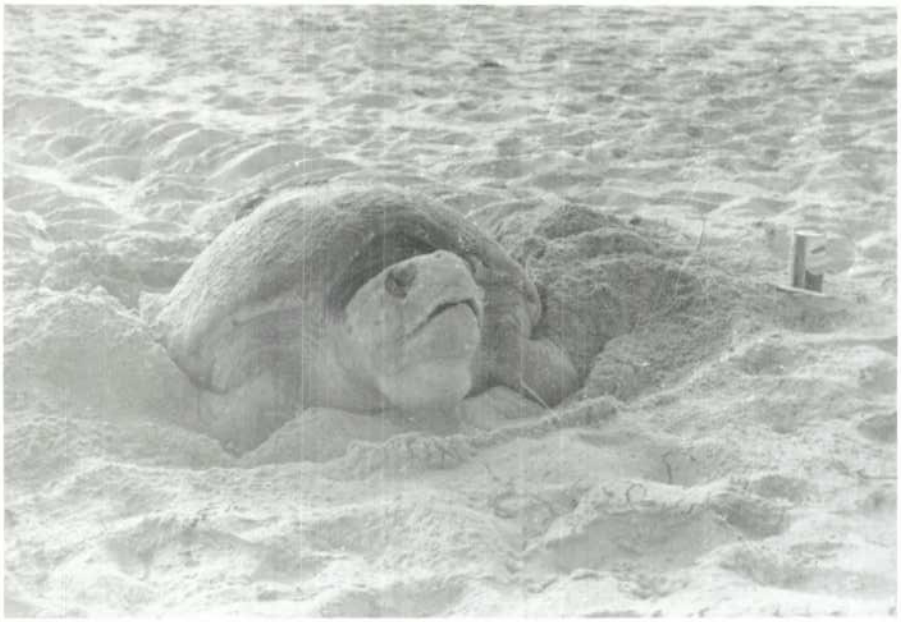
Date: March 22, 1973

Submitted by: D. F. Williamson Jr.

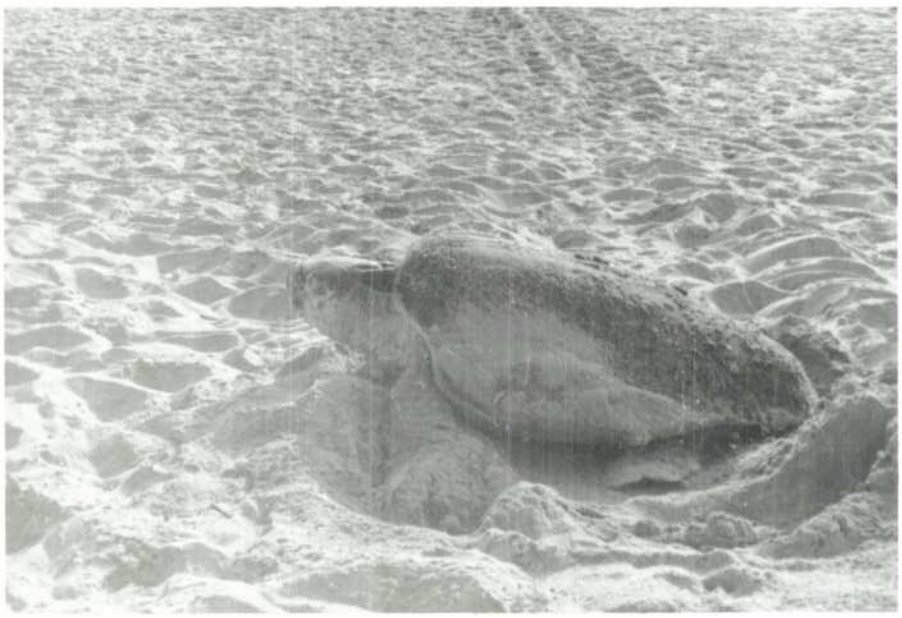
Approval: [illegible] MAR 27 1973

Assistant Regional Refuge Supervisor

On August 14, this Atlantic loggerhead sea turtle came ashore north of the refuge on Nags Head beach to lay her 129 eggs. She was found after she had begun to dig her nest. (Picture negatives donated by Mrs. Forman from Elizabeth City.)



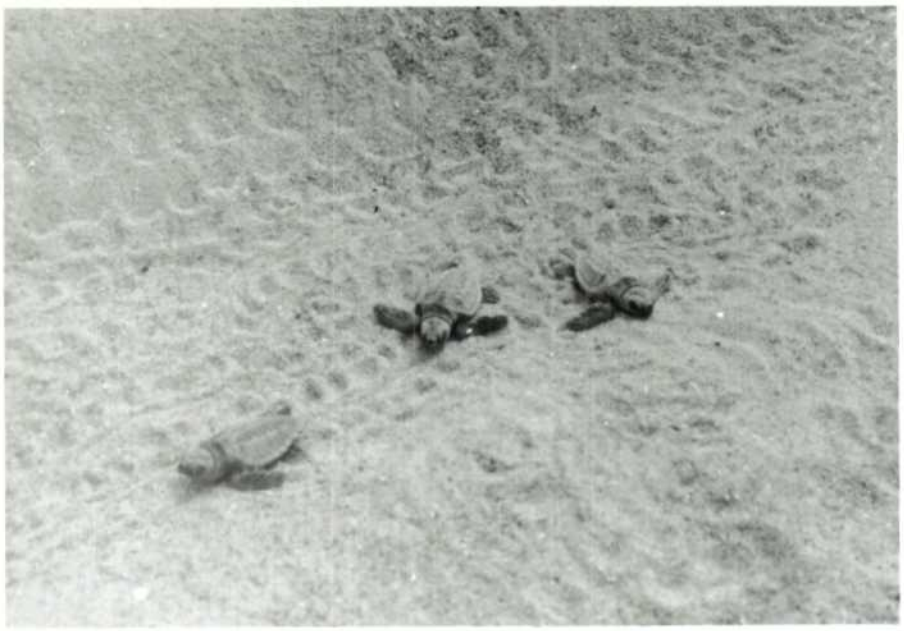
Here she has completed her nest and begun laying eggs. (From Mrs. Forman's negatives.)



Egg laying is completed and back to the ocean where she will once again be at home. (From Mrs. Forman's negatives.)

Eggs of the Atlantic loggerhead are a bit larger than a golf ball and have a white, semi-hard shell. Nest on Pea Island contained a high of 138 eggs and a low of 72.

After the egg laying ordeal, she is escorted back to the safety of the ocean, leaving the eggs to hatch and the young to fend for themselves. (From Mrs. Forman's negatives.)



Young Atlantic loggerheads heading to ocean. (R2-14-72)

These young encounter many obstacles and barriers such as these tracks left by beach visitors. (R1-17-72)

Also encountered are deep depressions and ruts left by beach vehicles. (R2-15-72)

Although vehicle tracks are numerous and many times detour the turtles, instinct tells them to move toward the roaring surf. (R2-13-72)

Boards and other materials washed up by the ocean offer more obstacles for the young, but they continue on their course. (R2-17-72)

Traffic on the beach is heavy making it rough for nesting turtles, turtle nest, young turtles, nesting birds and nest, plus detracting from the beach's beauty. (R1-6-72)

Raging ocean tides are hazardous for turtles and birds plus being a strong erosive force on the beach. (R2-8-72)

Strong persistant northeast winds cause strong running tides which change the beach's appearance in many ways. Here the beach area has eroded away and much of the dune area is gone. (R3-11-72)

Continued dune erosion by strong running tides. (R3-12-72)

As the rolling waves strike the dunes, the water soaked sand slides down the dune and is washed away by the cutting tides. (R3-14-72)

Here erosion has taken much of the dune past the sign marker in previous pictures. Ocean water had breached the dune. (R3-15-72)

Dune area almost eroded away, but calm days and tides will allow the beach to once again rebuild. (R3-20-72)

Fishing pier at Rodanthe just below the refuge. Braces were nailed to the piling to prevent the building from collapsing. (R3-16-72)

Much of the piling has settled or nearly washed away leaving a much distorted building and pier. (R3-18-72)

As part of Dr. Campbell's experiments, plots were burned off and later checked to determine its effects. (R1-0-72)

Blue crab predation on young gadwall. This young duck was being eaten alive and had already lost its leg. (R1-9-72)

An oysprey nesting platform was erected in North Pond, but not used this year. (R1-4-72)

A stolen car from Ontario caught fire and burned at south end of the refuge. Two young men were later apprehended. (R1-13-72)

Forms NR-7 and NR-11 were negative thus not submitted.

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 [illegible] For 12-month period ending August 31, 1972

Reported by [illegible] Title Assistant Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type	(2) Habitat Acreage		(3) Use-days	(4) Breeding Population	(5) Production
Unit #1	Crops	[illegible]	Ducks	[illegible]	[illegible]	0
South Boundary	Upland	239	Geese	177,[illegible]		
to New Inlet	Marsh	1,216	Swans	0		
	Water	[illegible]	Coots	0		
	Total	[illegible]	Total	[illegible]		
Unit #2	Crops	0	Ducks	[illegible]	20	40
New Inlet to	Upland	220	Geese	219,702		
North Dike of	Marsh	664	Swans	0		
North Pond	Water	9,550	Coots	0		
(Sound Side)	Total	10,434	Total	[illegible]		
Unit #3	Crops	[illegible]	Ducks	[illegible]	100	200
North & South	Upland	230	Geese	[illegible]		
Pond	Marsh	[illegible]	Swans	27,287		
New Field	Water	500	Coots	129,206		
	Total	1,331	Total	[illegible]		
Unit #4	Crops	0	Ducks	[illegible]	30	0
North Dike of	Upland	390	Geese	198,779		
North Pond to	Marsh	1,530	Swans	2,053		
Oregon Inlet	Water	3,440	Coots	3,760		
	Total	[illegible]	Total	[illegible]		
Totals for	Crops	100	Ducks	1,670,[illegible]	250	330
Refuge	Upland	1,115	Geese	1,0[illegible],204		
	Marsh	3,825	Swans	29,340		
	Water	26,540	Coots	[illegible],020		
	Total	31,580	Total	3,164,528		
	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.

Interior Duplicating Section, Washington, D. C. 27580

3-1755
Form NR-5

DISEASE

Refuge Pea Island Year 19 72

Botulism

Period of outbreak None Noted

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 None Noted

Species affected _____

Number Affected

Species	Actual Count	Estimated

Number Recovered _____

Number lost _____

Source of infection _____

Water conditions _____

Food conditions _____

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 Waterfowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
Common Ryegrass					95	80	95	Winter browse for geese	
								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				95
Hay - Wild				2. Acreage Cultivated as Service Operation				95

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 1 through December 31, 1972

(1) Variety*	(2) On Hand Beginning of Period	(3) Received During Period	(4) Total	(5) Grain Disposed of				(6) On Hand End of Period	(7) Proposed or Suitable Use*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Yellow Corn	175 bu.	0	175 bu.			175 bu.	175 bu.	0			
Common Ryegrass	0	5,000 lb.			4,600 lb.		4,600 lb.	0			

(8) Indicate shipping or collection points Ryegrass seed was purchased from Kaizer Chemical Co.

(9) Grain is stored at Pea Island Headquarters

(10) Remarks Corn was used for bait on goose trapping sites and ryegrass was seeded for green browse.

*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.

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

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PERSTICIDE APPLICATION

Refuge	Proposal Number	Reporting Year
Pea Island	1-72	1972

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)
May 17	Eridcoccus carninae	Isolated areas on dunes at north end of refuge.	.25 ac.	Cygon 267	Cygon-0.133 lb.	½ lb/acre (Average)	Water 10 gal/ acre	Ground Spray
				Scalecide Oil	Oil-0.0167 gal.	1 gal/acre		

10. Summary of results (continue on reverse side, if necessary) This was an experimental application made in connection with a study being made by Dr. William V. Campbell on insects affecting vegetation used in coastal dune stablization.
The Cygon 267 gave a 100 percent control.
Scalecide oil gave a 47 percent control.
The study is to continue in 1973.

35500

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

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PERSTICIDE APPLICATION

Refuge	Proposal Number	Reporting Year
Pea Island	2-72	1972

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)
			Not Used					

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

35500