

PEA ISLAND NATIONAL WILDLIFE REFUGE

Rodanthe, North Carolina

ANNUAL NARRATIVE REPORT

Calendar Year 1982

U.S. Department of the Interior
Fish and Wildlife Service
NATIONAL WILDLIFE REFUGE SYSTEM



Front Row: 4, 6, 1
Back Row: 2, 7, 3, 5

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5. Joseph B. Creef	Maintenance Worker, WG-8 PFT
6. Angela J. Elmore	YACC Enrollee, 8/10/82 - 3/10/82
	Laborer, WG-2 TFT, EOD 4/19/82
7. Barbara J. Henderson	Recreation Aid, GS-2 TFT
	EOD 5/24/82 Terminated 8/10/82
8. Willard B. Smith	YCC Enrollee, 6/21/82 - 9/01/82
9. Michael E. Wilkinson	YCC Enrollee, 6/21/82 - 8/20/82
10. Eric D. Roush	YCC Enrollee, 6/21/82 - 9/01/82

Review and Approvals

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Submitted by Date

Don H. McDaniel 2-9-83
Regional Office Review Date

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A. HIGHLIGHTS

A tornado or water spout hit the refuge headquarters on August 25th (Section B).

Beach erosion continued as a persisting problem. Winter storms were especially severe in October (Section B & F.1).

Oregon Inlet stabilization continued to be a highly emotional issue (Section J.1).



"Million dollar trawler" latest victim of
Oregon Inlet. 12/82 ARH

Water management capabilities in North Pond and New Field were enhanced with the final rehab efforts (Section F.2).

More than one hundred sea turtles washed ashore on the Outer Banks in late November (Section G.2).

The first National Hunting and Fishing Day Celebration held on September 25 was attended by hundreds of people (Section H.6).

Highway 12 continues to deteriorate due to ocean overwash, heavy traffic, and lack of maintenance (Section B & F.1).

B. CLIMATIC CONDITIONS

January was the coldest month of 1982. On January 10-11, with 10 degrees temperature and 30-35 mph winds, the sound froze over. This condition was temporary, lasting only a day or two. January's average temperature was 41 degrees.

July, by contrast, was the warmest month with an average of 78 degrees. The hottest day of the year for Pea Island was July 27 with a temperature reading of 89 degrees.

Precipitation for the year totalled 49.55 inches on the refuge with the wettest month being June with 8.53 inches. Since 1975, the mean annual precipitation for the Outer Banks has been 55.02 inches.

Several significant storms occurred during the year causing erosion, damage to structures, and loss of land. On August 25, a small tornado hit the headquarters complex area. It ripped off approximately 200 sq. ft. of roofing on the office building and bent the flagpole. Subsequent rain damage included complete destruction of ceiling and fiberglass insulation in the office of the assistant manager and ORP. Estimated damage was \$3,000.



Laborer Angela Elmore surveys tornado damage
to roof of office building. 8/82 JDB

Northeasterly winds on October 12-15 and October 24-25 caused ocean overwash of Highway 12 in several locations on the refuge. In addition to the piles of sand washed onto the highway, structural damage of the road (cave-in) occurred approximately a half mile north of headquarters.



And this is not the worst spot on Highway 12.
10/82 ARH

C. LAND ACQUISITION

1. Fee Title

Pea Island National Wildlife Refuge was established in 1938 and is located on the Outer Banks of North Carolina. The refuge is a 5,915 acre coastal barrier island extending 12.5 miles. An additional 25,700 acres of adjacent lands and water in Pamlico Sound are closed by Presidential Proclamation to waterfowl hunting.

A Congressional Act was passed in 1937 establishing Cape Hatteras National Seashore which is administered by the National Park Service. This Act recognized Pea Island Refuge as part of the Seashore but left administration of the Refuge to the U. S. Fish and Wildlife Service. There is a cooperative agreement between the two agencies for management of recreational activities on the refuge and wildlife management technical assistance on the Seashore.

D. PLANNING

1. Master Plan

Though the actual master plan for Pea Island was completed during 1981, several "final touches" were added during 1982. In addition to the public participation activities, which are discussed in the next section, the environmental assessment for the Pea Island master plan was completed and submitted by mid-April. This report also included a Section 7 and a FONSI.

Also, during 1982, an evaluation of the master planning process at Pea Island was completed by refuge staff and submitted to regional office. The evaluation included a step-by-step critique of the process as well as a breakdown of time spent on each step.

The development of the Pea Island master plan involved 1,665 man hours of refuge staff time (not including the EA). Total cost to the refuge was \$18,307.

3. Public Participation

The last of the individual responses concerning the master plan were mailed out by mid-January. A letter was sent to each person who responded to the mail-out outlining the proposed alternative for the refuge master plan. Letters addressed specific comments from the responder and gave general information on the finalized master plan proposal.

4. Compliance with Environmental Mandates

The Coastal Barrier Resources Act was passed by Congress on January 25, 1982. The Act was established in order "to minimize the loss of human life, wasteful expenditure of Federal revenues, and the damage to fish, wildlife, and other natural resources ...". The 1982 activities and programs of Pea Island were in compliance with this and other environmental mandates.

E. ADMINISTRATION

1. Personnel

No change occurred in PFT positions during 1982. The refuge did, however, have the addition of two temporary positions. In April, Angela Elmore, a former YACC enrollee, joined the staff on a temporary NTE one year appointment as a WG-2 laborer. Also, Barbara Henderson worked intermittently as a GS-2 Recreation Aid from May through August.

The following is a table showing the refuge personnel positions for the last five years.

<u>CY</u>	<u>Permanent</u>			<u>Temporary</u>
	<u>Full Time</u>	<u>Part Time</u>		
1982	5			2
1981	5			1
1980	4	1		
1979	3	1		
1978	3	2		1

2. Youth Programs

The YACC program started the year with one enrollee. The enrollee stayed in the program until its end on the tenth of March. The enrollee did prove to be beneficial to the refuge. She was versatile enough to be able to give interpretative programs, help with biological work, perform routine maintenance, or operate heavy equipment and do a good job on them all. She definitely learned a diversity of work skills while in the program.

In March, the refuge was informed that it would have a non-residential YCC Camp consisting of three enrollees. Considerable effort was put in to recruitment, but by the application deadline only one application had been received. By getting an extension on the deadline and having the refuge staff "beat the bushes" in the local communities, enough applicants were found. The program began on June 21.

YCC work projects encompassed many different tasks and skills. Projects included construction of boat docks, brush removal along the impoundment edges, construction of bulkheads, refuge facilities maintenance, brick and block wall construction and building of a boardwalk. Special projects included initiation of a dune erosion survey, assistance in the loggerhead sea turtle nest relocations, and assistance in royal and sandwich tern banding.

No specific environmental awareness programs were set up. However, the enrollees learned a great deal about their surrounding environment through talks during the work details. Helping with the erosion study, sea turtle project, and tern banding also helped tremendously.

Overall, the YCC program had its successes, but it also had associated problems. Along with the recruitment problems, the program also tied at least one refuge staff member to the program each day. This took away manpower from other refuge projects that YCC was not allowed to work on, i.e. projects involving driving heavy machinery, working at heights up to

20 feet, etc. The program definitely would have been of greater benefit to the refuge if it had its own staff.



YCC enrollees and Manager Hight installing new entrance sign at South boundary. 7/82 JDB

4. Volunteer Programs

Barbara Henderson worked as a volunteer from May to August during the time she wasn't employed as a Recreation Aid.

5. Funding

The funding level for FY 82 began at \$159,431, but was reduced to \$153,431 in March. The cut consisted of a \$1,000 in 1210 monies and \$5,000 of 1240 monies. The Endangered Species (1400) and Interpretation and Recreation (1240) programs continued to be woefully short of funding. The Endangered Species program ended up costing approximately \$2,000 more than allocated, and after the \$5,000 cut the I&R program funds barely covered the salary of the Outdoor Recreation Planner. The results have been that the Migratory Bird (1210) program continues to subsidize these programs.

The refuge also had an \$83,000 Force Account Job Order that was used to rehabilitate the existing water control structures in North Pond and New Field, and install a 30" water pump in South Pond.

The refuge residence received a new central heating/cooling system. This was funded through the 1994 fund in the amount of \$4,331.

A breakdown of funding history is as follows:

	Migratory Birds <u>1210</u>	I&R <u>1240</u>	Endangered Species <u>1400</u>	Mammals & Non-Migratory Birds <u>1220</u>	<u>1994</u>	Fiscal Year <u>Total</u>
FY 82 (after cut) (83,000)*	123,000	23,000	1,100	2,000	4,331	153,431 (83,000)
FY 81 (60,000)*	100,000	19,000	1,100	0	1,800	121,900 (60,000)
FY 80 (60,000)*	100,000	19,000	1,100	0	0	120,100
FY 79 (367,400)**	77,000	16,000	1,000	0	0	94,000 (367,400)
FY 78 (31,500)	70,000	16,000	1,000	0	0	87,000 (31,500)

* BLHP - Force Account Job Order to improve water management.

** BLHP - Contract to replace bulkhead in New Field impoundment.
Contract not awarded.

() - BLHP Funding

A basic analysis of the impacts of inflation on this refuge over the past three years indicate very little monies are left to maintain equipment, structures, and older buildings.

6. Safety

The refuge experienced another year without a lost-time accident, the last lost-time accident occurred in 1959.

Regular safety meetings were held with the major topics being vehicle safety, helping injured persons, steps to take in preparation for hurricane, and use of tools. In June, all current refuge staff participated in a Defensive Driving Course sponsored by the N. C. Department of Transportation.

On May 16, there were two near drownings on the refuge beach. Both victims were caught in rip currents and being taken out to sea. Luckily, surfers spotted the two and were able to reach them via their surfboards. One victim, a 12 year old girl, had stopped struggling and had submerged before she was rescued. One of the surfers was an Emergency Medical Technician and was able to administer needed first aid until an ambulance arrived. Both victims were taken to a hospital and recovered fully.

7. Technical Assistance

In March, the refuge staff assisted Manteo High School with a problem resulting from an osprey nesting in a section of light fixtures at the ball field.

In May, the staff conducted a two hour sea turtle training workshop for National Park Service personnel. Activities included nest location, nest relocation, and stranded turtles. The staff also assisted the NPS in November with a program dealing with waterfowl hunting and associated law enforcement.

Technical assistance was also given to the N. C. Marine Resources Center in the field of environmental education and wildlife related matters.

F. HABITAT MANAGEMENT

1. General

Pea Island, according to all legal documents, is comprised of 5,915 acres of barrier island and 25,700 acres of Proclamation Waters in Pamlico Sound. The last survey revealed the habitat types on the island included 456 acres of beach, 518 acres of barrier dunes, 630 acres of brush land, 3,024 acres of irregularly flooded salt marshes, 328 acres of salt flats, three brackish water impoundments totalling 950 acres, and one nine acre fresh water pond.

It must be noted, however, that the acreages of beach and barrier dunes have changed since the survey. Several intense northeast storms have hit the area within the past couple of years and caused moderate to severe erosion along the beach and dunes (see climatic conditions). The exact acreages lost have not been calculated. At Oregon Inlet approximately 300 linear feet of land has been lost in the past two years. Sixty-eight feet of that was lost between October and December, 1982! (See photos next page before storm and after).

2. Wetlands

The wetlands consisted of irregularly flooded salt marsh, salt flats, impoundments, and the fresh water pond. The impoundments include North Pond (461 acres), New Field (266 acres), and South Pond (223 acres).

The 30" pump that was installed in North Pond in 1981 proved to be beneficial. This was the first year the pump could be used to control water and water salinity at the proper levels needed to sufficiently allow the growth of sago pondweed (Potamogeton pectinatus) and other aquatics. The result was

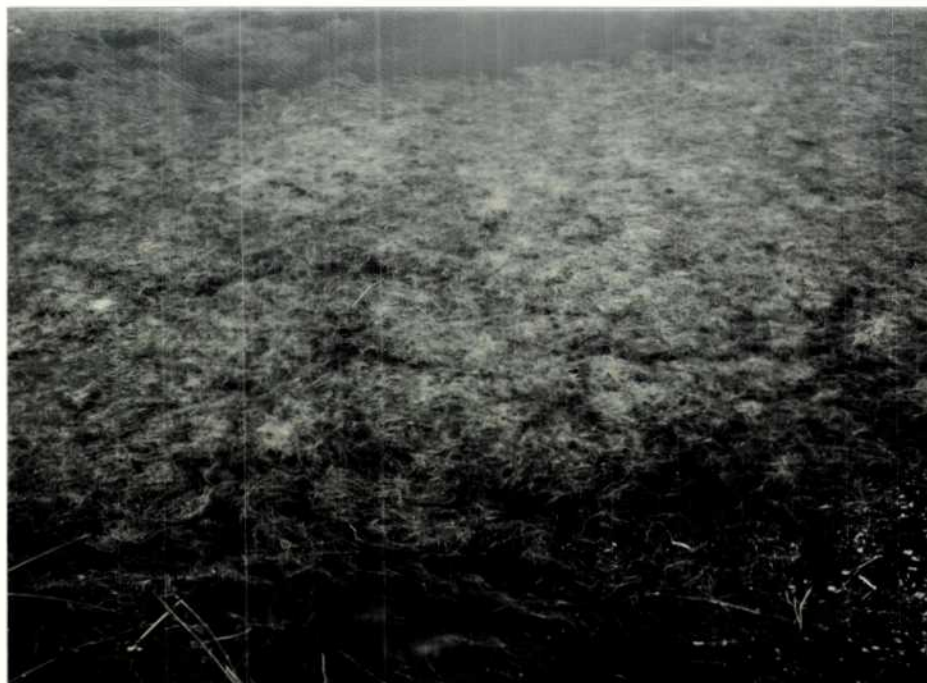


North Point at Oregon Inlet. Note location of comfort station. Arrow shows where dune line was in November 1981 2/82 ARH



North Point at Oregon Inlet during October storms. Pilings in water was where former comfort station stood. Arrow shows where dune line was at end of year. 10/82 ARH

one of the best growths of sago in several years. It was hoped that diving duck use on the pond would increase.



Sago pondweed located in North Pond. 8/82 JDB

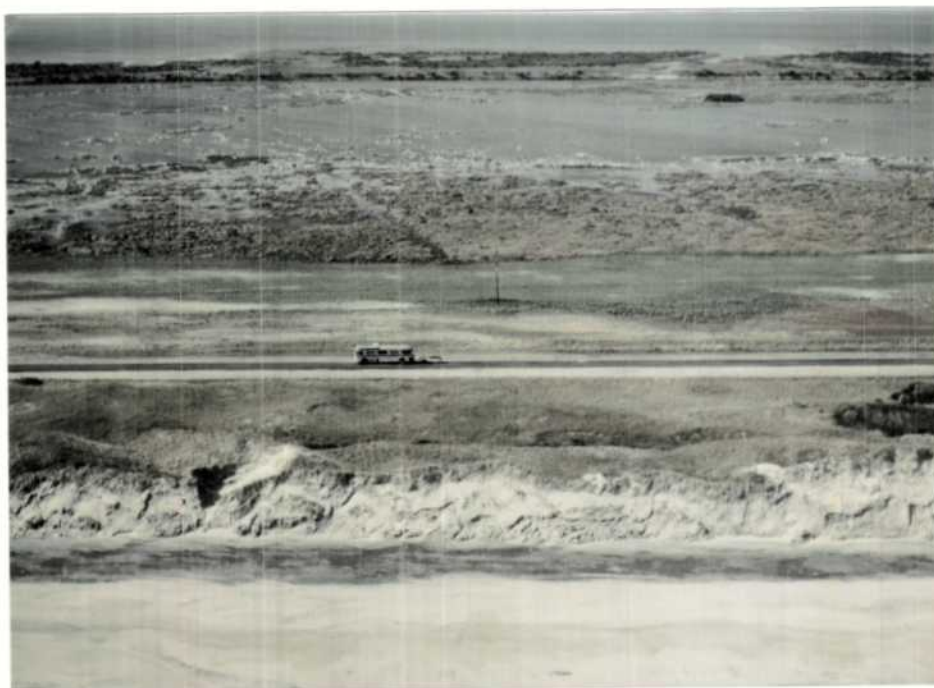
The BLHP rehabilitation of the tidal flap gates in New Field was completed this year. The reconditioned flap gates were installed on February 25, and the bulkheading associated with the gates was completed on March 12. Water was maintained in the impoundment at a suitable depth to allow growth of aquatics in the canals and emergents in the other areas. Vegetation transects of the pond showed a fair stand of sago pondweed and widgeon grass in the deeper areas and a good stand of Eleocharis in some of the other areas.

No active management occurred in South Pond due to the present inoperable water control structure. Plans to install a 30" pump to allow the pumping of water from the Sound into the pond were begun.

In August, vegetation transects were completed in the three impoundments and the salt flats. Plant species present along the lines were identified, quantity recorded and classified according to their value as waterfowl food. Final results of the transects were not compiled by the USFWS East Coast Biologist in time to be included here. Preliminary results indicate North Pond had the greatest amount of good waterfowl food. New Field was second, followed by Salt Flats and South Pond.

4. Croplands

The only cropland planted was a 35 acre goose browse area in New Field. It was planted with fescue. Two weeks before planting, the field was fertilized with 10-10-10 at the rate of 1,000 pounds per acre (very sandy soil). It was seeded on September 14 at the rate of 100 pounds per acre. Growth was good at best with only small patches available when the geese arrived in October. It did come on good in November, but was almost fed out by the end of the year.



Pea Island - from the ocean to the sound. This shows a cross section of habitat types: Beach, dune, New Field browse area, impoundment, irregularly flooded salt marsh, and sound. Green area is planted fescue. 11/82 ARH

6. Other Habitats

The areas of ocean beach, barrier dunes, and high sand ridges (brushland) are not subject to active management. Other measures such as signing and patrol are taken to prevent vehicle trespass, camping, fires, and subsequent damages.

This year a study was started to gather information on the dune erosion rate. Permanent reference points were set up every half mile. Measurements were made quarterly. Results from 1982 readings showed that the greatest erosion occurs during the winter storms. An average of 5 feet of dunes were lost from October to December. Also during this time 68 feet of land was lost at Oregon Inlet. (See map next page).

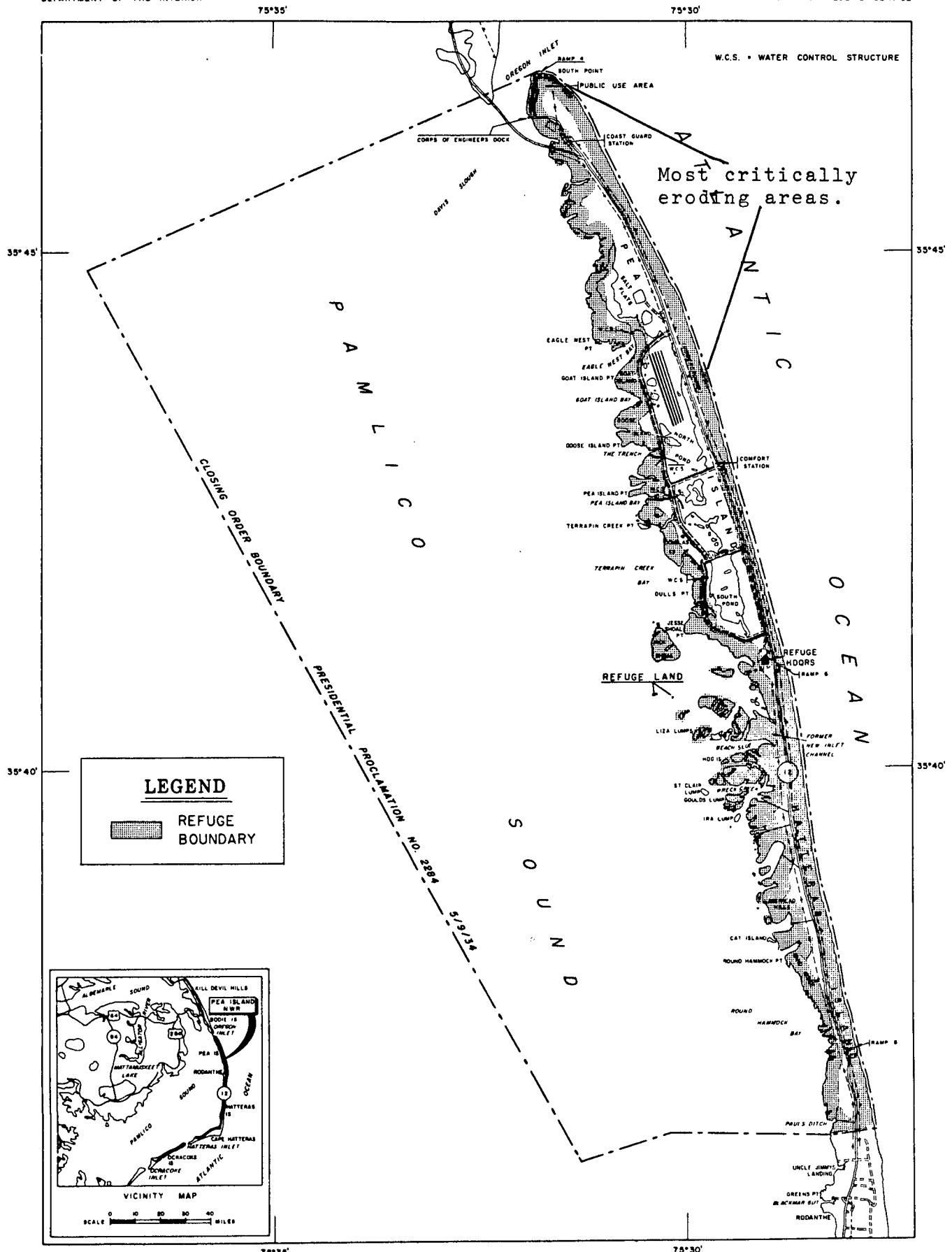
PEA ISLAND NATIONAL WILDLIFE REFUGE

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UNITED STATES
DEPARTMENT OF THE INTERIOR

DARE COUNTY, NORTH CAROLINA

UNITED STATES
FISH AND WILDLIFE SERVICE



9. Fire Management

One area totalling 10 acres was prescribe burned in December. Approximately 240 acres had been scheduled to be burned, but excessive rains and strong winds throughout January and February and most of December prevented this.

Three wildfires occurred during the year. On January 12, a winter storm caused a power line to break. This resulted in a $\frac{1}{2}$ acre burn. Then on April 15, the power line broke in a different area resulting in a 1/10 acre burn. On September 14, a brush fire, apparently caused by a cigarette, burned 150 acres.

The third wildfire turned out to be a blessing in disguise. It happened in an area that had been scheduled to be burned the previous winter, and proved to be quite effective in killing most of the woody vegetation. After the burn, the area was disked to knock down the brush and break up their root system. By December very little revegetation had started but all species present were either grasses or sedges.



Woody vegetation killed by wildfire. It is believed the fire was caused by someone throwing a lit cigarette from a car. 9/82 JDB



Disking the wildfire area in order to enhance the regrowth of grasses and sedges. 10/82 ARH

On October 28 and 29, all refuge staff except the Secretary attended a Fire Training Course at Mattamuskeet NWR. The course covered Introduction to Fire Behavior, Basic Fire Fighting, and Basic Fire Orientation

12. Wilderness and Special Areas

Numerous small islands in Pamlico Sound have been proposed for wilderness status. No final approval has been received. Total acreage of the islands is 180 acres.

G. WILDLIFE

1. Wildlife Diversity

No management actions are directly aimed at increasing wildlife diversity, but a rich diversity of mammals, birds, fish, reptiles, amphibians, mollusks, and crustaceans exists on Pea Island and/or in the Proclamation Waters. This diversity is especially evident in the birds. Over 315 different species have been identified within the area. Over 175 species were sighted in 1982 by the refuge staff or other proficient "birders". During the 1982 Christmas Bird Count, which was conducted during a rain storm, 80 species were sighted in one day.



Anyplace to weather the storm.... Pelicans, skimmers, oystercatchers, gulls, and terns waiting for a storm to subside. 10/82 ARH

2. Endangered and or Threatened Species

a. Federally Listed Endangered and Threatened Species

Brown Pelican (Endangered). Brown Pelican numbers have increased steadily over the past few years. Once considered a rare sighting in the area, they are now quite common, especially in the summer and fall. This year was no exception. Pelicans were sighted in every month. Approximately 200 were sighted on September 29, but the peak didn't occur until December 29 when 400 were seen. Use days totalled 20,760. This surpasses the previous record of 13,200 days from 1980.

On February 7, a banded juvenile brown pelican with clipped primary flight feathers was turned over to the refuge staff. The bird was put in a holding cage until the special agent in Washington, N. C. could be contacted. However, the bird was dead the next morning.



This juvenile brown pelican liked fishing so much, he took along his own fishing rigs. Also present with the colored floats were two 3 ounce sinkers and 4 hooks, all embedded. Two days after their removal the bird was able to fly. (Note how uniform vest faded to a rust color).
11/82 JDB

Bald Eagle (Endangered). An immature bald eagle was sighted October 13-15. It appeared to be sick, therefore, one staff member tried to capture it. It allowed him to get within 10 feet before flying. The bird was not sighted on or adjacent to the refuge after this.

Peregrine Falcon (Endangered). Off and on through the years a few peregrines have used the refuge as a wintering area. One overwintered here during 1981-82. It was sighted several times until mid-March.

The first one observed during the fall migration was on September 2. Although not as spectacular as some previous fall migrations, several falcons were spotted. Numerous single sightings occurred in September and October, but the most spectacular sighting was four peregrines at one time on October 23.

Evidently, one of the fall migrants chose to overwinter in the area. It was sighted several times in November and December. The last sighting was December 28.



Peregrine falcon using power pole as a hunting perch.
9/82 ARH

Kemp's (Atlantic) Ridley Sea Turtle (Endangered). On November 11, a small Ridley washed ashore near Pea Island. It was still in good condition, therefore, salvaged to be mounted. In December, it was sent to a taxidermist, via Regional Office. Hopefully it will be on display at refuge headquarters by summer.

A massive stranding of sea turtles occurred along the northern Outer Banks in late November. Most were loggerheads, but several Rيدleys were also found. Two were found on refuge beaches.

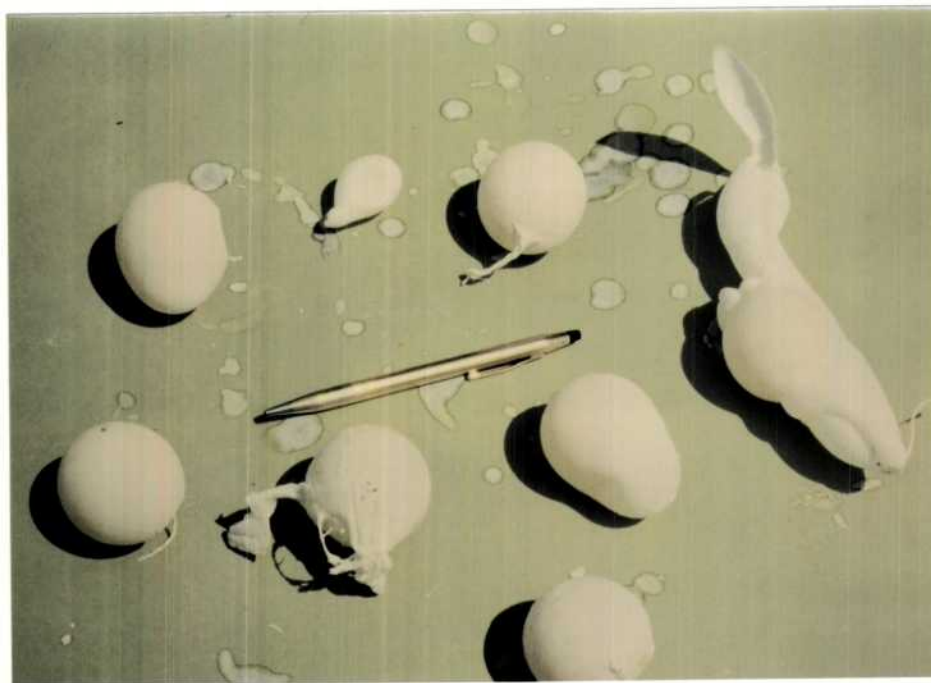
Atlantic Loggerhead Sea Turtle (Threatened). Loggerheads utilize Pea Island's beaches for nesting even though it is highly vulnerable to ocean overwash and severe erosion. A daily beach survey is performed from Memorial Day until August 31 to locate the nests. Any nest found in an area subject to overwash or erosion is transferred to a protected nursery located in the dunes. Once the nests have incubated 50 days they are checked daily. When a nest hatches, the hatchlings are carried to the beach and released.

How?
Vehicle
type?
How about
a 3 wheeler?

This year 14 nests were found. The first nest was discovered May 28, the earliest ever recorded. The last nest was discovered August 9. All 14 nests had to be relocated to the nursery. A total of 889 hatchlings were produced from 1,542 eggs (58% hatch). Quite a bit better than the dismal 44% hatch of 1981.



Gathering eggs from a loggerhead nest on the beach.
7/82 JDB



Some deformed turtle eggs found in one nest.
8/82 ARH

by who? violation?
 Eight nests from adjacent areas were also relocated to the nursery. Of the 854 eggs relocated, only 305 hatchlings were produced (36% hatch). The low hatch percentage was believed to be due to nest tampering and/or waiting too long to relocate. Some of the nests had been dug into before refuge staff could reach them and some dug by others were not brought to us until late afternoon. In one case, a nest was dug one morning, put in a garbage can, covered with sand, and set aside. It was delivered at 4:30 p.m.

One nest delivered by the National Park Service was laid on September 10. This is the latest nesting date known along the northern Outer Banks.

Loggerheads not only nest on Pea Island but also use the adjacent ocean waters as a gathering/feeding area during the summer. North Carolina Marine Fisheries aerial counts show 3 times as many present from Oregon Inlet to Cape Point (the north end of the refuge to 50 miles south) as in all other N. C. coastal waters combined. Usually the turtles linger here until October when the waters begin to cool, and then move out to the gulf stream. However, this year a warm trough of water stayed in the area through November keeping the turtles near shore.

Shortly after fishing trawlers began working the area in November, turtle strandings were reported. On November 23, a total of 12 loggerheads and 2 Ridley's were found on Pea Island's beach. Following a northeast storm during the last week of November, an unbelievable 136 dead turtles, of which approximately 130 were loggerheads, washed up along the Outer Banks. Only 4 of these were on the refuge; most were in the Cape Point area.

It is believed that the majority of these drowned in trawl nets. Several of the fresher specimens were sent off for autopsy, but were unsuitable for histopathological work. Therefore, this theory could not be medically substantiated. However, one trawler captain told a Marine Fisheries officer that after a 3 hour haul he had 16 turtles in his trawl net. Only 3 could be revived.

The idea of using an excluder panel in the trawl nets has been discussed with the captains, but they say it will not work. Although it has proven successful on shrimp trawls, it will not work when hauling for fish. They fear a large portion of the fish caught will go out through the panel with the turtles.

b. State Listed Endangered and Threatened Species

Of the other animals that occur on the refuge, the State of North Carolina lists 7 as threatened and 26 to be of Special Concern. Although refuge management is not

geared toward every one of these, they do benefit from present programs. The ones specifically managed for are listed below:

Osprey (Special Concern). Three elevated platforms have been constructed to provide nest sites for ospreys. One platform had an active nest but produced no young. The pair of osprey that used this nest platform was present from March thru October.

On September 14, a member of the refuge staff and a N. C. Wildlife Resources Commission protector picked up an immature osprey from a private citizen in Jarvisburg, N. C. The bird had fallen from a nest. The bird was transferred to the raptor rehab center in Charlotte, N. C.

Least Tern (Special Concern). Least terns have nested at specific areas along the beach for many years. The primary management tools has been the exclusion of human disturbance from nesting areas. This has been done by posting the nesting areas and excluding or controlling vehicular traffic on the beach.

Least terns started nesting in two locations in early May. One area along the southern portion of the beach, and one of the man-made islands in New Field were chosen. Another concentration of terns was spotted along the beach on the south boundary, but no nests were made. The nest site along the beach was situated in a low area and was inundated by high tides in early June. The site on the man-made island produced approximately 100 young.

3. Waterfowl

The year started out on the down side with a January peak of only 1,275 swan, 12,280 geese and 9,215 ducks. The monthly average was 14% lower than January 1981. As if this was not bad enough, warm weather during the first week of February caused a mass exodus of all species. The goose population dropped by 7,190 ducks by 3,295 and swans by 400. The remainder steadily declined thru late March. On March 26, only 400 Canada's and 125 snows remained. The duck population did increase by about 500 in late March due to the northward migration of teal. By late April all migrating waterfowl were gone.

Approximately 300 black ducks, 100 gadwall, and a few mallards did stay throughout the summer. The broods they produced seemed to be the summer highlight of the impoundments. One could not make a trip around the ponds without seeing several black duck and gadwall broods, and an occasional brood of mallards! Total production was estimated at 350 black ducks, 200 gadwalls, and 20 mallards.



Black duck brood in North Pond.

7/82 ARH

Fall migration began with the arrival of 150 blue-winged teal during the first week of August. These were followed by whistling swan on August 19, pintail and wigeon on September 6, Canada geese on September 26, and snow geese on September 30. All species arrived from one to two weeks earlier than normal. It was hoped this was to be an indication of a large fall flight, but it was not. Warm weather in the eastern portion of the U. S. caused most of the birds to stay further north. The majority of the birds that normally wintered in North Carolina was said to be staying in the upper Chesapeake Bay area. The fall peak was 22,795 birds; a 10% reduction from 1981.

The following are the dates of peak numbers for the different groups: whistling swans peaked at 1,650 birds on November 26, snow geese peaked at 8,250 birds on January 18, and Canada geese peaked at 4,030 on January 18. The aggregate duck population peaked on November 26 at 15,675. Of these, 7,000 were pintail, 3,600 wigeon, and 1,850 black ducks. The remainder was an assortment of smaller numbers of 14 different species. The coot population peaked at 1,130 birds on December 1. Below is a comparison of peak populations for the last five year period.

<u>Year</u>	<u>Swan</u>	<u>Snow Geese</u>	<u>Canada Geese</u>	<u>Ducks</u>	<u>Coots</u>
1982	1,650	8,250	4,030	15,675	1,130
1981	1,410	6,371	5,280	18,365	2,435
1980	2,900	7,900	5,800	24,400	3,500
1979	3,600	11,300	5,650	40,785	3,500
1978	600	9,505	1,540	19,650	1,900



Snow geese using the Salt Flats area. 11/82 JDB

The total waterfowl use days for the year was 2,451,744, a 24% decrease from 1981. The only species to increase in use days from 1981 was the Canada goose. This was due to the early arriving in the fall. A five year comparison of waterfowl use days is shown in Graph 1 on page 23. The following table provides a use day comparison for each group over the last five year period.

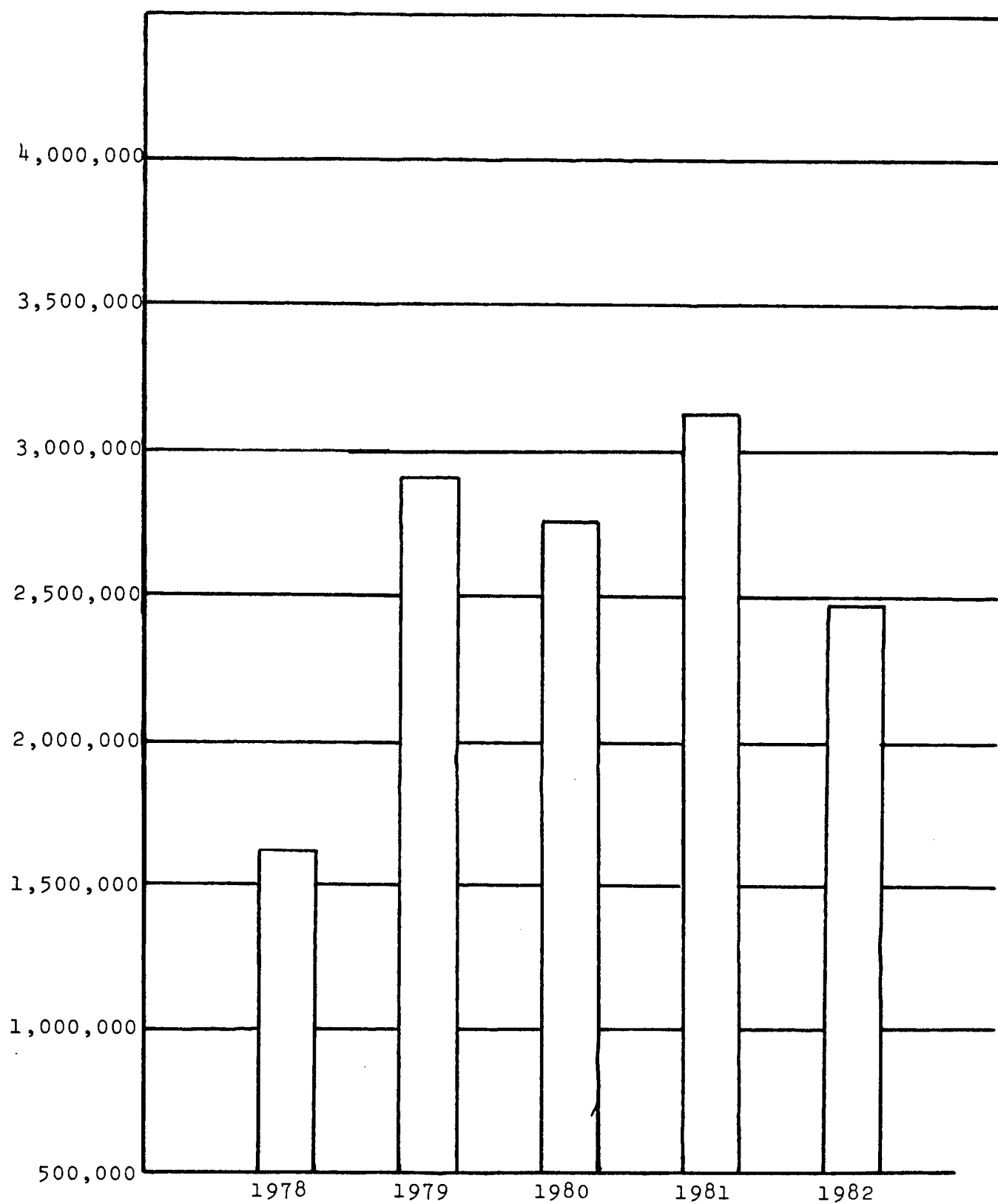
<u>Year</u>	<u>Swan</u>	<u>Snow Geese</u>	<u>Canada Geese</u>	<u>Ducks</u>	<u>Coots</u>
1982	145,577	390,095	340,045	1,519,053	56,974
1981	148,437	480,375	323,812	2,101,476	89,509
1980	150,456	444,050	295,515	1,771,105	98,789
1979	144,360	397,140	277,560	1,896,900	156,600
1978	23,580	335,010	83,940	1,101,300	88,100

In November, the USFWS East Coast Biologist, Otto Florschutz, and staff members conducted a snow goose and whistling swan aging/production survey on the birds present. Results showed that 15.7% of all snow geese present were young of the year and the average snow goose family contained 2.3 young. Swan families average 2.14 young, with 10.9% of the total population being young of the year.

4. Marsh and Water Birds

The beach, marshes, and impoundments were heavily utilized by marsh and water birds for both feeding and nesting. Twenty-one species used the refuge for a total of 1,031,700 use days. This is the 4th consecutive record high.

TOTAL WATERFOWL USE DAYS (CY)



Although no active management occurs exclusively for these birds, a steady increase in use days has been noticed. It is believed that the increase is inherent to the natural resource management practices used in other programs, and a steady increase in outside pressure and loss of habitat on adjacent lands. The following table shows this increase over the last five years.

<u>Year</u>	<u>Use Days</u>
1982	1,031,700
1981	1,009,075
1980	879,075
1979	584,635
1978	450,057



Louisiana Herons

7/82 ARH

Summer and fall were the times of year that the greatest diversity and use occurred. One survey in September showed 12 species and 1,260 individuals. Of these, 530 were snowy egrets and 195 were common egrets. However, the peak populations didn't occur until December 15 when 18,792 individuals of 15 different species were present. Of these, 17,280 were double-crested cormorants.

Only one rookery was present this year. It contained only 10 yellow-crowned night heron nests, 8 glossy ibis nests, and 2 snowy egret nests.

There was one large rookery on a spoil island in Oregon Inlet, but it was not censused. In more isolated areas of the marshes and impoundments it is estimated that about 35 common gallinules were produced.

This spring, as in the past few springs, a large number of common loons with badly mangled feet and/or legs washed ashore or were brought to refuge headquarters. This occurrence always coincided with the arrival of the large bluefish. Several birds with definite bluefish tooth mark patterns in the webbing of their feet seemed to show the damage was being caused by the fish. Four of the dead birds were sent to the wildlife lab in Madison to find out if there might be some reason for the strandings. Results showed that all were suffering from heavy metal poisoning. It was theorized that the poisoning weakened them to the point they could not fly, and as they paddled around, the bluefish attacked their feet and legs. The refuge staff saw at least 75 birds in this condition this year.

5. Shorebirds, Gulls, Terns, and Allied Species

A great number and diversity of these birds utilize Pea Island, especially during spring and fall migrations. Twenty different species totaling 18,160 individuals were counted in one day during the spring migration and 33 species totaling 23,285 individuals were counted in one day during the fall migration. The peak population for the year was December 15, when 32,595 individuals were present. Of these, 10,795 were great black-backed gulls and 17,825 were ring-billed gulls. A total of 4,031,104 use days were recorded.



Black skimmers flying over the spoil islands in the impoundments.

7/82 ARH

Terns, skimmers, and American oystercatchers nested along the beach and on the man-made islands in North Pond and New Field. Estimated production was 150 royal terns, 60 sandwich terns, 85 common terns, 140 black skimmers, and 20 oystercatchers were produced. It is believed that approximately 300 willets were raised in the isolated areas of the marsh and dunes.

In addition, a royal tern colony with approximately 1,400 nests was present on a spoil island at Oregon Inlet. The colony was not on the refuge but the birds used the beach and Proclamation Waters extensively as feeding areas.

6. Raptors

Though not quite as spectacular as in previous years, the fall raptor migration was far from being a boring experience. As many as 350 kestrels were seen in one day during October, and later in the year marsh hawks, merlins, and sharp-shinned hawks made their appearance. A total of 28,440 use days were recorded.

7. Other Migratory Birds

The diversity of birdlife on Pea Island is so great that it is sometimes referred to as a "birders heaven". This is especially true when considering the passerines. One hundred and fifteen different species of song birds migrate through the area yearly. Though no data are kept, it is apparent that the brushy areas, especially along the impoundment dikes, are used heavily by these birds.

Mourning doves peaked at 200.

8. Game Mammals

Muskrat and nutria continue to thrive. Populations were estimated at 5,000 and 700, respectively. Serious damage occurred to the impoundment dike berms from their burrows. They also have started to burrow under State Highway 12. But, at least part of these problems will be alleviated in 1983 due to implementation of a trapping program. The impoundments were divided into four units and offered to trappers on a bid system. The sealed bids were opened December 5 and the units were awarded. Two individuals each received two units. The total amount of the four bids was \$486.00. These trappers will definitely make some money! They will trap during February, 1983.

Cottontail rabbits continue to be seen almost everywhere. The estimated population was up to 1,200.

The otter population seemed to remain stable. There were plenty of signs of them but actual sightings were rare. It is believed that approximately 40 were present.

*- A hunt may
be practical
after all!
If it could be
worked out to not
interfere with
waterfowl life.*

No raccoons were seen this year, but more signs are present than last year. It is believed that approximately twenty-five raccoons are now on the refuge.

10. Other Resident Wildlife

Ring-necked pheasants were seen constantly in the salt marsh, brush land, the browse area, and in the dunes. It is estimated that the peak population was 750 birds, with 500-550 present throughout the year. Considering the refuge only has 4,000 acres of suitable habitat, including sand dunes, that is an average of one bird per eight acres. If the refuge had corn stalks instead of sand dunes it would seem like Iowa instead of North Carolina.

15. Animal Control

Trapping efforts to reduce the numbers of feral cats resulted in the capture of eight animals. These were removed from the refuge. It is estimated that at least forty more are present.

16. Marking and Banding

The waterfowl banding program met with limited success. Almost as soon as banding began, warm weather came in and the ducks moved out. The following table shows the final results.

	<u>Banded</u>	<u>Quota</u>
Black Duck	254	100
Mallard	354	200
Mallard/Black Hybrid	8	0
Canvasback	31	50
Ring-neck Duck	1	50
Non-Quota Ducks	134	0
Canada Geese	121	75

It must be noted that the above figures are a little misleading. The refuge was able to reach the quota on black ducks and mallards only through the help of the Pungo NWR staff. After the birds left the area, Pungo volunteered to band blacks and mallards. They had already met their quota and had several thousand blacks and mallards present. Pungo's staff banded 136 blacks and 282 mallards on bands assigned to Pea Island. Pea Island's staff banded all the Canada's, but was greatly assisted by a 60'X100' goose net on loan from the N. C. Wildlife Resources Commission.



Releasing a drake mallard after supplying him
with a new shiny leg bracelet. JDB



Removing geese from a cannon net. 2/82 BWS

On February 18, Grady Barnes, Dennis Luszczyk, and Jack Donnally of the N. C. Wildlife Resources Commission met with representatives from Pea Island, Pungo, Pee Dee, Mattamuskeet, the Asheville Area Office, the East Coast Biologist, and the Raleigh ADC representatives to discuss and coordinate waterfowl banding efforts in North Carolina. It was decided that the refuge managers, the state coordinator, and state staff banders would keep in close contact during banding season in an effort to reach the state wide quota, i.e. if one refuge had numerous mallards, but the others had only a few, the refuge would band as many as possible. This would free the other refuges to band other quota species such as Canada geese. A follow-up meeting was held on November 17, after state quotas had been established. It is believed this system will work out well.

H. PUBLIC USE

1. General

Pea Island had a total of 1,584,050 visitors during 1982. During the year, efforts for developing a comprehensive public use program were increased. Programs from 1981 were evaluated and scrutinized for their effectiveness and value. Some programs were eliminated; others were expanded. New programs were created, each designed to transfer the "message of the Service" to a specific target group or to the general public.

Efforts continued to be coordinated with other agencies to avoid duplication and to utilize the most efficient means for accomplishing objectives. The entire staff was involved to some extent, whether directly or indirectly in I&R programs.

Barbara Henderson, an intern from East Carolina University (Recreation Aid GS-2 Intermittent) joined the refuge staff for the summer months. Her abilities were utilized primarily with the I&R program; however, she also provided man-power for some maintenance and biological projects. In addition to providing valuable work experiences and university credits for Barbara, this arrangement provided the refuge with the much needed help for the summer interpretive programs. By utilizing Barbara as a volunteer for many hours, conducted programs were possible without tying up regular staff time.

At the end of 1982, refuge staff took a closer look at public use figures. The past method for estimating refuge visitors was closely scrutinized. A more conservative plan was established for the short term, and long range plans were made to acquire counters for the refuge. In the past (and present), all visitation data was obtained from NPS counters.

Note should be made that adjustment to the public use "formula" account for some of the more startling results of public use figures. Hopefully, by continuing to evaluate and adjust more accurate reporting will result.

Also during the year, refuge staff responded to approximately 9,000 public inquiries. News releases were sent out or interviews arranged for 24 refuge events or activities. WOBR, a local radio station, did special "spots" on waterfowl populations, the refuge trapping program, National Hunting and Fishing Day, Dare Days, and other refuge functions. Other radio "spots" were recorded in cooperation with N. C. Sea Grant dealing with the birds of Pea Island and the loggerhead sea turtle nesting program.

Two new pamphlets were completed and sent to RO for publication: A Calendar of Wildlife Events and The North Pond Interpretative Trail Guide. Refuge staff served as judges for the local science fairs.

Public visibility of the refuge definitely surged forward. As far as I&R is concerned, 1982 was the year for "bigger and better", but there is still much room to grow.

2. Outdoor Classrooms - Students

Environmental education increased from 1,757 AH in 1981 to 9,291 AH in 1982 (497%). This increase was a result of the development of the Dare County Cooperative Environmental Education program in 1981. During the 1981/82 school year, classes of all grade levels in two schools participated in the program. This posed two major problems. First, a program on this large a scale required a majority of the ORP's time to accomplish. If the program covered all three public elementary schools in the county on that level, virtually all of the ORP's schedule would be filled by it. Second, since all grade levels participated, it was not feasible to re-use programs year after year. Hence, the need for new program topics, A-V aids, hands-on material, etc. became a problem. *Never ending!*

In an effort to establish a more stable, consistent, and practical program, several changes were made for the 1982/83 school year. The program became county-wide, rather than involving just two elementary schools. In order to reduce staff involvement time, participation in the programs was restricted to two grade levels. At the suggestion of the school system, this plan was altered slightly. Programs were scheduled to include all second and fifth grade classes during the first semester and all first and fourth grade classes during the second semester. Each semester's program would involve three units. *||*

With this plan, units could feasibly be repeated year after year, using the same A-V aids, hands-on materials, and topics. Also, more students gain refuge exposure.



Outdoor classrooms at their best! Manteo Elementary School second graders collect fiddler crabs as part of a unit on "Invertebrates" 5/82 BWS



Fifth graders demonstrate the use of two types of nets to study "Sound Life". 5/82 BWS

* { Originally, this cooperative educational program was established to improve public relations with the local community, increase the visibility of the refuge, and teach the "message of the Service". The program successfully achieved these goals.

but they don't... unless they know we will be directly involved in the program.

An on-going objective of the program was to increase the quantity and improve the quality of environmental education activities on the refuge. Teachers were encouraged to bring their classes to the refuge and to use our outdoor classrooms for organized activities.

As a part of the Pea Island master plan, five outdoor classrooms were designated. During 1982, four of these sites were used repeatedly by classes for environmental education activities.

- but not on their own - we conducted the program.

As a direct result of the cooperative environmental education program, the use of outdoor classrooms began a sharp rise. Activities are summarized in the table below.

<u>Number of Students</u>	<u>Outdoor Classroom</u>	<u>Topic</u>	<u>Month</u>
16	Impoundment	Waterfowl ID and Banding	January
1,033	Impoundment	Waterfowl ID and Banding	February
1,000	Salt Marsh/Sound	Salt Marsh/Sound Ecology	May
*344	Salt Marsh/Sound	Wildlife Discovery	June-August
210	Salt Marsh/Sound Impoundment Beach/Dunes	Invertebrates, Vertebrates, and Wildlife Signs	October

* Note: Children's Wildlife Discovery program is included in Section 7 (Other Interpretive Programs).

3. Outdoor Classrooms - Teachers

During 1982, major emphasis was placed on providing technical assistance to professional educators in the area of environmental education. Since it is infinitely more efficient to train educators than to use the same amount of energy educating individuals who are non-educators, extra effort was made to organize the needed training sessions in eastern North Carolina.

On January 8, Pea Island participated in a meeting of professionals from Mattamuskeet NWR, Cape Hatteras National Seashore, N. C. Marine Resources Center, 4-H, Hyde County Schools, the N. C. Museum of Natural History and East Carolina University to organize and plan an approach to environmental education in eastern North Carolina. A follow-up meeting was held on February 24. Both meetings basically served to provide information for participants about various programs and resources available throughout this part of the state. The need for a united approach to environmental education was evident; however, a solution to this problem did not result.

Several workshops were conducted both in cooperation with other sponsors and as Pea Island sponsored activities. During late April and early March ORP Strawser assisted thirty-four Dare County teachers in planning classroom and schoolyard activities to be used in support of National Wildlife Week.

On March 26 and 27, Pea Island sponsored and conducted an eight hour environmental education workshop for 15 junior's and senior's from East Carolina University's Parks and Recreation Department. On October 1, the same students participated in a supplementary workshop. This workshop included work with a 4th grade class at Kitty Hawk School. In addition to receiving instruction in environmental education techniques, the ECU students actually observed those techniques in action.

On August 26, Pea Island staff conducted two sessions entitled "Wildlife Adaptations" at the Hyde County Environmental Education Training Workshop sponsored by Mattamuskeet NWR. Some Dare County teachers, East Carolina University students, 4-H leaders, and scout leaders also attended this workshop.

Plans were made with the Dare County Staff Development Committee to offer two workshops on environmental education for Dare County teachers and aids during the 1982/83 school year. Workshop plans were written, submitted, and approved by the school system. Because of a recent thrust in the county for child abuse information dissemination, the environmental education workshops have been postponed.

Probably the most effective teacher training program for the year has, again, been in conjunction with the Dare County Cooperative Environmental Education Program. In planning, developing, and implementing activities for their students, with the assistance of Pea Island staff, Dare County teachers have learned what most structured workshops cannot teach. They have been a part of the process, start to finish. They have witnessed the lack of energy and involvement in their students and watched a small spark of interest and knowledge grow into a huge flame of concern and appreciation for the environment. Learning by doing has proven effective with Dare County teachers and students alike.

4. Interpretive Foot Trails

Approximately 8,150 visitors used the North Pond Trail for a total of 14,000 AH.

During 1982, an interpretive pamphlet for North Pond Trail was written, edited, and sent off for publication in late September. The finished pamphlet was not received by the refuge during 1982. Until the pamphlet is available for distribution, the level of interpretation on this trail is definitely sub-standard, existing only in the form of placques on the overlooks. The placques, however, did receive new lexan covers this year.

The "refuge tour" which was conducted in cooperation with NPS summer interpretive programs, continued during the summer of 1982. Since the program was so well received during the previous summer (averaging 46 people per tour), the number of tours was doubled for this year. Sometimes, however, that sort of reasoning does not pay off. During its second summer the tour averaged only 17 people per program. The tour consisted of a "station" program which covered management, wildlife, and public use of Pea Island. One "station" included walking on a portion of the North Pond Trail. Other "stations" were the headquarters area, a portion of the refuge beach, and the overlook on the north dike of North Pond. Transportation was by private vehicles with car pooling recommended.

In addition to the "refuge tour" a Wednesday morning bird walk was conducted throughout the summer for the general public. Participants gathered at 7:00 a.m. with binoculars, bird books, and lots of insect repellent to brave the North Pond Trail with refuge staff.

These walks were relatively successful, averaging about 18 participants each. The quality of the walk was high, considering the lack of waterfowl in our area in the summer time. Participants always agreed that, despite the abundance of mosquitoes and biting flies, the bird walks were rewarding.

During fall migration, Saturday morning bird walks (7:00 a.m.) were conducted for six consecutive weeks. Though the quality of birding was excellent, the programs drew little public response. The six bird walks totalled only 23 participants. These bird walks were experimental in nature and will be discontinued next year.

6. Interpretive Exhibits/Demonstrations

In March, displays were set up at East Carolina National Bank, Planter's National Bank, the N. C. Marine Resources Center, and the Buxton Visitor Center of Cape Hatteras National Seashore to attract attention to National Wildlife Week 1982.

Also in March, Pea Island staff manned a booth at Dare County's Job Fair. Approximately 900 junior high and high school students participated in the fair. Much interest was shown in careers with the USFWS.

During the same month, an exhibit with a continuing slide program was set up and manned for the Colonial Coast Girl Scout Council at Currituck High School. Approximately 550 girl scouts attended the meeting.



Dare Days 1982! Approximately 3,000 people attended; many chatted with FWS staff or obtained hands-on experience with a corn snake!!
6/82 BWS

Again in 1982, a refuge exhibit was displayed and manned at the annual "Dare Days" celebration in Manteo on June 5. This year, the refuge display included a pair of corn snakes which were available for "hands-on experience". Consequently, the refuge exhibit was the most widely covered exhibits at "Dare Days" by the news media! Many parents stopped by the exhibit to complement the environmental education program and to allow their children to reacquaint themselves with the corn snakes.

This year Dare County's first National Hunting and Fishing Day was celebrated from Noon-5 on September 25. The event was sponsored by Pea Island NWR and the N. C. Marine Resources Center. Approximately 30 agencies, organizations and individuals had exhibits, demonstrations, or "try-your-hand" activities. In addition to the afternoon of events, a youth fishing contest and a NHF Day poster contest were

held. Approximately 100 students entered the poster contest, 126 entered the fishing contest, and 800-1,000 people attended the afternoon's activities.



Just a few of over 1,000 participants in the Dare County National Hunting & Fishing Day Celebration.

9/25/82 BWS



Youth Fishing Tournament for National Hunting & Fishing Day. Pier owners agreed "It's the best one yet!".

9/25/82 ARH

The three top posters in each age division were sent to the national contest for NHF Day posters. The two first place winners from the local contest won national recognition! Andrea Jeffrey and John Burke, whose poster won first place in the senior level competition locally, won a merit award in national competition (a \$50 savings bond). Karen Johnson, who submitted the winning poster in the junior level locally, won a \$250 savings bond and second place in the nation! It is anticipated that these national winners will spur much more local participation in the NHF Day poster contest next year.

7. Other Interpretive Programs

Two of the summer programs from 1981 were eliminated for the summer of 1982. The slide program and the punt gun demonstration were judged by refuge staff to be inappropriate and/or less effective than other suggested programs.

The emphasis for 1982 summer programs was to keep them on the refuge. Off-refuge programs (the two previously mentioned) were discontinued.

To replace these programs and bring more people onto the refuge for interpretive activities, a weekly bird walk and a children's "Wildlife Discovery" were scheduled. The bird walk was discussed in Section 4.



The Children's Wildlife Discovery Program has been one of the most successful summer interpretive programs. Here, children discover creatures of the salt marsh. 7/82 BWS

The Children's "Wildlife Discovery" was the most successful summer program of 1982. The program utilized outdoor classroom sites and involved the children in environmental education activities. An average of 28 participants were involved in each program. Enthusiasm and involvement in the discovery programs ran high throughout the summer.

During 1982, a variety of programs were presented to groups both on and off-refuge. In February, ORP Bonnie Strawser and Secretary Beverly Midgett were requested to present a program on women's careers with the USFWS for the Ladies Home Demonstration Association of Dare County. Basic refuge programs were given to other groups including schools, churches, 4-H, scouts, garden clubs, Audubon Chapters, museums, senior citizens, and more.

9. Fishing

Surf fishing continues to be the major wildlife related recreational activity on the refuge. Major beach erosion continues; however, nothing stops the endeavors of a dedicated surf fisherman.

During 1982, 393,993 visitors (1,245,365 AH) participated in pedestrian fishing at Pea Island. This shows an increase of 161% over 1981. Obviously, beach closure to vehicles has done little to deter the surf fishermen from Pea Island! (Note should be made that the 1981 figure was considered to be grossly conservative.)

11. Wildlife Observation

Due to the location of the road (Highway 12) through Pea Island, it is difficult for a traveler to pass without observing wildlife. On most days of the year, the quality of observation is quite high. During the fall and winter, snow geese, Canada geese, and blue geese feed on the road shoulders. Often vehicles must pause to allow the birds to move out of their paths.

During the spring and summer, cattle egrets replace snow geese as the most easily observed wildlife. Various species of raptors utilize the dunes, power line poles, and boundary sign posts for resting and hunting, thus making them clearly observable from a vehicle. During 1982, an estimated 768,439 AH were spent in association with vehicular wildlife observation. This represents an increase of 22% over 1981.

The North Pond Trail and other access points are associated in such a way as to make wildlife observation (on foot) easy and enjoyable. Refuge visitors spent approximately 515,657 AH participating in this activity during 1982.

12. Other Wildlife Oriented Recreation

Wildlife photography continues to be a popular activity at Pea Island. In some cases, photographers erect temporary photo blinds, but more often, the photographers are refuge wanderers. Good photographs tend to be the result of being at the right place at the right time.

During 1982, no public photo blinds were constructed. Approximately 16,973 AH (4,444 visits) were spent with photography at Pea Island last year. (1981 figures showed 4,400 visits.)

16. Other Non-Wildlife Oriented Recreation

Because Pea Island is associated with the "beach scene", non-wildlife related recreational activities will always occur on the refuge. Swimming, surfing, and sunbathing are major summer activities.

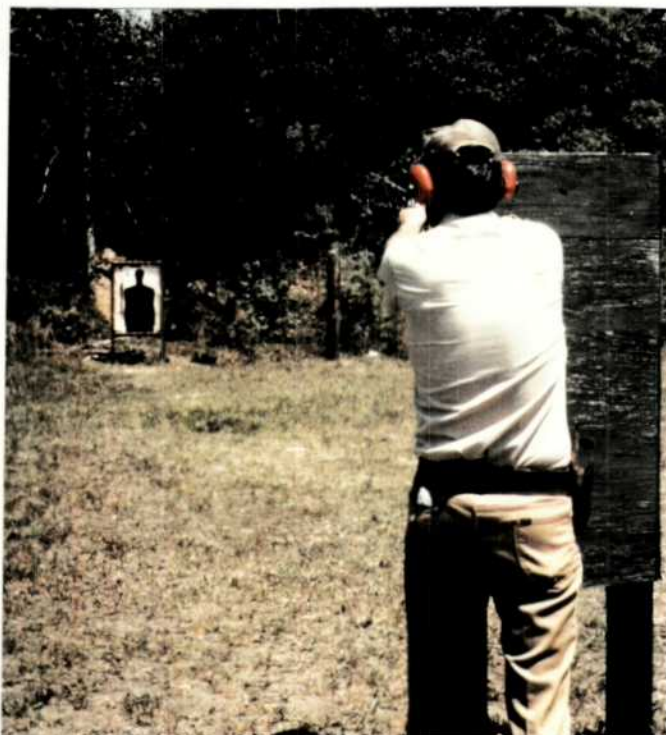
No facilities have been constructed for these uses. Approximately 933,111 AH (274,776 visits) were spent in non-wildlife oriented recreation on Pea Island in 1982. (1981 figures show 207,000 visits.)

17. Law Enforcement

Law enforcement at Pea Island is geared toward protecting the resource. Week-end and week-day patrols are conducted on the refuge and in the adjacent Proclamation Waters. The refuge staff continues to work closely with NPS rangers, the Dare County Sheriff's Department, N. C. Wildlife Resources Commission, N. C. Marine Fisheries and the N. C. Highway Patrol.

Highway 12 affords excellent opportunities for viewing wildlife. Unfortunately, it offers the same easy opportunities for illegal hunting. The fall waterfowl hunting season was a poor season for most hunters. This may be the reason for an increased incidents of illegal activities on the refuge. One early morning patrol resulted in the capture of Manager Hight's next door neighbor hunting pheasants along Highway 12. Much staff time has been devoted to protecting the resource. The following is a breakdown of violations on Pea Island for 1982:

<u>Violation</u>	<u>Numbers</u>
Driving off designated roadway	21
Taking animals on refuge	3
Discharging firearms on refuge	2
Possessing firearms on refuge	1
Camping on refuge	3
Lead shot in steel shot zone	1



Twice each year, Pea Island law enforcement staff meet with other refuge LE officers to participate in a pistol qualifying exercise. Special agents supervise the activity.

5/82 ARH

I. EQUIPMENT AND FACILITIES

2. Rehabilitation

A force account job order that began in CY 1981 provided funds for the rehabilitation of the water control structures in North Pond, New Field, and South Pond. The majority of the work on the North Pond and New Field structures was completed in 1981, but was not finished until 1982.

The final two flap gates on the New Field structure were installed on February 25. The remaining bulkheading associated with the structure was completed on March 12. The capability to control water levels in the impoundment was greatly enhanced.

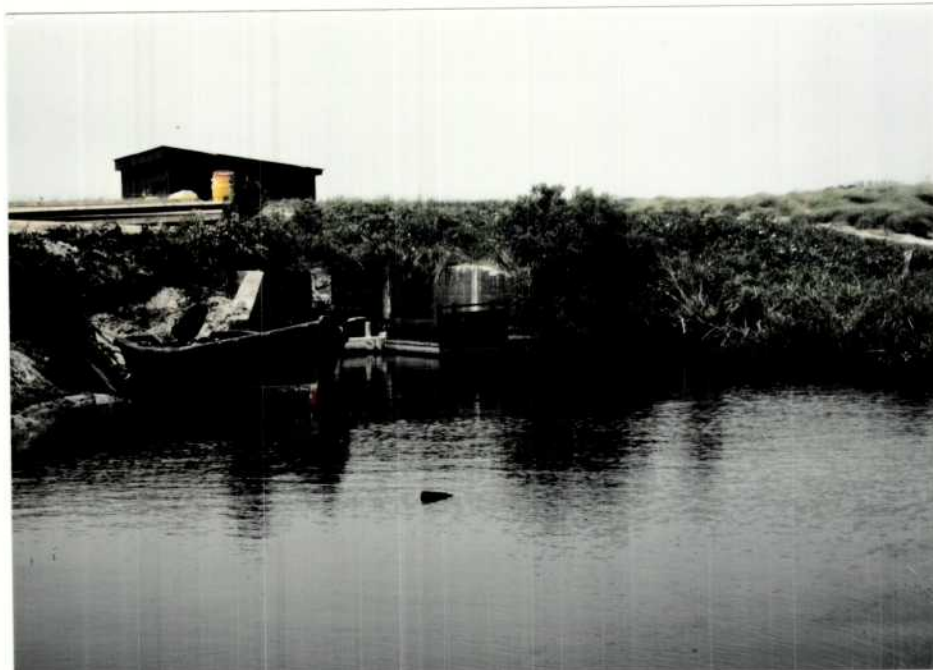
The only work remaining to be completed at the North Pond structure was bulkheading on the pond side. This was completed during the summer. Both refuge staff and YCC enrollees were used.

Plans to install a new 30" water pump in South Pond got well under way. Refuge staff members met with representatives from the FWS Ecological Service, the N. C. Office of Coastal Management, and the U. S. Army Corps of Engineers to look at the proposed pump site. By the end of the year all paper

work dealing with the project had been completed, and the proposal for a Section 404 permit was forwarded to the Corps. It is believed that the permit will be issued in time to start installation in the spring of 1983.



The end of a long hard day - tightening the last nut on the New Field flap gates. 2/82 ARH



North Pond water control structure before bulkheading. 6/82 JDB



Installation of the bulkhead in progress.
7/82 JDB



Completed bulkhead at North Pond pump site.
12/82 JDB

A 30'X56' pole shed was added to the South Pond storage building during the year. It will be used to store large equipment such as dozers, tractors, etc. Prior to building the shed, this equipment had to be parked in the open, and was deteriorating quickly due to the harsh environment. The lumber and aluminum was bought out of station funds; the remaining materials was picked up as surplus property. The refuge staff supplied the needed man power.

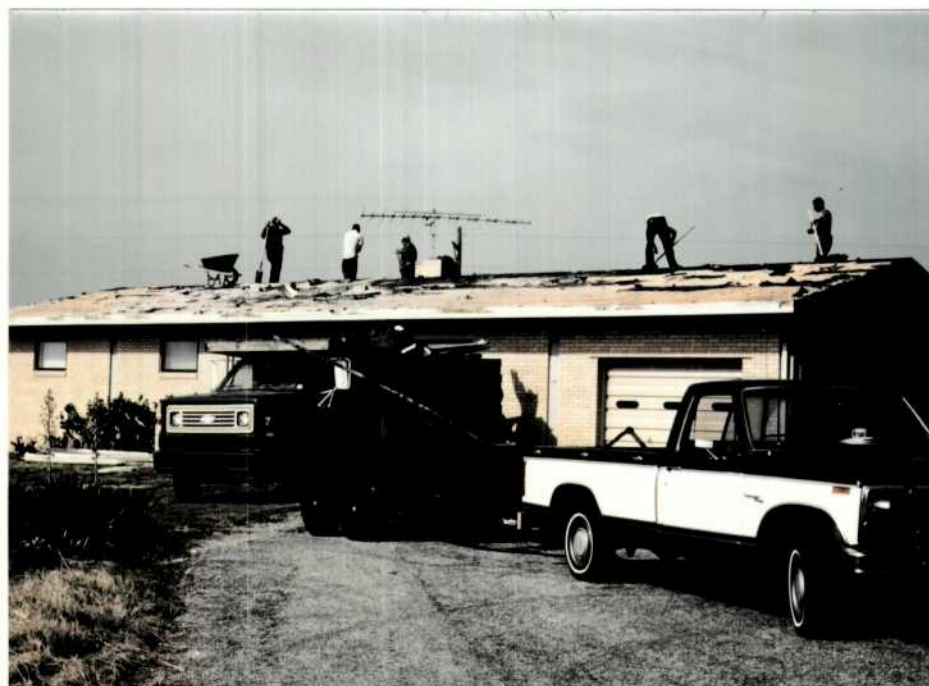


Pole shed built by refuge staff. 11/82 JDB

After 15 years of battling the elements, the roofing on the residence and buildings at the headquarters complex had to be replaced. A \$13,206 contract was let in early August and none too soon. On August 25, a small tornado hit the headquarters complex ripping off approximately 200 sq. ft. of roofing on the office building. The contractors started work shortly thereafter, and were finished with all roofs by September 12. (See photo next page).

August wasn't a good month for the refuge; along with the tornado, the headquarters well went dry during the last week in August. Two new lateral wells were dug during the first week of September.

The existing heating/cooling systems in the residence were replaced in December. The existing heating system consisted of a 15 year old gas heater with ducts to every room. The existing cooling system consisted of a 24,000 BTU window unit in the dining room. These were replaced with an electric 3 ton heating/cooling pump.



Contractors removing old roof from residence.
9/82 ARH

Several loads of clay were placed on the South Pond roadway in order to allow travel by vehicles not equipped with 4 wheel drive.

3. Major Maintenance

A new flagpole and refuge entrance signs were installed.

The road along the New Field dike was reworked. Parts of the road were relocated from the dike berm to the top of the dike.

The chlorinator for the headquarters complex water system was replaced.

5. Communications Systems

Several times throughout the summer the base station was knocked out by lightning. In June and July it seemed as though lightning hit almost every week. As soon as the units would be repaired, lightning would hit again. Who says lightning never strikes the same place twice!

J. OTHER ITEMS1. Cooperative Programs

- a. The Manteo (Shallowbag) Bay Project which was authorized by Congress in April 1970 is still on-going. The U. S. Corps of Engineers applied for a permit from the Dept. of the Interior to construct a pair of jetties to stabilize Oregon Inlet, a navigable channel lying between Bodie Island (administered by NPS) and Pea Island (administered by FWS). The basic design of the project as it affects the refuge includes the construction of two rubble mound or concrete armor jetties at Oregon Inlet and a sand bypass system that would require placement of dredge material on the refuge. The south jetty total length would be 8,700 feet with the shorewardmost 2,300 feet connected to the refuge and permanently occupying 4.4 acres. During construction, another 41 acres of refuge land would be required for sand bypassing, storage and access areas, and pipeline rights-of-way. Sand bypass would include annually pumping sand from the accretion fillet behind the north jetty onto the refuge beach.

A compatibility statement was prepared and found to be incompatible. Manager Hight briefed USFWS officials, Assistant Secretary Ray Arnett, and N. C. Senators in Washington on the incompatibility statement for the project.

Our position has been that comprehensive dredging can achieve the project goals in a more cost-effective manner without the jetty's inherent impacts to North Carolina's barrier islands. The option of Phase I evaluation of dredging looks positive in terms of keeping the channel open. In the meantime, the Corps' Wilmington District recently doubled its dredging efforts in trying to reopen the channel. While this will provide the necessary short-term solution, the proposed dredging alternative will hopefully provide for the long-term solution. In the event that unforeseen difficulties arise regarding the dredging alternatives the undertaking of a thorough review of all the known ramifications of proposed jetty construction and identifying potential exchange of lands is being taken.

- b. Authorization for emergency dredging was issued to the U. S. Coast Guard at the Oregon Inlet Coast Guard station. This authorization was the result of serious shoaling in the mouth of the harbor. The U. S. Corps of Engineers was also cooperating in this venture. In late August dredging began in the channel and basin. Though Manager Hight, Commander Pritchard of the USCG, and Captain Meekins of the U. S. Corps of Engineers had reached an

agreement on this operation and the spoil deposition location, the Corps of Engineers, Wilmington District, made the arbitrary decision to abandon this plan and, further, to pump the spoil on the beach of the refuge. That decision was made without consulting USFWS or the USCG and was obvious breach of the permit issued by the USFWS. A letter stating the action as observed was drafted and sent to Colonel Robert Hughes, District Engineer in the Wilmington Office.

- c. A meeting was held in Raleigh, N. C. on April 2 concerning the repaving of N. C. Highway 12 which goes through the refuge. This meeting was held in the office of the Secretary of Transportation and was attended by Manager Hight who was representing the Regional Director. Others in attendance included aides to the U. S. Representatives, local county commissioners, highway commissioners, and National Park Service representatives. The meeting was called to solicit federal assistance in repaving and improving the highway. Cost was estimated at 12 to 15 million dollars by Marc Basnight, Highway Commissioner. After much discussion the following plan of action was initiated. The N. C. Dept. of Transportation will petition the U. S. Senators and Congressmen from North Carolina to proposed legislation enabling the National Park Service through the Dept. of the Interior to expend funds on N. C. Highway 12. After passage of this legislation, the NPS would address the highway repair as a major rehabilitation project thus competing with other NPS projects. The N. C. Dept. of Transportation will provide portion of the funds for the project. No direct appropriations from Congress will be requested. This process is a long term process. This project will probably not be inserted into the system before FY 1985. We stated that the USFWS certainly recognized the unsafe conditions on Highway 12 and further stated that funds would not be available through the Service, but that we would certainly cooperate from an administrative standpoint. This cooperation would take the form of review of design, locations, or rights-of-way amendments, as well as environmental documents.

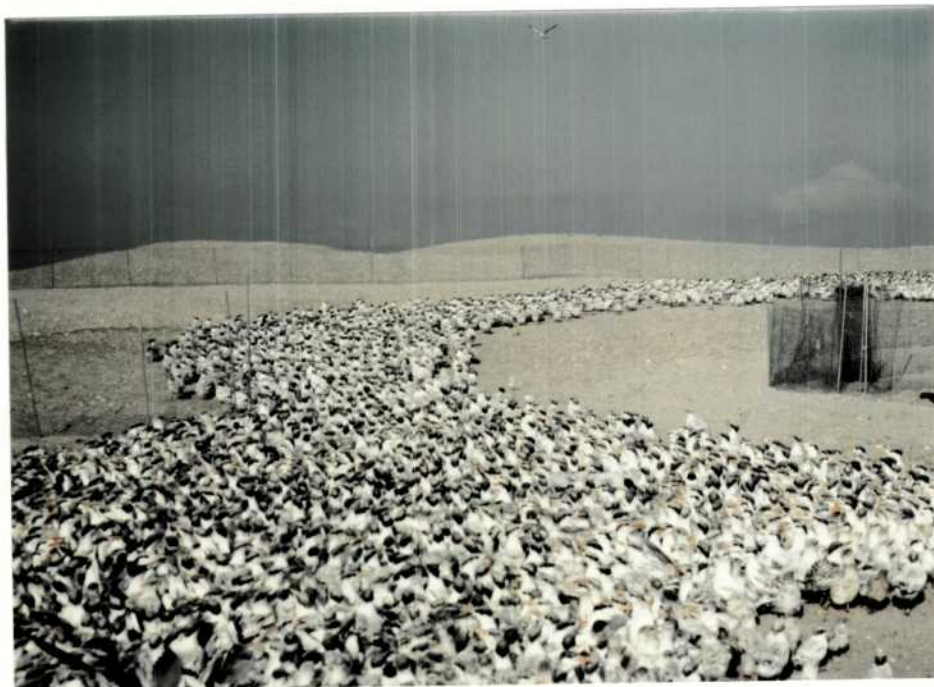
Congress failed to pass legislation allowing the Park Service to participate in funding repairs to Highway 12. Due to this fact and further damage to the road, N. C. Dept. of Transportation has appropriated 5.5 million dollars for road repairs.

- d. Considerable time was spent working on the power line proposal for issuance of a permit to the Cape Hatteras Electric Co-op. The original proposal included placing a 115 Kv electric transmission line across Oregon Inlet and upgrading the present 34.5 Kv line to 115 Kv between Oregon Inlet and Buxton. However, the proposal was

changed to include a second 34.5 Kv electric transmission line across Oregon Inlet and renovation of the present 34.5 Kv line between Oregon Inlet and Buxton.

A permit will be issued once they have complied with modifications on the existing right-of-way.

- e. Mr. David Hodges, area representative for Soil Conservation Service, visited the refuge to evaluate current and planned projects and update SCS files on the refuge.
- f. A permit was issued to Jeffrey Walters, Dept. of Zoology, N. C. State University to perform a research program on the movements and ecology of wintering shorebirds from January 1982 thru May 1983.
- g. On July 7, Assistant Manager Browning, Laborer Elmore, Recreation Aid/Intern Henderson, and the YCC assisted John Weske of the Smithsonian Institution with the banding of terns on the spoil islands at Hatteras Inlet. A total of 887 royal tern chicks and 150 sandwich tern chicks were banded to provide information on tern nesting and migration. Two weeks later they banded terns on the spoil islands at Oregon Inlet.



Terns on spoil island at Hatteras Inlet.
7/82 JDB



Terns being banded by refuge personnel and
Mr. Weske.

7/82 JDB

2. Items of Interest

Assistant Manager Browning and ORP Strawser received Special Achievement Awards of \$200 each on January 5 for their efforts on the Master Plan of Pea Island NWR.

Refuge Manager Hight received a Quality Performance Award on February 18 for his efforts on Pea Island NWR.

ORP Strawser won a cash award of \$50 for her safety slogan "Stop Accidents Before They Stop You".

Assistant Manager Browning participated in a Wing Bee in Laurel, Maryland on February 1-5.

Manager Hight and Assistant Manager Browning attended the Contract Warrant Training and Programmatic in Asheville on March 1-5.

On April 1st and 2nd, Assistant Manager Browning participated in the NPS "Save the Lighthouse" workshop.

Assistant Manager Browning attended a State-Federal Oil Spill Workshop in Raleigh on May 20.

November 30, Manager Hight attended the "Programmatic" meeting in Atlanta. He also presented a program on the master planning process.

3. Credits

The following personnel were responsible for completion of this narrative:

Albert Hight - Sections A and K
James Browning - Sections E, F, G, and I
Bonnie Strawser - Sections B, D, and H
Beverly Midgett - Sections A and K

All typing and organizing of this narrative was done by Beverly Midgett.