

PEA ISLAND NATIONAL WILDLIFE REFUGE

Rodanthe, North Carolina

ANNUAL NARRATIVE REPORT

Calendar Year 1981

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



1 5 Personnel 3 7 4

- | | |
|-----------------------|---|
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| 2. Angela J. Elmore | YACC Enrollee, EOD 8/10/81 |
| 3. Joseph B. Creef | Maintenance Worker, WG-8 PFT |
| 4. Beverly A. Midgett | Secretary-Typist, GS-4 PFT |
| 5. Robert C. Maddrey | YACC Enrollee, EOD 5/11/81 - 11/30/81 |
| 6. James D. Browning | Assistant Refuge Manager, GS-9 PFT |
| 7. Bonnie G. Woodall | Outdoor Recreation Planner, GS-7 PFT |
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Review and Approvals

Albert R. Hight 2/26/82
 Submitted by Date

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 Area Office Review Date

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A. HIGHLIGHTS

Pea Island was chosen as one of the refuges to test the new master planning process. Instead of a regional planning team, refuge staff completed the entire process (Section D.1).

Extensive damage occurred to the dunes and beach during a storm in November (Section F.1).

An 8,000 gallon oil spill came ashore on beaches north of the refuge. The refuge staff was involved in collection of oiled birds (Section F.6).

The number of loggerhead sea turtle nests found on the beach was the highest ever recorded (Section G.2).

With the addition of an Outdoor Recreation Planner, the environmental education program was intensified (Sections H.2 and H.3).

Several new interpretive programs were initiated in coordination with the National Park Service (Section H.7).

A proposal to open Pea Island's beaches to use by ORV's was sent by the North Carolina Beach Buggy Association to the FWS's Washington Office (Section H.15).

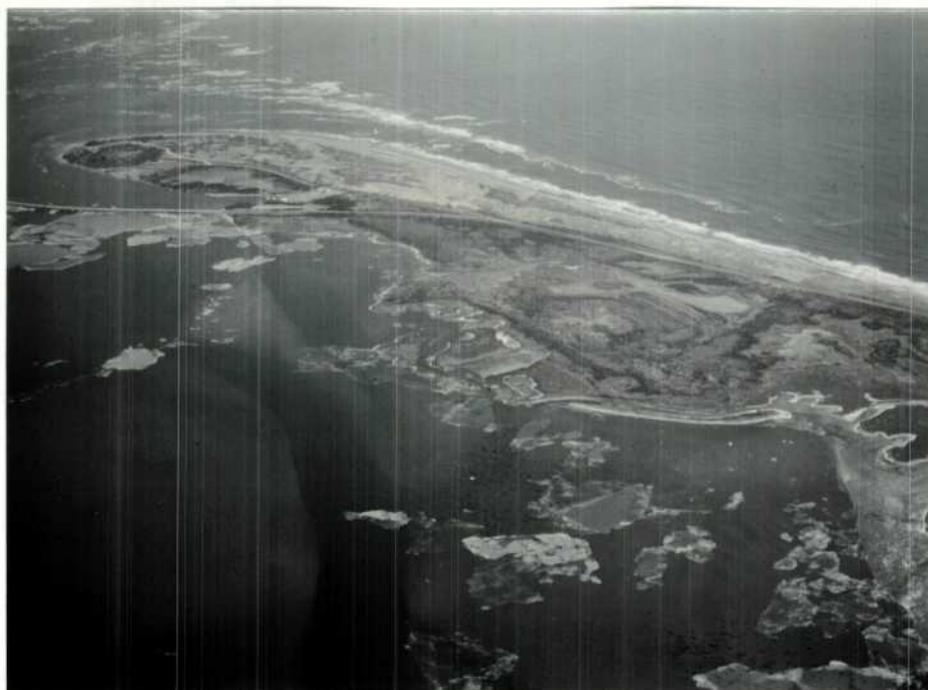
A 30" pump was installed between North Pond and one of the tidal creeks (Section I.2).

Assistant Secretary Ray Arnett visited the refuge on May 22 and 23 to discuss the possible effects of the proposed Oregon Inlet jetties would have on Pea Island (Section J.1).

B. CLIMATIC CONDITIONS

On January 4, the temperature dropped into the teens with 20 mph winds. There was a power outage for 20 hours. January 30 brought us 1-2 inches of snow. The severe cold weather with high winds caused the impoundments and sound to freeze over.

Total precipitation for the year totaled 43.68 inches as compared to 52.10 inches in 1980. This is 11.37 inches less than average. The month of August brought our largest amount of rainfall at 11.46 inches. 6.20 inches of that was contributed by tropical storm Dennis on the 19th. September was our lowest month of rainfall at .50.



North Point of refuge with ice sheets in sound.
Jan. 1981 BGW

C. LAND ACQUISITION

1. Fee Title

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

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

There is no impending development on the several small islands on the sound side of the refuge within the Proclamation Boundary that FWS does not own.

1. Master Plan

Though work on the Pea Island Master Plan officially began in August, 1980, the actual Master Plan was developed during 1981. Pea Island was chosen as one of the two refuges in Region 4 to field test a new master planning process. In this region, the planning was done on the field level, without the assistance of a regional planning team or other professional planners. This process at Pea Island consumed much of the staff time during 1981. A total of 1,665 man hours or 20% of professional and clerical staff time was used in the process. It cost the station \$18,307.00. The Environmental Assessment for the master plan is not included in the above mentioned figures and will be produced at the field level in 1982.

A number of problems became evident concerning the process of master planning. The workbook, which was produced to provide a "cookbook" approach to master planning, described a detailed process. The workbook was written in such a way as to be difficult for untrained planners to use. Many assumptions were made as to the basic skill and knowledge level of the user.

Major problem areas were locational criteria development and suitability mapping. Utilizing the detailed process in the workbook produced a series of maps locating wildlife use areas on the refuge. Unfortunately, in most cases, the wildlife did not use the areas diagnosed in the maps. Suitability maps could have been prepared more easily and usefully by ground truthing and using field knowledge of the refuge. Unfortunately, these methods are less objective and more difficult to document. It is obvious that this conflict must be resolved, either by changing the process or educating the wildlife.

The staff's overall impression of master planning include the following:

1. Developing the master plan is an extremely important responsibility. Good plans are essential to good management.
2. The process which was tested in 1981 at Pea Island is too complex and too detailed to be utilized on the field station level. The basic skills and knowledge required for this type of planning are seldom possessed by field personnel. Also, the basic mapping equipment required seldom exists on a refuge.

3. Not only is the process complicated and detailed, much of it seems to be unnecessary for an established refuge. Perhaps for a developing refuge, this level of detail is important, but for a refuge such as Pea Island, much of the work seemed redundant.
4. The responsibility of writing a master plan on the refuge level creates a huge burden on the refuge operations. Staff members with full ranges of duties were expected to write a master plan plus complete other work. This work overload caused a great deal of tension.

In spite of the problems involved with master planning, there were some positive aspects. Obviously, the staff has more of a working knowledge of the refuge than any regional planner could attain. For this reason, ground truthing and other field oriented activities were easier to accomplish.

Also, the process of gathering the background information for the master plan forced staff into becoming very familiar with this information. Though time-consuming and unpleasant, at times, the acquisition of this knowledge will undoubtedly aid in the efficient and practical running of the refuge.

3. Public Participation

Primary activities for public participation during 1981 involved the Pea Island Master Plan. The refuge staff followed NEPA requirements closely throughout the entire process. The design of the workbook provided clear, concise direction on public involvement.

The first major thrust for public participation in the master plan was the compilation of a contact list. Refuge and Cape Hatteras National Seashore files were scanned to collect names and addresses of groups and individuals who had requested specific services or information from either agency. In addition, efforts were directed toward adding conservation clubs, fishing and hunting clubs, state agencies related to conservation, state leaders, county and local leaders, educators, etc. Not only were attempts made to include both conservation and consumptive recreation groups; attempts were also made to include representatives from each type of refuge use group (research, commercial fishing, ORV users, teachers, birdwatchers). A media list was also compiled for use in disseminating information and expanding the contact list.

The first mail-out introduced recipients to the master planning concept, advised of the up-coming public meeting, and requested ideas on activities and/or facilities that might be considered. This letter was mailed on January 15. A total of 23 responses were received by the refuge.

On February 23, a second mail-out was sent to participants on the original contact list plus additions. This mail-out

included an invitation to the public meeting scheduled for March 11, 1981 and a compilation of suggested activities form the January 15 mail-out. Also included was a list of staff-suggested activities and/or facilities. Participants were advised to review the materials prior to the public meeting.

Nine participants attended the public meeting, which was held at the North Carolina Marine Resources Center on Roanoke Island. Though a small group, members represented sportfishing, commercial fishing, conservation, and education groups. National Park Service, North Carolina Marine Resource Center, and North Carolina Office of Coastal Management were represented.

The third mail-out was sent on September 11, 1981, and included an outline of the proposed alternative for the Pea Island Master Plan. Sixty-one responses were received. Of these, 58 supported the plan as proposed or with minor changes; two stated that not enough information was available to them and one reply (from a sport fisherman) was against the plan.

5. Research and Investigations

Beginning in the spring of 1979, Mike Erwin of the Migratory Bird and Habitat Research Laboratory in Laurel, Maryland has been involved in a research program to "assess two censusing methods in heronries". Comparisons are made between actual nest counts and production estimates from counting individual bird entrances and exists to the rookery. Heronries on Pea Island have been censused each year as a part of the research project.

E. ADMINISTRATION

1. Personnel

Assistant Manager James D. Browning and Outdoor Recreation Planner Bonnie G. Woodall officially reported for duty on December 29, 1980. However, their presence was not realized until this calendar year. This is the first year that an Outdoor Recreation Planner position had been filled on this refuge. In March, Secretary-typist Beverly A. Midgett was converted from permanent part-time to full time status. In December, Maintenance Worker Joseph B. Creef was upgraded from a WG-7 to a WG-8. One temporary biological technician position was occupied by Claudia Jones, a former YACC enrollee.

Permanent

<u>CY</u>	<u>Full Time</u>	<u>Part-Time</u>	<u>Temporary</u>
1981	5		1
1980	4	1	
1979	3	1	
1978	3	2	1
1977	2	2	1

2. Youth Programs

YACC was the only youth program on the refuge this year. Three enrollees spent part of the year in the program. The program was small but it had direct benefits to all aspects of refuge management. The enrollees were especially effective in sea turtle surveys, routine maintenance, and BLHP force account work projects. Two of the enrollees had college degrees and would have made excellent permanent staff members. They showed an interest in refuge programs beyond the point of merely being a job.



YACC enrollee Angela Elmore shows concern for injured great blue heron.

10/81 BM

All toll, there have been six enrollees participating in the YACC program on this refuge. There is no doubt that all learned work skills while in the program. For several, it is doubtful that the refuge benefited from their presence.

5. Funding

The funding level for FY 1981 was \$120,100. This level is the same as that received in FY 1980. The inflation rate for 1981 was 8.9%. This fact coupled with additional salary costs for the Outdoor Recreation Planner would have had serious impacts on the ability to protect and manage the refuge resources. However, a force account job order for \$60,000. absorbed some salary and maintenance costs. The Endangered Species (1400) and Interpretation and Recreation (1240) programs continued to be woefully short of funding needs. The results have been that the Migratory Bird (1210) program continues to subsidize these programs.

The Force Account Job Order for \$60,000 was used to rehabilitate the existing water control structures in North Pond and New Field.

The refuge residence received new floor coverings. This was funded through the 1994 fund in the amount of \$1,800.

A breakdown of funding history is as follows:

	<u>Migratory Birds 1210</u>	<u>I&R 1240</u>	<u>Endangered Species 1400</u>	<u>1994</u>	<u>Fiscal Year Total</u>
FY 81	100,000 (60,000)*	19,000	1,100	1,800	121,900 (60,000)
FY 80	100,000 (60,000)*	19,000	1,100	0	120,100 (60,000)
FY 79	77,000 (367,400)**	16,000	1,000	0	94,000 (367,400)
FY 78	70,000 (31,500)	16,000	1,000	0	87,000 (31,500)
FY 77	52,500 (33,400)	10,000 (2,000)	1,000	0	67,700** (35,400)

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

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

*** - Includes \$4,200 sales of equipment.

() - BLHP funding.

A basic analysis of the impacts of inflation on this refuge over the past three years indicate we have been able to accomodate inflation with very little left over to maintain equipment purchased under the BLHP program and older buildings and structures.

	<u>Needed</u>	<u>Funded</u>
FY 1979	94,000	94,000
Inflation 13.3%		
FY 1980	106,500	120,100
Inflation 12.4%		
FY 1981	119,700	121,900
Inflation 8.9%		
FY 1982	130,300	?

This data assumes that in 1979 the basic functions of the refuge were funded. The 1981 data does not take into account the additional salary of the ORP position or the upgrading of other positions.

6. Safety

The refuge experienced another year without a lost-time accident. The last lost-time accident occurred in 1959. One reportable accident occurred on September 13. Outdoor Recreation Planner Woodall fractured her hand while at FLETC in Glynco, Georgia. She was practicing physical defense moves.

Regular safety meetings were held with the major topics being; vehicle safety, use of hand tools, lifting techniques, beach hazards and safety, boating safety, and heavy equipment safety. One full day was devoted to a CPR course.

7. Technical Assistance

The refuge staff worked closely with the N. C. Marine Resources Center in Manteo. The staff provided technical assistance in the field of environmental education, sea turtle identification, and release, and other wildlife related matters. The staff also provided technical assistance to the National Park Service in matters concerning control burning, bird identification, and law enforcement.

F. HABITAT MANAGEMENT

1. General

At the beginning of the year the refuge was comprised of 5,915 acres of barrier island and 25,700 acres of Proclamation waters in Pamlico Sound. 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 managed impoundments totalling 950 acres, and one nine acre fresh water pond. However, the acreages of beach and barrier dunes were reduced in November by a storm.

On Friday, November 13 a northeaster hit with winds of 40 mph. The next three days the winds churned up 10-14 foot seas that lashed against the island resulting in extensive damage. The most severe damage occurred at the refuge's north point (Oregon Inlet) and at the south end. Approximately 200 feet of the north point, including a 50 car paved parking area was washed away. Waves breached the dunes on the south end resulting in desposition of 4 feet of sand on N. C. Highway 12 and the south end parking area, not to mention a 40 foot gap in the dune line.



North Point of Refuge (Oregon Inlet) at start of November storm. (Note comfort station and parking lot as compared to picture on following page). 11/81 ARH



North Point after storm.

12/81 ARH

All thirteen miles of beach and dunes between the north point and south end were also hit hard. Severe to minor erosion occurred along the entire dune line. As much as 30 feet of dunes were lost in some areas. The end result was a dune line that looked more like a vertical cliff than rolling dunes.

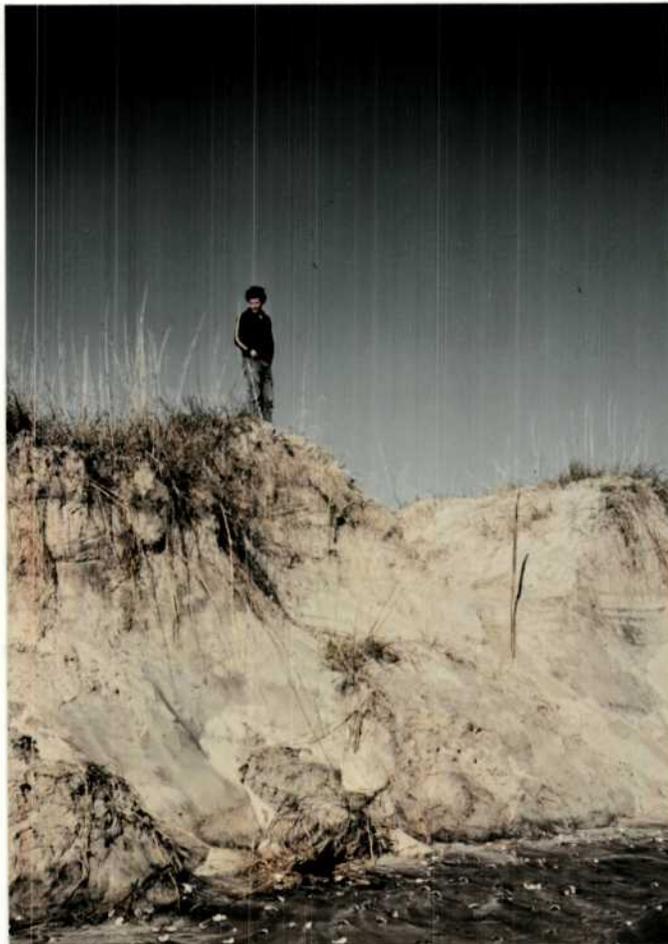


Section along beach before storm. Concrete pilings are approximately 5 feet from base to top.

10/81 ARH



Same section of beach after storm. 11/81 JDB



Erosion to dunes caused by November storm. 11/81 JDB

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).

A 30" pump was installed in North Pond during the year. This greatly enhanced management capabilities. Water can now be pumped from the sound into the pond in order to maintain a water depth sufficient to allow the growth of sago (Potamogeton pectinatus) and other aquatics. Hopefully this will increase use by diving ducks.

Although the pump was installed too late in the year to aid in water control, the pond did, by the grace of Mother Nature, have adequate water depth to produce a large crop of sago. This was the best growth of sago in several years. Diving duck use greatly increased on the area. On December 16, the divers peaked at 3,725 birds, of which over 2,400 were canvasbacks.

The BLHP rehabilitation project in New Field continued. The ability to manipulate and maintain suitable water levels in New Field was hampered, and will continue to be, until this project is completed. After completion, water levels will be maintained at a suitable depth to grow sago and other aquatics in the canals while the remainder of the pond will be managed as a moist soil management area. Optimistically, this will increase use by divers as well as dabblers.

No active management occurred in South Pond due to the present water control structure (stoplog riser) being inoperable. However, Mother Nature once again worked to our advantage by providing an enormous growth of 3-square bulrush (Scirpus, sp.) throughout the pond. This was used extensively in the fall by snow geese. (See photo page 13).

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. The following is a table of the results:

<u>Food Value</u>	<u>Areas</u>			
	<u>North Pond</u>	<u>New Field</u>	<u>South Pond</u>	<u>Salt Flats</u>
Good	12.8%	47.1%	50.7%	1.0%
Fair	86.6%	23.5%	48.7%	78.9%
Poor	0.6%	29.4%	0.6%	20.1%



Excellent stand of 3-square bulrush in South Pond.

Encroachment by woody shrubs in the impoundment edges and salt marshes has been increasing for several years. Four areas totalling 150 acres were prescribe burned and disked to prevent further encroachment. Two of the areas were in the impoundments and two were in the salt marsh. (See Fire Management Section).

4. Croplands

The only cropland currently planted is a small goose browse area in New Field. The area was reduced from 50 to 35 acres and Italian ryegrass instead of fescue was planted to help reduce costs. The ryegrass was planted on September 10 and was fertilized with 16-8-8. Growth was extremely good. The geese arrived in October to find a nice 4"-6" stand of browse. By mid-December, the field was virtually bare. Due to the inability of ryegrass to develop a strong root system, the geese pulled the plants from the sandy soil. It was good while it lasted, but fescue seems to be a better browse crop in this situation.

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 traverse, camping, fires, and subsequent damages.

On Wednesday, May 6, two ships collided 15 miles off the North Carolina/Virginia coast. The resulting oil spill, approximately 8,000 gallons of Bunker C oil began to wash onto the beaches two days later. Though only negligible amounts of oil reached refuge beaches, the beaches north of Oregon Inlet were heavily coated. Numerous calls began to come in on oiled birds. Refuge staff members immediately went to the hardest hit areas to collect oiled birds and offer assistance. A total of 39 loons were collected. Of these, 7 were dead when picked up, 7 died enroute to refuge facilities, and 25 were turned over to the N. C. Wildlife Resources Commission to be rehabilitated at their facility in New Bern, N. C. Only 2 of the 25 survived. Dr. Don Schultz of the Environmental Contaminants section of Regional Office was present to evaluate the spill's effect and to oversee the de-oiling operation.



Results of oil spill on Nags Head beach.
5/81 JDB

9. Fire Management

Four areas totalling 150 acres; one in South Pond, one in North Pond, and two in the salt marsh were prescribe burned in March. These were the first burns since 1976. In some areas where the fire did not kill all the woody shrubs, heavy disking was also used. The burning and disking combination proved to be quite effective. Approximately 90% of the woody vegetation was eliminated and replaced with salt marsh grass (Spartina, sp.), 3-square bulrush (Panicum), and several sedges.



Manager Ron Hight starting a prescribed burn.
3/81 BGW

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. One hundred bird species were seen during the Christmas Bird Count on December 30. Six other species were known to be using the refuge, but weren't seen on the count.

2. Endangered and/or Threatened Species

a. Federally Listed Endangered and Threatened Species

Brown Pelican (Endangered). Brown pelicans were rarely seen in the area a few years ago but now are becoming a common sight, especially in the summer and fall. Pelicans

were sighted from May thru December with a peak of 100 birds on October 1. Use days totalled 9,550. This was down from the record high 13,200 days recorded in 1980.

An immature pelican with broken wings was picked up south of the refuge on November 20. The bird was sent to veterinarian Dan Hudson in Raleigh for treatment. Dr. Hudson reported that in addition to the fractured wings, there were numerous internal injuries. The bird died two days later and was donated to the N. C. Museum of Natural History.

Peregrine Falcon (Endangered). Peregrines have long used the Outer Banks as a migratory corridor, and sometimes as a wintering area. Two overwintered on the refuge during 1980-81. They were last sighted on the refuge on May 4.

The first falcon observed during fall migration was on September 15. Birds were then seen on several dates thru November 18. The peak number was 3 birds sighted November 15. Use days totalled 465.

Bald Eagle (Endangered). An immature bald eagle was sighted at the North Point on May 4.

On May 19, a call was received that an immature bald eagle was trapped in a phone booth at Manteo airport. It appeared to be quite sick when retrieved. On May 20, the eagle was transferred to Ted Curtis, Special Agent LE, who flew the bird to the Auburn University School of Veterinary Medicine. It was diagnosed as having 2 minor pellet wounds and having ingested poison of some sort. Auburn kept the bird until it was rehabilitated.

After 2 months of rehabilitation, the bird was brought back and released on July 23. Stories and pictures of the release were picked up by United Press International (UPI) and distributed nationwide.

Kemp's (Atlantic) Ridley Sea Turtle (Endangered). A Kemp's Ridley turtle washed ashore at Cape Hatteras on December 14, apparently suffering shock from reaction to a sudden temperature drop of the ocean water due to a cold front. Park Service personnel brought the turtle to the refuge headquarters. It was then taken to N. C. Marine Resources Center. The U. S. Coast Guard was contacted about the possibility of air-lifting it, along with another Kemp's turned over to the Marine Resources Center, to the Gulf Stream for release. On December 17, the Coast Guard helicoptered the turtles out the 30 miles to the Gulf Stream where they were released.



U. S. Coast Guard preparing to lower one of the Kemp's turtles into the Gulf Stream. 12/81 ARH

Atlantic Loggerhead Sea Turtle (Threatened). Loggerheads utilize Pea Island's beaches for nesting even though the area 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. The nursery is checked daily, after 50 days of incubation, all hatchlings are carried to the beach and released.

This year 16 nests were found, the most ever recorded since the program began in 1971. It is also the most recorded on any section of the Outer Banks. The first nest was recorded on June 8 and the last on August 11. All 16 of the nests were relocated to the protected nursery. A total of 801 hatchlings were produced from 1,834 eggs (44% hatch). This is the lowest percentage hatch of the program. One reason for this was tropical storm Dennis.

In August, tropical storm Dennis brushed the Outer Banks causing extremely high tides and dumping 12 inches of rain in 24 hours. The nursery was totally inundated by rainwater and the sand over the nests was hard packed. Hatch rate before the storm was 67.4%. Hatch rate afterward was 23%. However, it should be noted that had the nests not been relocated to the nursery, all eggs would probably have been destroyed by the high tides.



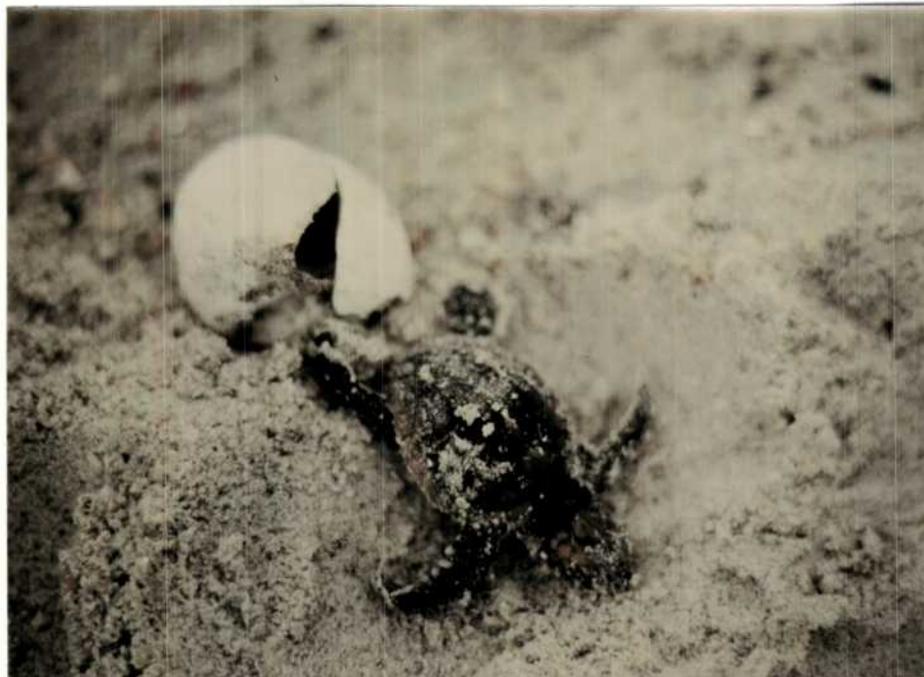
Female loggerhead laying eggs.

ARH



Bio-tech Claudia Jones using the ATC on the
turtle survey. (It gets 50 mpg even in sand!)

7/81 ARH



Loggerhead hatchling heading toward the ocean.
9/81 BM

A private citizen contacted refuge personnel about 2 nests located in an area of high public use near Nags Head. Both nests were relocated to the nursery. Of the 267 eggs within the nests, 207 hatched (78%). The hatchlings were released along the refuge's beaches.

Refuge personnel assisted the National Marine Fisheries Service in their aerial surveys of marine turtle nesting. Staff members did ground truths along the beaches on the days of the flights.

All nesting data for 1981 was supplied to the Sea Turtle Recovery Team and the State of North Carolina.

On October 12, refuge personnel picked up a large loggerhead along the beach in Kitty Hawk. It had sustained injuries to the head possibly from a sharp instrument such as an axe. It is believed that the turtle was caught in a trawler's net, worked over when dumped on board, and tossed back overboard. The turtle died at refuge headquarters.

Frank Schwartz (Institute of Marine Science, The University of North Carolina at Chapel Hill, Moorehead City Branch) and Otto Florschutz (USFWS East Coast Biologist) visited on June 17 to observe the nursery program. Both agreed the program was worthwhile.

Jim Steinburg of the Center for Environmental Education (Sea Turtle Rescue Fund) visited on June 22 to discuss

the entire sea turtle program. This resulted in the refuge's activities being listed in the "Directory of Sea Turtle Conservation Programs In The Southeastern U. S."

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). Ospreys were present from March thru October. The peak number of birds seen was 4 on May 10. Total use days was 565.

A series of elevated platforms have been constructed to provide nest sites. One platform had an active nest but no young were produced. Another platform was used for a time but was abandoned as a nest site.

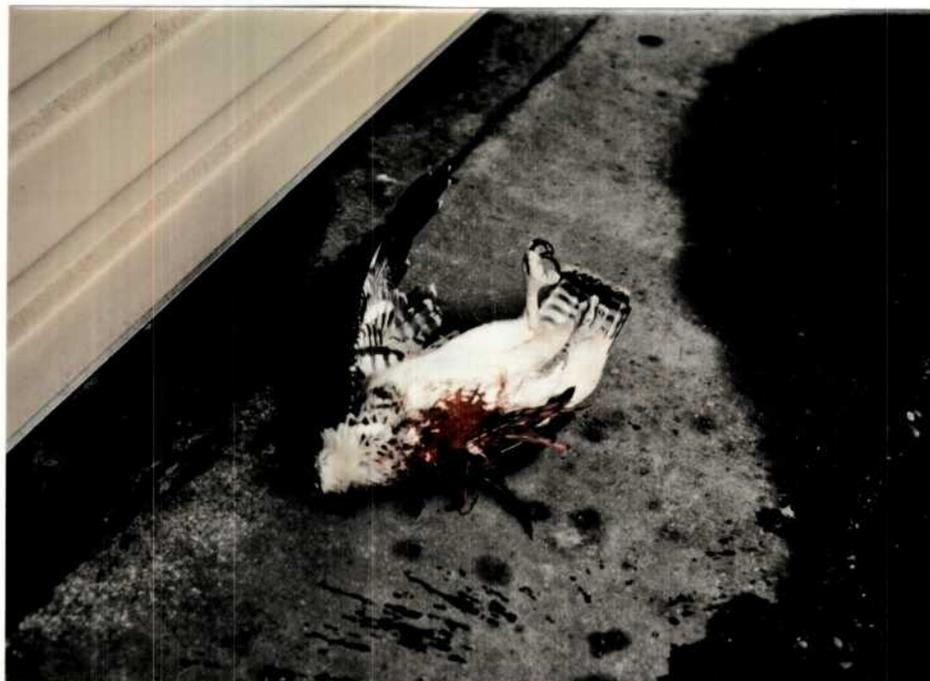
An injured adult osprey was brought to the headquarters from Wanchese, N. C. on May 7. The bird was taken to Mattamuskeet NWR and examined by a veterinarian in Washington, N. C. He was diagnosed as probably having temporary nerve damage, possible from a power line collision. On May 12, he was returned to Wanchese and released.

An osprey was found dead on the refuge underneath the power line on October 4. Its right wing remained on the line.



Osprey's right wing hanging from the power line.

10/81 ARH



Osprey found dead under power line. (Note loss of right wing). 10/81 ARH

Least Tern (Special Concern). Least terns have nested on the beach and dunes for many years. The primary management tool 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.

The birds began to congregate in 3 different areas along the beach in early May. Site locations were across from North Pond, 2 miles south of headquarters, and 4 miles south of headquarters. By late May nests were observed in only one site, the one 4 miles south of headquarters. There were 80 nests present, most with 2 eggs. As it turned out, this was the only site producing young. Production at the site was approximately 85 young.

3. Waterfowl

Waterfowl censuses were carried out on a regular weekly basis from January 1 to the last of March and from mid-September to the end of December. Census methods were changed during the year. From January 1 to the end of March, counts were made on the ground by traversing a prescribed route. Along with these counts, an aerial count was made each month. It was determined that this method covered most of the impoundments and marsh, but was only counting the birds in the sound once monthly. A new method was employed to alleviate this problem. The fall counts were made weekly, but were alternated between ground counts and aerial counts. A plan to reduce costs was devised with the

Special Agents (LE) in Washington, N. C., Mattamuskeet NWR, and Pungo NWR. All three refuges used the same census method and flew the same day using the Special Agent's aircraft and pilot. The three refuges shared costs of the flight. Compared to hiring a private aircraft monthly, cost were comparable and benefits were doubled.

Overwintering populations of all species were about normal. The peak population of 21,430 birds occurred on January 3. Surprisingly, the birds lingered later than ever recorded. Approximately 50 swan, 375 geese, and 4,500 ducks were still present on March 28. Normally only a few hundred ducks are present.



Snow Geese using along roadside in Salt Flats.
Staff photo

Fall migration began with the arrival of 200 blue-winged teal on August 11. The first whistling swans appeared on September 6 and pintail and wigeon first appeared on September 9. The first geese appeared September 19. Numbers of waterfowl increased until peaking on November 10 at 24,855 birds. This was about 1½ months ahead of the normal peak period.

The following are the dates of peak numbers for the different groups: whistling swans peaked at 1,410 birds on December 21, snow geese peaked on December 2 at 6,371 birds, and Canada geese peaked on December 21 at 5,280. The aggregate duck population peaked on November 10 at 18,365. Of these, 7,540 were pintail, 2,000 wigeon, 1,575 green-winged teal, and 1,540 black ducks. The remainder was an assortment of smaller numbers of several species. The coot population

peaked at 2,435 birds on November 18. All peaks showed a decrease from 1980. 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>
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
1977	600	12,325	4,500	14,000	690

Although peak populations were down from 1980, waterfowl use increased to 3,143,609 days. That is a 14% increase over 1980's 2,759,915. The reason for this was twofold. First, the waterfowl lingered longer during winter (January-March) and second, the birds arrived early in the fall and stayed in large numbers thru December. A five year comparison of waterfowl use days is shown on Graph 1, page 24. The table below provides a use day comparison for each group over the last five year period.

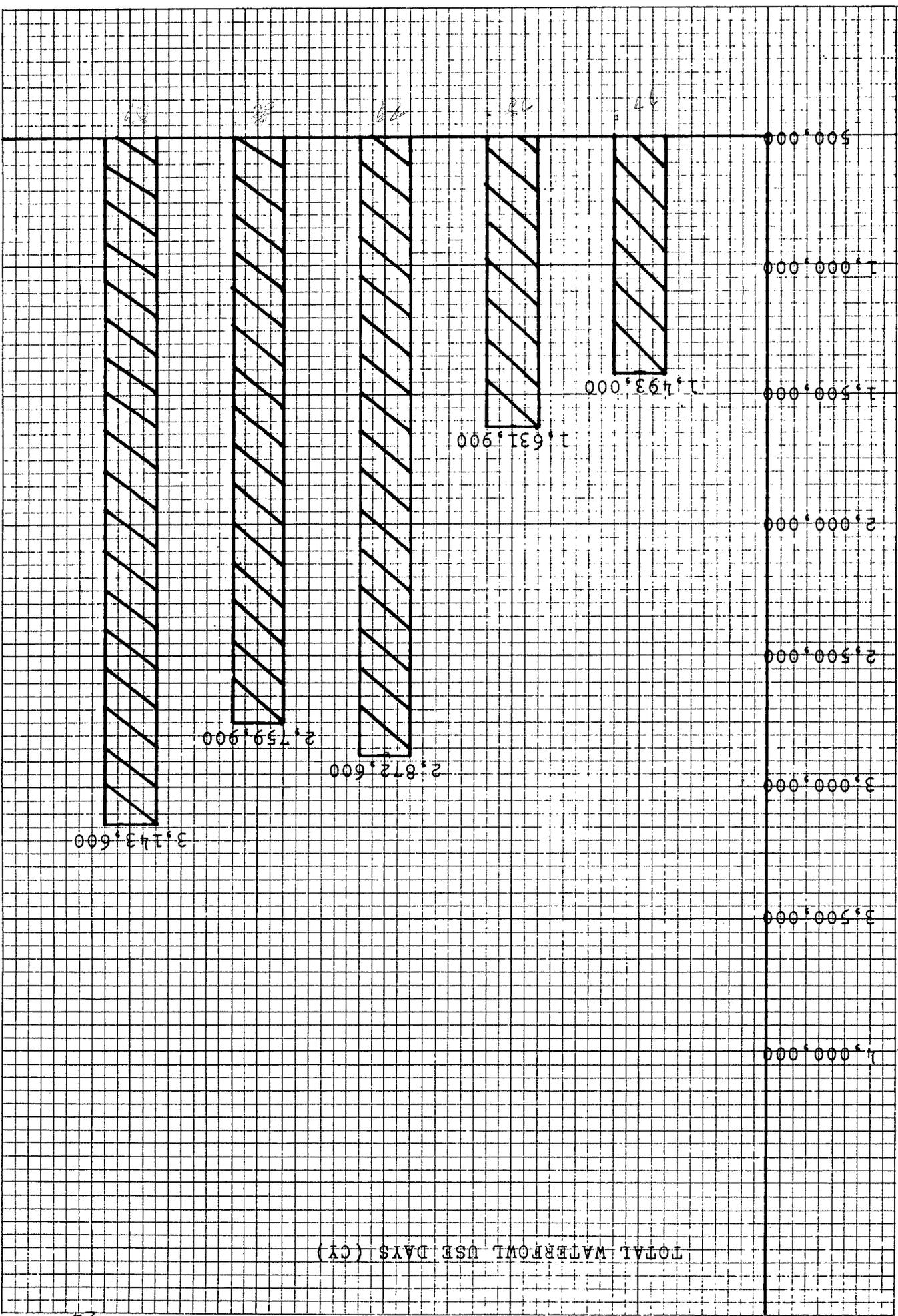
<u>Year</u>	<u>Swan</u>	<u>Snow Geese</u>	<u>Canada Geese</u>	<u>Ducks</u>	<u>Coots</u>
1981	148,437	480,375	323,812	2,101,476	89,509
1980	150,456	444,050	295,515	1,771,105	98,789
1979	144,360	397,140	277,560	1,896,900	156,600
1978	23,580	335,010	83,940	1,101,300	88,110



Pintails in North Pond.

10/81 JDB

SECTION 10 X 10 TO INCH
27 LINE HEAVY



TOTAL WATERFLOW USE DAYS (CY)

The most unusual waterfowl sightings during the year were a Ross' goose on January 17, four white-fronted geese on October 19, two fulvous tree ducks on November 5, and a common eider on December 3.

Total waterfowl production was 770 birds, which consisted of 400 black ducks, 350 gadwall, and 20 mallards. The most unusual aspect concerning production was a hen black duck sighted with 18+ ducklings.

4. Marsh and Water Birds

The beach, marshes, and impoundments were heavily utilized by marsh and water birds for both feeding and nesting. Twenty-seven species used the refuge for a total of 1,009,075 use days. This was a record high! Peak populations exceeded 15,000 birds. On November 10, 10,000 double-crested cormorants (considered threatened by the State of North Carolina) were observed along the beach and in the impoundments.

A steady increase in use days has been noticed since 1975. The following table shows this increase over the last five years.

<u>Year</u>	<u>Use Days</u>
1981	1,009,075
1980	879,983
1979	584,635
1978	450,057
1977	457,967

No active management occurs exclusively for these birds. 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.

Two rookeries were found this year. A total of 900 chicks were produced. The following is a listing of nesting species and production:

White Ibis	75
Glossy Ibis	115
Common Egret	120
Snowy Egret	120
Louisiana Heron	70
Little Blue Heron	145
Black-crowned Night Heron	250
Yellow-crowned Night Heron	50

A spoil island near Oregon Inlet had a large rookery last year. This year it was abandoned. In more isolated locations of the marshes and impoundments it is estimated that common gallinules raised about 40 chicks.

The most unusual sighting was of a wood stork (ibis) on May 13. It was seen only once.

5. Shorebirds, Gulls, Terns, and Allied Species

A great number and diversity of these birds utilize Pea Island, especially during fall migration. Fall migration was again fantastic. Forty-one different species were observed, with a one day peak of 75,245 individuals. Thirty-nine of the 41 species sighted are yearly visitors. The two rare sightings were a white-rumped sandpiper and a Baird's sandpiper.

A total of 4,600,120 use days were recorded. Almost 2,000,000 of these occurred during the fall.

Terns, skimmers, and American oystercatchers nested along the beach and on the finger islands in North Pond. Estimated production was 50 common terns, 50 sandwich terns, 50 oystercatchers, and 15 black skimmers. It is believed that approximately 150 willets were raised in the isolated areas of the marsh and dunes.

In addition, a royal tern colony with approximately 1,600 nests was discovered on a spoil island at Oregon Inlet (see photo). The colony wasn't on refuge land but the birds used the beach and Proclamation Waters extensively as feeding area.



No Vacancy!

7/81 ARH

6. Raptors

As one can tell from previous sections, fall is the time to visit Pea Island to view birds. The Outer Banks have long been used as a migratory corridor by raptors, and this fall was no exception. It was exciting to observe the great numbers of raptors passing over the dunes. On September 11 and 12 several hundred kestrels (estimated at 500 daily) migrated through. Later in the year the marsh hawks, sharp-shinned hawks, merlins, and red-tailed hawks joined the southward procession.

A total of 32,114 use days were recorded. Most of these were by migrating and overwintering marsh hawks, barn owls, and kestrels. Twelve different species were sighted at various times of the year. The most unusual was of a swallow-tailed kite on April 10.

7. Other Migratory Birds

Mourning dove populations peaked at 200. Savannah sparrows peaked at 500 birds.

No collective data are kept, but it is apparent that the brushy areas, especially along the impoundment dikes, are a haven to migrating song birds. One hundred and fifteen different species migrate through the area yearly. Forty-eight of these were sighted during the Christmas Bird Count.

8. Game Mammals

Muskrat and nutria continued to thrive. Populations were estimated at 5,000 and 650 respectively. Serious damage occurred to the impoundment dike berms from their burrows. They have now started burrowing under State highway 12 causing it to crumble. Cold weather killed a few nutria, but at present, highway traffic is the only effective population reducer.

Cottontail rabbits were frequently seen. The estimated population was 1,000.

The otter population seemed to remain healthy. There were plenty of signs, but actual animal sightings were rare. It is believed that 50 individuals were present.

A raccoon was captured in a hav-a-hart trap during September. This was the first confirmed sighting of a raccoon on the refuge. Coon tracks were seen a few times along tidal creeks after the trapping, but the population seems to be fewer than 10 animals.

10. Other Resident Wildlife

Ring-necked pheasants were seen constantly in the salt marsh, brush land, the browse area, and even in the dunes. It is estimated that the peak population was 700 birds, with 500-550 present throughout the year. That is an average of one bird per 10 3/4 acres - pretty good for a sandy refuge in North Carolina!

15. Animal Control

Feral cat numbers continued to increase. Trapping efforts to reduce the numbers resulted in the capture of 11 animals, 10 cats and 1 raccoon. These were removed from the refuge. Hav-a-hart traps were used to ensure other animals were not harmed.

16. Marking and Banding

The waterfowl banding program met with very little success. Banding quotas were 300 black ducks, 100 mallards, and 75 Canada geese. Things started out great with a cannon net capture of 118 black ducks and 41 mallards. By mid-February 138 black ducks, 62 mallards, 52 Canada geese, and 90 non-quota ducks had been banded. It went down-hill from there. Final banding results are as follows:

	<u>Actual</u>	<u>Quota</u>
Black Duck	187	300
Mallard	81	100
Black/Mallard Hybrid	12	0
Canada Geese	63	75
Pintail	45	0
Green-winged Teal	37	0
Wigeon	2	0

H. PUBLIC USE1. General

Pea Island had a total of 1,259,176 visitors during 1981. During the year, efforts were made to develop an organized, effective method of transferring the "message of the Service" to the diverse group that visits the refuge. The first step in developing a comprehensive public use program was to add a PFT Outdoor Recreation Planner to the staff. The second step was to evaluate public use types on the refuge and speculate as to possible methods of reaching the various groups.

Basically, the visitors to Pea Island can be divided into 2 major groups; the local people and the summer tourists. In examining the trend in visitor services and community services

provided by local agencies (NPS, N.C. MRC), refuge staff sought methods to compliment those already existing services. The effort was to enhance and support other environmental programs, not to compete with them.

During 1981, refuge staff responded to 6,228 public inquiries and sent out 12 news releases. Though there is still much room for improvement concerning refuge visibility, great strides were made in 1981 in the area.

2. Outdoor Classrooms - Students

Environmental education increased from 1,514 AH in 1980 to 1,757 AH in 1981. Note should be made that environmental education prior to 1981 at Pea Island was relatively unstructured and did not actually fit the Service definition.

As a part of the master plan, five outdoor classrooms were proposed to be designated. As most outdoor educators know, designation of these sites does not guarantee their usage.



Typical tidal creek at Pea Island, a perfect spot for youngsters to learn about the salt marsh ecosystem!
10/81 JDB

In an effort to improve public relations with the local community, increase the visibility of the refuge, and teach the "message of the Service", a cooperative environmental education program was established in the Dare County School system. The program was designed to involve students and teachers in experiential learning.

Activities included measuring, counting, observing general characteristics, recording observations, making comparisons, and analyzing general adaptations. Emphasis was placed on learning by doing.



"Yes, he CAN bite you!!"

12/81 ST



"Look at his beak and feet. Can you tell me what this animal eats?"

12/81 ST

The Dare County Cooperative Environmental Education Program actually began in November, 1981. In the beginning, there were 15 classes involved in the program. By December, the number of classes had doubled and involved over 750 students each month. Several other teachers requested involvement in the program, but had to be turned down due to limited staff time.

The program includes activities in the classroom, in the schoolyard and on the refuge. Teachers are required to involve their classes in related activities throughout the month. These activities include viewing movies, doing library research, writing books, participating in art activities, creating special projects, etc.

By reaching out to the community schools and preparing teachers to utilize the refuge for environmental education, it is anticipated that the number of activity hours will more than triple in 1982.

3. Outdoor Classrooms - Teachers

Two teacher training workshops were held during the year. The first, an 8 hour Girl Scout leaders workshop was co-sponsored by Cape Hatteras National Seashore and held on March 28 at Bodie Island. Leaders received training in divergent questioning, field activity organization and experiential learning. Approximately 25 leaders attended.

The second was an 8 hour workshop held at Mattamuskeet School on June 17. This workshop was co-sponsored by East Carolina University and USFWS. Funding was received from the Office of Extension Education (Connelly Moffett) in Washington. Approximately 75 teachers attended this workshop and each received a published proceedings.

Probably the most effective teacher training during 1981 was in conjunction with the Dare County Environmental Education Program. Much time was spent working with the cooperating teachers in formulating classroom activities to support the monthly topic. The success of the program was largely due to the growth of the cooperating teachers in becoming independent environmental educators.

4. Interpretive Foot Trails

Approximately 6,698 visitors used the North Pond Trail for a total of 13,637 AH. Of these, 842 visitors (1,924 AH) received conducted programs.

In actuality, the only interpretation on the North Pond Trail is in conjunction with the overlooks. The level of interpretation is definitely sub-standard. Plans to upgrade the interpretation of North Pond Trail and to create and interpret the New Inlet Trail were included in the draft master plan.

A weekly "refuge tour", which was conducted in cooperation with NPS summer interpretive programs, accounted for over half of the conducted interpretation. These tours were done from June 16 thru September 7 on Tuesday mornings from 10:30-12:00. Public response was excellent, with the programs averaging 46 people. The tour began at headquarters with introductions and explanation of goals and objectives of FWS. The second "station" was on the beach to discuss the loggerhead sea turtle nesting program, see preserved turtles and eggs, and talk about least terns. The third "station" was at the south overlook for bird identification, and a discussion on bird banding. Different sized bands were displayed and banding methods and objectives were discussed. The last "station" was located at the north overlook and involved an explanation of general wildlife management including control burning, disking, planting, and water level manipulation.

Transportation was in private vehicles with car pooling recommended. These vehicles were only taken on public access roads.



ORP Bonnie Woodall explains management programs to summer visitors. 7/81 CJ

6. Interpretive Exhibits/Demonstrations

Initial plans were made for a Dare County National Hunting and Fishing Day celebration; however, an unexpected training session at FLETC occupied that time period for the Outdoor Recreation Planner. Contacts were maintained and will be utilized for the 1982 NHF Day celebration.

A refuge exhibit was designed, displayed and manned at the annual "Dare Days" celebration in Manteo on June 6. "Dare Days" is the official celebration of the beginning of tourist season in Dare County. For the first time, "Dare Days" participants could view photographs of refuge activities, touch a loggerhead skull, get a close look at a snow goose, and talk one-to-one with refuge staff. It was estimated that 2,500 people attended "Dare Days".



Bio-Tech Claudia Jones manning "DARE DAYS" display. 7/81 BGW

Also completed during 1981 was the mural for a salt marsh/black duck nesting display for the headquarters building. The display will be completed before the 1982 tourist season.

7. Other Interpretive Programs

In addition to the weekly refuge tours conducted in coordination with NPS, a slide show entitled "Snow Geese, Sea Turtles, and Man - A Profile of Pea Island" was shown weekly at the Bodie Island visitor center. Average attendance was 34, for a total of 464 people attending the programs.

Also, in cooperation with NPS, a "Punt Gun and Market Hunting" talk/demonstration was conducted weekly at Bodie Island. This program was a part of the NPS "living history" programs and utilized a ranger in the role of a market hunter. Refuge staff narrated the scene, providing information of FWS regulations and their effects on market hunting. A total of 386 people attended these demonstrations, averaging 39 each program.

Throughout the year, a variety of programs were presented both on and off-refuge to college groups, birding clubs, public schools, museum groups, and others. A total of 10 off-refuge programs were presented during 1981 (excluding environmental education). Programs included slide talks and seminars on conservation careers. Approximately 770 people participated in on-refuge programs that have not been previously mentioned.

9. Fishing

Surf fishing continued to be the major wildlife related activity on the refuge. Though major erosion occurred near Oregon Inlet, fishermen continued in their fishing endeavors. On November 17, refuge staff met with staff of Cape Hatteras National Seashore to discuss revisions for the NPS/FWS Cooperative Agreement. The major item of discussion was beach access parking areas. Refuge staff maintained that an obligation existed to continue to provide parking on the north point of the refuge for pedestrian fishermen. NPS agreed that this access was important and made plans to evaluate the situation on the north point. At this writing, no definite plans have materialized.



Heavy traffic in North Point Parking area is evidence of the demand for pedestrian fishing.
Staff photo



"You should have seen the one that got away"
5/81 JDB

During the year 151,096 people fished on Pea Island (604,408 AH). It should be stressed that this is a most conservative estimate. For a comparison of consumptive recreational use, see Section 12 Other Wildlife Oriented Recreation.

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. See photo on following page.

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 1981, an estimated 630,000 AH were spent in association with vehicular wildlife observation.

The North Pond Trail has parking areas, toilet facilities and observation platforms associated in such a way as to make wildlife observation (on foot) easy, enjoyable, and of high quality. Refuge visitors spent approximately 402,000 AH (213,000 visits) participating in this activity during 1981.



Family units of snow geese perform roadside antics to amaze refuge visitors. (Note highway edge on left). Staff photo

12. Other Wildlife Oriented Recreation

Wildlife photography has become a popular activity at Pea Island. As a part of the master plan draft, the construction of 5 photo blinds was proposed. Until these blinds become a reality, wildlife photography will continue to be an activity for the opportunist. Approximately 17,500 AH (4,400 visits) were spent with photography at Pea Island this year.

A six year comparison of consumptive and non-consumptive wildlife related recreation follows:

Activity Hours

<u>Year</u>	<u>Consumptive (includes fishing and other)</u>	<u>Non-Consumptive (includes wildlife observation and other)</u>
1981	892,144	435,258
1980	621,250	438,601
1979	415,150	442,323
1978	458,500	553,000
1977	414,000	415,800
1976	348,000	298,100

15. Off-Road Vehicling

The beaches of Pea Island were closed to vehicular traffic in December, 1977. This closure has remained in effect since then. During 1981, several clubs and organizations began raising questions concerning the beach closure policy at Pea Island, Chincoteague, and Back Bay refuges. The North Carolina Beach Buggy Association was the primary club showing interest in ORV use of Pea Island. The Washington office collected information on all aspects of opening the beaches for ORV use. At the time of this writing, no change in national policy has been announced. It is expected that an announcement will be made during 1982. Until the policy is altered, Pea Island's beaches remain closed to ORV's.

16. Other Non-Wildlife Oriented Recreation

Because Pea Island is located within the boundaries of a national recreation area, swimming, sunbathing, surfing, and other non-wildlife oriented types of recreation are common. No facilities have been constructed for this use group.

The beach access parking areas, established for pedestrian fishermen, were utilized heavily during the summer months for non-wildlife oriented recreation. Fortunately, little conflict occurred, since the best times for fishing and swimming barely overlap. Approximately 684,000 AH (207,000 visits) were spent on non-wildlife oriented recreation at Pea Island during the year. Little can be done to decrease this useage. Plans are being made to make more obvious attempts to expose these visitors to wildlife oriented recreation and/or interpretation.

17. Law Enforcement

The law enforcement program continues to be geared toward protecting the resources. Weekend and weekday patrols are conducted on the refuge and in the adjacent Proclamation waters. The refuge staff also works closely with NPS rangers, the Dare County Sheriff's Department, N. C. Wildlife Resources Commission, and the N. C. Highway Patrol.

One interesting event in 1981 was the discovery of two 50 pound bags of marijuana on the beach on February 1. The marijuana was "street valued" at approximately \$90,000 and was turned over to the N. C. Highway Patrol. A third bag, probably from the same source, was found on February 21.

During 1981, one additional Pea Island staff member received FLETC training, bringing the total number of staff with LE authority to 4.

The following is a breakdown of violations on Pea Island for 1981:

<u>Violation</u>	<u>Numbers</u>
Driving in unauthorized area	12
Camping on refuge	6
Discharging firearms on refuge	1
Dog off lease	3
Entering closed area (Least tern colony)	1
Hunting on refuge	2
Possession of firearms on refuge	1
Hunting iwth unplugged gun	1
Possessing lead shot in steel shot zone	1

I. EQUIPMENT AND FACILITIES

1. New Construction

No new construction occurred during the period.

2. Rehabilitation

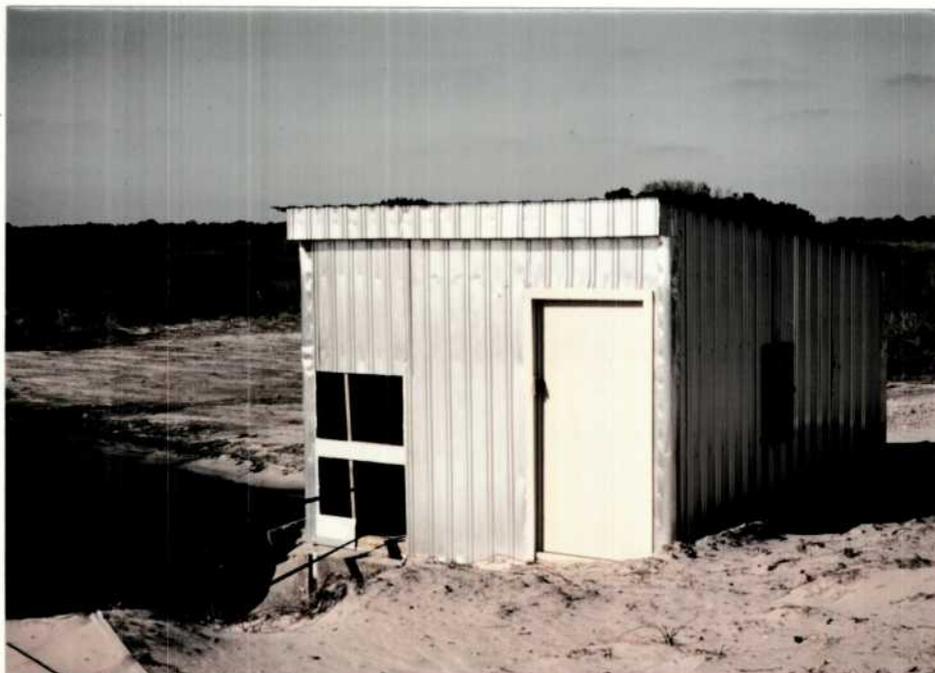
The force account job order provided funds for the rehabilitation of the water control structures in North Pond and New Field. The original North Pond water control structure consisted of a concrete raceway with stop logs. It was set at an elevation too high to allow tidal flow into the pond. The rehabilitation included inserting a 30" pipe through the old raceway, plugging and sealing the raceway, attaching a 30" low lift pump, setting up a diesel power supply, and repairing the bulkhead around the outfall pipe. To date all of the elements have been accomplished with the exception of the bulkhead repair.



Installation of 30" pump in North Pond. 5/81 ARH



Installation of diesel power supply in North
Pond. 6/81 BGW



Protective shed over power supply. 11/81 JDB



For the first time water is pumped into North Pond. 10/81 ARH

The original New Field structure consisted of four metal flap/slide gates and a concrete/metal trunk. The four gates were totally encrusted with barnacles and showed the effects of fifteen years of brackish water. The rehabilitation included removal of all four gates, repair of the gates including replacement of slides, return of the gates to the structure, and replacement of the bulkhead on the pond side of the structure. To date all four gates have been rehabilitated, two have been returned to the structure and one side of the bulkhead is replaced.

The South Pond roadway received several loads of marl. The roadway will require additional repair before it is passable to vehicles other than 4-wheel drive vehicles.

3. Major Maintenance

The exterior of the headquarters complex buildings was painted. The complex includes the office/shop building, the storage building, the oil house, and the residence.

A new flagpole and refuge entrance signs were ordered and received.

Sand was hauled to fill low areas along the dikes in North Pond. Equipment for this operation was borrowed from Cape Hatteras National Seashore.

The saga of posting the Proclamation Boundary in Pamlico Sound continued this year. In the previous year the actual water

boundary was located and marked with floats and 4X4's. After unsuccessful attempts by the Corps of Engineers to place the permanent markers, a small contract was negotiated with Allan Foreman for \$1,470 to drive the permanent piling. On the first day of his contract he sank his boat. He subsequently subcontracted the work to Jim Fletcher. The boundary markers were in place in September after several years of delays. The irony of the situation is that one severe winter season could remove all the markers.

4. Equipment Utilization and Replacement

The salt and sand environment took its toll on equipment. The Rome plow required extensive repairs to the hydraulic system and wheel assembly. The D-6 Caterpillar dozer required repair to the track system. The John Deere 4240 tractor required repair to the electrical system and the PTO unit. The lack of equipment storage, especially for heavy equipment, is a serious shortcoming of this station.

The Dodge Ramcharger was replaced by another Dodge Ramcharger picked up from the Bureau of Mines. The newer Ramcharger had lower mileage, 4-speed transmission, and a small engine. The original Ramcharger was transferred to Back Bay NWR.

An excess portable welder was picked up from Mattamuskeet NWR. It serves the needs of this refuge.

A new Onan 12 Kw generator was purchased to provide auxillary power during frequent blackouts.

5. Communications Systems

The 100 watt Motorola base station unit was replaced with a 100 watt GE unit. The Motorola unit was transmitting at 40 watts when it was replaced. The GE unit was transferred to this station from the YACC camp at Mattamuskeet NWR. A new deskon unit was installed in the refuge residence.

6. Energy Conservation

Three energy saving measures were initiated this year. As previously discussed, beach surveys especially during the summer months had previously been conducted with a 4-wheel drive vehicle. This year 3-wheel ATV's were used in the surveys. The result was fuel savings, less repair on 4-wheel drive vehicles, and positive public reaction to their use. Another fuel saving measure was the reduction in travel to the local post office (they will not deliver to us). The post office is seven miles from headquarters. Instead of driving 14 miles per day six days a week, the mail was picked up three days a week. No adverse condition was realized by the reduction in mail pickup. The final energy saving measure was a change in fueling procedures for one 4-wheel drive vehicle. The vehicle has two fuel tanks. Instead of filling

both tanks and hauling that extra weight, one tank was filled at a time to reduce the weight carried.

J. OTHER ITEMS

1. Cooperative Programs

The U. S. Corps of Engineers has applied for a permit from the Department of the Interior to construct a pair of jetties at Oregon Inlet. The Fish and Wildlife Service has reviewed the project from the aspect of environmental degradation and impacts to the refuge. Serious, as yet unanswered questions, have been raised concerning the project. 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 periodic placement of dredge material on the refuge. The south jetty would have a total length of 8,700 feet with the shorewardmost 2,300 feet connected to the refuge. The jetty will permanently occupy 4.4 acres and during construction and sand bypass approximately 41 acres of refuge land would be required for such purposes as sand bypassing, storage and access areas, and pipeline rights-of-way. Sand bypass would include annually pumping approximately 531,000 cubic yards of sand from the accretion fillet behind the north jetty onto the refuge beach. To date, permits have not been issued for the project. The Department of the Interior has requested that an alternative to the jetties be explored more fully. The alternative includes extensive dredging of the Inlet without construction of the jetties.

The U. S. Coast Guard maintains Oregon Inlet Coast Guard Station on the refuge. During the year they were authorized to dredge the basin and channel at the station and deposit the material on the refuge beach. Approximately 10,000 cubic yards of material was deposited. See photo on following page.

The Cape Hatteras Electric Co-op has proposed to upgrade the existing utility line through the Refuge and Seashore from 39.5 Kv to 115 Kv. The National Park Service is taking the lead in preparing a position on this project. It appears that modification of the existing rights-of-way through the refuge will be granted but at a lower voltage than originally requested.

Tidewater Construction Company was issued a special use permit. This company was contracted to make repairs to the Herbert C. Bonner bridge across Oregon Inlet. The repairs included driving eighty-four, one hundred foot concrete pilings under the bridge. They located their operations trailer and supplies along Highway 12, on the refuge.



Dredge pipe from Oregon Inlet Coast Guard Station to beach. Attempts were made to minimize damage from this operation.

3/81 ARH

2. Items of Interest

Beverly A. Midgett, secretary-typist, received her 10 year service certificate.

Joseph B. Creef, maintenance worker, received his 10 year service certificate.

3. Credits

The following personnel were responsible for completion of this narrative:

Beverly Midgett - Sections B and C
Donny Browning - Sections A, F, and G
Bonnie Woodall - Sections D and H
Ron Hight - Sections E, I, J, and K

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



Dedicated employee receives a 10 year service pin.
12/81 AJE



Another dedicated employee receives a 10 year service pin.
12/81 AJE

K. FEEDBACK

The Cooperative Agreement between the National Park Service and the U. S. Fish and Wildlife Service for management of recreational opportunities on the refuge has proven to be inadequate in certain areas. During this period of auster budgets, the NPS trend is to do less and less on the refuge. The maintenance division maintains three sets of sanitary facilities, does limited litter pickup around several parking lots, and maintains one road. The interpretation division does nothing on the refuge. The ranger/law enforcement division occasionally patrols Highway 12, especially during the summer months. Communications between an organization of 200 employees (NPS) and one of five employees (FWS) is somewhat difficult due to the many levels of authority found in the NPS. Overall rapport between the two agencies is good.

The Fish and Wildlife Service policy on Coastal Barrier Islands has direct impacts on planning and operations of this refuge unit. Completion of the master plan was more difficult due to this policy. The policy is correct in most cases. However, there must be some flexibility, especially when the refuge is part of a National Seashore and historic use for fishing, wildlife observation, and general beach use require certain facilities. The policy should allow for facilities such as parking areas with a realization that these facilities will eventually be lost to the ocean. Capital expenditures should be minimized. For example, the parking surface should be marl instead of asphalt. Visitor use will continue on coastal barrier islands. We have a responsibility to provide for a certain level of use and minimize environmental damage.

I believe this would be in line w/ CBI policy. LAF

The support received from other refuges in this vicinity is excellent. Mattamuskeet, Pungo, and Back Bay Refuges have loaned their equipment and/or manpower to this refuge. Several projects would not have been accomplished without their assistance especially in the BLHP force account program. Our thanks and gratitude is extended to them.