CAPE ROMAIN NATIONAL WILDLIFE REFUGE
Awendaw, South Carolina

ANNUAL NARRATIVE REPORT
Calendar Year 1976

NATIONAL WILDLIFE REFUGE SYSTEM
Fish and Wildlife Service
U.S. DEPARTMENT OF THE INTERIOR

Personnel

	Name	Title	Grade	Status
1.	George R. Garris	Refuge Manager	GS-11	PFT
2.	Stewart W. Givens	Asst. Refuge Manager	GS-9	PFT
3.	J. Frederick Milton (Transferred to Reelfoot NWR 1/18/76	Asst. Refuge Manager	GS-7	PFT
4.	Jack H. Hagan (Transferred from Pea Island NWR 5/25/76)	Asst. Refuge Manager	GS-7	PFT
5.	Henry E. Hattaway	Maintenanceman	WG-7	PFT
6.	Herbert E. Manigault	Maintenance Worker/Helper	WG-5	PPT
7.	James E. Turner, Jr.	Laborer	WG-3	PPT
8.	Carol R. Riggs	Clerk-Typist EOD 3/1/76	GS-3	PPT
9.	Keith G. Peebles	Laborer EOD 6/7/76 Term. 9/1/76	WG-2	Temp.

Review and Approvals

George R. Garris 1/20/77
Submitted by Date

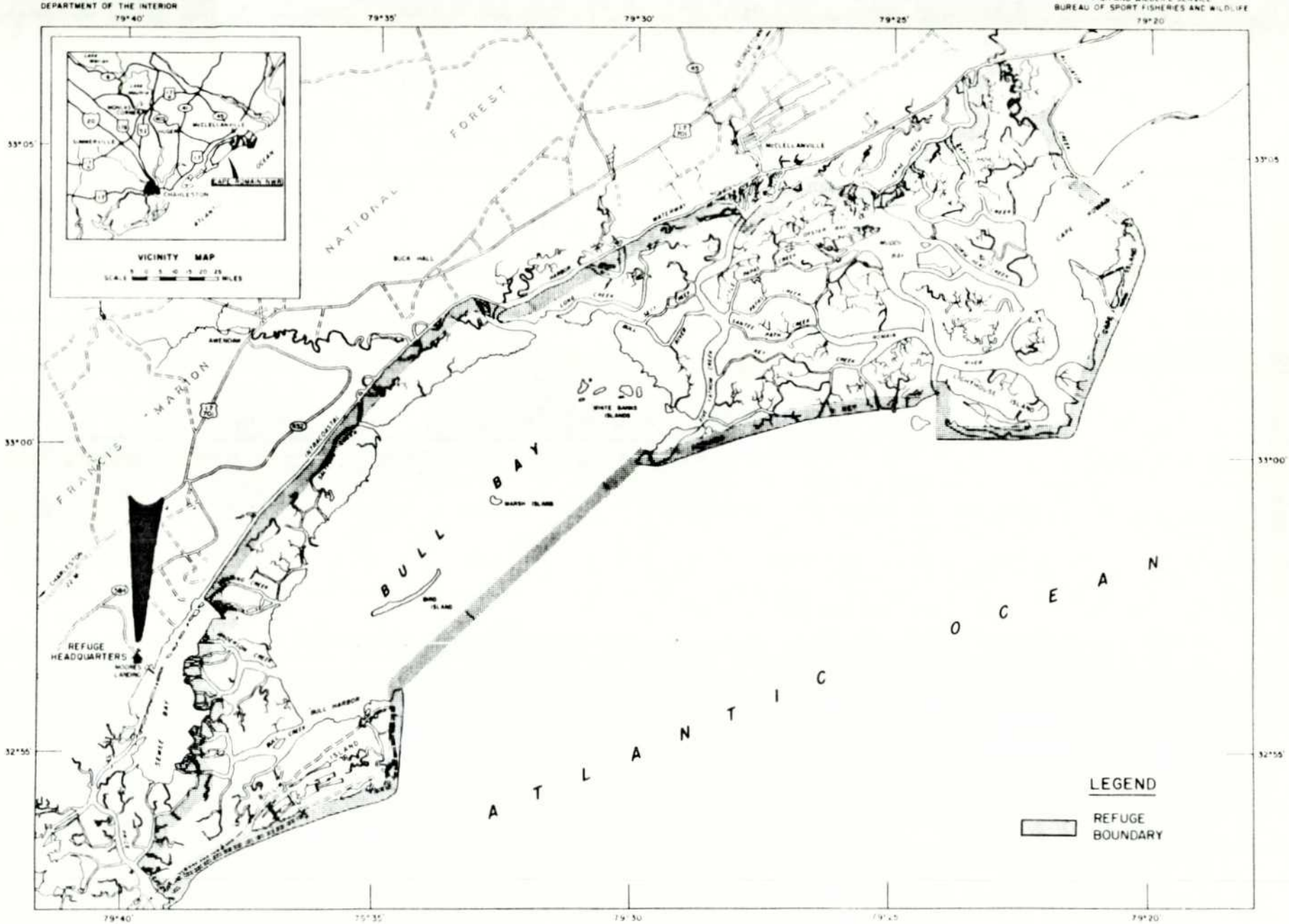
CAPE ROMAIN NWR
Refuge

William Hicks
Area Office Date

R. C. Rudolph 2/16/77
Regional Office Date

CAPE ROMAIN NATIONAL WILDLIFE REFUGE

CHARLESTON COUNTY, SOUTH CAROLINA



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Scale

MEAN DECLINATION

ATLANTA, GEORGIA SEPTEMBER, 1968

4R-SC-118-404

TABLE OF CONTENTS

I. GENERAL

A. Introduction

Cape Romain National Wildlife Refuge, established in 1932, is located in Charleston County, South Carolina, twenty miles north of Charleston. The total acreage is 34,218, of which 34,038 acres are Federal lands and 180 acres are State lands under lease. Adjacent to refuge lands is a 20,024 acre area of State-owned tidal waters closed to the taking of waterfowl by Presidential Proclamation. The majority of the 34,218 acres is marshland. Bulls Island consists of 5,018 acres of which 1,475 acres are forest uplands. Cape Island consists of 970 acres, 15 which are wooded. The refuge contains other small islands--Bird, Marsh, White Banks, Lighthouse and Raccoon Keys--which are above tidal influence, but treeless.

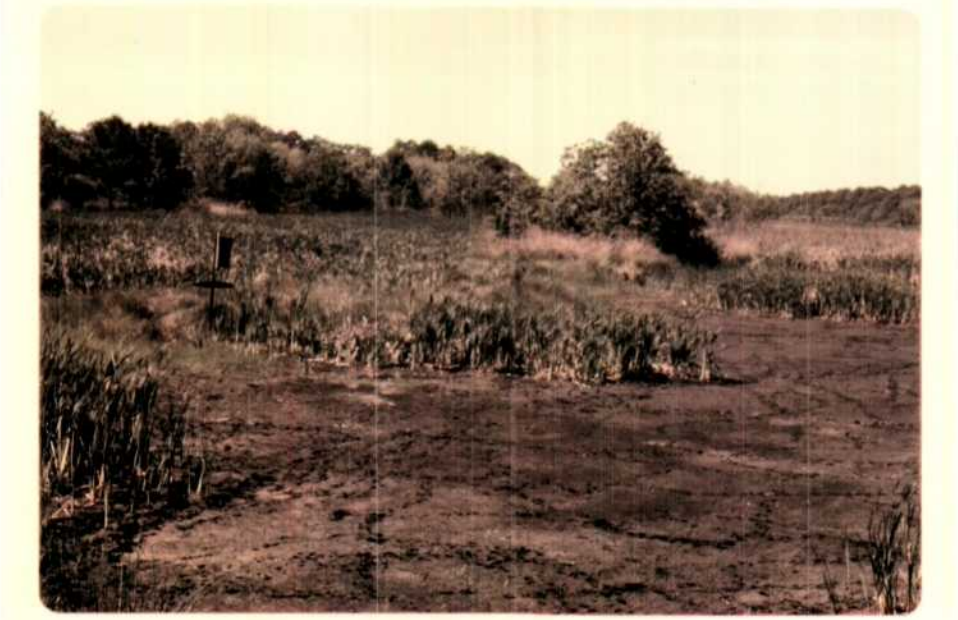
There are 990 acres of freshwater impoundments on Bulls and Cape Islands.

The former headquarters site in McClellanville, South Carolina, is under lease to State of South Carolina and sublet to the Town of McClellanville.

B. Climatic and Habitat Conditions

Calendar year 1976 weather patterns were somewhat removed from normal in several recorded categories. One prolonged dry period during April and May consisted of 45 consecutive days with zero precipitation. A record high temperature for the month of April was recorded with a reading of 84 degrees. The low temperature for the year was 17 degrees recorded in January.

The prolonged dry period of 45 days created concern for potential losses due to forest fires. However, we were fortunate and escaped without a problem. Water management was the most severely effected situation. Since there was deficient rainfall to maintain impoundment water levels, vegetation was affected during the peak spring plant growing season. With the reduction of impoundment water levels, this tended to concentrate alligators and other species into smaller areas. At least three ponds were completely dry.



Flora and fauna suffer when it doesn't rain.
(Photo by Garris)

It can readily be assumed that species populations concentration, i.e. alligators, had an immeasurable effect on game fish and other animal populations in impoundments.

For the purpose of supporting the foregoing statements, the climatic figures below are submitted.

Month	Temperature Max.	Min.	Rainfall	Normal For Month	Departure From Normal
January	72	17	5.13	2.40	+2.73
February	78	27	0.67	3.07	-2.40
March	84	30	5.33	3.62	+1.71
April	84	42	0.05	2.54	-2.49
May	82	46	9.80	3.76	+6.04
June	85	58	4.63	4.92	-0.29
July	96	68	4.37	8.04	-3.67
August	86	64	10.18	6.61	+3.57
September	86	55	6.97	6.32	+0.65
October	80	37	0.97	2.74	-1.77
November	70	28	3.58	1.92	+1.66
December	56	19	5.40	2.74	+2.66

These figures indicate the unusual pattern of plus and minus departure from normal even though the total precipitation exceeds the annual average by 7.53 inches.

C. Land Acquisition

1. Fee Title
N.A.

2. Easements
N.A.

3. Other
N.A.

D. System Status

1. Objectives

At the NFIO level of funding and its relation to lost benefits, the refuge would likely revert to a custodial status. If management and protective funds are not available over any period of time our most important endangered species programs will be irreparably damaged.

As set forth in the RPS our NFIO levels would eliminate virtually all public use programs due to reduced funds and manpower.

In the objective setting process the increases in operation, maintenance, and rehabilitation requirements are realistic.

In order to bring buildings, water control structures, and antiquated equipment up to Government standard, large increase in funding will be necessary.

Water Control Structure? Need Rehabilitation?
(Photo by Garris)

2. Funding

The funding and manpower pattern over a five year period is best described by the following statements.

a) At the current level of increased pricing of materials and equipment, for any reasonable approach to structures rehabilitation, a 10% increase in funds annually is needed. Based on reduced funds, higher costs of salaries, supplies, parts, etc., our buying power for 1976 was estimated to be $12,000 less than in 1975 and the funds alloted for 1977 are estimated to be $20,000 less than in 1975.

b) Protection of endangered species and habitat management, a high priority activity, will require additional funds and manpower. One unfilled position, to work primarily on endangered species programs, should be filled.

c) Interpretation and recreation programs can best be supported by adequate new facilities, equipment and staffing. There is an urgent need for safe docking facilities at Bulls Island for private boats.

d) Replacement of office and shop facilities at Moores Landing and Bulls Island should take precedence over any possible realistic rehabilitation of present facilities. For example, wooden shop structures, in bad need of repair, are now 40 years old.

e) For safety of visitors, personnel and boats, replacement of the Moores Landing wooden pier must be accomplished immediately. Dredging of the Bulls Island boat basin is also necessary. Since a greater part of our public use and overall refuge management requires adequate and safe boat handling facilities, this should receive immediate priority.

A. Construction

A seven foot chain link fence was installed around the equipment storage yard at Moores Landing to protect refuge equipment and supplies. As future protection and to provide a buffer around the storage area, multiflora rose bushes were planted on the outside of the chain link fence. These multiflora rose areas will also provide excellent feeding and nesting habitat for birds.

The Moores Landing shop windows were covered with heavy expanded metal guards for protection against break-in.

Two portable chemical toilets, mounted over an 1800 gallon tank, were installed for public use at Moores Landing headquarters and have proven to be quite satisfactory. The large tank will reduce the number of pumpouts needed and thus reduce maintenance costs.

B. Maintenance

Mowing and removal of windblown trees and limbs from headquarters, shop, camping area, trails, quarters and rest areas was accomplished on a regular basis for beautification and visitor safety.

The public restroom on Bulls Island was painted, also a foul weather canopy installed to protect visitors and their gear during sudden storms.

C. Wildfire

None

III. HABITAT MANAGEMENT

A. Croplands

N.A.

B. Grasslands

Fire lanes and food patches on Bulls Island cover 85 acres. These areas are extensively used by deer, squirrels, turkeys and song birds as feeding and nesting areas. They are mowed as needed during the non-nesting season, (January and February), to help control woody growth intrusion.

C. Wetlands

During calendar year 1976 wetlands management problems were two-fold, as brought out in Section 1-B. Precipitation during peak requirement periods was inadequate and seriously effected water level management. All water levels in Bulls Island ponds depend on rainfall, therefore plant and animal life in these ponds were effected as shown below.

Effects on impoundment after 45 days without rain.
(Photo by Garris)

As pond levels continued to recede, alligators, marsh and water birds, and other animals congregated in those ponds having desired habitat conditions.

Alligators congregate in available water holes during drought. (Photo by Garris)

During June, the peak period for best results in cattail control, we experienced a problem of herbicide application due to the lack of water. The usual procedure is spraying from a flatbottom boat. However, we were forced to use other means such as the tractor drawn rig pictured below.

Keith Peebles and James Turner spray cattail.
(Photo by Hagan)

This method did not always prove infallible. Numerous times the crawler tractor had to be dislodged from the mud. The use of this equipment was less productive in balance with man-hours expended due to less mobility and less availability of a clean water supply for the spray mixture.

D. Forestlands

There were no forestland management problems involved during 1976. We were indeed fortunate that we did not experience the Southern Pine Bark Beetle outbreak as during 1975.

E. Other Habitat

Beach erosion on the north end of Bulls Island continues to be a serious problem due to loss of trees and dunes, and threatening loss of a large portion of Jack's Creek Pond dike.

Some progress has been made to correct or at least retard the erosion problem. Bulls Island has been selected as an area to establish a beach erosion control project by the U.S. Corps of Engineers. Preliminary on-site surveys and discussions concerning this project began this year.

F. Wilderness and Special Areas

A large part of the refuge is now under the Wilderness System. While it was approved January 3, 1975, we feel it is appropriate to include this information in this section. The attached map outlines the marshes and islands designated as the Cape Romain Wilderness area, totaling 29,000 acres.

Management of the area is largely protection since we have two endangered species utilizing the habitat--Atlantic loggerhead sea turtles and Eastern brown pelicans. Even though the loggerhead sea turtle is not endangered nation-wide, it is considered endangered in South Carolina.

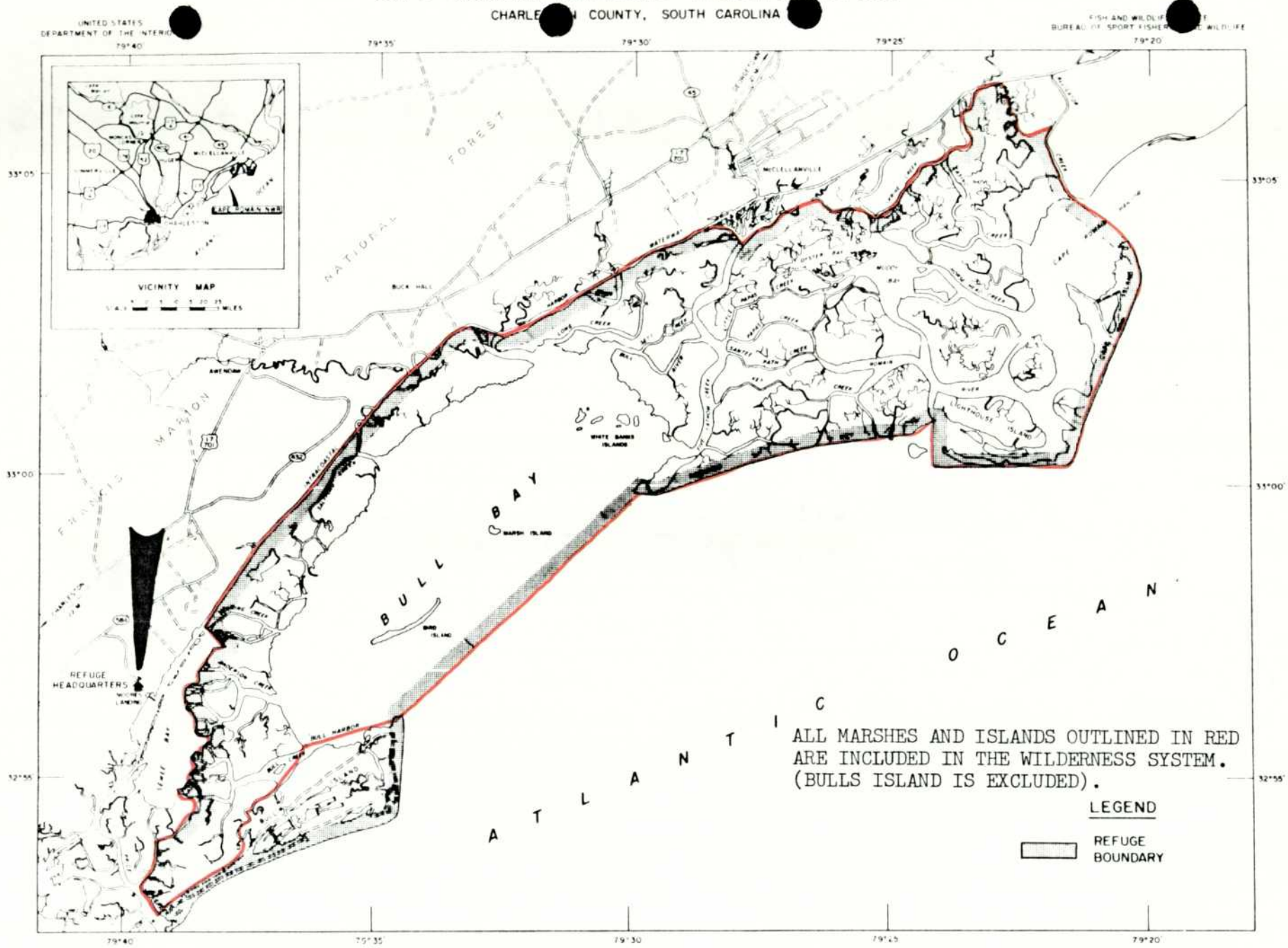
Bird, Marsh and White Banks islands are extensively used by Eastern brown pelicans and other colony nesters.

G. Easements for Waterfowl Management

None

CAPE ROMAIN NATIONAL WILDLIFE REFUGE

CHARLE[illegible] COUNTY, SOUTH CAROLINA



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A. ENDANGERED AND/OR THREATENED SPECIES

During calendar year 1976 Cape Romain NWR was utilized by five endangered and three threatened species.

The endangered species are:

1. Eastern brown pelican
2. American alligator
3. Peregrine falcon
4. Red-cockaded woodpecker
5. Red wolves

The threatened species are:

1. Atlantic loggerhead sea turtle (South Carolina)
2. Osprey
3. Wood stork

Of these species the Eastern brown pelican, American alligator and Atlantic loggerhead sea turtle nested on the refuge.

Endangered Species:

1. The Eastern brown pelican had an exceptionally good nesting year. Nesting began a month earlier than in previous years and total production on Marsh Island was estimated at 2,000.

Pelicans nesting on Marsh Island.
(Photo by Garris)

At the end of the nesting period two hundred of the pelican fledglings were banded. Six staff members and four volunteers completed the banding in record time for the refuge---45 minutes.

Banding pelicans are, left to right: Keith Peebles, Ed Hattaway, Jean Garris (volunteer), and Carol Riggs. (Photo by Garris)

2. The American alligator population remained stable with 700 to 750 individuals inhabiting Bulls Island. Many of the larger alligators congregate in Jack's Creek while the smaller ones are usually found in Upper Summerhouse impoundment. Several new nests were found and it was estimated that 150 young were produced.

3. Six sightings of Peregrine falcons were reported by the staff on the refuge during 1976. Half of the sightings were reported during the month of December over Bulls Island. This is five fewer than in 1975.

4. No Red-cockaded wood peckers were sighted on the refuge, but several nesting cavities were found and we estimate a probable population of six.

5. The highlight of the year occurred for the refuge when--after over a year of planning by the U.S. Fish and Wildlife Service and the states of Louisiana, Texas and South Carolina--a translocation experiment of a mated pair of Red wolves to Cape Romain NWR was initiated.

In order to acclimate the wolves to their new habitat on Bulls Island it was decided to keep the animals confined for a period of five to six weeks. Release date was tentatively set for mid-December following the archery hunts.

Initial work on a sectional 50 foot by 50 foot prefabricated chain link fence was begun on September 23rd with the leveling of the pen site by the refuge staff.

Herbert Manigault clearing pen site.
(Photo by Hagan)

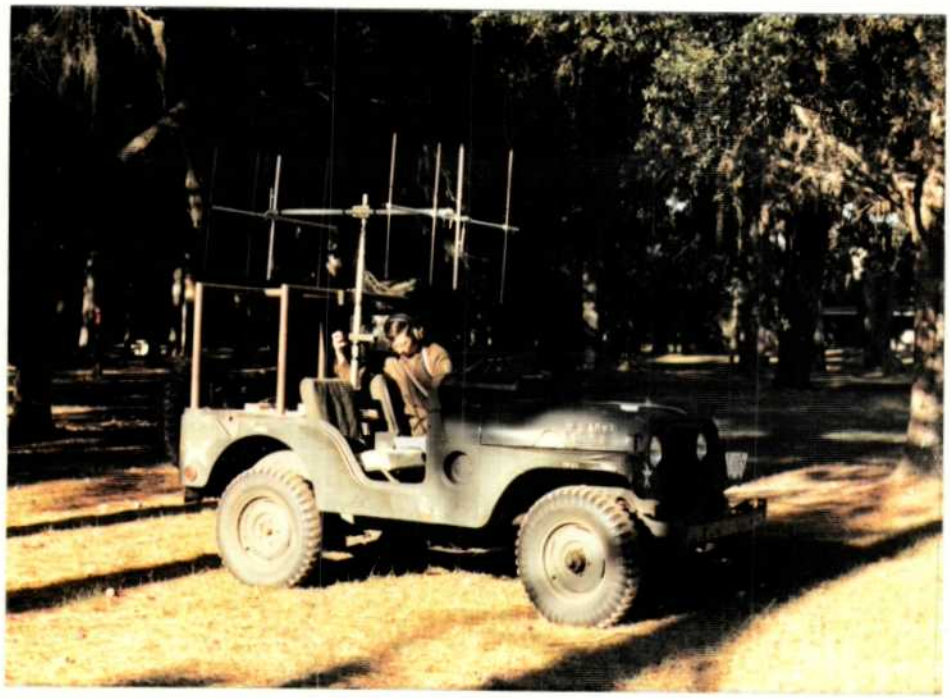
On September 28th pen construction was begun by the refuge staff and Red Wolf Recovery Team leader Curtis Carley. The pen had two additional features not usually found on pens of this type. First, an additional two feet of one inch chicken wire was put at the top of the pen to discourage any attempts the animals might make to climb or jump out.

Red Wolf Recovery Team leader Curtis Carley assists with pen construction. (Photo by Hagan)

Second, a chain link skirt, 3 feet in width around the inside edge of the walls and buried 6-8 inches underground, was installed to prevent the animals from digging out.

Wire skirt around inside perimeter of pen.
(Photo by Hagan)

Since a major part of the project after release would be the tracking of the wolves with radio telemetry equipment, a jeep was equipped with radio antenna and other tracking devices. Roads and trails were cleared of low branches to allow the telemetry jeep to travel without damaging the tracking equipment.



Jack Hagan checks out jeep radio telemetry equipment. (Photo by Pat Hagan)

On November 4, 1976, a mated pair of Red Wolves named "Buddy" and "Margie" arrived at Charleston Airport. Three local television stations and numerous press and State Wildlife personnel, as well as regional office representatives and refuge personnel, were on hand to welcome the animals.

Arrival of Red Wolves at airport.
(Photo by Pat Hagan)

From the airport the wolves were taken to Cape Romain NWR headquarters where each was fitted with a radio telemetry collar.

Preparing to attach radio collar to Red Wolf are: (left to right) James Turner, Stewart Givens, Curtis Carley, George Garris, Jack Hagan and Ed Hattaway. (Photo by Pat Hagan)

Female wolf being fitted with collar. (Photo by Pat Hagan)

The following day the pair was transported to their new home on Bulls Island and released in the pen.

George Garris (bow) and James Turner accompany the wolves to Bulls Island. (Photo by Hagan)

During the 38 day acclimation period, the decision to place the wire skirt on the inside edge of the walls was proven sound, for eventually the entire edge was dug up by the wolves in their desire to escape.

On December 13th staff members placed both wolves into a small holding pen and removed two sections of the large 50 foot by 50 foot pen through which the wolves would be allowed to escape. At 11:35 A.M. with extensive press and television coverage, the pair was released.

Arrival of press for release activity.
(Photo by Hagan)

Female wolf is first to leave pen.
(Photo by Hagan)

The monitoring of the wolves twenty-four hours a day, for what was expected to last fourteen days, was begun by Curtis Carley, Red Wolf Recovery Team leader, and Assistant Manager Jack Hagan. After this period, tracking was to be reduced to 8 hours per day and eventually 4 hours every other day.

All went smoothly for the first six-and-a-half days. However, on December 19th at 7:15 P.M., the female wolf swam Price Inlet to Capers Island just south of Bulls Island. A boat was dispatched to the south end of Capers Island , and with the aid of cracker shells and propane exploders, she was turned back to the north end of Capers Island.

The male crossed to Capers Island at 11:35 P.M. the same evening. His radio signal was lost soon after.

On the afternoon of December 20th a plane fitted with radio tracking equipment was used to locate the wolves. The male was located on Dewees Island just south of Capers Island. He had bypassed the propane exploders and personnel on the south end of Capers Island. A boat was dispatched to the south end of Dewees Island to prevent the male from crossing the Inlet to the highly populated Isle of Palms.

The female was located on a small island on the west side of the Intracoastal Waterway. She was approximately one-half mile from the mainland. To get to this point she had traveled over approximately three miles of marsh and water. Two boats (one refuge and one State) were dispatched to turn her back toward Bulls Island, but could not reach her due to decreasing light, bad weather and low tides.

Tuesday, December 21st, the plane was again leased to relocate the wolves. The male was still on Dewees Island, but had moved to the north end back toward Bulls Island. The female had succeeded in getting to the mainland and was located approximately one-quarter mile inland.

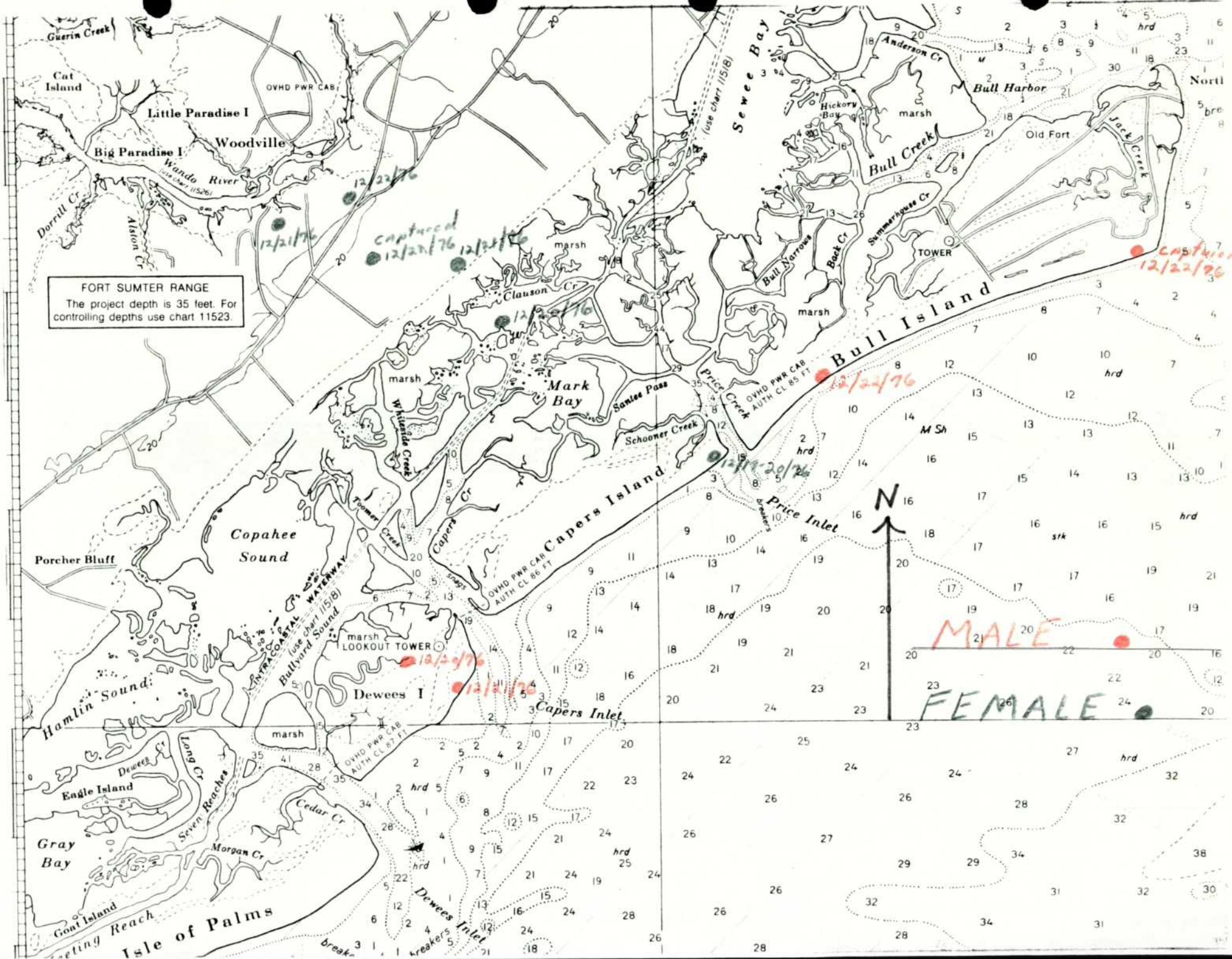
Assistance was requested from the South Carolina Wildlife and Marine Resources Department and plans were made to recapture the female first. The telemetry jeep was brought to the mainland to assist the ground crew in the search. South Carolina Wildlife and Marine Resources Department brought in their helicopter to handle the search from the air. The helicopter was fitted with tracking equipment in order to monitor the movement of the wolf.

About Noon on Wednesday, December 22nd, the jeep located the female wolf near Highway 17, only a couple of miles south of refuge headquarters. In two days she had only moved inland approximately one-half mile.

The helicopter proceeded to the area and flushed the wolf out of the woods into a large open field. The female was herded by the helicopter and shot with a tranquilizer dart. By 1:45 P.M. the female had been returned to refuge headquarters and was soon on her way back to the holding pen on Bulls Island.

The helicopter crew proceeded to locate the male. He was found to have returned on his own to Bulls Island. He, too, was shot with a tranquilizer dart and by 4:00 P.M. both wolves were back in the holding pen.

Wolves returned to holding pen.
(Photo by Hagan)


Guerin Creek
Cat Island
OVHD PWR CAB
Little Paradise I
Big Paradise I
Woodville
Wando River
(use chart 11526)
Dorrill Cr
Alston Cr
FORT SUMTER RANGE
The project depth is 35 feet. For controlling depths use chart 11523.
Sewee Bay
(use chart 11518)
Anderson Cr
Bull Harbor
Hickory Bay
marsh
Bull Creek
Old Fort
Jack Creek
Summerhouse Cr
Back Cr
Bull Narrows
TOWER
Bull Island
captured 12/22/76
12/21/76
captured 12/22/76
12/22/76
Clauson Cr
marsh
Mark Bay
Whiteside Creek
Santee Pass
Price Creek
OVHD PWR CAB AUTH CL 85 FT
Schooner Creek
Capers Island
Price Inlet
breakers
Porcher Bluff
Copahee Sound
Toomer Creek
Capers Cr
snags
OVHD PWR CAB AUTH CL 86 FT
INTRACOASTAL WATERWAY
(use chart 11518)
Bullyard Sound
Hamlin Sound
marsh
LOOKOUT TOWER
12/20/76
12/21/76
Dewees I
Capers Inlet
OVHD PWR CAB AUTH CL 87 FT
Dewees Cr
Long Cr
Eagle Island
Seven Reaches
Cedar Cr
Gray Bay
Morgan Cr
Goat Island
Isle of Palms
Dewees Inlet
breakers
N
MALE
FEMALE

The wolves will remain in the pen until the project is re-evaluated by State and Federal agencies involved. Hopefully, the re-evaluation will be positive and this important project can continue.

We feel several facts would support continuing the project. First, the male wolf returned to Bulls Island on his own, and second, the fact that recapturing the wolves went so smoothly.

The male's conduct was easily explained and totally characteristic of this species. We believe he just went on a scouting expedition and foray for food as he had demonstrated during the first six days. As soon as he had completed the expedition, he returned to Bulls Island to find the female.

The female's flight to the mainland was totally out of character of the pattern she had followed for the first six and a half days on Bulls Island. She had not only broken her established behavior pattern of waiting for the exploring male, but she had gone against her deepest instincts by exposing herself in broad daylight, without cover on the broad mud flats. The reason for the female going to the mainland is unknown, but we believe she was probably frightened by something and was seeking cover. This is substantiated by the fact that she stopped as soon as she reached cover on the mainland. For two days she only moved inland approximately one-half mile and we believe that during this time she was trying to figure out how to rejoin the male.

Threatened Species:

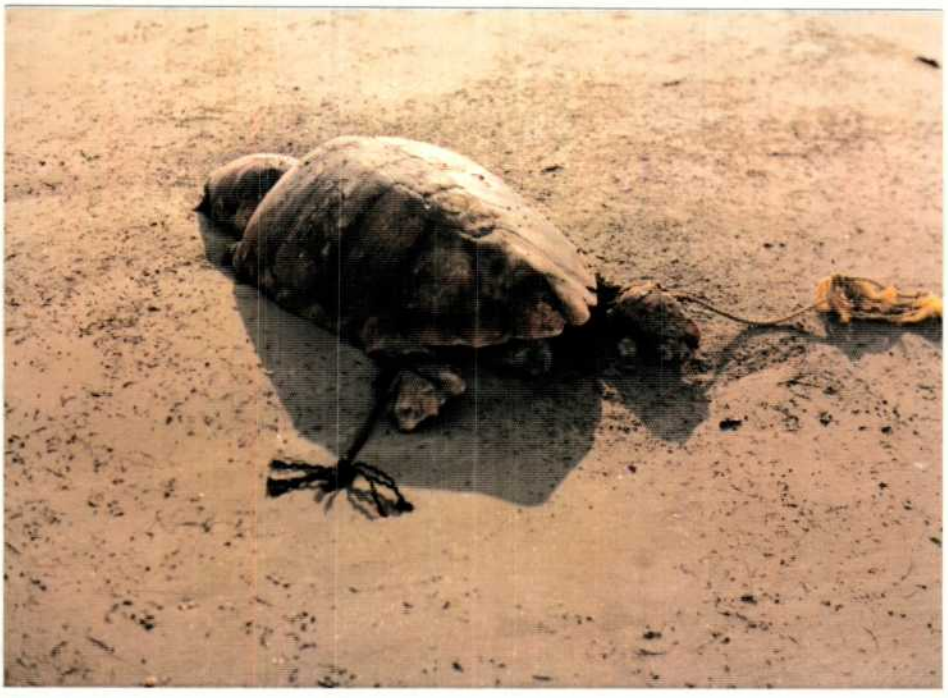
Since the loggerhead sea turtle is considered a threatened species in South Carolina, it is included in this section. Since 1969 the refuge has annually transplanted ten loggerhead sea turtles' nests to each of three refuges: Chincoteague, Back Bay and Pea Island, in an attempt to increase the population in its historic range. In 1976, due to late nesting, badly washed beaches, egg poachers and rainy weather, we were unable to supply the nests for transplanting. Hopefully, the project can be continued in 1977.

Cape Romain NWR has the largest sea turtle rookery on the Atlantic Coast. The estimated number of lays on refuge beaches in 1976 was 2,599 nests. Predation by natural enemies and humans was high with an estimated 900 nests destroyed by raccoons, 162 by sandcrabs, 10 by rats and 141 by turtle egg poachers. Estimated production of young turtles entering the water was 15,600.

The 2,599 nests made in 1976 were 440 or 14.5% fewer than 1975 with 3,039 on the same area. Severe beach erosion on Cape Island, leaving in some areas a vertical dune edge instead of the usual gentle slope, not only washed away a large number of nests, but also may have discouraged some nesting attempts.

Severe beach erosion caused hardships on nesting sea turtles. (Photo by Garris)

Seventeen dead sea turtles were found washed up on refuge beaches. Most of these were probably drowned in shrimp trawlers' nets, however, some were mutilated. Some had amputations of limbs and heads; some were tied with ropes as shown below; and others had large gashes in the shells or skulls possibly caused by axes.



Tortured sea turtle. (Photo by Hagan)

The refuge was utilized by eighteen Osprey this year. This is a slight increase over last year's figure of 15. Two pair attempted to nest on Bulls Island in nests used in years past, but for unknown reasons, the nests were abandoned early in the year.

The wood stork population peak was almost three times that of last year. This year's peak was 125. No nesting was observed on the refuge.

B. MIGRATORY BIRDS

1. Waterfowl

During the month of January the refuge had about 200 birds less than in January 1975. The principle ducks utilizing the refuge included scoters, green winged teal and canvas-backs. Scaup and scoter populations fluctuated greatly

with peak populations being recorded in refuge waters in April when 15,000 were reported. In 1975, the greatest concentration of these birds occurred in February and March. The peak waterfowl population this year occurred in November when 25,000 waterfowl were recorded on the refuge.

Two species, coots and canvasbacks, made up approximately 71% of the waterfowl on the refuge during the month. There were 3,000 more coots in 1976 than in 1975.

Bulls Island wood duck population was down during 1976. Comparison of 1975 and 1976 nest box management programs is shown below:

	1975	1976
Total boxes	110	110
No. boxes checked	98	101
No. boxes with eggs	64	62
Eggs laid	541	511
Eggs hatched	254	81
Eggs rotten	275	430
Young raised to flight	127	40

We have no explanation for number of eggs laid, hatched and rotten compared to the small number produced to flight.

2. Marsh and Water Birds

Marsh and water bird population numbers for 1976--- 45,162 at the peak period: June, July and August--- were very similar to those of 1975 at 44,555.

In 1976 snowy egrets and Louisiana herons produced 704 more young than in 1975.

Two unusual marsh and water bird species were sighted on the refuge during 1976. A magnificent frigate bird was seen July 24th; and a pair of American flamingos stayed on the refuge during the month of June. They were observed on more than one occasion by refuge personnel and visitors.

American flamingos made rare visit to refuge.
(Photo by Harry Lynch)

3. Shorebirds, Gulls, Terns and Allied Species

Shorebird populations during the peak period, June, July, and August totaled 31,900 compared to 22,050 for the same period in 1975.

The 1976 production of shorebirds (12,917), almost tripled the 1975 production (4,650). During the 1975 nesting season bad weather and high tides washed away many nests.

The two largest producers of shorebirds were royal terns (10,000) and laughing gulls (1,500) on Bird Island.

Concentration of nesting royal terns on Bird Island. (Photo by Garris)

4. Raptors

A total of 14 species of raptors were observed on the refuge this year. Our major raptors are marsh hawk; red tail hawk; turkey and black vultures; horned owls; screech owls; and American kestrel. Others that only occasionally visited the refuge include the Mississippi kite and the swallow-tailed kite.

Visitors reported occasional sightings of both Bald and Golden eagles. A Golden eagle was observed twice during 1976 by the refuge manager.

5. Other Migratory Birds

Dove populations appear to be stable with 100 mourning and 50 ground doves found on Cape Island. No ground doves were seen on Bulls Island, but mourning doves are occasionally sighted. Nesting by both species occurred on Cape Island producing 75 young.

C. MAMMALS AND NON-MIGRATORY BIRDS AND OTHERS

1. Game Mammals

The Bulls Island deer herd was healthy even though over-browsing is some areas was evident. The herd's size was estimated at between 300 and 350 during the summer. It was thought that a die-off might occur next year since food, particularly the acorn crop, was poor this year. However, the two archery hunts partially solved the problem with 61 deer killed on the first hunt and 28 on the second. It is believed---with the number of wounded deer reported but not recovered---that over 100 deer were actually killed during the two hunts. Thirty-nine squirrels and 59 raccoons were also taken by the hunters.

2. Other Mammals

The river otter population on Bulls Island was estimated at about 50. They were seen frequently by staff members and tracks were commonly seen along dikes, around water control structures and on the beaches.

The gray and black color phases of the Eastern fox squirrel seems to facinate the Bulls Island visitor. These squirrels are sometimes mistaken for skunks by visitors. Their population is estimated at about 1500.

3. Resident Birds

The turkey population on Bulls Island is estimated at 10. No broods were reported during the year by refuge personnel or visitors.

Bob White quail are frequently heard at Moores Landing and occasionally seen. The population is estimated at about 25.

4. Other Animal Life

Large numbers of cottonmouth moccasins and black racers were seen on Bulls Island during the summer.

The refuge received 60,000 bream and redear fingerlings from Orangeburg NFW November 24th. They were transported to Bulls Island on the LCM and released in Jack's Creek Pond.

Fingerling bream and redear enroute to Bulls Island. (Photo by Hagan)

V. INTERPRETATION AND RECREATION

A. Information and Interpretation

1. On-Refuge

Total visits to the refuge were 36,621. This involved the visitor in one or more activities. Passengers visiting Bulls Island via the concession operated tour boat averaged 297 per month and the total for the year was 3,573. Tour boat passengers are given wildlife interpretive information by the boat operator who is a trained, experienced naturalist. Specific answers to questions on historical background is also a part of this interpretive service.

When visitors arrive on Bulls Island via the tour boat, or use of private boats they usually assemble in the rest area at the visitor information display center. The display includes maps, photos, shell collection and other useful information. The visitor information center was improved tremendously this year by Jack Hagan who added displays on shell and egg identification.

Bulls Island Visitor Information Display Center.
(Photo by Hagan)

BULLS ISLAND

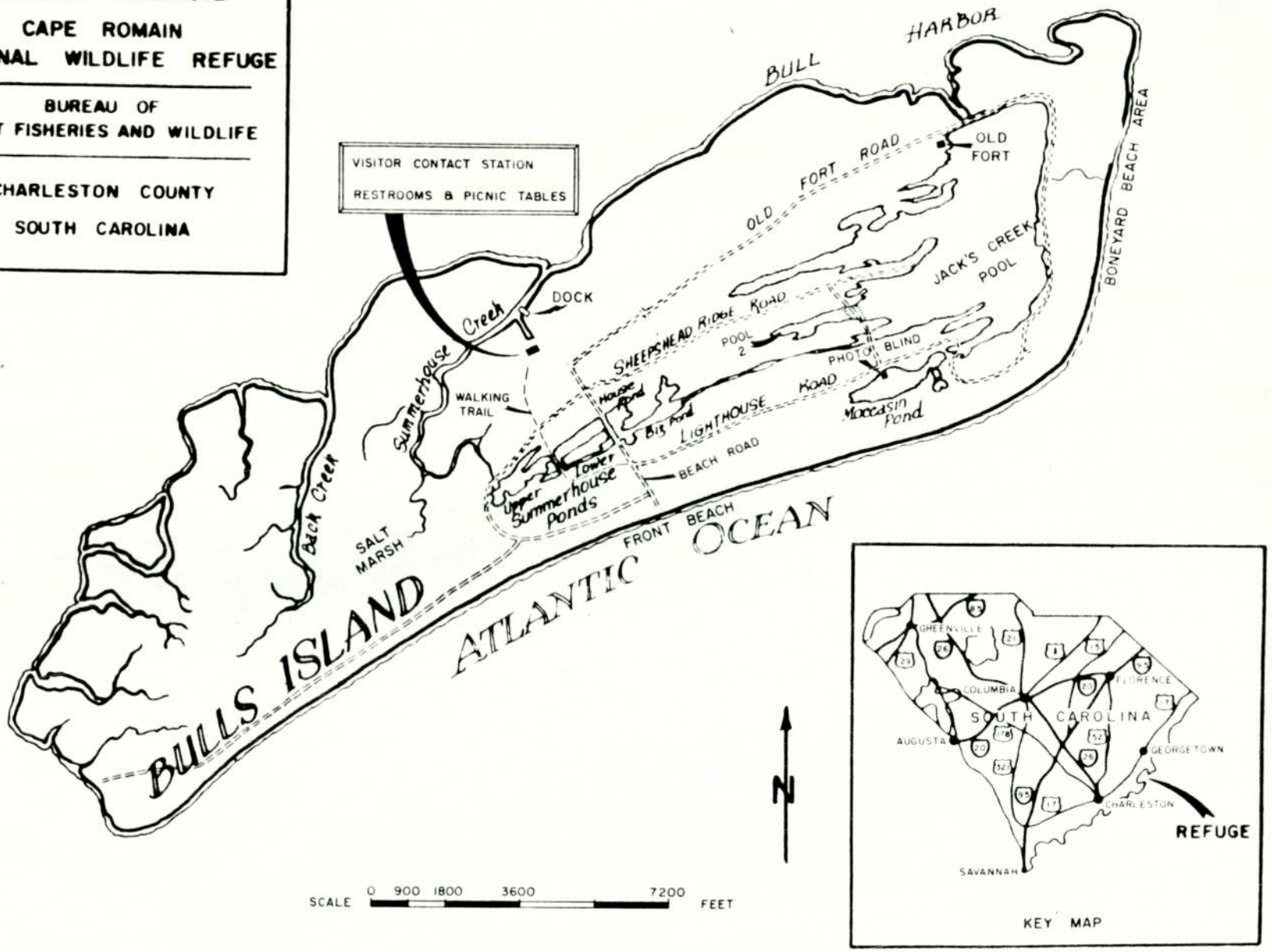
CAPE ROMAIN NATIONAL WILDLIFE REFUGE

BUREAU OF SPORT FISHERIES AND WILDLIFE

CHARLESTON COUNTY

SOUTH CAROLINA

ALL ROADS AND TRAILS ARE MARKED AND THESE MAPS ARE AVAILABLE TO VISITORS.



Leading from the rest area is a two mile wildlife trail which represents a sampling of the habitat of the entire island. Fourteen interpretive plaques at selected locations describe the immediate area and its relation to wildlife.

Wildlife trail plaque and demonstration wood duck nesting box. (Photo by Hagan)

All jeep trails and the wildlife trail are used depending on the specific interest of the visitor. There is a photo blind on Moccasin Pond for the camera closeup shots of waterfowl and other birds.

Camping on Bulls Island is--with exception of deer hunters--restricted to environmental oriented groups, i.e., Sierra Club; Audubon Society; college and high school biology classes; scouts, etc. These groups use a major portion of their camping stay directly in environmental education. Twenty-three groups, comprising 541 campers, camped for the above purpose during 1976. Many conducted truck tours were given to explain management and wildlife habitat.

As our part in celebrating National Wildlife Week, the rest area on Bulls Island was open for the first time to family camping. Interpretive programs were presented by the refuge staff to participating campers.

2. Off-Refuge

Five news releases were sent out from this office during 1976. The topics included: opening of warmwater fishing season; family camping during National Wildlife Week; vandalism of refuge property; and the two hunting programs, rail and archery deer hunts.

In addition to the above, numerous articles about the refuge appeared in many South Carolina newspapers. These articles were mostly on the loggerhead sea turtle and the red wolf project. The refuge staff assisted in helping prepare approximately two dozen of the articles. Other news releases were prepared by the Public Affairs Officer in Atlanta and by the news people of the South Carolina Wildlife Department. Articles concerning the red wolf project appeared in newspapers all over the Country.

Television and radio programs added much to public exposure to refuge projects. In all, there were 23 television and 6 radio programs involving general wildlife and endangered species. Most of the television programs were shown at least twice. Additional radio and television programs about the red wolf project were aired all over the State and Nation.

The 30 minute television program on the loggerhead sea turtles featuring the refuge manager and the vice president of WCBD-TV 2, that was filmed in 1975, was shown again in 1976.

During 1976, as a bi-centennial project, we presented monthly television news programs on the nesting birds (brown pelicans and terns), and loggerhead sea turtles. With the help of Robert Raiford of WCBD-TV channel 2, we were able to show to the public the complete nesting cycle of the birds and turtles, from the egg to the adult. Since the nesting areas are off limits to refuge visitors, we took this means of keeping the public informed of the nesting progress of these species. We received many favorable comments on the programs.

Franc White visited the refuge and filmed a fishing program on Bulls Island. This film was shown on his television program, "Carolina Sportsman" on June 15th.

The refuge was featured in "Gateway to Historic Charleston", a local magazine for tourists. Nick Karas, fishing editor, published an article on fishing on Cape Romain Refuge in the August issue of Argosy Magazine. Personnel from the Shakespeare Corporation visited the refuge to get fishing pictures to be used in their 1977 advertisements.

Refuge leaflets and visitor information sheets are mailed through many requests for general information. Some distribution of leaflets is through our furnishing them to interstate highway welcome centers and chambers of commerce.

B. Recreation

1. Wildlife Oriented

Warmwater and saltwater fishing, rail hunting and archery deer hunting, clamming and crabbing are the principle activities involved. Activity hours during 1976 for each of these were:

Warmwater fishing	8,250
Saltwater fishing	13,450
Rail hunting	579
Deer hunting	7,824
Clamming, crabbing	2,610
	32,713

Activity hours, wildlife oriented, for all activities were:

Environmental education	1,762
Interpretation	9,899
Recreation wildlife	87,210
	98,871

Total non-consumptive activity hours totaled 1,843

As the above information points out, we have practically no recreation non-consumptive. When it does exist, it is usually beach use for picnicking, swimming and shell collecting.

Visitors picnicking on refuge beach

Through news releases, hunting and fishing regulations, individual contact by on-site informal meetings, and informative regulatory posting, the consumptive programs create little or no problems.

Fishermen's vehicles at Moores Landing
(Photo by Garris)

With this type of public information, the refuge through the most part has the benefit of visitors cooperative attitude toward these programs. Over a period of time we have managed to discourage the hunting and fishing visitors that are the playboy type. This is our approach to the quality experience and it appears to be working.

The two 1976 archery deer hunts were successful in the quality and quantity of hunters and deer taken.

Results of a good hunt.
(Photo by Hagan)

A successful and happy bow hunter.
(Photo by Hagan)

The table presented here is self-explanatory in harvest quantities, but not in the reasons of severe fluctuations in number deer killed.

Year	Estimated Population	Harvest
1941	175	No hunt
1945	200	"
1950*	15	"
1955	185	2
1956	NA	18
1957	NA	3
1958	NA	5
1959	NA	4
1960	210	12
1961	210	16
1962	210	14
1963	230	32
1964	250	29
1965	250	39
1966	200	28
1967*	280	39**
1968	180	9
1969	260	21
1970	300	27
1971*	350	37
1972	250	49
1973	260	14
1974	200	29
1975	250	30
1976	300	89

*denotes years of known natural die-off
**shotgun hunt in addition to bow hunt

2. Non-Wildlife Oriented

Non-wildlife recreational uses are at a minimum due to inaccessability except by boat. Restrictions on camping for the sake of camping, non-use of motor bikes and bicycles also add to quality of the wildlife oriented visitors stay.

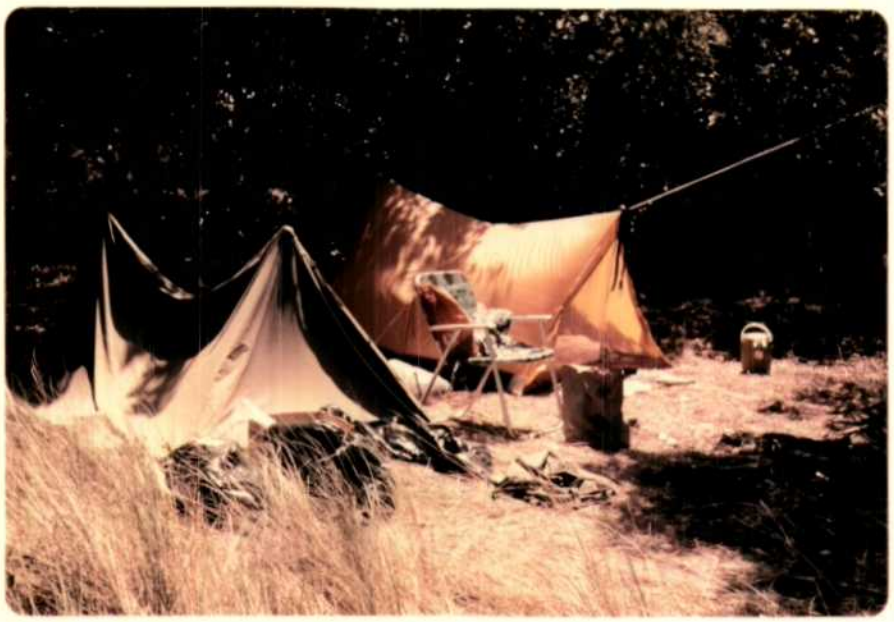
C. Enforcement

Generally people control is not a serious problem at this refuge, but it is increasing each year as the number of private boat owners increases. Two minor problems that we incurred during 1976 were caused by visitors who used their own boats. They would invariably dock their boats in the refuge boat basin; and they thought it necessary to bring a dog with them for companionship and/or protection.

Theft and vandalism has been a problem on several occasions. The most serious was the theft of an 85 h.p. Evinrude outboard motor, gas tank, and battery; and damage to controls and stern of the boat.

Theft of refuge boat equipment.
(Photo by Hagan)

Illegal camping was a lesser enforcement problem that resulted in habitat defacement and leftover garbage.



Illegal campsite.
(Photo by Hines)

Our most difficult enforcement problem was in endangered species program.

At the beginning of the loggerhead turtle nesting season we experienced increased activity in turtle egg thefts on Cape Island. After many trips and hard work by refuge personnel, it was decided a stake-out would be the best method to apprehend the thieves. Agent Fred Williams, Agent George Hines, and Assistant Refuge Manager Jack Hagan finally apprehended three men digging eggs the night of June 25th. They had 525 eggs in their possession.

One thief, a juvenile, was fined $100 and released. Richard Stanley Millis was fined $250, sentenced to six months, suspended and placed on 730 days probation. The elder, Sam Stanley Millis, failed to appear under $1,000 bond and his case is still pending. We feel this action will be a deterrent on further turtle egg thefts. The thieves' boat and motor was also confiscated. The boat turned out to have been stolen earlier from a man in Georgia.

Agent Fred Williams (left) and Assistant Manager Jack Hagan at stakeout camp. (Photo by Hines)

Agent George Hines with turtle eggs taken from poachers. (Photo by Garris)

Numerous occasions of low flying airplanes caused additional problems as well as two planes that landed on Bulls Island. With the help of Agent George Hines, cases were made against four pilots that either landed on the refuge or flew too low over the refuge. The F.A.A. officials were also notified. Along with these enforcement procedures all of the local airports were again notified that it was a federal violation to fly low over national wildlife refuges. These methods seem to have reduced the number of low flying airplanes, at least during the past few months.

One pilot was forced to make an emergency landing on Cape Island due to engine problems with the results shown below. Fortunately, the pilot wasn't seriously hurt. Many hours and much effort was required to help the owner remove the wreckage.

Wreckage of plane on Cape Island.
(Photo by Garris)

VI. OTHER ITEMS

A. Field Investigations

None

B. Cooperative Programs

The United States Department of Commerce NOAA, installed a float activated tide gauge on the end of the concrete pier at Moores Landing. The purpose being to monitor tide fluctuations in selected areas along the Atlantic Coast.

The University of South Carolina, Geology Department, Coastal Research Division, was granted a permit to locate a pressure analog gauge on Bulls Island. The purpose of this instrument is to indicate wave action and tidal flow effects on coastal islands.

Maintenanceman Hattaway (left) and Manager Garris examine tide wave action gauge installed on Bulls Island. (Photo by Hines)

Dr. Joseph H. Makurath, assistant professor of geology, Wayne State University, Detriot, Michigan, was granted a permit to take soil samples from the floor of Bulls and Sewee Bays and adjacent marshes. These fifty 3"x24" core samples are to be tested for sediment organism content.

Mr. O. Rhett Talbert, Jr., research associate, University of South Carolina was given a permit to monitor the beaches of the refuge, by low flying aircraft, for loggerhead sea turtle crawl inventory.

The permit to Charleston County Mosquito Abatement Control on refuge lands was extended through December 31, 1977.

C. Items of Interest

Assistant Manager Fred Milton was transferred to Reelfoot NWR effective January 18 1976. On May 25th he was replaced by Jack H. Hagan Pea Island NWR who is stationed on Bulls Island.

Carol R. Riggs, E.O.D. March 1st as clerk-typist. We had been without this help for four months and the position being filled eased our work load considerably.

Clerk, Carol Riggs, catching up on backlog of paperwork. (Photo by Hagan)

We would like to thank Pat Hagan, assistant manager at Ding Darling NWR for contributing his time to help the staff when the red wolves arrived at the refuge. He was also temporarily assigned to the refuge to help in the recapture operation. Refuge Manager, Glenn Bond, is to be commended for his unselfishness in allowing Pat to help us even though it was during the Christmas season. Other refuges that offered help on the red wolf project included Piedmont, Santee, Carolina Sandhills and Pee Dee.

Special thanks go to members of the South Carolina Wildlife Department who contributed many hours to the red wolf project. Among those who were most helpful---especially during the recapture operation---were Ken Stansil, William Robinson, Buster Fort and C. R. Murray. Those standing by and offering help included Pat Ryan, Rembert Dennis, Jr., Sally Hopkins, Pete Laurie, Billy Durant, Larry Cameron and Bill Mahon. It was apparent to anyone who helped with the recapture that this was not a Federal project, but a State and Federal project with cooperation between the two organizations at the highest level.

We would also like to thank Susan Dugan, a student at the University of South Carolina, for her voluntary help throughout the red wolf project. Susan spent days helping on the project. Thanks also goes to Steve Garris, the refuge manager's son, and a student at Guiford College, who spent two days helping with the recapture. These two students were most helpful, since they took the place of a refuge employee on those projects requiring two people, thereby freeing a refuge employee so that he could get some sleep or help in another area.

Others who deserve special thanks for their help and interest in the red wolf project are Bill Hickling, Mary Ann Neville and Don Pfitzer. No job was too small or demeaning for them. They assisted on all projects from cleaning the wolf pen to giving interviews to the news people.

We also received voluntary help from the U.S. Forest Service. Three of their personnel, including the ranger, from the McClellanville office helped with the recapture of the female wolf.

The news people in this area are to be especially commended in their coverage of the entire red wolf project. The quantity and quality of their coverage has been outstanding. Those who have been especially helpful are listed below.

Robert Raiford and Julian Boyd WCBD-TV Channel 2
Gardner Miller, The News and Courier
Warren Pepper, WCSC-TV Channel 5
Margaret Orr, WCIV-TV Channel 4

Two students from Wando High School, Mount Pleasant, South Carolina, participated in refuge activities through a "Student Volunteer Career Exploration Program." This program, the first in the State, is an experimental learning concept to make education more relevant and help students understand how subjects in the classroom are applied in the work force.

D. Safety

The staff, through regularly held safety meetings, constant safety reminders, and attention to proper equipment use, have compiled 89,071 employee working hours without a lost-time accident.

Visitors including hunters and fishermen are given safety reminders by the staff and this awareness of our interest in their safety has produced excellent results.

Since there is a large part of our refuge activities involving use of boats, proper handling and lifesaving equipment and use, is mandatory. In turn, we encourage boating safety to those visitors that use the refuge launching ramp.

This narrative report was compiled by Assistant Manager Givens, who was ably assisted by Jack Hagan and Carol Riggs.