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EASTERN SHORE OF VIRGINIA  
NATIONAL WILDLIFE REFUGE  
and  
FISHERMAN ISLAND  
NATIONAL WILDLIFE REFUGE

Kiptopeke, Virginia

ANNUAL NARRATIVE REPORT

Calendar Year 1992

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

REVIEW AND APPROVALS

EASTERN SHORE OF VIRGINIA NATIONAL WILDLIFE REFUGE  
AND  
FISHERMAN ISLAND NATIONAL WILDLIFE REFUGE

KIPTOPEKE, VIRGINIA

ANNUAL NARRATIVE REPORT

Calendar Year 1992

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Project Leader Date

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Division of Refuges, South

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Regional Office Approval Date

EASTERN SHORE OF VIRGINIA  
NATIONAL WILDLIFE REFUGE  
AND  
FISHERMAN ISLAND  
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## INTRODUCTION

Eastern Shore of Virginia National Wildlife Refuge is located on the southern tip of the Delmarva Peninsula in Northampton County, Virginia at the mouth of the Chesapeake Bay. Currently, the refuge consists of 656.6 acres of maritime forest, myrtle and bayberry thicket, grassland, cropland, fresh and brackish pond, tidal salt marsh and beach habitats. The refuge was administratively established in 1984 through a transfer of excess military land. It was established for the following purposes:

(1) to conserve, manage and enhance the habitat for use by endangered and threatened species, migratory birds (16 USC 667d), and other species of fish and wildlife; (2) to encourage a natural diversity of habitat and associated fish and wildlife species; (3) to fulfill the international treaty obligations of the United States relating to fish and wildlife ; and (4) to provide fish and wildlife-oriented recreation and education (16 USC 460k-1) and assist the county and state meet their identified recreational needs for the Cape Charles area if in line with the goals of the refuge.

The refuge and the adjoining woodlands are regarded as one of the most important migratory bird corridors along the east coast, comparable to the better known Cape May, New Jersey. This importance stems from the fact that the peninsula acts as a geographic "funnel" for migratory birds in the fall. At the tip, millions of migratory birds "stage" until favorable winds blow to assist them in crossing the bay.

Written history of the "Shore" dates back to the earliest colonial times when its natural diversity caught the eye of explorers. In the early 1600's, Captain John Smith described it as:

"...a faire Bay compassed but for the mouth with fruitful and delightsome land...Heaven and earth never agreed better to frame a place for man's habitation."

The predominant occupations are and have been farming or working the water. Man's use of the land on the Eastern Shore has not been solely tied to what he might harvest. The area's strategic location at the entrance to the Chesapeake Bay encouraged fortification throughout our nation's history. The land was privately owned until a few years before World War II. Through condemnation it became Fort John Custis and after the war it became Cape Charles Air Force Base. The base closed in 1980 but the landscape is dotted with remnants of military history. Gun emplacements and bunkers rise on the land encompassed by the refuge. Many of the buildings associated with the base have been removed yet some still remain.

In the early 1980's, the threat of recreational development loomed over this area. Condominiums, town houses, and a marina



were planned by a local corporation. However, the U. S. Fish and Wildlife Service (Service) foresaw habitat destruction and other environmental problems that would invariably occur with this development and it acted responsively to establish the Eastern Shore of Virginia National Wildlife Refuge with an approved acquisition boundary of approximately 1350 acres.

In 1984, 180 acres were transferred from the U. S. Air Force through the General Services Administration, creating the refuge; 174 of these acres made up the core of the refuge. In 1985, a 368.6 acre parcel of adjacent land, owned by the Chesapeake Bay Bridge Tunnel Authority, was acquired by The Nature Conservancy for \$2.6 million. The Service acquired this tract from The Nature Conservancy for \$2.5 million in 1986 for inclusion in the refuge. Skidmore Island, a 108 acre privately owned parcel one mile east of the mainland, was purchased by The Nature Conservancy in 1986. The Service bought it from The Nature Conservancy in 1987 for \$325,000 for inclusion in the refuge. The Service is still involved in acquisition for the refuge.

A dedication ceremony and open house on December 8, 1991 was held for Eastern Shore of Virginia National Wildlife Refuge's Headquarters Building; the ceremonies included groundbreaking for the initial phase of the Visitor Center project.

Phase I of the Visitor's Center was dedicated on October 25, 1992 and is to become a part of the Service's public use program to serve the six million people enroute on highway U.S. 13 every year. The refuge's goal is to be able to reach about 10% of these travelers with an environmental message about the U.S. Fish and Wildlife Service and natural resources.

Fisherman Island National Wildlife Refuge was assigned to Eastern Shore of Virginia National Wildlife Refuge for management responsibilities in 1984. Fisherman Island National Wildlife Refuge is a 1,000 acre parcel on a 1,500 acre barrier island. Fisherman Island is located one half mile south of the mainland of the Eastern Shore of Virginia.

Together these two refuges provide critical habitat where migratory birds rest and feed before crossing the Chesapeake Bay. They also provide important habitat for wintering waterfowl, certain endangered species, and upland game birds.

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### A. HIGHLIGHTS

Field work for the fourth year of woodcock research was completed in April (D-5).

The first Regional Biological Workshop was held at Eastern Shore of Virginia NWR (E-8).

The refuge hosted two Regional 40-hour Law Enforcement Refresher Training sessions in April (E.6).

The Heavy Equipment Training Course, coordinated and hosted by the refuge was successfully completed (E.6).

The YCC program successfully completed another phase in the wildlife trail (E.2).

Project Leader Stairs represents Eastern Shore of Virginia NWR at the opening of Kiptopeke State Park, Virginia's first state park in 20 years (J-3).

The Eastern Shore of Virginia NWR has a new official brochure and bird list (L).

Hunt Environmental Assessment and Plan completed (D-2).

Loggerhead turtle found dead of gunshot wounds (G-9).

The dedication ceremony for the First Phase of the Visitor Center was October 25 (I-1).



## B. CLIMATIC CONDITIONS

The weather on the refuge for 1992 was wet with few extremes with rainfall above average. Total rainfall for the year was 46.73 inches which was .73 inches above the 42 to 46 inch average. The high temperature for the year was 102 degrees Fahrenheit (July) and the annual low temperature was 16 degrees Fahrenheit (January).

A summary of the year 1992 precipitation and temperature data for the refuge follows.

<u>MONTH</u>	<u>PRECIPITATION</u> (inches)		<u>TEMPERATURE</u> ( F)		
	<u>Total</u>	<u>+/- normal</u>	<u>High</u>	<u>Low</u>	<u>X</u>
January	2.18	-1.88	64	16	58
February	2.42	- .98	66	26	40
March	4.20	- .07	72	26	46
April	1.54	-1.66	92	34	58
May	4.42	-1.32	90	44	46
June	2.29	-1.11	94	50	44
July	2.08	-1.32	102	68	34
August	13.04	+8.76	92	60	32
September	4.18	+ .78	90	50	40
October	2.97	- .53	80	38	42
November	4.33	+2.22	80	32	48
December	3.08	+ .14	60	28	32
TOTALS	46.73	+3.89			

1992 was a very wet year with additional rainfall from Hurricane Andrew and Tropical Storm Diane.

In August, Hurricane Andrew brought two weeks of solid rainfall. On September 25, Tropical Storm Diane dropped only .06 inches of rain on the Eastern Shore of Virginia. The high winds and hard driving rain brought no damage to Eastern Shore of Virginia Refuge.

## C. LAND ACQUISITION

### 3. Other

Project Leader Stairs met with Northampton County's Administrator, John Richardson in March concerning our acquisition of the 60 acres of county land adjacent to the refuge. The county may be interested in a 99-year lease.

On April 1, Robert Miller and Walter Quist from the Region 5, Department of Realty met with Project Leader Stairs to look at future land acquisitions for the refuge.

Project Leader Stairs met with the environmental contractor for the Chesapeake Bay Bridge Tunnel's second crossing project on May 12. The meeting was held on-site at Fisherman Island and Eastern Shore of Virginia Refuges. Agencies that attended the meeting were U.S. Fish and Wildlife Service (ESV), the Army Corp of Engineers, Virginia Department of Game and Inland Fisheries and Virginia Marine Resource Commission. There were several possible mitigation factors discussed if the project were approved and impacted the Refuge. One of the topics included the purchase of Wise Point Corporation property to compensate for wetland and upland loss on the Refuge.

Refuge Manager Stairs traveled to the Regional Office to meet with regional personnel concerning the Chesapeake Bay Bridge Tunnel's second trestle. The Chesapeake Bay Bridge Tunnel Authority is contemplating building a second roadway similar to what is being used at the present time. Land on Fisherman Island NWR for a road and right-of-way is being requested. Heading North, Fisherman Island NWR is the first landfall excluding the manmade islands/tunnels, and heading south Fisherman's Island is the first landfall. Project Leader Stairs also checked in with realty to find out how the proposed land acquisition was faring.

#### D. PLANNING

##### 2. Management Plan

Eastern Shore of Virginia NWR's Deer Hunt Plan and Environmental Assessment was submitted to the Central Zone Biologist, Hal Laskowski and to the Regional Office for approval in April, 1992. After several revisions, the Environmental Assessment for deer hunting was sent to local newspapers and was available for public comment for a thirty day period beginning November 20, 1992 and ending December 21, 1992. Five written comments were received, one telephone call and two persons visited the refuge to express their interest in the Environmental Assessment.

The Upland Management Plan was submitted on June 30 to the Central Zone Biologist, Hal Laskowski. It was returned to the refuge for revision.

Revision was started on The Fire Management Plan.

The Public Use Plan was returned to the refuge for revisions.

##### 4. Compliance with Environmental and Cultural Resource Mandates

On August 12, Project Leader Stairs met with William Hester, U.S. Fish and Wildlife Biologist from White Marsh, Virginia regarding the Chesapeake Bay Bridge proposed second trestle crossing.

On November 10, Tammy Angel, U.S. Fish and Wildlife Service from Denver, CO, and private consultants from Armour, Cape & Pond and Law Environmental (contractors for hazardous wastes) met at the refuge to formulate plans for surveying the underground storage tanks and motor oil in the old military septic tank. The Law Environmental crew finished up the project on November 13.

On December 16, Refuge Operations Specialist, Jim Wood assisted the Army Corp of Engineers on a survey of Department of Defense hazard waste sites on Eastern Shore of Virginia NWR.

January 30 and February 19, Louis Seivard met with Manager Stairs to do their groundwork on the "Best Project" for the contaminants workshop that was attended by Manager Sherman Stairs the week of March 9-13 at Montezuma NWR.

#### 5. Research and Investigations

Eastern Shore of Virginia NR91 - "Population Monitoring and Nocturnal Habitat Use of Wintering American Woodcock on the Eastern Shore of Virginia National Wildlife Refuge." (51650-01)

A radio telemetry study focusing on the survivability and habitat preferences of wintering juvenile and adult female American Woodcock (*Scolopox minor*) at the Eastern Shore of Virginia National Wildlife Refuge was initiated on December 14, 1991. An original target number of 20 female woodcock (10 juveniles and 10 adults) were to be fitted with radio transmitters between early December and December 30.

Travis Helm and Christine Parrish were hired as Biological Technicians to conduct the 1991-1992 woodcock research project. David Kremetz offered his expertise on the project as principal investigator by training the technicians and following up on their research every week.

Radio transmitters were placed on 76 woodcock and banding was conducted four to five nights per week. Banding was done through the efforts of biologists, refuge staff members and volunteers. On January 18, these efforts were supplemented by two researchers, Jim Berdeen and Michael Slivinski, both a part of the Georgia Field Branch of Patuxent Wildlife Research Center, who moved up to the Eastern Shore of Virginia when woodcock did not arrive in Georgia.

Warmer than normal temperatures in December, indicated that migration would be later than usual and also suggested that some woodcock on the refuge would continue migrating south resulted in the time frame of fitting radio transmitters onto woodcock was continued till the end of January. Data Collection which had begun in December included amounts of understory cover, overstory type, UTM coordinates, national wetland inventory type and status. Twenty-five percent (25%) of the data collected was during

nocturnal observations.

There were two different sets of objectives for the 1991-1992 winter woodcock study.

The primary management objective was to enhance refuge habitats found to be least used by woodcock diurnally. A secondary management objective was to define some type of rotation growth and cutting of nocturnally used fields. The majority of birds captured were by night-lighting.

The objectives were studied using radio telemetry. 76 woodcock were fitted with radio transmitters by February 5. However, only 71 were tracked. Marked birds included 27 young males, 35 young females, 2 adult males, and 7 adult females. Two of the 5 birds not followed disappeared immediately. The remaining 3 birds died; some birds after being fitted with radios behave so differently they expose themselves unknowingly to predators. Birds were tracked day and night as data was collected. Habitats were evaluated relative to overstory type, understory density, wetlands inventory, and site location (within or transition).

Results indicated that the most used diurnal habitat consisted of a conifer (loblolly)/hardwood mixture with hardwoods (locust, cherry, sweet gum, and maples) dominating. Most used understory consisted of a dense to moderately dense growth.

David Kremetz submitted an interim report, in May, 1992, on the woodcock project for the years 1991-1992 that occurred on the refuge. A final report on the woodcock project has not been received. Banding results and computer updates were accomplished by Travis Helm. (See G.16, Marking and Banding.)



2/92 SA

Christine Parrish, preparing to band a Woodcock.

On May 13, a Special Use Permit was issued to Christopher J. Foust and Richard R. Mills from Virginia Commonwealth University, Richmond, Virginia to conduct a research study at the nature trail location. The proposal titled "Survival Rate of Wildflowers In An Established Plant Community" is a study based on the assumption that different types of wildflowers will provide nectar nourishment for butterflies that use the Atlantic Flyway and stop on the lower end of the peninsula to rest. The wild flowers were planted along the nature trail in plots. The flowers will add beauty and if the study is correct, it will enhance the butterfly population and add beauty to the refuge. The proposal has been sent to the Zone Biologist and Associate Manager for approval.

A Special Use Permit was issued to Christopher Foust and Richard Mills from Virginia Commonwealth University, Richmond, Virginia to conduct research on "Grasshopper Abundance and migration at Wise Point". The objective of the research is to determine the relative abundance of banded-winged grasshoppers by capturing, marking, releasing and recapturing to study migration patterns. We expect this project to continue. The proposal was sent for approval to the Zone Biologist and Associate Manager-Refuges South.

Eastern Shore of Virginia NR92 - "A Regional Study of the Coastal Zone Habitat of Critical Importance as a Concentrated Area for Neotropical Avian Migrants."  
(51650-02)

Sara Mabey, Field Ornithologist, working under the umbrella of



NOVA's Office of Coastal Zone Management Program, The Council on Environment, The Nature Conservancy, The National Fish and Wildlife Foundation, U.S. Fish and Wildlife Service, Commonwealth of Virginia's Department of Conservation and Recreation's Division of Natural Heritage, continued studies for the second year of migratory bird study. Her permit extended to Fisherman Island NWR and other surrounding barrier islands. The study was conducted by Sara and several assistants. Results of the 1992 field study was the establishment of 44 survey sites and thousands of birds counted. The studies completed thus far brought a closer understanding for the needs of songbirds stopping on the Delmarva Peninsula on their long trip to the tropics. This program is scheduled to continue in the spring of 1993.

Eastern Shore of Virginia NR91 - "Continuation of Yearly Raptor Fall Migration Banding, Observations, and Correlation of Data with Weather Patterns." (51650-03)

This project has operated off of Wise Point under a Special Use Permit for eight years. The project is funded through the Commonwealth of Virginia's Non-game Wildlife Program and administered and supervised by Dr. Mitchell Byrd, Professor of Biology, The College of William and Mary. This on-going program is intended to 1) provide data to the U.S. Fish and Wildlife Service Banding Laboratory on Peregrine Falcons and other raptors, 2) provide observations on Peregrine falcon sightings to the Virginia Department of Game and Inland Fisheries Endangered and Non-game Species Program. 3) Make such other observations in the course of the above for reporting to the Refuge as may be appropriate, 4) correlate raptor movements with weather patterns.

This observation and banding program was conducted by Reese Lukei on the Eastern Shore of Virginia NWR. (See G.16)

## 6. Other

Studies being conducted by the Chesapeake Bay Bridge Tunnel District for the purpose of constructing a second trestle over the Chesapeake Bay include survey work at Wise Point and Fisherman Island NWR being done by Espey Huston & Associates, Inc., contracted by the Chesapeake Bay Bridge Tunnel District. Steve Shedd, primary representative of Espey Huston & Associates, met with Managers Stairs and Wood on February 6, 12, 19, and 28 to discuss using Fisherman's Island as a land hold.

William Hester, U.S. Fish and Wildlife Biologist is representing the Service in the Chesapeake Bay transaction. The Service has required additional environment assessments to be completed with the total migration pattern from the Chesapeake Bay Bridge Tunnel Authority.

Earl Robinson, Delmarva Power Company representative met with James Wood, Supervisor of Refuge Operations, on Friday, February 18 to discuss future plans of placing the refuge electrical system underground.

During the month of November, James Wood and Petra Wood from West Virginia Wildlife Cooperative Unit discussed probable studies that could be done at Eastern Shore of Virginia NWR using West Virginia students.

#### E. ADMINISTRATION

##### 1. Personnel



12/92 BAW

Back Row: Robert Carpenter, Jerome Loomis, James Wood  
Front Row: Irene Morris, Sherman Stairs, Steve Alvarez

##### Personnel

1. Sherman W. Stairs, Refuge Manager, GS-485-12, EOD 12/12/84, PFT.
2. James H. Wood, Supervisor of Refuge Operations, GS-485-11, EOD 2/24/91, PFT.
3. Steve I. Alvarez, Outdoor Recreation Planner, GS-0023-7, EOD 4/7/91, PFT.

4. Irene G. Morris, Office Assistant, GS-303-6, EOD, 12/23/84, PFT.
5. Robert W. Carpenter, Engineering Equipment Operator, WG 5716-10, EOD 12/9/84, PFT.
6. Jerome C. Loomis, Electrician, WG-2805-10, EOD 12/9/84, PFT.
7. Christine R. Parrish, Biological Technician (Wildlife), GS-404-5, EOD 12/3/91, TFT, NTE 16 Weeks.
8. Travis J. Helm, Biological Technician (Wildlife), GS-404-5, EOD 12/1/91, TFT, NTE 16 Weeks.
9. Solomon P. Owens, Junior Fellowship Program Trainee, (Biological Science), GS 0499-2, EOD 6/17/91, FT-Conditional.
10. Stacie R. Partin, High School Cooperative Program, GS-0499-1, EOD 6/15/92, FT-Conditional.
11. Jacqueline S. Joynes, High School Cooperative Program, GS-0499-1, EOD 6/15/92, FT-Conditional.
12. Robert M. Bondurant, Youth Conservation Corps Group Leader, GS-0186-04, EOD 6/7/92, TFT, NTE 9/30/92.

Christine R. Parrish, GS-404-5 ended her 1991-92 winter tour of duty on the winter woodcock research study March 24, 1992.

Travis J. Helm, GS-404-5 ended his 1991-92 winter tour of duty on the winter woodcock research study on March 24, 1992. Travis was rehired for an additional three months to help with the 40-Hour Law Enforcement and Heavy Equipment Training Programs.

Solomon P. Owens, Junior Fellowship Program Trainee, GS 0499-3, resigned from the program on October 27, 1992.

Stacie R. Partin and Jacqueline S. Joynes, working under the High School Cooperative Program entered on duty 6/15/92. Both trainees are seniors at Northampton High School.

Robert M. Bondurant, Youth Conservation Corps Group Leader entered on duty June 7. His tour of duty ended with the termination of the 1992 Youth Conservation Corps Program, August 14.

Jerome Loomis and Robert Carpenter received a bonus for the work done on the Visitor Center during the years 1991-1992.

A summary of refuge staffing showing a five year comparison of on-board strength is shown below.

Year	<u>Permanent</u> Full-Time	Seasonal	Temporary	<u>Student</u> Programs	Total Employees
FY 92	6	0	3	*3	12
FY 91	7	0	4	*2	13
FY 90	6	1	2		9
FY 89	6	1	1		8
FY 88	6	1	1		8

\*Does not reflect FTE's.

## 2. Youth Programs

Project Leader Stairs interviewed 15 prospective candidates for the High School Cooperative Program. Stacie Partin and Jacqueline Joynes were selected and started work June 15. Jacqueline lent assistance to the office staff while Stacie assisted and accompanied the Outdoor Recreation Planner with the Visitor Center and tours. Jacqueline and Stacie, both seniors at Northampton High School, started back to school the first week of September. Jacqueline did not return to work, however, Stacie continued working weekends at the Visitor's Center.



6/92 SA  
Stacie Partin and Jacqueline Joynes  
High School Cooperative Program Trainees

A Senior Career Exploration Program at Broadwater Academy, a 12-

year school, worked out well for the Refuge. James Johnson, a former YCC enrollee, volunteered his services for a week starting May 29. James was selected as the YCC Youth Leader for 1992.

The Youth Conservation Corps Program officially began Sunday, May 31 when Project Leader Stairs and Office Assistant Morris met with prospective Youth Conservation Corp members and their parents discussing the refuge and what they could expect as lasting benefits from working at a national wildlife refuge and also what the refuge staff would expect from the youth. Much of the time was filling out the required paperwork.

The Youth Conservation Corps Supervisor, Robert Bondurant started his 10 weeks duty on June 7. Eight students from the two high schools in Northampton County began their eight-week work program on June 15. Work that was accomplished were cleaning the boundaries, collecting trash and picking up litter, 12 blue bird boxes were constructed and 10 were placed on the refuge, painting information signs on the trail, constructing a fence to keep vehicular traffic from attempting to drive the trail, spreading and compressing the rock dust in front of the bunkers to even out any holes in the trail. On June 23, the YCC and available staff members received CPR and first aid instruction from two volunteer Red Cross instructors. YCC'ers scraped and painted the bottom of the refuge boat and refinished the boat's console paneling. Completed the circular pathway through the bunkers, on the nature walking trail by installing timbers and placing rock dust and rolling it to create a hard finish for handicapped assessable maneuvering. Prepared supplies for Fisherman's Island signing and on July 1, installed signs and cleared the road of brush so it could be maneuvered by vehicles. July 9, banded terns and erected "Area Closed" signs near the high water mark on Fisherman's Island. Cleaned the cemetery by weeding and mowing. cleaned and washed vehicles. Solomon Owens, working under the Junior Fellowship Program joined the YCC group on July 15 when they assisted Chincoteague NWR's staff with the installation of snow fence on the beach to prevent sand erosion. The YCC'ers mowed lawns and weeded the flower and shrub areas in front of the Environmental Education and Conference Buildings.

On August 6, the YCC Supervisor, Robert Bondurant, Solomon Owens, Junior Fellowship Trainee, and the YCC enrollees assisted Kiptopeke State Park staff members in planting trees at the new state park. On August 7, staff members joined YCC'ers in a luncheon and the afternoon was spent finding tools and personal effects. YCC Supervisor, Robert Bondurant, spent August 10-14 writing evaluations and ending summaries. The YCC Program officially closed August 14.

The YCC Program was very successful with projects completed or worked on. The young adults did a good job, worked well together and with staff, and were proud of what they had accomplished.





8/92 SA

YCC enrollees erecting a "Area Closed" sign on Fisherman's Island.



7/92 SA

Youth Conservation Corps Group Picture.

Back Row: Lamont Lyons, Jennifer Sturgis, James Johnson, Robert Bondurant, Genethia Dunton, Charles Lewis, Richard Hubbard  
First Row (kneeling) Rebecca Tolbert and Tiwanica Ames

Solomon P. Owens, Junior Fellowship Program Trainee, resigned from the program on October 27.



7/92 SA

Solomon Owens, Junior Fellowship Program Trainee, assisted banding terns on Fisherman Island.

#### 4. Volunteer Program

Thelma Peterson, Eastern Shore of Virginia artist, illustrated the woodcock that graces our new Bird List. Thelma donated her time, effort and talent for the project. (See L, Information Packet.)

Woodcock volunteers came out in force on January 7 to work with Hal Laskowski, Region 5 Biologist, Christine Parrish, and Travis Helm, Eastern Shore of Virginia's research biologists. Volunteers who worked from 7:00 PM to 12:00 Midnight were Robert Lewis, Charles Lewis, James Pruitt, Elizabeth Pruitt, Jennifer Sturgis, Beth Bucklew, Robert Carpenter and Barbara Wood.

Staff team members volunteering time for capturing and banding woodcock consisted of: Sherman Stairs, Steve Alvarez, James Wood and Hal Laskowski, Regional Zone Biologist.

Volunteers assisted the refuge staff in a variety of ways this year. Barbara Wood volunteered her assistance during the Law Enforcement 40-Hour Training with preparation of buildings, helping to obtain supplies, and running errands. Barbara also assisted by taking water samples to Virginia Health Departments, and at the

Biological Workshop held at the refuge on February 25-27. Volunteers assisted staff with preparation for the weeks preceding the Visitor Center's dedication ceremony and later with assisting the staff in manning the Visitor Center. The following volunteers assisted the refuge during 1992.

Thelma Peterson  
 Barbara Wood  
 Richard Hunt  
 Roy and Vivian Wallace  
 Tom Savage  
 Dean and Wendy Reynolds  
 Warren and Grace Velsor  
 Erika Peterson  
 Beth Bucklew  
 Robert Carpenter, Jr.  
 Jennifer Sturgis  
 James Pruitt and daughter, Elizabeth  
 Reese Lukei  
 Mitchell Byrd  
 Shawn Padgett  
 Paul Baker

#### 5. Funding

A summary of Eastern Shore of Virginia National Wildlife Refuge funding is shown below for five consecutive fiscal years starting with 1988.

<u>Type of Funding</u>	<u>Fiscal Year</u>				
	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>
Operations and Maintenance	511,377	296,889	254,244	321,082	321,622
Residence Maintenance	11,606	6,963	6,977	7,610	0
Const/Rehab/ARMS	40,600		37,000	44,000	317,500
Redir. ARMM		25,000			
Resource Mgt	0	0	5,000	5,000	0
Fire Mgt	0	0	74,500	9,500	500
Wetland Educt					3,000
Volunteer Program				500	500
YCC	13,600	14,280	14,280	16,665	16,732

## 6. Safety

Safety meetings were scheduled during each month with a staff member giving a safety program. Some of the programs were fire protection and prevention; summer protection, heat exhaustion, stress, first aid and defensive driving. Safety hazards pointed out to be corrected were loose bricks on the kitchen floor in the Conference Building, potholes on the refuge roadway, weeds and overhanging trees on the nature trail. The safety hazards were corrected the following day after disclosure.

Special safety meetings were held before Law Enforcement and Heavy Equipment Training and Visitor Center Dedication Ceremony. These safety meetings were held to determine if any staff member could foresee any problem that could be corrected before the event.

In April, all the station fire extinguishers were inspected and recharged as needed. All station smoke alarms were checked at the same time.

In May, safety films or video tapes were ordered from the Regional Office to enhance the material presented in staff safety meetings and in YCC safety meetings.

Tailgate meetings each morning were held on safety before YCC'ers were allowed to proceed with any project during their eight-week work duration.

On June 23, Mr. Dean Reynolds of the Chesapeake Bay Bridge Tunnel District, instructed a class on CPR and First Aid for YCC enrollees, Refuge Staff and volunteers.

The hand rail on the steps leading to the "bunker top" observation platform was painted white as a safety precaution in June. The observation platform is on the wildlife trail.

Due to the lack of freezing weather on the Eastern Shore of Virginia, the tick population is hazardous to humans and animals. Volunteer Barbara Wood contracted Lyme's Disease and was under a physician's care during the summer months. Daily tick checks by refuge personnel was the order of the day as a safety precaution.

On May 19-20, Jerry Loomis served as a safety instructor for Jeff Graves, Iroquois NWR, on operation of the Pan Scraper. The effort was not in vain, as Jeff helped move dirt into the berm area at the Visitor's Center location. On Friday, May 21, Bailey White drove up with Great Dismal Swamp's low boy trailer, loaded and secured the Pan Scraper and with Jeff rolled north with the Pan Scraper headed for Blackwater NWR.

On Sunday, July 19, while on routine law enforcement patrol, the 1985 Chevrolet Blazer caught fire on the beach at Fisherman Island

NWR. The fire was confined to electrical system and burnt some of the rubber hose connections. No injuries occurred!

On August 26, Robert Wilson, Safety Officer for Chincoteague NWR inspected Eastern Shore of Virginia NWR for possible safety hazards. On August 27, James Wood, Safety Officer for Eastern Shore of Virginia NWR traveled to Chincoteague NWR and inspected Chincoteague NWR for safety items. Safety reports on the refuges were sent to the Regional Office for approval.

## 7. Technical Assistance

On September 30, the Chesapeake Bay Bridge Tunnel loaned the refuge the use of their dump truck for landscaping work at the Visitor Center site.

Those special persons or agencies that assisted at our October 24-25 Dedication Ceremony for the Visitor's Center have our personal thank you.

Kiptopeke State Park personnel; mowing, cleaning, and maintenance.  
Chincoteague NWR personnel; cleaning and maintenance.  
Outdoor Recreation Planners: Great Dismal Swamp, Teresa Cherry Chincoteague, Ann Bell and Maggie O'Connell; construction of displays, assisted with stage and presentation of Ceremony.  
Chesapeake Bay Bridge Tunnel: Use of truck.  
Sunset Beach Motel - Use of grounds and rooms for October 24-25.  
Fish & Wildlife out-of-town personnel and dedication speakers.

Jim Berdeen, Michael Slivinski, and Dave Kremitz arrived at the refuge on January 18 to assist with the woodcock research study program. Dave flew home to Georgia on Monday, January 20, while Jim and Mike stayed on the refuge in Quarters 219.

Back Bay NWR requested the use of Electrician Jerry Loomis on May 13-15 to install electrical service to new fuel tanks and again on June 24 to repair electrical problems in the Flammables Building, headquarters building and pole shed.

Bombay Hook NWR enlisted the help of Jerry Loomis for electrical work on September 21-23.

Electrician Jerry Loomis spent October 28 at Chincoteague NWR doing an electrical survey of the sub-headquarters building.

July 13-28, Engineering Equipment Operator, Robert Carpenter spent two weeks operating heavy equipment for the wetland project. Robert helped to enhance the wetlands by building dikes for private property owners in the State of New York.

On May 29, in preparation of the opening for the Kiptopeke State Park, Robert Carpenter assisted park personnel by operating a Back-



hoe for their landscaping project.

#### 8. Other

Steve Alvarez, Outdoor Recreation Planner spent May 27-28 in West Virginia assisting the staff at the Ohio Islands NWR dedication ceremony that officially opened the refuge. Congratulations and good luck to Jerry Wilson and staff.

January 27-February 7, Outdoor Recreation Planner, Steve Alvarez completed a two week tour at Glynco, Georgia which finished his Basic Refuge Officer Training course. The last two weeks were strictly for U.S. Fish and Wildlife Service employees.

On February 10, Firearms Instructor Kenny Kessler, Chincoteague NWR qualified Steve Alvarez on his service revolver.

Refuge Manager Sherman Stairs attended the Contaminants Workshop held March 9-13 at Montezuma NWR.

Hal Laskowski, Region 5's Zone Biologist instructed representatives from six refuges on procedures in R-Base Training. Refuges represented were Presquile, Great Dismal Swamp, Back Bay, Ohio River, Chincoteague, and Eastern Shore of Virginia. The training took place March 10-11 at Eastern Shore of Virginia NWR in the Conference Building.

Steve Alvarez, Outdoor Recreation Planner, attended the National Association Interpretative Region II Workshop held at Chincoteague on March 19-20.

Sherman Stairs, Refuge Manager, went to Tallahassee, Florida for a "Fire Management for Line Officers" course held March 23-27.

Robert Carpenter, Engineering Equipment Operator, completed a course for welding at Eastern Shore Community College. The course ran from January 14 through May 13, 1992.

Sherman Stairs, James Wood, and Steve Alvarez completed the 40-Hour Law Enforcement Refresher Course during the first two weeks of April.

Robert Carpenter qualified for the "Red Card" for fire training by completing the required physical examination and running a mile and half in the required time period during the first two weeks in April.

On June 23, all available staff members completed an eight-hour course on First Aid and CPR.

On September 21-25, Jim Wood attended the Neo-tropical Bird Workshop in Fort Collins, Colorado.

September 15, Firearms Instructors, Frank Kuncir and Kenny Kessler from Chincoteague NWR requalified Region 5 law enforcement officers. Refuges represented were Back Bay, Chincoteague, Presquile, Great Dismal Swamp, Bombay Hook, Mason Neck and Eastern Shore of Virginia NWRs.

Project Leader, Sherman Stairs, attended meetings and discussions lending advisory comments to the Enforcement Refresher Committee prior to the April course.

Approximately 90 law enforcement officers spent 50 hours undergoing the required 40-hour Law Enforcement Refresher held April 6-11 and April 13-18. Refuge staff members lent their assistance to the Law Enforcement Refresher Course by acquiring the food, fixing, cleaning, cooking, running errands, taking messages, arranging for Emergency Medical Technicians for the physical training, helping to arrange training scenarios and to create the atmosphere by making posters and requesting help from the local school and local agencies for the "milling crowds and protesting students". Trainees enjoyed a special Eastern Shore Dinner, cooked and served by the refuge staff on Thursday evenings.

Two incidents occurred during the two weeks of training. Edward Moses, Great Meadows NWR, was taken to the hospital for cuts, and severely sprained arm and ribs. He was in a training scenario and overzealously tackled a civilian escaping from a fenced-in area. Barbara Pardo sprained her fingers in training.



4/92 JHW

Teenagers participated in a mock hunting demonstration at the LE Refresher.



4/92 BAW

Refuge officers respond to a dispute between a birdwatching group and a hunting group during the 1992 40-Hour Law Enforcement Refresher Training Course.

A forklift training course was given June 3-4, 1992 for 10 trainees. Preparation for this training included: coordinating equipment loans, setting up classroom, servicing the forklifts, acquiring food supplies, laying out instructional assignments, and preparing grounds where field exercises were to be conducted. Instruction was provided by two instructors; Robert Carpenter from Eastern Shore of Virginia NWR and Edward Darlington from Harrison Lake National Fish Hatchery.

The following refuges sent trainees: Blackwater NWR, Bombay Hook NWR, Chincoteague NWR, Great Swamp NWR, Back Bay NWR, Great Dismal Swamp NWR, Presquile NWR, and Northeast Fishery Center. There was one trainee from Virginia Park Service.

A new forklift was loaned to Eastern Shore of Virginia NWR for use in the training course through Clark Forklifts, Inc.





5/92

SA

Heavy Equipment Coordinator, Robert Carpenter watches closely as a trainee backs into the obstacle course during the 1992 Forklift Safety Course.

#### 8A. North American Waterfowl Management Plan

The Eastern Shore of Virginia and Fisherman Island National Wildlife Refuges lie within the North Atlantic Flyway and is playing an active role in achieving the objectives of the Joint Venture and North American Waterfowl Management Plan by the following activities.

Five freshwater ponds built on Eastern Shore of Virginia NWR to enhance waterfowl use. (See F.2.)

On a joint effort, combining the expertise of Chincoteague and Eastern Shore of Virginia National Wildlife Refuge's staff, a dike was rebuilt in Nassawadox, Virginia on private property owned by The Nature Conservancy. (See J.1.)

### F. HABITAT MANAGEMENT

#### 1. General

Pam Rooney, landscaping design specialist from the Regional Office spent May 19-20 tagging trees, that were later placed around the Visitor's Center building. Pam spent all of her two days in the

woods and fields on the refuge placing tags on a great number of pine and hard wood trees.

## 2. Wetlands

During the Demolition project where buildings were torn down and craters left in the earth, two ponds were built to enhance wildlife to the refuge. Those ponds, the Conference Building pond, a developed 1/2 acre area (area in back of Conference Building, former site of one story military barracks), and the other pond is situated on the east side of the base of the bunker closest to the Headquarters Building. There are three additional ponds which have been built. A north pond, a natural wetland area on the most northern section of the refuge which started as a 1/2 acre pond and has grown to 2 acres, and a south pond, another natural wetland area which is approximately 1/2 acre, in back of the maintenance area and lastly the Visitor's Center pond which was completely structured by staff members.

The Conference Building pond has had continued wildlife use since the day it first retained water.



8/92 SA

Conference Building Pond, completed in 1991, former site of one story military barracks. A developed 1/2 acre pond.



SA 2/92  
Visitor Center Pond, completed in early Spring, 1992



9/92 SA

Visitor Center Pond, September of 1992. Notice the vegetation change.



## 5. Grasslands

Fields, grasslands and disturbed sites, where construction or demolition had taken its toll by the disappearance of top soil, were disked and seeded to prevent soil erosion.

Approximately 20 acres of grassland were mowed or disked for migratory bird use in the fields. In a seven-acre piece of ground, five-acres of the field on the west side of Route 13 was mowed and two-acres were left in the center of the field for dense grass cover. A five-acre field in the southern portion of the refuge was disked late in October to allow cool season grasses to germinate. Another field near the Visitor Center was disked in Mid-September to allow volunteer rye grass to grow. The east field containing native grasses and forbs were disked several times to allow for spotty grass areas and bare ground. The method was used to determine if this prescription will increase woodcock use. Twelve foot wide strips were cut in the fields during November. The strips serve two purposes. a) raptor hunting areas during the day and b) census areas for woodcock during the night.

## 9. Fire Management

The Fire Management Plan that has been waiting for final approval for the past two years has been dusted off and is being revised.

On March 23-27, Refuge Manager attended the training course held for "Fire Management for Line Officers".

Refuge Manager Stairs attended the Annual Fire Management Coordination meeting led by Allen Carter at Great Dismal Swamp NWR on November 10.

## 10. Pest Control

In late July, Roundup was used on wiregrass around the Visitor Center location and on the wildlife trail along the walk-way.

# G. WILDLIFE

## 1. Wildlife Diversity

The Eastern Shore of Virginia Refuge is one of the most diverse areas on the east coast. Strips mowed in grasslands, trees and shrubs planted for windbreaks and hedge rows, and ponds enhanced with aquatic vegetation contributed to increased diversity and density of wildlife. During migrations, raptors, passerines and waterfowl fill the air along with scores of shore and water birds. Sea turtles and marine mammals are found in the waters surrounding the refuge and adds to the diversity.

Wildlife diversity increased on the refuge through the summer months. The main reason for the increase was the Visitor Center's pond and the associated wildlife it had attracted. Large flocks of glossy ibis, egrets, shore birds, and sea gulls visited the area every day.

The Refuge is situated in a major corridor for fall migration. Migration came late in October because of the warm weather that hung on into the late fall. Many of the birds utilized the Refuge for feeding and roosting. By the middle of December, most of the migration was over and only the remaining birds utilized the Refuge for feeding and roosting.

The Christmas Bird Count was accomplished on Sunday, December 29. Henry Armistead, volunteer, coordinated the count. The number of volunteers were down from previous years so the volunteers did not cover as much ground as they had in years past. The number of birds counted were not as plentiful as in previous years.

## 2. Endangered and/or Threatened Species

The Osprey arrived on the Refuge the first week of March. The Osprey platforms were fought over with the first to arrive gaining the first footholds. By the middle of April, the Osprey had added on to the existing nests and were settling down to raise their families. By the end of May, the young Ospreys had arrived and the adult Ospreys were seen going back and forth to the nest trying to find food to fill those hungry mouths. By the middle of August, most of the young Ospreys had fledged their nests and were looking for food on their own. Sometime during the week of September 15, the Ospreys had migrated south.

There were 30 bald eagle sightings and 54 peregrine falcon sightings reported during the month of October. There were 25 sightings of Bald eagles and 7 sightings of Peregrine falcon during the month of November from the banding site at Wise Point. There were three sightings of Bald eagles from the Visitor Center and two sightings at Refuge Headquarters.

## 3. Waterfowl

Waterfowl use on the refuge is limited due to lack of suitable wetlands on the main body of the Refuge. However, in areas where Refuge staff have developed wetlands over the past several years, waterfowl use has increased with some nesting occurring.

Duck use has increased on the refuge due to the new wetland rehabilitation areas on the north end of the refuge. Mallards and black duck who set up nesting territories frequented the north and south ponds. Gadwall were observed in the Visitor Center pond during the latter part of March.

Waterfowl numbers were spotty throughout November. Large numbers of Gadwall were observed periodically. Waterfowl observations were down for December, with only a few tundra swans, Canada geese and black ducks seen during the month.

#### 4. Marsh and Water Birds

Hérons and egrets were a common sight during the summer months feeding in the north pond.

A great egret roost on the north pond area has attracted more birds to the roosting area. Approximately fifty birds per day were using the area for roosting.

Large flocks of Double-crested cormorants were observed flying over the refuge in October.

Snow geese could be seen in many of the fields near the refuge, as well as Canada geese and brant. One single Tundra swan was seen for four days in a neighboring farmer's field enjoying the end product of soybeans.

During November and December, it was noted that 15 to 20 common loons were wintering off the Wise Point portion of the refuge.

#### 6. Raptors

Marsh hawks, turkey vultures, American kestrels, red-shouldered and red-tailed hawks are in abundance on the Eastern Shore of Virginia refuge.

Reese Lukei, Volunteer for The College of William and Mary, began the raptor banding season August 15, by cutting grass and repairing the blind at Wise Point, which is located at the end of Delmarva Peninsula. Raptor banding began in earnest September 14, when Reese set up the nets to capture raptors on the refuge. The banding site closed at Wise Point on November 30. Raptors captured and banded during the month totaled to 836. (See Marking and Banding G.16)

Turkey and black vultures numbering in the hundreds were seen throughout the months of October and November. Most of the vultures seen were migrating, however some stay in the area year round and can be seen daily, eating, roosting or floating on the wind currents. A migrating vulture which was unusual was seen twice on November 17 and 18; the vulture had a black body with white wings.

During December, Northern harriers and red-tailed hawks were common observations from the Visitor Center observation window, while American kestrels were frequently noted watching us from nearby electrical lines.

## 7. Other Migratory Birds

Blue bird boxes were checked on May 29. Out of eleven boxes, only one box had been used and it has been determined that chickadees had used the box. The YCC constructed 11 more blue bird boxes which were installed at various locations on the refuge.

Large flocks of robins, tree swallows and purple martins were observed on the refuge during the later part of May.

Passerines migrated through the area as the weather stayed moderate through the last two weeks of August and the month of September.

On October 5, 300+ tree swallows were observed from the banding station at Wise Point. During the entire month of October, hundreds of migrating swallows were seen using the fields and maritime forests for refuge.

On October 21, Flocks of 500+ blackbirds, cowbirds, starlings, swallows and sharpies were observed migrating through the area.

Woodcock returned to the refuge on October 23, and increased in quantity through the end of year.

Migrating robins, bluebirds and blue jays in flocks of hundreds used the refuge during the first three weeks of November.

## 8. Game Mammals

The resident coyotes were seen each month during 1992. They seem to feel at ease with staff personnel working within 10-15 feet of their territory. Travis Helm, Woodcock Researcher observed a coyote twice in February, in approximately the same location, and felt sure that the den was close to where he was looking for woodcock. Law Enforcement trainees who spotted the coyotes during the two week training period were surprised that the coyotes seemed unafraid, stood their ground and seemed to be observing the trainees. At the end of May and again on October 21, an adult and two immature coyotes were seen near the old airstrip, which led the staff to believe that there were two litters of coyotes born in 1992. Every year, it is reported that one or two coyotes are shot by neighboring farmers.

The Eastern Shore of Virginia only had two frosts last winter and most of the tick population survived another season to harass the deer population. In July, a small fawn was found wandering in circles; the result of ticks smothering his head. This year's deer herd grew with numerous fawns seen on the refuge during the month of July and August. A group of 34 deer were counted as they raced around the headquarters building during September.

White-tailed deer were reduced to approximately 14-20 animals along

refuge roads during daylight hours probably due to hunting on adjacent county property and adjoining farms. However, deer could be seen most mornings in adjacent refuge fields, only to disappear toward Wise Point, (most distant from hunting).

White-tailed deer are still in abundance after hunting season.

#### 9. Marine Mammals

One Loggerhead turtle was found dead on the refuge in July. The turtle was buried on the beach after data was recorded for the Virginia Marine Museum.

October 9, a pilot whale was reported lying off Gargatha Bay Inlet on the Eastern Shore of Virginia by the Little Creek Naval Station. Nick Carter, a member of the Coastal Bay sub-committee from the State of Maryland was at Eastern Shore of Virginia NWR waiting for a tour to Fisherman Island NWR, assisted with obtaining the latitude and longitude to gain the position of the whale. The whale was lying just below Wallops Island and in close proximity of Chincoteague NWR. Chincoteague NWR was contacted and responded to the call.

A river otter continues to be seen in and around the Intracoastal Waterway and other inlets around Wise Point.

#### 10. Other Resident Wildlife

A long-eared owl was seen twice in the evening by woodcock researchers in the location of the airstrip.

#### 16. Marking and Banding

A proposal to trap and band raptors was submitted by Reese Lukei, Jr., Research Assistant and Refuge Volunteer. Reese working with Dr. Mitchell Byrd and Shawn Padgett from The College of William and Mary set up their banding operation on September 14. One hour after setting the net, a red tailed hawk trying to get at the pigeon being used as bait, flew through the net ripping a 3-foot hole in it. That same day, 50 raptors were captured and banded. By 3:00 PM, banding operations had to be closed to fix the net and catch more pigeons. The station was manned each day by one of the volunteers. The banding site was closed on November 30, 1992.

## Raptors Banded During the September-November Migrating Season:

RAPTOR	SEPTEMBER	OCTOBER	NOVEMBER	TOTAL
American Kestrel	11	1	1	13
Merlin	75	16		91
Peregrine	1	7	2	10
Sharp-Shinned	52	385	81	518
Coopers	26	107	3	136
Red-tailed	2	20	24	46
Red-shouldered		1	2	3
Broad-winged		2		2
Northern Harrier	—	<u>1</u>	<u>1</u>	<u>2</u>
Total Banded	167	540	114	821
Foreign retrapped	1	12	2	15
Total trapped	<u>168</u>	<u>552</u>	<u>116</u>	<u>836</u>

The nets were open a total of 790 hours during the three months.

No attempt was made to record the number of raptors that were present at the banding site because of the tendency of raptors to mill around and fly back and forth from north of the site to one mile south to Fisherman Island NWR. While there has been no attempt to keep records on the number of raptors that are trapped as they return from the south, it is estimated that about 15-20% are trapped as they approach from the south. (See Research and Investigations D.5.)

The Wise Point and Fisherman Island Raptor Banding Project headed up by Reese Lukei, Paul Baker, Dr. Mitchell Byrd and Shawn Padgett has been a demanding job. These dedicated volunteers donate their personal time each year cleaning banding sites, spending endless hours sitting in blinds to capture and band raptors, and then spend numerous hours working on summary reports to finalize their accomplishments. Reese Lukei gave lectures or instructions on banding to visitors, students and instructors that visited the Wise Point site during the banding project.





10/92 SA

This rare dark phase Peregrine Falcon was one of several hundred raptors banded at Wise Point raptor banding station by Reese Lukei.

The 1991-1992 research project for wintering woodcock began December 1, 1991 when Travis Helm and Christine Parrish were hired as Biological Technicians for the project. David Kremetz offered his expertise as chief investigator and brought two technicians from Georgia to help with the research.

There were two different sets of objectives for the 1991-1992 winter woodcock study on Eastern Shore of Virginia. The primary management objective was to enhance refuge habitats found to be least used by woodcock diurnally. A secondary management objective was to define some type of rotation growth and cutting of nocturnally used fields.

The majority of birds were captured in the fields at Eastern Shore of Virginia NWR by night-lighting. Data obtained when woodcock were captured included age/sex, bill/wing dimensions, weight, what type of band was used, what habitat the woodcock was in when captured, and any comments vital at the time of capture.

A summary of the 1991-1992 winter woodcock banding accomplishment follows.

<u>Month Banded</u>	<u>Sex</u>		<u>Total Banded</u>
	<u>Female</u>	<u>Male</u>	
December	42	52	94
January	47	85	132
February	<u>36</u>	<u>24</u>	<u>60</u>
Totals	124	161	286

There were 36 recaptures of woodcock that had been banded previously.

February 5-6, John Haig, Research Biologist from Patuxent Wildlife Research Center brought two visitors from Pakistan to teach the foreign visitors woodcock banding. John and the visiting Pakistanians joined Jim Berdeem, Michael Slivinski, Christine Parrish and Travis Helm in an evening of capturing and banding woodcock.

#### H. PUBLIC USE

##### 1. General

The refuge was used daily throughout the year by visitors to the area as well as local citizens who used the roads daily for jogging, bicycling, or walking. The wildlife trail was used continually from sunup to sunset by visitors, photographers, and birders.

On January 21, six-thousand Eastern Shore of Virginia NWR brochures arrived which had been printed in the regional office.

Nash Bailey, a Cape Charles resident, has collected Indian and other artifacts for a great number of years and in June 1992, donated some of these artifacts to the Eastern Shore of Virginia NWR and to the Kiptopeke State Park. On August 4 and 8, discussions were held concerning the donation by Mr. Bailey and staff members, Sherman Stairs, Steve Alvarez and Solomon Owens. On August 7, Solomon Owens picked up the collection and then spent the next two weeks cataloging and organizing data. Paul Wyncoop, Kiptopeke State Park, worked with Solomon Owens on the State Park's exhibit which will be housed at Eastern Shore of Virginia NWR until the state can build premises.

On August 11, John Herwall from Virginia State Parks met with Outdoor Recreation Planner, Steve Alvarez, to discuss plans for interagency use of the traveler information station that will be located at the Visitor's Center.

A Visitor Center Committee, composed of local businessmen, farmers, and interested citizens have volunteered their time to the refuge for 2-3 years. This committee assisted the refuge by inserting valuable information and volunteering their time to help the Visitor Center Dedication Ceremony on October 25 go smoothly.

On October 25, the Visitor Center Dedication Ceremony became a reality. Congressman Herbert Bateman, his staff from Washington and the Eastern Shore along with other political persons representing the state and local government were in attendance. Region 5 was represented by Ronald Lambertson, Barbara Donlon and Spencer Conley. Washington, D.C. was represented by David McMullen. The public that attended represented local businesses, neighboring landowners, Eastern Shore citizens and agencies that have worked closely with the refuge. Approximately 250 persons attended the dedication ceremony.



10/25/92 MO

Refuge Manager Sherman Stairs welcoming speakers and visitors to the Dedication Ceremony of the Visitors Center.

Preparations for the ceremony began early in August by notification to the Regional Office requesting support and officially setting October 25 for the ceremony. The Visitor Center Committee which is made up of many interested citizens held two meetings a month and worked hard to help bring about the dedication's success. On September 24-25, Janet Marvin, Outdoor Recreation Planner from Erie NWR and Barbara Donlon, Public Affairs Office met with Sherman Stairs and Steve Alvarez to plan for the ceremony.

Steve Alvarez and Sherman Stairs spent many hours despairing over,



working with, and assisting the exhibit contractor from April to October. However, even with all the work put into this portion of the Visitor Center interior, the exhibits were not ready for the October 25 Visitor Center dedication ceremony. Barbara Donlon and Janet Marvin came to the rescue by sending five displays or exhibits. Craig Koppie from the Chesapeake Bay Estuary Program in Annapolis, Maryland sent a large display on raptors that had just been completed. Exhibits that were on hand for the day included the Living Museum from Norfolk, VA, Virginia Institute of Marine Sciences, Virginia Marine Resources, U.S. Coast Guard, Reese Lukei, display on raptors, and Thelma Peterson, paintings of the Eastern Shore.

Outdoor Recreation Planners, Maggie O'Connell and Ann Bell from Chincoteague NWR and Teresa Cherry from Great Dismal Swamp spent Saturday and Sunday morning setting up the displays and arranging the Visitor Center for the ceremony, and followed up by taking pictures, and lending their support where needed. Parking and building access was accomplished by volunteers. The Northampton High School Ecology Club served refreshments and music was provided by the Northampton High School quartet.

The Dedication Ceremony of Phase I of the Visitor Center was a success because of the dedication and hard work of many people. Hours were spent working on invitations, designing and printing the program, brochures and displays, checking accomplishments and all the hundred small details that have to be accomplished.



10/25/92 TC

Congressman Herbert Bateman and Regional Director Ronald Lambertson cutting the ribbon that officially opened the Visitor Center.

The Visitor Center officially opened with the dedication service on October 25. The Visitor Center has been staffed by staff members and volunteers daily except for Thanksgiving day. A total of 528 visitors have toured the building. The book store appreciated total sales of \$635.98 and six Duck stamps have been sold.



11/92 SA

Volunteer Barbara Wood does a little PR work at the information desk at the new Visitor Center facility.

## 2. Outdoor Classrooms - Students



5/92 SP

Outdoor Recreation Planner, Steve Alvarez, leads a group of students on a tour through one of two World War II 16 inch gun emplacement sites located on the refuge's wildlife trail.

On January 21, Head Start Students from Cheriton, Virginia were shown through the Environmental Education Building by Barbara Wood, Volunteer. There were 20 four-year old pre-schoolers plus instructors and chaperons.

On February 11 and 18, Bill Williams, the coordinator for the Annual Colonial Bird Count and Science Curriculum coordinator for Williamsburg-James City County Public School System brought 31 field biology students and teacher, Charles Dubay to become familiar with refuge terrain and habitats.

Travis Helm and Christine Parrish presented an educational woodcock program to the 31 Lafayette High School students from Williamsburg, Virginia. Travis and Christine began the program with a brief orientation of the Eastern Shore of Virginia National Wildlife Refuge. After a slide presentation about the woodcock study research study being done on Eastern Shore of Virginia NWR, the students were taken to the field for some "hands-on" experience in capturing and banding woodcock. A total of seventeen woodcock were captured and banded by the students. The group departed the refuge approximately 10:00 P.M.

May 13 and 14, Barbara Gray, Coordinator of Richmond Community High School System, assistants: Donna Dockery, Linda LewRoca, Principal



Murray Wood and Steve Alvarez, Outdoor Recreation Planner, conducted an outdoor biology class which focused attention on various marine organisms found on the beach at Wise Point. They studied the marshes, tides, and identification of birds, trees, and plants. There were 30 ninth graders in each group. Overall, both groups were exceptionally enthusiastic about marine biology and were excited about touring the refuge.

May 22, twenty-five seventh and eighth grade students from Gateway Christian Academy, Norfolk, Virginia walked the trail with Steve Alvarez, Outdoor Recreation Planner. After walking the trail, the group visited the Environmental Education Building. The students especially enjoyed the hands-on exhibits such as snake skins and marine mammal bones.

June 2, Hare Valley Elementary School, seventy, first grade students toured the Environmental Education Building and was led on the wildlife trail.

June 3, Hare Valley elementary School, fifty, first grade students were given a tour of the Environmental Education Building and wildlife trail.

June 25, Day Pine School of Marine Sciences, twenty-five students toured the wildlife trail and viewed the Environmental Education Building.

June 29, Norfolk Academy, 30 students toured the Environmental Education Building and wildlife trail.

July 2, and on July 15, seventh and eighth grade students from the Day Pine School were given tours of the Environmental Education Building and wildlife trail on the two separate days.

On July 17, Office Assistant, Irene Morris and Cooperative High Student, Jacqueline Joynes gave 60 youth enrolled in a summer program at Northampton Parks and Recreation a tour of the wildlife trail and a chance to view the Environmental Education Building.

On July 16, Solomon Owens gave a slide presentation to 21 second grade enrollees of a summer migrant program Machipongo Elementary School. His program was about the refuge and its wildlife.

On July 20, Stacie Partin and Solomon Owens led a group of 20 fifth graders from Norfolk Academy on a tour of the wildlife trail and Environmental Education Building.

Instructor, Richard Mills and 27 entomology students from Virginia Commonwealth University, Richmond, Virginia was given a tour of the Environmental Educational Building and wildlife trail by Outdoor Recreation Planner, Steve Alvarez. Steve assisted in collecting specimens at Wise Point.

### 3. Outdoor Classrooms - Teachers

Manager Moya B. King and forty members of the Resident Associate Program at Smithsonian Institute, Washington, D.C. visited the refuge as one of their stops on their way south. Assistant Manager, Jim Wood gave the group an orientation to the US Fish and Wildlife Service and tour of the refuge and facilities.

July 13, 20 staff members of the Northampton School Board were given a 10 minute orientation of the refuge and a tour of the nature trail.

### 4. Interpretive Foot Trails

Signs were ordered for the wildlife trail and kiosk.

Entrance signs were installed for wildlife trail parking and trail directions.

Fencing was installed along the new portion of the wildlife trail by the Youth Conservation Corp as part of their summer work schedule. The fencing was installed to prevent vehicular traffic.



7/92 SA

Installing a rail fence to the wildlife trail was one of many projects completed by the 1992 YCC enrollees.



7/92 SA

The wildlife trail has a new parking area. The project was completed during the month of July by Engineering Equipment Operator, Robert Carpenter and the YCC enrollees. The project involved the removal of the old wildlife trail parking area and the construction of a larger parking facility.



8/92 SA

For the comfort of our visitors a bench was installed at the base of the stairs leading to the 60-foot high observation platform. For the safety of our visitors, the rails were painted white.





7/92 JHW

Steve Alvarez and High School Cooperative Student, Stacie Partin working on the Wildlife Trail Interpretation Plan.

##### 5. Interpretive Tour Routes

Stacie Partin, High School Cooperative Student led two tours through the Environmental Education Building: One family with four members and another family of two members. Irene Morris led a tour through the Environmental Education Building for four visitors from Florida.

On June 5, Eastern Shore Community Board members held a planning staff meeting at the Conference Building. As part of their meeting, the board members were given an orientation of the refuge and a tour of the nature trail by Steve Alvarez.

On July 21 and 24, fifteen senior citizens from the Norfolk area were given tours of the Environmental Education Building which were led by Steve Alvarez and Stacie Partin.

On October 6, Federal Bureau of Investigation Agent, Bud Evans requested a tour of Eastern Shore of Virginia NWR for other FBI officials. James Wood accompanied the group.

## 6. Interpretive Exhibits/Demonstrations

Early this spring, Steve Alvarez met with Leigh Whiteside, Paul Sauliner, and Curt Laffin at the Regional Office in Boston, Massachusetts to evaluate the bid proposals for the Visitor Center Exhibit contract.

Prior to awarding the Visitor Center Exhibit contract, Outdoor Recreation Planner, Steve Alvarez worked throughout the early part of the year acquiring numerous artifacts, slides, video footage, interpretive information, maps, tourist information and other information as specified in the exhibit contract.

The Visitor Center Exhibit Contract was awarded to General Exhibits of Philadelphia, Pennsylvania.

On April 29, a meeting was held at the Visitor Center with Art Friedman, President of General Exhibits, representatives from the Regional Office, Curt Laffin, Paul Saulnier, Leigh Whiteside, Tom Comish, Janice Henning and Refuge staff members, Sherman Stairs and Steve Alvarez. The discussion was on details and responsibilities of the exhibit contract. At the end of the meeting, Alvarez presented the collected artifact and exhibit items to Art Friedman for fabrication.

On May 5, Project Leader Stairs and Outdoor Recreation Planner Alvarez attended a meeting in Philadelphia, Pennsylvania to discuss plans concerning the Visitor Center exhibits with contractor, Art Friedman, of General exhibits Inc. Curt Laffin and Leigh Whiteside from Region 5 office also attended the meeting as part of the Visitor Center technical advisory staff. The focus of the meeting involved a demonstration of a video wall display unit and a discussion about the specifications of a "White Model" video slide exhibit. The purchase of either the "White Model" or video wall will provide the Visitor Center with a four to six minute video production based on the theme "Coming to a Point".

Refuge Manager, Sherman Stairs and Outdoor Recreation Planner, Steve Alvarez made several trips in August and September to Philadelphia, Pennsylvania to assist the exhibit contractor with the fabrication of exhibits and to preview some of the completed displays.

Due to technical problems, General Exhibit were unable to meet the October deadline date for the Open House Dedication. To prepare for the dedication ceremony, Outdoor Recreation Planners, Maggie O'Connell, Ann Bell, Teresa Cherry and several volunteers assisted Steve Alvarez setting up temporary displays in the Visitor Center. By December 1, General Exhibits had requested a extension of time to complete their exhibits so between the months of November and December, the Visitor Center operated with temporary displays.



9/92 SA

Sculptured geese on the rooftop of General Exhibits, Inc. in Philadelphia, PA are ready for their big migration to the Eastern Shore of Virginia's Visitor Center Facility.



10/92 SA

Temporary exhibits are being used until the permanent displays are completed by General Exhibits, Inc.



Rains throughout the later part of the year revealed numerous leaks in the Visitor Center. The continuous problem with rain entering the building and the delay from General Exhibits prevented the installation of displays until spring of 1993.

Upon completion, the Visitor Center will be equipped with a large video screen, a habitat wall with interpretive text and artifact cases, four small video monitors, a interactive video program and numerous other exhibits.

February 24, Dick Schneider of Source Interactive, Inc. delivered the Visitor's Center first exhibit display item, an interactive video system. (This is not to be confused with the exhibit contract.) Mr. Schneider temporarily installed and demonstrated the system to Sherman Stairs, Steve Alvarez and Jerome Loomis. The interactive video system will be programmed to show not only Eastern Shore of Virginia National Wildlife Refuge, but many of the other wildlife refuges found throughout the country.

A Delmarva Fox squirrel and a Striped bass were processed by professional taxidermists to be placed in the Visitor Center as part of the displays that feature Eastern Shore wildlife.

Chincoteague National Wildlife Refuge transferred possession of a Delmarva Fox Squirrel specimen to be used as part of an exhibit entitled "Uplands Habitat" in the Visitor's Center.

Abby Gale, Naturalist for the Nature Conservancy spent many hours advising and assisting with many of the Visitor's Center exhibits. Her valued assistance and experience was a real aid in the creation of the exhibits.

The Eastern Shore Tourism Commission offered assistance to the refuge by loaning their numerous slides for duplication to be used in the Visitor's Center project.

#### 7. Other Interpretive Programs

February 27, Travis Helm and Steve Alvarez attended Northampton High School's 1992 Career Day Fair. Numerous students were interested in the YCC program and many interested in future wildlife oriented careers approached the U.S. Fish and Wildlife Service information booth. Both Steve and Travis were encouraged by the concern for wildlife conservation.

July 18, Steve Alvarez, Outdoor Recreation Planner and High School Cooperative Student, Stacie Partin set up a display and represented the refuge at a Ducks Unlimited youth program "Greenwings". The display consisting of a slide program, standing exhibit and handouts were made available to the youth attending the program. Several hundred people attended the 11:00 AM - 4:00 PM activity.

On November 20, Outdoor Recreation Planner attended a Career Fair at Northampton County's Middle School in Machipongo, VA. Numerous "Take Pride in America" stickers and flyers were eagerly received by the students.

#### 17. Law Enforcement

US Fish and Wildlife Service Law Enforcement Officers requalified using their handguns on September 15 at the firing range on Eastern Shore of Virginia NWR. Refuges represented were: Back Bay, Presquile, Chincoteague, Bombay Hook, Mason Neck and Eastern Shore of Virginia NWRs.

On September 28-29 Special Agents, Frank Kuncir, Vernon Ricker, Don Patterson, Paul Gladdys met at Eastern Shore of Virginia NWR and enlisted the help of Jim Wood on the 28th and Sherman Stairs on the 29th to track and watch rail hunters. September 28 was a day with quiet seas and mild temperatures, September 29 was windy with choppy seas, and cool temperatures.

On January 21, Assistant Manager, Jim Wood received a call from 911 regarding an injured man on the refuge. After responding to the scene, Wood found a man on the Chesapeake Bay Bridge Authority property with a broken leg. Wood administered first aid for shock and hypothermia and waited for emergency services to arrive. After further investigation Wood found out that two men had entered the refuge at 3:00 AM to sleep off a drunken night. The men wandered around until one of them broke his leg. The other man went for help but 911 was not contacted until about 7:05 AM. They were cited for motor vehicle trespass.

Special use permits were renewed to all commercial fisherman who have fishing working boats moored at the Intracoastal Waterway and use the refuge roadway to gain access to their boats.

Project Leader Stairs attended a "Law Enforcement Coordinator" seminar sponsored by the Cape Charles Coast Guard Station, Cape Charles, VA on October 14.

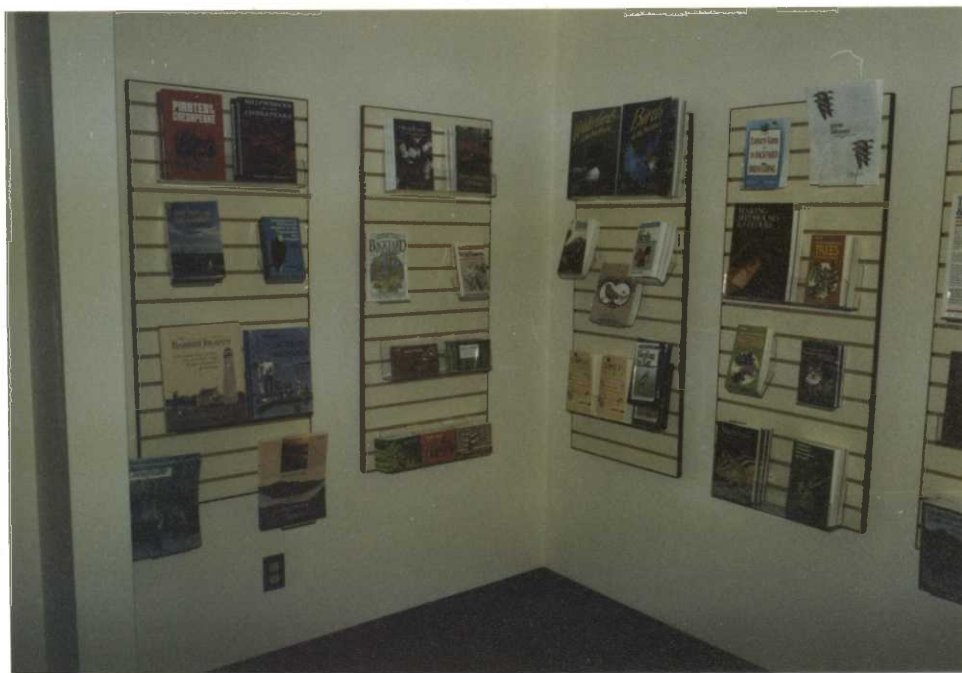
An individual was apprehended for trespass, driving while intoxicated, reckless driving, destruction of government property and a firearms violation on November 19. The individual drove his truck through the metal gate that was the barrier for pedestrians on the nature trail, and down the road to Wise Point which ends at the Chesapeake Bay or under the Chesapeake Bay Bridge and Tunnel Roadway. The individual ended up in the Chesapeake Bay under the bridge where he was arrested by the Chesapeake Bay Bridge police.

In another incident, the Chesapeake Bay Bridge police arrested a birder at gun point on their property at Fisherman Island. The man refused to come out of the bushes when ordered and the police had to retrieve him. The gentleman was a math professor at the

University of North Carolina and did not believe he could be arrested for looking at raptors. He was taken to Northampton County jail.

#### 18. Cooperating Associations

February 21, Marsha Kessler and George Worner from the Chincoteague Natural History Association met with Project Leader Sherman Stairs and Outdoor Recreation Planner, Steve Alvarez to discuss plans to set up a book retail sales store. The book retail sales outlet store provides revenue which can be used 1) to replenish the association and 2) to buy needed items for the visitors center and refuge programs. Marsha Kessler and Steve Alvarez spent many hours preparing inventory, reviewing book store operational procedures, setting up displays and learning techniques needed for the retail sales outlet. Marsha completed an inventory and audit at the end of each month.



11/92 SA

An assortment of book titles were acquired for sales at the Visitor Center's new retail sales outlet.

### I. EQUIPMENT AND FACILITIES

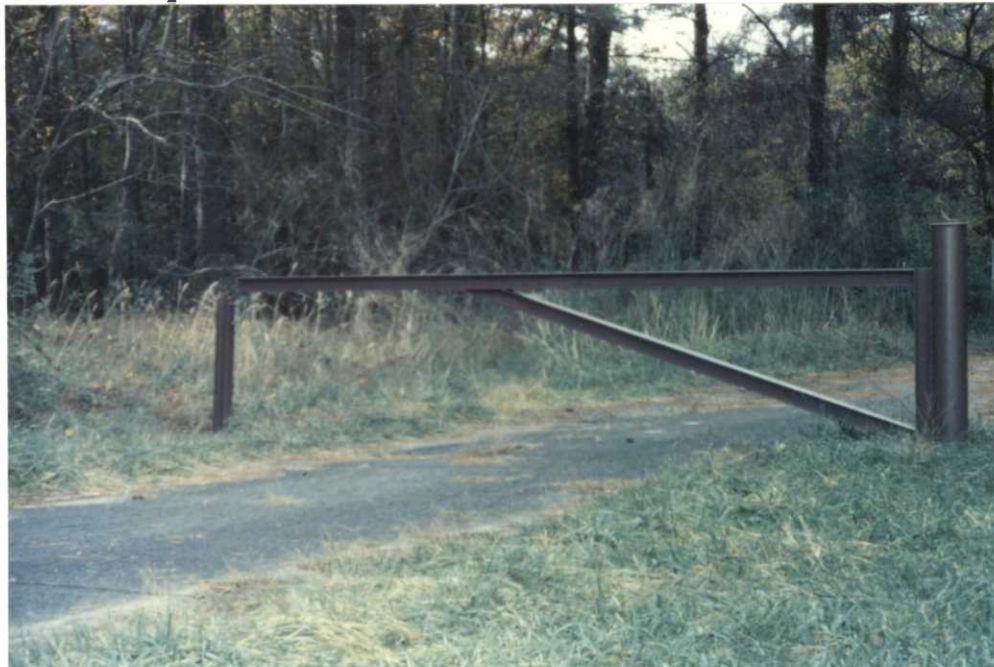
#### 1. New Construction

In February, the Visitor's Center alarm system was installed which was programmed to operate on the same security system as all the

other buildings on the refuge.

In April, Robert Carpenter and Jerry Loomis completed construction of the Visitor Center bus parking area.

During the months of March and April, a new underground drain system was installed at the Visitor Center to keep ground water away from the building and provide another water source for the Visitor Center pond.



11/92 SA

Several new gates were made and installed by maintenance staff.

The last two weeks in April, staff members, Loomis and Carpenter built a new 16' gate and installed it at the back entrance of the Refuge. The gate was placed 50 feet in front of the original fencing, to close the vertical gap caused by the increased footage, cedar trees were planted every 5 feet. A borrowed tree spade was used for this procedure.

A new 14' gate was constructed and installed on the Wise Point Road to prevent public use at the end of the peninsula. Trees were planted on each side of the gate to prevent vehicular traffic going around the gate.

The Visitor's Center site received a great deal of foliage with Electrician Jerry Loomis and Engineering Equipment Operator Robert Carpenter planting trees that had been earmarked previously by Landscaping Specialist Pam Rooney from the Regional Office. The trees required watering each day as the ground was extremely dry from lack of rain.





9/92 SA

Jerome Loomis and Robert Carpenter watch as the "tree spade" easily uplifts a tree for relocation. Numerous trees were moved during this year's Visitor Center landscaping project.

Jerry Loomis and Robert Carpenter, staff members, installed guttering on the Visitor's Center.

Two small pumps were installed by the maintenance staff. These pumps provided water to fill the Visitor Center pond.

Work to send out the contract for the Visitor Center Parking Lot and Landscaping proceeded slowly. In July and early August, parking lot elevations were taken four different times and contours were changed four times to give the contractor the as-is conditions when the bid packages were sent out.

The parking area and landscaping was structured and rough graded by staff members.

During the month of August, I.A. Construction Company, landscaping and parking area contractor worked on the parking area, despite several days of rain which slowed the progress.

Retaining walls were built on the northeast side of the Visitor Center, outdoor lights installed, landscaping accomplished along the entrance and parking area finished by the landscaping contractor.



10/92 SA

A circular entrance sign base made from natural stone filled with soil and planted shrubs was completed the first week of October.



9/92 SA

Engineering Equipment Operator, Robert Carpenter, prepared the area for the landscaping contractor who planted trees and shrubs around the Visitor's Center.





9/92 SA

Materials for the retaining wall that is partially completed abuts up against the Visitor Center north wall.



9/92 SA

Contracting crews prepare the ground for the visitor parking area.



9/92 SA

Clam shells were used as a temporary surface for the parking lot until further funding is available.

The Landscaping Contractor working with staff members, reached 90% complete, Saturday afternoon, October 24 at 6:00 P.M. I.A. Construction Company and his sub-contractor, Gary Wagner, who installed the irrigation system and finished the landscaping, worked hard the last week to try to finish in time for the dedication service.

A last trying touch came on October 23, Friday evening, a construction truck leaving the premises took out a portion of the entrance sign structure. Needless to say, action was immediately taken and construction contractor and crew worked overtime to repair the damage.

The leakage problem in the Visitor Center has not been taken care of and is getting worse with each storm. The large list of growing problems that is in conjunction with the leakage in the building has caused concern with refuge staff because no efforts have been put forth by the contractor to stop them.

The contractor has expressed a willingness to abate the problems, but work toward making repairs has not happened. The staff has been concerned about future long lasting effects that may be related to the leakage of the building, and most assuredly about wet/stained carpet and tiles. At the end of December Contracting and General Services was working to remedy the situation.



12/92 SA

The first phase of the Visitor Center Facility completed at Eastern Shore of Virginia National Wildlife Refuge.

On November 9, metal vehicle barriers were installed at the refuge gas pumps.

## 2. Rehabilitation

Vinyl siding was completed on the exterior and new doors and bathroom fixtures were installed in Quarters 201.

Several projects were completed during August by YCC enrollees and the maintenance staff. The outside exteriors of the Conference Building and Environmental Education were restrained. The exterior Flammable Storage Building and the exterior and interior of the Shop Motor Pool were painted. Painted also was a disk harrow and safety posts in front of the storage shed.

In September, an old fire hose house rehabilitated into a pump house, was moved next to the Environmental Education Building and a pump installed to provide water for a newly made pond.





3/92 SA

Two new electrical garage doors were purchased and installed in the Motor Pool Facility.

Bids were let June 6 to contractors to reshingle the Environment Education and Conference Buildings. The first bidder rejected the job. The bid was sent out again in October. In December, Goslee Roofing and Sheet Metal began the job of repairing the roof and reshingling the Environment Education (EE) and Conference Buildings. At the end of December, the EE Building has been repaired and reshingled; this project will be complete when the roof ridge vent is in place.

The east side of the Conference building roof was reshingled and or roll roofing applied. The west side underlayment (plywood) had previously not been installed properly and the plywood was wet in many spots. Such repairs were not part of the contract, therefore, the refuge purchased sufficient 5/8 inch plywood and Jerome Loomis and Robert Carpenter installed it over the existing material. The contractor installed felt paper over the new plywood and ordered more shingles to complete this part of the project. Weather permitting, these projects could be complete in January.

### 3. Major Maintenance

#### Vehicles:

The 1985 Chevrolet Blazer, which had caught fire in July, went back into the shop for repair. It only would go 10 miles per hour and the automatic choke was not working.

#### Equipment:

The forklift was serviced to repair numerous oil leaks and key switches were installed to bring it up to safety standards. 1) A new switch was installed in the transmission so that the forklift could only be started in the neutral position. 2) The start-switch was a toggle-switch and was replaced by a key switch so only authorized personnel could start the forklift. All the tires were replaced and a backup alarm was installed.

The motor grader had the battery disconnect switch replaced.

Refuge boats were brought up to safety standards with kill switches installed.

The 330 John Deere lawn mower had electrical problems and had to be taken to the dealer for repairs.

Case 1030 Tractor: the PTO shaft had to be replaced.

Caterpillar 977 Tractor-Loader's lift cylinder leak was repaired and a backup alarm installed for safety. The 977 Tractor-Loader was moved to the Caterpillar dealer in Felton, Delaware for service. Bailey White, from Great Dismal Swamp, moved the equipment for the refuge thereby saving us a great deal of money for transportation. After the machine had new track pins installed and some work done on the starter, Mr. White moved the machine back to the refuge.

#### Building Maintenance:

During February, in the Conference Building, ovens which were previously obtained through the excess property system were hooked up so food could be prepared for the law enforcement refresher training. A propane heater was also installed in the Conference Building.

A new ice machine was installed into the Conference Room. Another ice making machine (slush) from excess property was installed in March.

Other maintenance accomplished in the Conference Building included a water heater being removed, and a broken condensate return line on steam boiler was repaired.



Keith Underhill, a heating and air conditioning contractor, removed the old air conditioning unit in the meeting room at the Conference Building. The original unit was replaced with a heat pump/air conditioning system received surplus from Chincoteague NWR. The replacement was to improve climate control, while reducing noise in the process. Station staff enclosed the area, where the old air handler was located, which added lockable storage space in the remaining unused area for some items such as projects and audio visual equipment.

Electrician Loomis worked through November on installing electricity in a storage bunker. The bunkers are wet and the humidity keeps them from being used. An installation of a sump pump and dehumidifier will solve this problem.

In November, a condensation pump was installed in the Conference Building.

A blower motor was installed in the heating unit in Quarters 201.

### 3A. Minor Maintenance

#### Vehicles:

A semi-annual service was accomplished on all 10 station vehicles.

A tire was repaired on the Chevrolet pickup.

Jeep was serviced and exhaust repaired.

#### Maintenance:

Staff members were involved in a long overdue cleanup and organization of the maintenance shop compound during January and work on this will continue.

One protective cover was built for the water pump at the Visitor's Center, and another cover is scheduled for completion in January 1993.



11/92 SA

Protective housing built for small water pumps.

Furnace repairs were accomplished in Quarters 200, 201, 204, 211, 219, 220.

Furnace Units were serviced in all the buildings.

Lights were repaired and bulbs replaced in the Visitor Center and Headquarters buildings. Specialty bulbs are required in many new lights that mark doorways, restrooms, and/or other features, and require replacement similar to our florescent and incandescent bulbs.

The road leading to County property was graded.

New work benches were installed in the carpenter shop in November.

A table for the Radial Arm saw was built.

A pump was repaired in the furnace room of the Motor Pool.

A gate was repaired on the road leading to Wise Point. A vehicle illegally had run through it and smashed the gate.



9/92 SA

What used to be a bowling lane for the former Cape Charles Air Force Station has been converted into a work table for the maintenance staff.

Other:

Numerous trees were transplanted and many new trees were planted for the Visitor Center landscaping project. The trees were then watered daily by the maintenance staff to give them a good start.

The property inventory was completed and sent by the due date.

Power outages, frequently caused by bird strikes or tree branches dropped on the high voltage transmission lines by raptors building nests, were repaired by replacing fuses in the power lines. Repairs were made by refuge staff members.

5. Communication Systems

C & P Telephone Representative, Ronald Flowers, met with staff members regarding the installation of new telephone lines into the Visitor's Center and tying those lines in with the existing ones on the refuge. The Visitor's Center required two telephone lines. The distance between the maintenance shops, Conference and Environmental Education Buildings, Visitor's Center and Staff Headquarters Building was a challenge for C & P Telephone to come up with a telephone system that could be tied into all the

buildings. One other factor was that three buildings have alarm systems and radio lines which are also tied into the telephone lines. The result was a Centrex system which can be used by all the buildings. The system was installed and on line by the end of March.

The communication system on the firing range was repaired by Electrician Loomis.

Five new radios were installed in refuge vehicles. Communications on the refuge should be better.

The high band transmitter in the office was serviced by an outside concern.

The Eastern Shore of Virginia NWR and a number of others were omitted from the 1992-1993 printed telephone directory, however, the refuge telephone numbers have been reinstated on directory information.

#### 6. Computer Systems

The refuge's Dell PC's Limited 286 had major problems at the end of March and early April. The C drive failed to operate (black screen) with the annual narrative on it. Most of the system had been backed up so a great deal of it was saved. Most of the memory was restored, but only after 16 days of constant telephone communication with Dell's hotline and two of the Chesapeake Bay Bridge Tunnel technicians. Even while trying to bring back the main drive - the printer would not cooperate. It was a source of aggravation to staff members and to Law Enforcement Committee members who wanted to run their programs. The last week in September, the C drive was replaced and upgraded for more memory. By the third week in October it was up and running again.

#### 7. Energy Conservation

A heat pump is being installed in the Conference Building. The energy conserved by the heat pump installation will be a savings.

#### 8. Other

Water samples were taken monthly to be tested by the Virginia Health Department. In the month of August, water samples taken tested positive to coliform, under advice from the Water Department, bleach was added to the water supply tank. After a 24 hour waiting period, the water was retested and was proved negative to coliform. After one week, the water was retested again for safety purposes.



## J. OTHER ITEMS

### 1. Cooperative Programs

Friday, October 23, Richard Kellam, Thomas O'Connor, Gregory McDonald and Charles Hunter, III from Ducks Unlimited Inc, John Schroer, Project Leader from Chincoteague NWR, and Sherman Stairs dedicated a pond that both refuges helped to restore/enhance on The Nature Conservancy's farm in Nassawadox, Virginia. A second dedication ceremony took place at the freshwater pond created for the Eastern Shore of Virginia Visitor Center; Ducks Unlimited Inc. is providing \$5,000/6,000 toward construction costs. The Ducks Unlimited donation is scheduled for the Spring, 1993.



10/23/92 BAW

Official "Ducks Unlimited Inc." Dedication of Visitor Center Pond.

From Left to Right: James Wood, Refuge Operations Specialist, Eastern Shore of Virginia NWR, Gregory McDonald, Regional Director for Southeast Virginia, Ducks Unlimited Inc., Charlie Hunter, State Chairman, Ducks Unlimited Inc., Richard Kellam, Zone Chairman, Ducks Unlimited Inc., Thomas O'Connor, donor for the wetland projects, Ducks Unlimited Inc., Sherman Stairs, Project Leader, Eastern Shore of Virginia NWR, Cheryl O'Connor and child Sadie O'Connor.

### 3. Items of Interest

The Navy navigation tower that has been on the refuge since 1977, has been removed as not compatible with refuge use. The tower was removed on January 21.

Gary Andres and John Gallegos from Back Bay NWR met with Hal Laskowski at Eastern Shore of Virginia NWR on January 8 to work on a compatibility report.

January 13, Dixon Tucker, Water System Inspector arrived at the refuge to inspect the water system and check the drinking water for nutrients.

January 15, Steve Alvarez, as a representative of the refuge, was a judge for a Science Fair held at Northampton High School.

During the week of February 3-7, the Chesapeake Bay Bridge Tunnel Police used the Conference and Environmental Education Buildings as well as the firing range for their 40-hour law enforcement refresher course. Agencies included in their training program were the Cape Charles Police Department, Exmore Police Department, Accomac County Swat Team and Police Department and all the Chesapeake Bay Bridge Tunnel Police who needed to requalify.

A team of specialists removed asbestos from the C & P Telephone Building during the week of February 10-14.

Project Leader Stairs met with a group of state, county, and local citizens for a coastal zone management meeting on February 4 and 25.

Project Leader Stairs attended a Waterfowl Trust meeting on February 20. The Waterfowl Trust members are very interested in Partners for Wildlife.

The first Regional Biological Workshop was held at the refuge the week of February 24-28. Hal Laskowski coordinated the workshop. The refuge staff assisted as needed to make the workshop a success.

Region 5's Zone Biologist, Hal Laskowski conducted a "Moist Soil Management" program on the Eastern Shore of Virginia on September 3-4. Jim Wood attended for the Eastern Shore of Virginia NWR.

On June 5, The Eastern Shore Community Services Board used the Conference Building for their board-wide staff meeting.

On April 6, John Humphrey, Coordinator for Northampton County's Zoning, brought members on the Council on Environment issues and also members of NOVA to the refuge for a tour of Wise Point. Project Leader Stairs gave the group an up-date on the Refuge's activities and conducted them on the tour.

Sara Mabey, Research Coordinator for the Neo-tropical Bird Study was interviewed on Fisherman Island by a Richmond Times Newspaper reporter.

April 13, Robert Bloxom, Virginia House of Delegates, arranged a meeting at Refuge Headquarter's conference room for the Board of Supervisors, the Citizens for a Better Eastern Shore, and other individuals to introduce the Kiptopeke State Park employees and their immediate plans for opening the park.

On April 23, Administrative Assistant, Irene Morris gave three members of a Naval surveillance team a look at lands that the Navy thought they owned. The tour was for the end of Wise Point to check the beach area and also to Fisherman's Island where the Navy owns 25 acres on the east side of Fisherman's Island right in the middle area of the island, they thought they owned the beach area. The surveillance team was hunting for a place where their Hovercrafts could conduct training exercises. The request issued was that they were checking any government-owned lands.

Virginia has a new state park in Northampton County. Kiptopeke State Park's manager, Scott Flickinger, his wife Cindy and two children, moved into refuge quarters until the state can build residences on park property, estimated to be within one year. They brought a new awareness with them as they began a new venture on the Eastern Shore of Virginia.

The Chesapeake Bay Foundation used the Conference and Environmental Education Buildings on Tuesday, May 5, for a joint meeting with 13 interested donors.

Governor Wilder was in attendance at Virginia's newest state park, Kiptopeke State Park, at a private gathering of politicians and interested individuals on Friday, May 29. The park was officially opened with a ribbon cutting ceremony on May 30. Project Leader Stairs represented the Service on May 29 by greeting and meeting Governor Wilder and his representatives from the state.

On July 14, a Revenue Sharing check in the amount of \$32,874.00 was presented to Northampton County's Administrator, John Richardson.

Virginia Marine Police used the Conference and Environmental Education Building for a Loran Training Course on July 8.

Northampton School Administrator, Berkeley Ashby, requested the use of the Conference and Environmental Education Buildings for a school administration planning meeting on July 13-14.

On August 24, an airplane with state personnel landed at Eastern Shore of Virginia NWR. The visit was an introduction to the Eastern Shore of Virginia NWR and to the new Kiptopeke State Park for the following dignitaries: Secretary of Natural Resources,

Elizabeth Haskell; Virginia House of Delegates Robert Bloxom and Robert Ball; Bob Hicks; Director of State Parks, Dennis Baker and Kiptopeke State Park Personnel Ron Jordan, Jim Roberts and Site Manager Scott Flickinger.

Karen Mayne, Enhancement Manager at White Marsh, Virginia brought together other neighboring refuges, state representatives and law enforcement officials for a meeting to discuss areas common to all agencies in Virginia and to improve on ways to help each other. The meeting was held at the Eastern Shore of Virginia NWR's Conference Building. A cookout turned into a cook-in with dinner being catered from a local restaurant on Thursday, October 29. October 30, representatives visited Eastern Shore of Virginia sites.

November 10, Outdoor Recreation Planners, Maggie O'Connell and Steve Alvarez met at the Kiptopeke State Park with community officials to plan for Northampton County Environthron Contest.

One hundred Federal Bureau of Investigation agents and family members used the refuge on November 1 for a family picnic and firearms program. Food was catered from a local restaurant. Volunteer Barbara Wood helped by dispersing brochures and manning the Environmental Education Building.

On November 29-30, a Navy special boat team from the Naval Amphibious Base in Norfolk used the refuge as a base for exercises.

The refuge hosted an open meeting at the Conference Building on December 7 for commercial watermen that require Special Use Permits to cross the refuge during closed hours. Purpose was to permit interaction with local watermen by refuge staff and others interested in doing so, to explain conditions as set forth in permits and to answer questions and/or address problem areas.

The firing range was used throughout the year by government, state and local law enforcement agencies. A summary of agency use follows.

<u>Name of Agency</u>	<u>Total of Use</u>
Federal Bureau of Investigation	14
Chesapeake Bay Bridge Tunnel Police	11
United States Navy Seal Teams/Small Boat Groups	17
United States Army	1
Virginia Marine Resources Commission	3
Coast Guard	7
Northampton County Sheriff's Department	3
Accomac County Swat Team	1
United States Fish & Wildlife Service	<u>14</u>
Total Use by Agencies	70



#### 4. Credits

Narrative sections A-G,I,J,L were written by Irene G. Morris. Steve I. Alvarez wrote section H and selected pictures; Sherman W. Stairs wrote section K. The narrative was proofread by James H. Wood, Jerome C. Loomis and Robert W. Carpenter. The narrative was executed by Irene G. Morris.

#### K. FEEDBACK

Word was received that a 1993 YCC Program for Eastern Shore of Virginia NWR had been cancelled, for at least this year; this is a real shame. Virginia's Eastern Shore is basically one of the poorest counties in Virginia, if not U.S., and population dynamics share Eastern Shore racial balance 50/50 black/white. Our program reflected this balance. YCC has helped high school students from the local area to develop responsibility, punctuality, safe work/play habits, and to reinforce "stay in school". It also contributed much needed financial gain. Loss of YCC is likely to negatively impact visitor services and visitor perception of our facilities unless help is forthcoming from elsewhere.

All staff members were able to utilize annual leave before the end of the leave year. However, please note that staff attempts to donate annual leave to approved persons were thwarted by Personal Management's unwillingness to handle these donations by the end of the leave year. A sad situation is when an employee has to hurry to take End of Year Leave because his donation was returned unused.

Current methods of purchasing computers, training for its use, and providing compatible software is ineffective. Problems includes outdated equipment, non-compatible programs, insufficient RAM and/or memory, and of course, cost for equipment. Region 5 now has a "computer person" that is to oversee and hopefully improve and update equipment for field use. We hope this means our Refuge will get adequate or better computer systems that will be able interact with others.

#### L. INFORMATION PACKET

Contents of Information Packet:

Eastern Shore of Virginia National Wildlife Refuge Brochure.

"Birds" Eastern Shore of Virginia and Fisherman Island National Wildlife Refuges.

F I S H E R M A N   I S L A N D   N A T I O N A L  
W I L D L I F E   R E F U G E

## INTRODUCTION

Fisherman Island National Wildlife Refuge is a barrier island located in Northampton County, Virginia. It is situated one-half mile south from the tip of the Delmarva Peninsula at the mouth of the Chesapeake Bay. The refuge is 1,000 acres of the 1,500 acre island. The rest of the island is privately owned.

Prior to the 1940s it had been a refuge, but at our entry into WWII the U.S. Navy took the land and used the island as a submarine detection base. The Navy declared it excess property in 1969 and the land was transferred back to the U.S. Fish and Wildlife Service (16 USC 667b). It was managed as an unmanned satellite refuge of Back Bay National Wildlife Refuge until 1984 when management was turned over to the newly established Eastern Shore of Virginia National Wildlife Refuge. In the early 1960s the Chesapeake Bay Bridge-Tunnel was built and the bridge makes landfall on Fisherman Island. The road and right-of-way pass through the refuge.

Fisherman Island National Wildlife Refuge was re-established primarily to serve as a breeding ground and nursery for marsh and water birds, shorebirds, gulls, terns, and allied species. The rookeries with herons and egrets are active from late March until early September with black-crowned night herons, tri-colored herons, great egrets, and snowy egrets being the most abundant.

Thousands of royal terns, hundreds of common terns, herring gulls, laughing gulls and black skimmers nest on the island between May and mid-September.

Piping plover and other threatened and endangered species like the brown pelican (endangered except on the Atlantic coast), and the peregrine falcon nest on the island. The bald eagle frequent the refuge and occasionally a golden eagle is seen on the island.

During the fall migration, millions of birds stage on the island before the 18 mile flight across the mouth of the Chesapeake Bay. Most of them are passerines but in late September and early October the raptors are common over the island. They may include sharp-shinned hawks, Cooper's hawks, and red-tailed or red shouldered hawks. Some waterfowl species move through while others like black ducks and brant are common winter residents.

In March, the osprey, the island's harbinger of spring, arrive and begin nesting on the platforms on and around the refuge.

Due to the nesting activities on the refuge and the restrictions for safety, the Chesapeake Bay Bridge Tunnel Authority put on motorists, public use was limited to staff-guided interpretive programs for organized groups. The refuge was closed to all public use from March to October to reduce disturbance on nesting birds.

## INTRODUCTION

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#### A. HIGHLIGHTS

Environmental Assessments conducted on Fisherman Island National Wildlife Refuge for the proposed second trestle for the Chesapeake Bay Bridge Tunnel (D-4).

Virginia Colonial Bird Survey was conducted on June 21 (G-5).

Fisherman Island National Wildlife Refuge educational tours began for the year on the first Saturday in October (H.5).

Contaminants survey on island (D-4).

Peregrine falcons nesting attempts were unsuccessful (G-2).

New "Area Closed" signs were installed on Fisherman's Island beaches by YCC enrolees (J-3).

Royal terns banded on Fisherman's Island on July 9 (G.16).

Christmas Bird Count conducted on Sunday, December 27 (G-1).

#### B. CLIMATE CONDITIONS

Two storms, Hurricane Andrew in August and Tropical Storm Diane in September changed the beaches around on Fisherman Island National Wildlife Refuge. Basically, the beaches increased in size because of sand being blown from the Eastern Shore of Virginia and the 500 acres that is owned by Walkley Johnson, private property owner.

#### D. PLANNING

##### 4. Compliance with Environmental and Cultural Resource Mandates

The College of William and Mary spent several days each week for two months conducting a special research program on Fisherman's Island and other barrier islands. The research was to determine how many species of birds and their quantity were using the islands.

#### G. WILDLIFE

##### 1. Wildlife Diversity

Fisherman's Island is a growing barrier island with restricted

public disturbance. These factors provide excellent habitat for a variety of resident and migratory birds to raise their young. There are heron and egret rookeries and large tern and pelican colonies as a result.

The Christmas Bird Count was conducted on Sunday, December 27. The bird count recorded on December 27 and the volunteers that responded were less than in previous years. Some birds that are rarely seen or higher in numbers at the end of December are as follows; pied-billed grebe 83, green-backed heron 1, glaucous gull 1, ash-throated flycatcher 1, blue jay 915, great cormorant 41, and the grasshopper sparrow 1. There were 151 different species and approximately 38,586 individual birds counted.

## 2. Endangered and/or Threatened Species

Piping plover surveys were conducted which started by March 15 when the first piping plover was seen on Fisherman's Island. Each week, weather permitting, surveys were done to determine quantity of species and nest count.

Two pairs of piping plovers were observed defending their territory on the beach at Fisherman's Island the last part of March. During the month of April, only one piping plover could be found.

Piping plover surveys were taken weekly during May. On May 3, two adult plovers were observed. May 11, one single adult and one pair of adults were surveyed. May 15, three adult plovers were observed. On May 20, one adult on nest of four eggs were found near the west end of a wash pond. May 22, one adult observed. May 27, three adults were observed.

Karen Terwilliger, Chief Biologist for Virginia of Inland Game and Fisheries, conducted a Piping plover survey on Fisherman Island on June 12, with one Piping plover observed. A survey done by Steve Rottenborn, graduate student from William and Mary College located one nest with three eggs.

Refuge staff identified three nest sites in a period of four months.

At the end of July, only one immature piping plover was observed feeding on the island. There were three nesting pairs on the island this year and two of the nests contained a total of seven eggs. The other plover's nest was not found. Nesting success was not known due to spotty surveys after June.

On an April 7 survey, nine Osprey were observed.

In June, osprey young were seen along with their parents in nests built in trees and posts where they have made homes.



There was some concern that one of the peregrine falcons had been injured. Only one peregrine was observed on top or around the hacking tower during surveys the month of March and April. For the past two years, four peregrine falcons have fledged from the same pair of falcons. Many people are involved in the return of the peregrine falcon and hope the progress of the peregrine falcons at Fisherman's Island will continue.

May 13, Craig Koppie from the Annapolis Enhancement Office and friend Shawn Padgett were in Williamsburg for meetings and decided to extend their visit to Fisherman's Island to climb the hacking tower to check to see if the peregrine falcon were nesting. There had been concerns because only one peregrine falcon had been seen in March and April, and there were worries that the female had died or late coming back from migration. Not only did Craig confirm that the female was there but there were four eggs.

In the month of June, two adult peregrine falcons were seen at the nesting site, however, there was no evidence of fledgling. After surveying the site in July, it was determined that the eggs had not been fertilized.

In a survey done November 25, two peregrine falcons were observed at the hacking tower.



6/92 SA

Fisherman Island continues to maintain a healthy population of nesting brown pelicans.

On May 22, on a survey of Fisherman Island NWR a pair of white pelicans were spotted in the brown pelican colony on the east end of the island. It is not known if the pair is nesting. For the past few years, one white pelican has frequented Fisherman's Island along with brown pelicans.

Pelicans were observed in small numbers in the area in late November.

June is the month for finding dead Loggerhead and Kemp Ridley turtles on Fisherman's Island beaches. Several turtles were found with head wounds. One was shot, which indicates that there was foul play involved in their demise. One Loggerhead was found with propeller cuts across the carapace. This year officials reported a higher incident rate of sea turtles washing up on the beaches along the Chesapeake Bay area. An outbreak of some bacterial virus was suspected for the large number of deaths.



7/92 SA

Loggerhead sea turtle found on Fisherman's Island beach. An outbreak of a bacterial virus was reported to be the cause of large numbers of dead sea turtles washing up on beaches surrounding the Chesapeake Bay.

A single Wilson's plover was observed several times during the month. This state endangered species is not known to nest on Fisherman's Island, however, is known to nest on nearby barrier islands.

### 3. Waterfowl

During the months of January and February, the island is used as a wintering area and during this time both sea ducks and puddle ducks are observed on a regular basis. Approximately 1,000+ snow geese spent the entire month of January on Fisherman's Island. 200-300 Brant and 50-100 Canada geese were seen frequently through the months of January and February on the bayside of the island. Black ducks and widgeon were observed feeding in the marsh area of the refuge.

On February 6, John Haig and two Pakistanians visited Fisherman Island to observe and survey shore birds and different waterfowl that frequent the island in the wintertime. The following birds were observed during their visit. Snow geese 51, Black Ducks and Mallards 107, Brant 73, Cormorant 11.

A survey conducted on April 7 reported four Canada geese, two brant, three Mallard, seven black ducks, nine shoveler, and 12 red-breasted mergansers.

During the month of May, waterfowl are abundant on Fisherman's Island. On surveys completed May 22 and 28, the following waterfowl were observed on Fisherman Island National Wildlife Refuge. Eight mallards with one brood of nine young, 24 black duck, 13 gadwall, one black scoter. and two hooded mergansers.

On June 5, Gary Costanzo, Waterfowl Biologist for Virginia Game and Inland Fisheries Commission, visited Fisherman Island in June to determine the nesting progress of black ducks. The results were that the entire season was late and no active nests were found.

On August 28, in cooperation with Gary Costanzo, Waterfowl Biologist of the Virginia Game and Inland Fisheries Commission, the refuge prepared trapping and banding sites on Fisherman Island National Wildlife Refuge in preparation for waterfowl pre-migration banding. Corn was used for bait and the corn was placed in the traps twice daily. The focus of this work was to band black ducks. When the traps were opened in September, 37 ducks were banded, 25 black ducks, 2 green-winged teal and 10 blue-winged teal. Banding was done September 8-15 by Greg Sepik and refuge staff.

On November 2, a survey revealed the following: 20-25 buzzards, 150-200 black ducks, 70 Canada geese, 1000 tree swallows.

During a November 25 survey, the following waterfowl were observed. 200 American widgeon, 5 Canada geese, 4 black ducks and 20 mallard. It was also noted at the end of November that the water level in several ponds were low and empty in others.

#### 4. Marsh and Water Birds

There are two rookeries on Fisherman's Island. The great egret rookery contained approximately 200 nests. The rookery with mixed species contained the usual species of glossy and white ibis, little blue herons, tricolored herons, cattle egrets, snowy egrets, black-throated night heron, and yellow-throated night herons. Both rookeries were surveyed by the Virginia Colonial Waterbird Survey researchers.

On June 21, Bill Williams, Coordinator of the Virginia Colonial Waterbird Survey for the southern tip of the peninsula and barrier islands led the survey on Fisherman's Island. Royal and Forester's terns were counted in one colony. In another section of the island brown pelicans and several gull species nested together. Observed in the brown pelican colony was a single white pelican. Oyster catchers, great snowy and cattle egrets and herons were numerous in count. A new nesting species for the island was the Great Blue Heron.

Large flocks of Double-crested cormorants were observed flying over the refuge during the month.

During the first two weeks of April, between 120-175 great cormorants and 25 double-crested cormorants used Fisherman Island NWR.

One hundred ninety-eight cormorants, three great egrets and four cattle egret were observed on May 28.

#### 5. Shorebirds, Gulls, Tern and Allied Species

A pair of American Oyster catchers wintered on the refuge. Great black-backed and ring-billed gulls were commonly observed during the month of January.

Surveys done January 6, 10, and 18, 50-150 sanderling were observed respectively, towards the end of the month between 100-200 sanderlings were seen feeding along the shoreline.

February 6, Haig and visitors observed: 83 Great Black-backed gulls, 151 Herring, 161 Ring-billed gulls, 5 Semipalmated sandpipers, and 3 sanderlings.

15 Ring-billed gulls, 5 laughing gulls, 8 great black-backed gulls, one killdeer, 20 sanderlings, and 14 oyster catchers were observed on April 7.

On Surveys completed in May, laughing, herring, and a colony of great black-backed gulls were numerous in count. Surveys taken throughout May confirmed that earlier in the month there were fewer species, however on a May 28 survey the following shorebirds were



recorded; 25 Royal terns and 17 common tern, 22 Oyster catchers, 106 sanderlings, 11 ruddy turnstone, and 20 semipalmated plovers.

6. Raptors

(See G.2, Endangered Species and G.16, Marking and Banding)

7. Other Migratory Birds

Ten yellow-rumped warblers, 2 flickers, 2 towhees, and one mockingbird were observed on April 7 survey.

8. Game Mammals

The only game mammal on Fisherman Island National Wildlife is the white-tailed deer. The deer on Fisherman Island seemed healthy and apart from deer kills by automobiles on U.S. 13, there was no known mortality.

10. Other Resident Wildlife

Because Fisherman Island is linked to land by the Chesapeake Bay Bridge Tunnel predator scent stations were established to insure mammalian predators were not establishing a population on the island and becoming a threat to nesting birds. There were 16 predator scent stations set up on March 12 and checked March 13. No predator's tracks were found.



8/92 BAW

River otter tracks near a pond on Fisherman's Island.

## 16. Marking and Banding

On July 9, John S. Weske, an Associate of Smithsonian Institute, supervised volunteers, eight Youth Conservation Corp enrollees and staff members. The group banded 1960 Royal Tern chicks and seven Sandwich tern chicks. A second banding was accomplished on July 15 by Weske and two volunteers. The banding was light on the second banding because most of the chicks had fledged. The tern colony was smaller this year than in previous years.



7/9/92 SA

Stacie Partin, High School Cooperative Program Trainee, shown with tern chick in preparation for banding.



7/9/92 SA

Young terns wait in a holding pen to be banded.

On September 7, Paul Baker, Volunteer Raptor Bander repaired the blind at Fisherman's Island and secured his special use permit and keys to the gate on Fisherman Island NWR. On September 20, Paul Baker began the raptor banding operation. Paul continued the operation through October 25 when he ran into some health problems and had to discontinue his banding operation on Fisherman Island. Shawn Padgett picked up where Paul had left off and continued the project through the end of November. Mr Padgett and Mr. Baker's raptor banding summary follows:

<u>Raptor</u>	<u>Male</u>	<u>Female</u>	<u>Sex Not Determined</u>
Sharp Shinned Hawk	30	33	8
American Kestrel	3	3	2
Cooper's Hawk	30	24	9
Merlin			3
Northern Harrier			5
Peregrine Falcon	4	1	4
Red Shoulder Hawk			1
Red Tailed Hawk			22



## H. PUBLIC USE

### 1. General

Public use on Fisherman Island had been prohibited while the lands were under the jurisdiction of the U.S. Navy. When the Navy turned over the lands to the Service in 1969, Back Bay National Wildlife Refuge started giving interpretive tours on the island. In 1984, when management of the island was turned over to Eastern Shore of Virginia Refuge, the staff continued the practice with some reservations. Fisherman Island National Wildlife Refuge is only open to tours from October 1 through March 15 and when it does not interfere with the refuge's primary purposes.

The first Saturday in October marked the beginning of educational tours on Fisherman Island National Wildlife Refuge. October and the first half of November being the most sought after dates for individual birders, Audubon societies, and bird clubs to catch the fall migration.

A press release was sent to local newspapers and radio stations to enhance local citizens to spend time on this unique barrier island. The response was very rewarding. Not only did people respond to the tour, but many signed up to volunteer their services.

On July 2, a representative from General Exhibits, the contractor who won the bid to construct the exhibits for the Visitor Center was led on a tour of Fisherman's Island by Refuge Manager, Sherman Stairs and Outdoor Recreation Planner, Steve Alvarez. The tour was to help gain some insight of a barrier island and the Eastern Shore so the contractor could prepare a script for the narrative that will be used in a video program. The program will be incorporated into the Visitor Center's video-wall exhibit.

New Entrance signs were ordered for Fisherman Island National Wildlife Refuge with expected arrival in February, 1993.

### 2. Outdoor Classrooms - Students

Saturday, February 8, Charles Blem, College Professor from the Commonwealth University of Virginia, Richmond, Virginia used Fisherman Island as an outdoor classroom for 25 ecology students.

October 10 - Debra Mosher from the Virginia Beach gifted student program led 15 students on a tour of Fisherman's Island. The tour focused on the ecology of the Chesapeake Bay.

### 3. Outdoor Classrooms - Teachers

On July 24 and August 14, Steve Alvarez gave a tour of Fisherman Island National Wildlife Refuge to 15 teachers from the Chesapeake Bay Foundation. This annual tour was a refresher for the more



experienced teachers and a new experience for newly hired teachers from the Foundation. From information and experiences gathered from the educational tours, these folks go back to work on brochures and lectures to bring needed information to the public and to their school districts about barrier island and Chesapeake Bay ecology.

#### 5. Interpretive Tour Routes

Tours of Fisherman Island National Wildlife Refuge were offered to the general public beginning the first Saturday in October. Audubon societies and bird club members have made the barrier island an annual trip, either for birding or for cleaning the beaches.

Dr. Byrd, Biology Professor from The College of William and Mary led 16 members of The Monticelli Bird Club on a tour of Fisherman Island on Saturday February 15.

October 3 - 20 bird watchers from Hampton Road Bird Club toured Fisherman Island led by Outdoor Recreation Planner, Steve Alvarez.

October 3 - 18 bird watchers from the Richmond Audubon Society viewed Fisherman Island NWR on a tour led by Stacie Partin.

October 9 - Nineteen members of the Coastal Bay sub-committee from Snow Hill, Maryland were led by Outdoor Recreation Planner Alvarez on a tour of Fisherman Island. The group was interested in barrier island and marshland ecology.

On November 7, twenty-seven people from the Virginia Living Museum of Newport News, Virginia were given a tour of Fisherman Island NWR.

On November 14, fifteen individuals, not associated with an Audubon society or club, signed up for a tour of Fisherman Island NWR. This tour was advertised in the local paper to encourage local involvement with the refuge.

#### 17. Law Enforcement

On several occasions during the Spring and Summer, recreational boating parties were found on the refuge trespassing. Verbal warnings were given to most of the people trespassing because of the distance to the nearest boundary signs. In some cases the boundary signs were about a quarter of a mile away from the waterline due to beach accretion.



8/92 SA

Jim Wood investigated the remains of a vessel believed to be involved in a self-inflicted arson fire on Fisherman Island.

#### J. OTHER ITEMS

##### 3. Items of Interest

The south and west boundaries of the refuge were posted with "Area Closed" signs at the high tide line. There is still a problem with boats landing and people trespassing in and around the tidal zone.

"International Beach Clean Up Day" was accomplished by a combination of efforts between the Navy, and refuge staff. The Navy sponsored the day for inter-city children from the Norfolk area.

##### 4. Credits

Fisherman Island National Wildlife Refuge's narrative was written by Irene Morris, pictures selected by Steve Alvarez and proofread by James Wood, Robert Carpenter and Jerome Loomis.

## Eastern Shore of Virginia NWR - 1992

### K. FEEDBACK

Word was received that a 1993 YCC Program for Eastern Shore of Virginia NWR had been cancelled, for at least this year; this is a real shame. Virginia's Eastern Shore is basically one of the poorest counties in Virginia, if not U.S., and population dynamics share Eastern Shore racial balance 50/50 black/white. Our program reflected this balance. YCC has helped high school students from the local area to develop responsibility, punctuality, safe work/play habits, and to reinforce "stay in school". It also contributed much needed financial gain. Loss of YCC is likely to negatively impact visitor services and visitor perception of our facilities unless help is forthcoming from elsewhere.

All staff members were able to utilize annual leave before the end of the leave year. However, please note that staff attempts to donate annual leave to approved persons were thwarted by Personal Management's unwillingness to handle these donations by the end of the leave year. A sad situation is when an employee has to hurry to take End of Year Leave because his donation was returned unused.

Current methods of purchasing computers, training for its use, and providing compatible software is ineffective. Problems includes outdated equipment, non-compatible programs, insufficient RAM and/or memory, and of course, cost for equipment. Region 5 now has a "computer person" that is to oversee and hopefully improve and update equipment for field use. We hope this means our Refuge will get adequate or better computer systems that will be able interact with others.

# *Birds*

Eastern Shore of Virginia  
*and* Fisherman Island

NATIONAL  
WILDLIFE  
REFUGES



Virginia

## A Stop Along the Flyway . . .

Sandwiched between Chesapeake Bay and the Atlantic Ocean, the tip of the Delmarva Peninsula is the Eastern Shore of Virginia and Fisherman Island National Wildlife Refuges. Approximately 1,700 acres are a mix of loblolly pine, holly forest, shrub thickets, open fields, tidal salt marsh and barrier islands. The Refuge was established in 1984 to manage and protect habitats for migrating birds, including shorebirds, songbirds, raptors, waterfowl, and threatened and endangered species.

Because of its strategic location along the Atlantic Coast Flyway, the Refuge is a major stop for land birds during their fall migration. Raptors and songbirds are particularly abundant. The combination of mild winters and diverse habitats makes the Refuge a prime wintering area as well. The area has one of the highest Christmas Bird Counts (more than 150 species) north of Florida. Fisherman Island is noted for its large and diverse nesting colonies of waterbirds (terns, gulls, herons, and ibis). Note: to protect nesting species and minimize disturbance to wildlife, this island is closed to the public except by special permit.

Birding is best from September through May. The Refuge is open from dawn to dusk and visitors are welcome to enjoy bird-watching at the wildlife trail area.

This folder lists over 294 birds that have been identified on the Refuge, and is in accordance with the Sixth American Ornithologists Union Checklist.

Most birds are migratory, therefore, their seasonal occurrence is coded as follows:

### SEASON:

**S** - Spring      March - May  
**S** - Summer    June - August  
**F** - Fall        September - November  
**W** - Winter     December - February

- Birds known to nest on or near the Refuge
- Italics indicate threatened/endangered species*

### RELATIVE ABUNDANCE

**a** - abundant      a species which is very numerous  
**c** - common        likely to be seen or heard in suitable habitat  
**u** - uncommon     present, but not certain to be seen  
**o** - occasional     seen only a few times during a season  
**r** - rare            may be present but not every year

### LOONS - GREBES

___ Red-throated Loon .....	u		u	u
___ Common Loon .....	c	o	c	c
___ Pied-billed Grebe .....	u	o	u	u
___ Horned Grebe .....	u		u	u
___ Red-necked Grebe .....	r		r	o

### STORM-PETREL

___ Wilson's Storm-Petrel .....	r	r		
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### GANNET - PELICANS - CORMORANTS

___ Northern Gannet .....	o		o	u
___ American White Pelican .....	r	r	r	r
___ • Brown Pelican .....	o	c	c	r
___ Great Cormorant .....	u		o	u
___ Double-crested Cormorant .....	c	c	c	c

### BITTERNS - HERONS - IBISES

___ American Bittern .....	u		u	u
___ Least Bittern .....		o		
___ Great Blue Heron .....	u	u	c	u
___ • Great Egret .....	c	c	c	o
___ • Snowy Egret .....	c	c	c	o
___ • Little Blue Heron .....	u	u	u	o
___ • Tricolored Heron .....	u	c	c	u
___ • Cattle Egret .....	u	u	c	
___ • Green-backed Heron .....	u	c	c	r
___ • Black-crowned Night-Heron .....	c	c	c	u
___ • Yellow-crowned Night-Heron .....	u	u	u	r
___ • White Ibis .....	r	r	r	r
___ • Glossy Ibis .....	u	u	u	r

### SWANS - GEESE - DUCKS

___ Tundra Swan .....	u		u	u
___ Mute Swan .....	r		r	
___ Snow Goose .....	u		u	u
___ Brant .....	u		u	c
___ • Canada Goose .....	u	u	u	c
___ • Wood Duck .....	o	o	o	
___ Green-winged Teal .....	u	r	u	u
___ • American Black Duck .....	c	u	c	c
___ • Mallard .....	c	u	c	c
___ Northern Pintail .....	u		u	u
___ Blue-winged Teal .....	u	o	c	o
___ Northern Shoveler .....	u		u	u
___ • Gadwall .....	u	u	u	u
___ Eurasian Wigeon .....				r
___ American Wigeon .....	u		u	u
___ Canvasback .....	o		o	o
___ Redhead .....	o		o	o

___ Ring-necked Duck .....	o		o	u
___ Greater Scaup .....	u		u	u
___ Lesser Scaup .....	u		u	u
___ Common Eider .....				r
___ King Eider .....				r
___ Harlequin Duck .....	r			r
___ Oldsquaw .....	u		u	u
___ Black Scoter .....	u		u	c
___ Surf Scoter .....	c	r	c	c
___ White-winged Scoter .....	u		u	u
___ Common Goldeneye .....	u		u	u
___ Bufflehead .....	c		c	c
___ Hooded Merganser .....	u		u	u
___ Common Merganser .....				u
___ Red-breasted Merganser .....	c	r	c	c
___ Ruddy Duck .....	u		u	u

### VULTURES - HAWKS - FALCONS

___ Black Vulture .....	u	u	u	u
___ Turkey Vulture .....	c	u	c	c
___ • Osprey .....	c	c	c	r
___ Mississippi Kite .....		r		
___ <i>Bald Eagle</i> .....	u	u	u	u
___ • Northern Harrier .....	u	o	c	c
___ Sharp-shinned Hawk .....	u		a	u
___ Cooper's Hawk .....	u		u	u
___ Northern Goshawk .....			r	r
___ Red-shouldered Hawk .....	u	o	u	u
___ Broad-winged Hawk .....	o		c	
___ Swainson's Hawk .....			r	
___ • Red-tailed Hawk .....	u	u	c	c
___ Rough-legged Hawk .....	o		o	o
___ Golden Eagle .....			r	r
___ American Kestrel .....	u	u	a	u
___ Merlin .....	o		c	u
___ • <i>Peregrine Falcon</i> .....	u	u	c	u

### QUAIL

___ Ring-necked Pheasant .....	o	o	o	o
___ • Northern Bobwhite .....	c	c	c	c

### RAILS - CRANES

___ Yellow Rail .....			r	
___ Black Rail .....			r	
___ • Clapper Rail .....	c	c	a	u
___ King Rail .....	u	o	u	u
___ Virginia Rail .....	u	u	u	u
___ Sora .....	u		u	o
___ Common Moorhen .....	o	o	o	r



	S	S	F	W
___ American Coot .....	u		u	u
<b>PLOVERS - SANDPIPERS</b>				
___ Black-bellied Plover .....	c	o	c	u
___ Lesser Golden-Plover .....		o	o	
___ Semipalmated Plover .....	u	o	c	o
___ • Piping Plover .....	u	u	u	r
___ Killdeer .....	u	u	u	u
___ • American Oystercatcher .....	c	c	c	c
___ American Avocet .....			r	r
___ Greater Yellowlegs .....	c	o	c	u
___ Lesser Yellowlegs .....	c	o	c	u
___ Solitary Sandpiper .....	u	u	u	
___ • Willet .....	c	c	c	u
___ Spotted Sandpiper .....	u	u	c	r
___ Upland Sandpiper .....	o	u	u	
___ Whimbrel .....	u	u	u	o
___ Marbled Godwit .....		o	o	o
___ Ruddy Turnstone .....	u	u	u	u
___ Red Knot .....	u	u	u	r
___ Sanderling .....	c	u	c	c
___ Semipalmated Sandpiper .....	c	u	u	
___ Western Sandpiper .....		u	u	u
___ Least Sandpiper .....	u	u	u	r
___ White-rumped Sandpiper .....	u	u	u	
___ Pectoral Sandpiper .....	u	u	u	
___ Dunlin .....	c	o	c	c
___ Stilt Sandpiper .....	r	u	u	
___ Buff-breasted Sandpiper .....		o	o	
___ Short-billed Dowitcher .....	c	u	c	o
___ Long-billed Dowitcher .....		o	o	o
___ Common Snipe .....	u		u	u
___ • American Woodcock .....	u	o	c	a
___ Wilson's Phalarope .....		o	o	
<b>GULLS - TERNS</b>				
___ Laughing Gull .....	a	a	a	o
___ Bonaparte's Gull .....	u		u	u
___ Ring-billed Gull .....	u	o	c	c
___ • Herring Gull .....	a	c	a	a
___ Lesser Black-backed Gull .....	r		o	o
___ • Great Black-backed Gull .....	c	u	u	c
___ Gull-billed Tern .....	u	u	u	
___ • Caspian Tern .....	u	u	c	
___ • Royal Tern .....	a	a	c	r
___ • Sandwich Tern .....	o	o	o	
___ • Common Tern .....	c	u	c	
___ Forster's Tern .....	u	u	a	o

	S	S	F	W
___ Least Tern .....	u	u	o	
___ Black Tern .....	o	o	u	
___ • Black Skimmer .....	c	c	c	r
<b>DOVES - CUCKOOS - OWLS</b>				
<b>SWIFTS - HUMMINGBIRDS</b>				
___ • Rock Dove .....	c	c	c	c
___ • Mourning Dove .....	c	c	c	c
___ Black-billed Cuckoo .....			o	
___ • Yellow-billed Cuckoo .....	u	u	u	
___ • Barn Owl .....	u	u	u	u
___ • Eastern Screech-Owl .....	c	c	c	c
___ • Great Horned Owl .....	c	c	c	c
___ Long-eared Owl .....			o	o
___ Short-eared Owl .....	o		u	u
___ Northern Saw-whet Owl .....			o	o
___ Common Nighthawk .....	u	u	u	
___ • Chuck-will's widow .....	c	c	o	
___ Whip-poor-will .....	o		o	
___ Chimney Swift .....	u	u	c	
___ • Ruby-throated Hummingbird .....	u	u	u	
___ Belted Kingfisher .....	u	o	c	u
<b>WOODPECKERS - FLYCATCHERS</b>				
___ Red-headed Woodpecker .....	o	o	u	o
___ • Red-bellied Woodpecker .....	u	u	u	u
___ Yellow-bellied Sapsucker .....	o		u	u
___ • Downy Woodpecker .....	c	c	c	o
___ • Hairy Woodpecker .....	u	u	u	u
___ • Northern Flicker .....	c	c	a	c
___ Pileated Woodpecker .....	o	o	o	o
___ Olive-sided Flycatcher .....	r		r	
___ • Eastern Wood-Pewee .....	u	u	u	
___ Yellow-bellied Flycatcher .....			u	
___ Acadian Flycatcher .....	o	o	u	
___ Alder Flycatcher .....			u	
___ Willow Flycatcher .....			u	
___ Least Flycatcher .....	o		u	
___ Eastern Phoebe .....	o	o	c	o
___ Say's Phoebe .....			r	
___ • Great Crested Flycatcher .....	u	u	u	
___ Western Kingbird .....			o	r
___ • Eastern Kingbird .....	c	c	a	
___ Scissor-tailed Flycatcher .....		r	r	
<b>LARKS - SWALLOWS - JAYS - CROWS</b>				
___ Horned Lark .....	u		u	u
___ Purple Martin .....	c	c	u	
___ Tree Swallow .....	u	o	a	o

	s	S	F	W
Golden-winged Warbler .....			r	
Tennessee Warbler .....	u		u	
Orange-crowned Warbler .....	r		o	u
Nashville Warbler .....	u		u	
Northern Parula .....	u		u	
Yellow Warbler .....	c	u	c	
Chestnut-sided Warbler .....	u		u	
Magnolia Warbler .....	u		c	
Cape May Warbler .....	u		c	
Black-throated Blue Warbler .....	u		c	
Yellow-rumped Warbler .....	c		a	a
Black-throated Green Warbler .....	u		u	
Blackburnian Warbler .....	o		u	
Yellow-throated Warbler .....	o		o	
• Pine Warbler .....	c	c	c	u
• Prairie Warbler .....	u	u	c	r
Palm Warbler .....	o		c	u
Bay-breasted Warbler .....	o		u	
Blackpoll Warbler .....	u		c	
Cerulean Warbler .....		r		
Black-and-white Warbler .....	u		c	r
American Redstart .....	u		a	
Prothonotary Warbler .....	o		o	
Worm-eating Warbler .....	o		u	
Ovenbird .....	u	o	a	r
Northern Waterthrush .....	u	u	c	
Louisiana Waterthrush .....	o	r	r	
Kentucky Warbler .....	o		o	
Connecticut Warbler .....			u	
Mourning Warbler .....	o		u	
• Common Yellowthroat .....	c	c	a	o
Hooded Warbler .....	o		o	
Wilson's Warbler .....	u		u	
Canada Warbler .....	u		u	
• Yellow-breasted Chat .....	u	u	u	o
<b>TANAGERS - SPARROWS</b>				
• Summer Tanager .....	u	u	u	
Scarlet Tanager .....	u		u	
• Northern Cardinal .....	c	c	c	c
Rose-breasted Grosbeak .....	o		u	
• Blue Grosbeak .....	u	u	u	
• Indigo Bunting .....	u	u	c	
Dickcissel .....			o	
• Rufous-sided Towhee .....	u	u	a	c
American Tree Sparrow .....				r
Clay-colored Sparrow .....			r	

	s	S	F	W
• Chipping Sparrow .....	o	o	c	o
• Field Sparrow .....	u	u	c	u
Vesper Sparrow .....	o		u	u
Lark Sparrow .....			r	
Savannah Sparrow .....	u		c	c
• Grasshopper Sparrow .....	o	o	u	
Henslow's Sparrow .....		r		
Sharp-tailed Sparrow .....	o	o	u	u
• Seaside Sparrow .....	u	u	a	u
Fox Sparrow .....	o		u	u
• Song Sparrow .....	c	u	c	a
Lincoln's Sparrow .....	r		r	r
Swamp Sparrow .....	u		a	c
White-throated Sparrow .....	c		a	a
Dark-eyed Junco .....	u		u	u
Lapland Longspur .....			o	o
Snow Bunting .....			o	o
<b>BLACKBIRDS - FINCHES</b>				
Bobolink .....	u	o	a	
• Red-winged Blackbird .....	c	c	a	c
• Eastern Meadowlark .....	u	u	c	c
Rusty Blackbird .....	o		c	u
Brewer's Blackbird .....				r
• Boat-tailed Grackle .....	c	c	a	c
• Common Grackle .....	a	a	c	c
• Brown-headed Cowbird .....	u	u	c	u
• Orchard Oriole .....	u	u	r	
Northern Oriole .....	u		c	r
Purple Finch .....	o		u	u
• House Finch .....	u	o	u	u
Red Crossbill .....			o	o
White-winged Crossbill .....				r
Common Redpoll .....				r
Pine Siskin .....	o		c	c
• American Goldfinch .....	c	c	a	c
Evening Grosbeak .....			u	u
• House Sparrow .....	u	u	u	u



## U.S. Fish and Wildlife Service

Eastern Shore of Virginia and Fisherman Island are two of more than 500 Refuges in the National Wildlife Refuge System administered by the U.S. Fish and Wildlife Service. The National Wildlife Refuge System is a network of lands and waters managed specifically for the protection of wildlife and wildlife habitat and represents the most comprehensive wildlife management program in the world. Units of the system stretch across the United States from northern Alaska to the Florida Keys and include small islands in the Caribbean and South Pacific. The character of the Refuges is as diverse as the nation itself.

The Service also manages National Fish Hatcheries, and provides Federal leadership in habitat protection, fish and wildlife research, technical assistance and the conservation and protection of migratory birds, certain marine mammals and threatened and endangered species.

For further information, contact:

Refuge Manager  
Eastern Shore of Virginia  
National Wildlife Refuge  
RFD #1, Box 122B  
Cape Charles, Virginia 23310

Telephone: (804) 331-2760

Woodcock illustration © Thelma Jarvis Peterson



DEPARTMENT OF THE INTERIOR  
U.S. FISH AND WILDLIFE SERVICE

RL-51610-2

September 1992

# Birds

Eastern Shore of Virginia  
and Fisherman Island

NATIONAL  
WILDLIFE  
REFUGES



Virginia

# *Eastern Shore of Virginia*

**National  
Wildlife  
Refuge**



**Virginia**

## Coming to The Point

Eastern Shore of Virginia National Wildlife Refuge, located at the southern point of the Delmarva Peninsula, was established in 1984 for migratory and endangered species management and for wildlife-oriented recreation. The 651 acres of maritime forest, myrtle and bayberry thickets, grasslands, croplands, and fresh and brackish ponds are frequently used by endangered species such as bald eagles and peregrine falcons.



Each fall, migrating birds stage, or gather in large groups, on Refuge land until favorable wind and weather conditions permit an easy crossing of Chesapeake Bay. This "funneling effect" provides excellent viewing opportunities for visitors between late August and early November.

## Past Uses of Refuge Land

Written history of the area dates back to the earliest colonial times, when Refuge uplands were farmed and wetlands and waters were hunted and fished. The strategic location at the mouth of Chesapeake Bay encouraged military uses of the area in the years before the Refuge was established. At the beginning of World War II, much of the

Refuge was acquired by the federal government and named Fort John Custis, after a prominent eighteenth century resident of Northampton County. - During the War, large bunkers housed 16-inch guns designed to protect naval bases and shipyards in Virginia Beach and Norfolk. In 1950, the U.S. Air Force acquired Fort John Custis, renaming it the Cape Charles Air Force Station. A landing strip and additional buildings were built by the Air Force, which occupied the area until 1981.

## Refuge Wildlife Resources

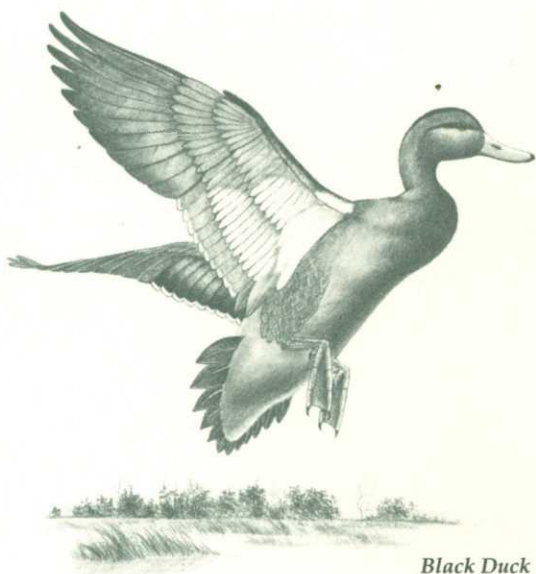
The varied habitats of the Eastern Shore of Virginia Refuge - from open water to dense woodlands - produce a diversity of wildlife species that change constantly with the seasons. Hawks, falcons, and songbirds are common on the Refuge from late August to early November. From late November to mid-January, American Woodcock zoom and twitter as they fly from woods to fields at dusk.

After sunset, snow geese and swans are often heard overhead. During the winter, northern harriers, or "marsh hawks," fly low over the fields in search of rodents, while American kestrels perch on power lines, keeping a watchful eye open for prey. Throughout the year, black ducks and great blue herons feed in Refuge marshes.

With the arrival of spring, marsh and shore-birds such as glossy ibis, cattle egrets, and willets search for food in shallow waters and moist grassy areas. Resident bobwhite quail frequently scurry along road edges. From spring until fall, ospreys may be seen nesting on platforms installed by Refuge staff. Refuge woodlands provide year around homes for chickadees, great horned owls, screech owls, warblers, woodpeckers, and wrens.

Common mammals that make their homes on the Refuge include gray squirrels, cotton-tailed rabbits, raccoons, river otters, opossums, red foxes, and white-tailed deer. Rodents such as meadow voles serve as prey for raptors and coyotes.





*Black Duck*

## Management Improves Wildlife Habitat

Refuge staff are involved in restoration efforts designed to increase the diversity and quality of available migratory bird habitat. Since the Refuge was established, many military buildings have been removed and have been replaced with wildlife food plots and food and cover shrubs.

In some parts of the Refuge, ponds have been created to increase the amount of freshwater wetlands for waterfowl, wading birds, and shorebirds. In addition to osprey platforms, nesting structures have been erected for owls, bluebirds, and wood ducks.

## Visitor Activities

A logical starting point for those who visit Eastern Shore of Virginia Refuge is the visitor center, located just north of the Chesapeake Bay Bridge Tunnel. Here, Refuge visitors can view exhibits, operate video programs, and talk to knowledgeable people about the fish and wildlife and tourism resources available on the Eastern Shore.

Visitors who want a closer look at the Refuge may walk the 1/2-mile interpretive trail which loops through mixed hardwoods, past an old graveyard, and to the top of World War II bunkers - where a panoramic view of Refuge marshes, barrier islands, bays, inlets, and the Atlantic Ocean may be seen.

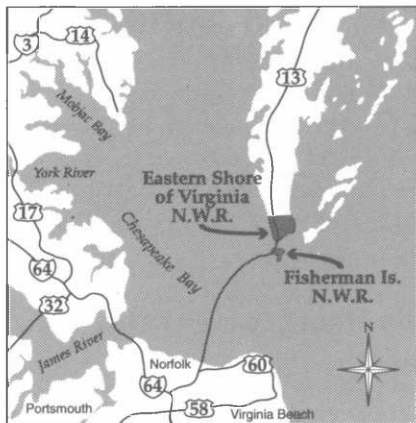
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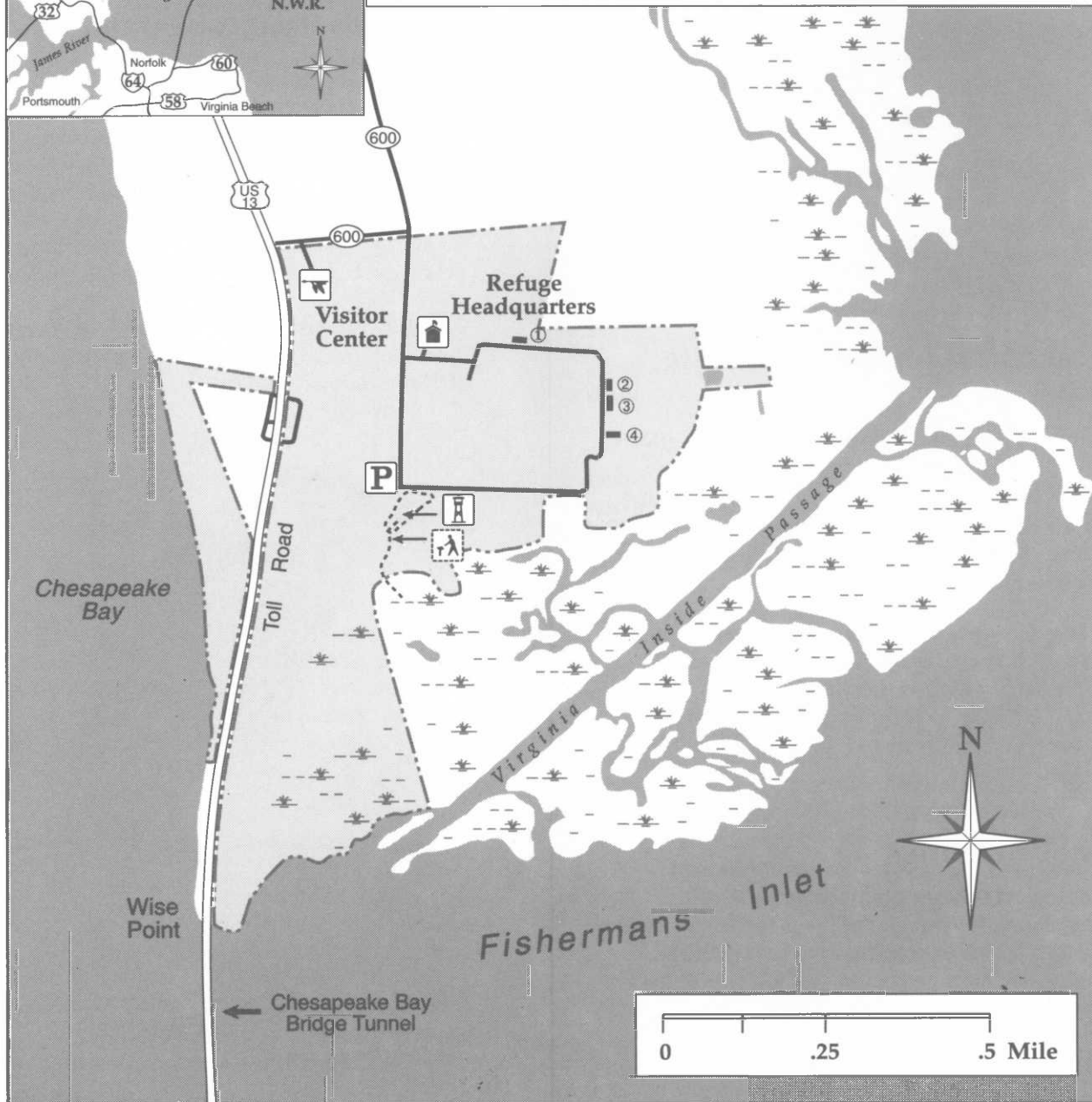
*Great Blue Heron*





# Legend

- |   |                      |      |                         |
|---|----------------------|------|-------------------------|
| — | Refuge Boundary      | ---* | Tidal Marsh             |
|   | Refuge Headquarters  | ①    | Residential Area        |
|   | Visitor Center       | ②    | Training / Confr. Bldg. |
|   | Walking Trail        | ③    | Educational Bldg.       |
|   | Trail Parking Area   | ④    | Maintenance Area        |
|   | Observation Overlook |      |                         |



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For further information please contact:

Refuge Manager  
Eastern Shore of Virginia National Wildlife Refuge  
RFD 1, Box 122 B  
Cape Charles, VA 23310-9725  
Phone: (804) 331-2760



DEPARTMENT OF THE INTERIOR  
U.S. FISH AND WILDLIFE SERVICE

# *Eastern Shore of Virginia*

NATIONAL  
WILDLIFE  
REFUGE

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Cape Charles, Virginia



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*Peregrine Falcon*

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*Black Ducks*

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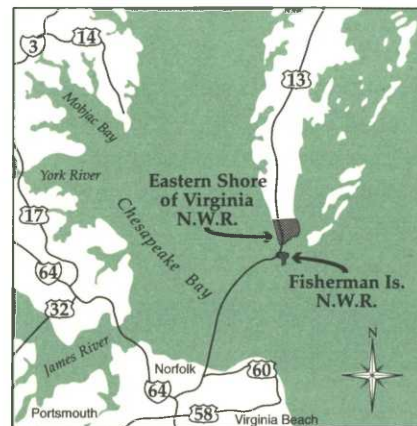
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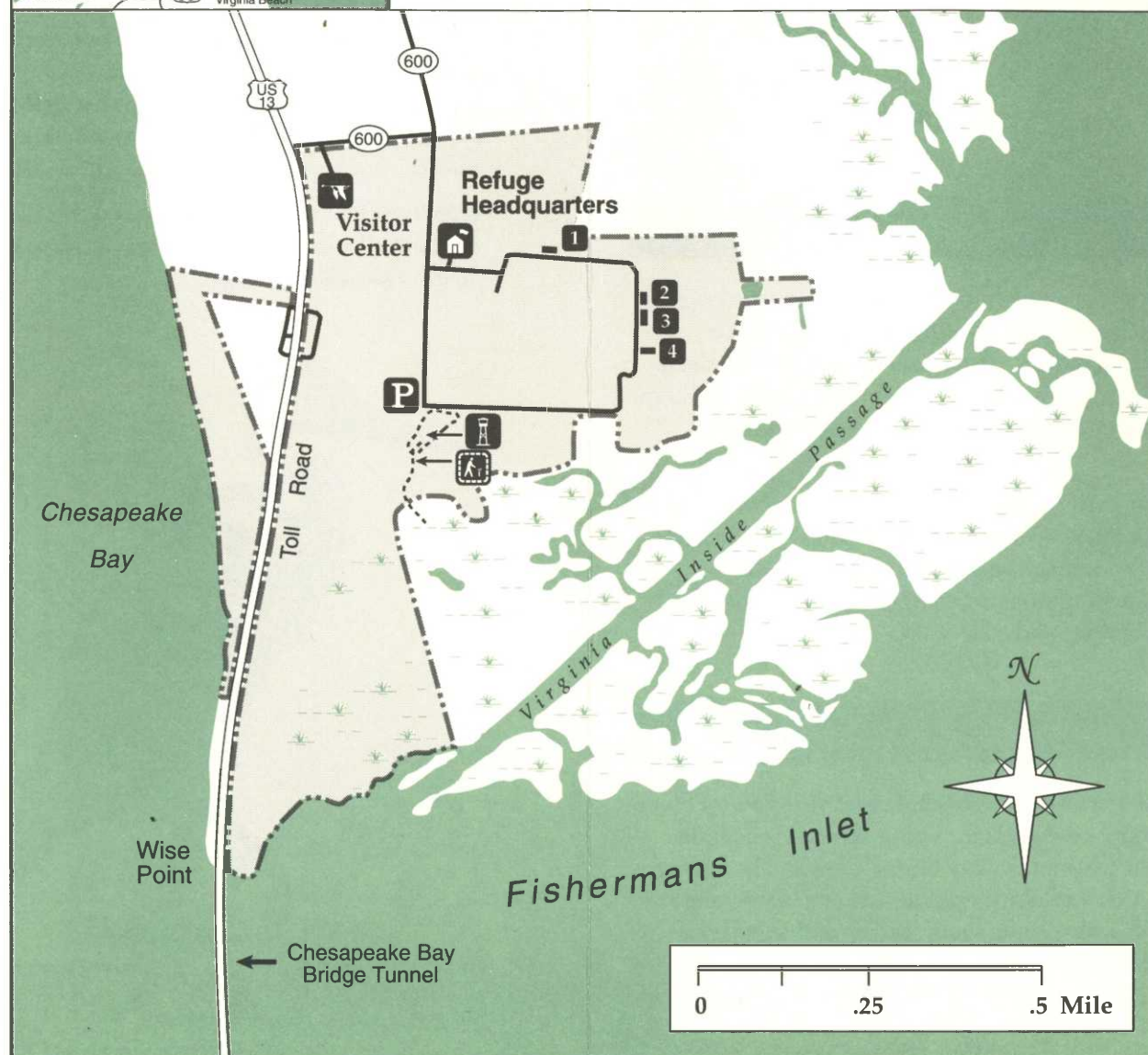
*Great Blue Heron*





## LEGEND

- |                             |                                  |
|-----------------------------|----------------------------------|
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