

**EASTERN NECK
NATIONAL WILDLIFE REFUGE**
Rock Hall, Maryland

**ANNUAL NARRATIVE REPORT
CALENDAR YEAR 1998**

U.S. Department of the Interior
Fish and Wildlife Service

Annual Narrative Report
1998

EASTERN NECK NATIONAL WILDLIFE REFUGE
ROCK HALL, MARYLAND

Martin Kachny
Refuge Manager

5-17-00
Date

Thomas W. Stewart
Refuge Supervisor, South

7/17/00
Date

S. McMillan
RO

7/21/00

INTRODUCTION

Eastern Neck National Wildlife Refuge, located at the mouth of the Chester River on the eastern shore of Chesapeake Bay in Kent County, Maryland, was established in December 1962. The island contains 2,286 acres and is a major feeding and resting place for migratory and wintering waterfowl on Maryland's famed "Eastern Shore." The topography is flat to gently rolling with elevation ranging from sea level to about 20 feet above sea level. The habitat is varied, ranging from croplands and woodlots to brackish tidal marsh and freshwater ponds.

Eastern Neck, strategically located at the confluence of river and bay, has a long and varied history. The island was among the first settled areas in the New World. Here Major Joseph Wickes obtained a grant of 890 acres in 1650 and built "Wickliffe," one of the finest mansions of the time. Eventually, the Wickes owned all of Eastern Neck Island up until 1902. One of the famous descendants of Major Joseph Wickes was his grandson, Captain Lambert Wickes, who was the first Navy officer named by the Continental Congress to carry the American flag in European waters in 1776. During the revolutionary war Captain Wickes terrorized British shipping, capturing at least 28 ships and he carried Benjamin Franklin to France aboard his flagship, the *Reprisal*, when Franklin was trying to gain French support for the American Revolution. Captain Wickes was lost at sea during a severe storm off the Newfoundland coast on a return trip from France. A memorial to Captain Wickes is located on Eastern Neck near the Wickliffe site.

Packet ships built to carry goods and passengers across Chesapeake Bay made regular stops at Bogle's Wharf where a small fishing village with an oyster shucking plant was located on the east side of the island from colonial days until 1924. Farming and waterfowl hunting were the most important land uses prior to the establishment of the refuge. The island was known as one of the best hunting grounds on the bay and was a favorite with gunning clubs.

In the 1950's a developer bought a large tract on the island and subdivided it into 293 small lots for a housing development. Responding to concerns expressed by the local community, the U.S. Fish and Wildlife Service acquired the entire island between 1962, when the refuge was first established, through 1966. The present refuge office is located in the only house built in the above mentioned subdivision.

Today, the refuge is home to nesting bald eagles, the endangered Delmarva fox squirrel and transitory peregrine falcons. It is a major overwintering area for migratory waterfowl and 243 species of birds have been reported. It is a major staging area for tundra swans during their fall and spring migration periods.

INTRODUCTION

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K. FEEDBACK

NTR

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A. HIGHLIGHTS

- A special one day hunt on January 17 resulted in an additional 114 deer being harvested for a record deer hunt total harvest of 242 deer during the 1997-1998 annual hunt (Section H.8).
- The National Tree Trust donated 1,700 seedlings that were planted by refuge staff and volunteers to create a forested buffer zone between the Chesapeake Bay and agricultural fields (Section F.3).
- A rash of vandalism occurred on the refuge (Section H.17).
- Rehabilitated Tundra swans were released on the refuge (Section G.3).
- Storms washed out Boxes Point Trail (Section F.6).
- New Maintenance Worker on board (Section E.1).
- Two new Green Thumb Workers are a welcomed addition (Section E.3).
- Refuge Manager Kaehny participated in one of ten National Audubon Society workshops to develop partnership with Maryland refuges (Section J.1).
- Refuge staff met with Ron Fithian, Rock Hall Town Manager/Kent County Commissioner to tour refuge and discuss issues (Section J.1).
- A college intern from the University of Maine, Orono, worked for the summer (Section E.4).
- The Delmarva Fox Squirrel nest box and live trapping mark/recapture surveys continued for the 4th year (Section G.2).
- The refuge aerial sprayed 200 acres of phragmites (Section F.10).
- The refuge hosted 220 Kent County 4th Grade students for environmental education (Section H.2).
- The lodge Asbestos Abatement Project was completed (Section I.2).
- The refuge held numerous special events throughout the year (Section H.6).
- The 1998-1999 annual deer hunt resulted in only 78 deer harvested (Section H.8).

- The National Audubon Society held a special work day at the refuge as part of the Audubon Refuge Keeper's Program (ARK) (Section J.1).
- The refuge headquarters received a new roof (Section I.2).
- A pair of cinnamon teal visited the refuge to the delight of birders (Section G.3).
- The refuge traded an old backhoe for a newer model and obtained two surplus military vehicles (Section I.4).
- Record number of volunteer hours in 1998 (Section E.4).
- WALT TURNED 40 and got engaged!

B. CLIMATIC CONDITIONS

The following table depicts the annual meteorological data recorded for the year and compares the 10 year average (1981 - 90) from the weather station in Chestertown, MD, located 15 miles NE of the refuge.

MONTH	1998	10 YEAR AVG.	10 YEAR HIGH	10 YEAR LOW
January	4.91*	2.81	4.54	.56
February	4.20*	3.29	4.63	1.07
March	5.98	3.22	6.99	1.12
April	2.17	3.55	8.09	.57
May	3.02	5.06	7.22	1.16
June	2.78	4.12	15.44	1.06
July	.84	4.03	7.13	.82
August	2.51	3.24	8.71	.62
September	1.37	3.43	7.93	.73
October	.80	3.13	5.73	1.62
November	.90	3.61	5.88	.27
December	3.32	3.39	8.09	.82
TOTAL	32.80*	42.88	N/A	N/A

* Rainfall data is incomplete due to the gauge being blown over during time of precipitation.

Precipitation for the month of January measured at least 4.91" (the rain gauge was blown over on 1/28 with an unknown amount of precipitation lost). In addition to the winds knocking over the rain gauge, high winds combined with high tides resulted in a significant washout of the Boxes Point Trail road at it's northern terminus (Section I.2). Tons of debris were also washed up along the island's shoreline. In summary, January was a warm, wet, and wild month.

In February 4.20" of rainfall was recorded; however, this is only a partial figure as the rain gauge again was blown over on two occasions and an unknown amount of precipitation was lost. High winds were also responsible for causing additional erosion to Boxes Point Trail.

The first two weeks of May were soggy as measurable precipitation fell nearly every day with tidal flooding recorded on 5/13-14. The month's total precipitation was 3.02" but all but .03" fell before the 13th. Temperatures for the latter half of the month were above normal, often at or above 90 degrees which started a seven month drought.

June precipitation totaled 2.78 inches, most of which fell prior to the 15th of the month. Temperatures were considered to be above normal for approximately 1 week during the last half of the month.

The weather for July could be summarized in one word - DRY! Only .84" of rain fell; .77" on the 8th and .07" on the 30th. Many areas of the state and the Eastern Shore considered themselves to be dry but they reported copious amounts of precipitation on occasions when we received none. Temperatures for the month were average.

August continued the hot and dry weather with only two days recording precipitation totaling 2.51", 2.36" on August 11 and only .15" for the rest of the month. A lightening storm hit on the 11th and knocked out the office fax and answering machines and all but two of the phone lines. So much for the reliability of surge protectors!

The September weather pattern continued as dry as the previous months with only 1.37" of rainfall recorded. Even though it was a prolonged drought the island's farm crops looked better than could be expected. The drought conditions continued through October and November with only 0.80" and 0.90" of rain recorded respectively.

Finally in December we received 3.32" of much needed precipitation. The drought was finally broken on 12/10 with 1.21" of rainfall. Approximately 2" of wet snow fell on 12/23 and 24 resulting in the first white Christmas on the eastern shore in many years. An additional dusting of snow fell on 12/31.

D. PLANNING

1. Management Plan

In January the station's Big Game Hunting Plan was amended to include turkey hunting for 1999. Turkey hunting would be limited to a youth only hunt with assistance to be provided by the local Wild Turkey Federation. Refuge Operations Specialist (ROS) Ford completed the Compatibility Determination, modified Code of Federal Regulations (CFR) to allow turkey hunting, a funding analysis, and the Environmental Action Memorandum and submitted the documents to the Regional Office for approval.

The Big Game Annual Hunting Program was revised in May to include the spring youth turkey hunt. The plan was sent to Zone Biologist Laskowski for comments and approval along with the previously submitted documents approved by the RO. The annual hunt program was received on May 18 with Zone Biologist Laskowski's approval as submitted.

4. Compliance with Environmental and Cultural Resource Mandates

The Joint Federal/State applications for the alteration of any flood plain, waterway, tidal or non-tidal wetland in Maryland was submitted to the Maryland Department of the Environment, Water Management Administration, on February 24 for the repair of the road washout on Boxes Point Trail (see Section I.2). A letter from the Maryland Department of the Environment dated March 17 stated the proposed activity did not require a tidal wetlands license from the state and qualified for federal authorization under the Maryland State Programmatic General Permit.

5. Research and Investigations

Eastern Neck NR94-1 "Using Constructed Wetlands for Control of Agricultural Runoff"

This three year study by Dennis F. Whigham, Thomas E. Jordan, David L. Carrell and Donald E. Weller of the Smithsonian Environmental Research Center was conducted both on and off refuge to study the ability of constructed wetlands to control agricultural runoff and remove the nutrients (nitrogen and phosphorous) and sediments from the runoff. All field work for this project has been completed and the final report is due in 1999.

Patuxent Research Center Biologist Dan Day submitted a study proposal entitled "Influence of the Exotic Mute Swan on Submerged Aquatic Vegetation in the Chesapeake Bay" in regard to the Tundra swan and other waterfowl species to be conducted at Eastern Neck. The mute swan population in the MD portion of the Chesapeake Bay has increased to over 2,500 since their accidental introduction in 1962. The study will try to determine the impact that mute swans are having on other species resulting from their feeding habits, aggressive territorial behavior and/or direct mortality to other species. This study was submitted to the CB/SR ecosystem team for funding and was one of four projects approved for team funding

in FY1999.

6. Ecosystem

Refuge Manager (RM) Kaehny attended the Chesapeake Bay/Susquehanna River Ecosystem Team Meeting at Conowingo, MD, May 5-6. Committee liaisons updated the team on the status of FY98 funded projects: 1) The projects included a gill net study of migratory bird mortality in coastal anchored gill nets; 2) An Atlantic sturgeon reward program involving a \$100 reward for each live Atlantic sturgeon caught by waterman and kept alive for fisheries to examine; 3) Two outreach projects including a mass transit poster and trifold brochures; 4) A water quality monitoring project in the Potomac; 5) A wetlands and migratory bird conference scheduled for November. The team solicited additional funds from field stations resulting in two additional projects including construction of a cave gate to protect the endangered Virginia big-eared bat and a bog turtle habitat restoration project (riparian fencing).

Refuge Manager Kaehny, Migratory Bird Committee liaison, sent potential project proposals dealing with migratory birds to committee team members for their review and ranking in July.

Refuge Manager Kaehny attended the Chesapeake Bay/Susquehanna River Ecosystem Team Meeting August 18-20 at Canaan Valley Resort, WV. The four committee liaisons presented updates on FY 1998 funded projects and presented project proposals for FY99 that were prioritized by the team.

The refuge hosted the November 4-5 ecosystem team meeting in the historic hunting lodge. Refuge Manager Kaehny provided a tour of the refuge to interested team members the evening of November 4. Mother nature was very cooperative as Hail Creek was wall to wall waterfowl with thousands of ruddy ducks, American widgeons, canvasbacks and scaup.

7. Other

Rock Hall Town Council representative David Jones met with the refuge staff on February 10 to discuss cooperative outreach efforts that the Town of Rock Hall could undertake to promote the refuge. This brainstorming session resulted in a number of recommendations including additional highway signage, participation in special events, literature distribution to local businesses, etc.

Refuge Manager Kaehny and ROS Ford met with Rock Hall Town Manager/Kent County Commissioner Ron Fithian and Rock Hall Town Council members on March 4 to discuss cooperative outreach opportunities to promote tourism and Eastern Neck NWR.

Refuge Manager Kaehny attended the FWS/Maryland Department of Natural Resources meeting held at the Woodmont Road and Gun Club, Hagerstown, MD, on May 7. The primary focus of the meeting was to discuss resource issues of concern involving both

agencies (i.e. invasive and exotic species, dredging in submerged aquatic vegetation (SAV) beds in the Chesapeake Bay, etc.).

In July Refuge Manager Kaehny met with the MMS Functional Requirements Work Group in Washington, DC, to address the congressional concern regarding why the Department of Interior's six bureaus utilize six different MMS systems. The primary objective of the group was to:

- Identify the needs and functional requirements of each bureau
- Assess the potential for sharing systems
- Develop recommendations for inclusion in the FY2000 budget submission

The work group discussed each bureau's current system as it relates to the 18 functional requirements developed by the work group and developed the minimum information needed for each bureau to incorporate into its current system to meet the minimal requirements.

In August, Senator Paul Sarbanes sent a letter to Washington, DC, requesting construction funds for rehabilitation of the lodge for FY99. However, this project was taken out of the RONS systems and submitted in the MMS system for FY99.

The issue of dredge spoil material and a proposal to utilize Eastern Neck National Wildlife Refuge as a disposal site surfaced in August as the result of comments by Maryland General Assembly Delegate Wheeler R. Baker. A newspaper article reported Delegate Baker dropped his previous support for dumping dredge spoil at a deep water site north of the bay bridge, based on information he received that the spoils might be contaminated. Supposedly, in a letter to Governor Glendening, he urged the governor to consider using Eastern Neck Island as an alternative site for the dredge material. A public radio announcement reported that Queen Anne's County Commissioners have written the governor to support the Eastern Neck alternative. Refuge Manager Kaehny was then contacted by State Delegate Mary Walkup and Candidate Sossi who took advantage of the situation to present their views (election year). Refuge Manager Kaehny was interviewed by the Kent County News regarding this issue. Front page news article resulted, which basically stated the Service has not been officially approached so there is no official position but that contaminated spoils would not be deposited on Eastern Neck Island.

E. ADMINISTRATION

1. Personnel



NR-98-1 1 2 3 4 05/02/00

1. Walter E. Ford, Refuge Operations Specialist, GS-11, EOD 09/97 PFT.
2. Kimberly B. Bucklew, Office Automation, GS-6, EOD 06/89 PFT.
3. Martin C. Kaehny, Refuge Manager, GS-12, EOD 01/94 PFT.
4. John J. Nicely, Maintenance Worker, WG-8, 03/98 PFT.

January 20: Mr. John Nicely, selected for the Maintenance Worker (MW) position, visited the refuge with his wife Nadine and daughter Amber during their house hunting trip.

January 27 - 30: Refuge Operations Specialist Ford attended S-330 Task Force/Strike Team Leader fire training in Deadwood, SD.

February 19: Refuge Manager Kaehny and ROS Ford attended required aviation safety training at Patuxent NWR. Re-certification is required every three (3) years.

February 23 - 27: Office Automation (OA) Bucklew and ROS Ford attended the Administrative Workshop that was held at the National Conservation Training Center

(NCTC) in Sheperdstown, WV.

March 6: Refuge Operations Specialist Ford attended a MD State Pesticide Applicators Re-certification course near BWI Airport. He was re-certified in both wetland and right-of-way application.

March 15 - 28: Refuge Operations Specialist Ford attended the Firearms Instructor Training Course in Marana, AZ. Ford will assist with firearm requalification duties in Region 5 at the Annual LE Refresher and the semi-annual requalification.

March 16: Maintenance Worker John Nicely reported for duty. John was a permanent Engineering Equipment Operator from 1991 - 97 with the Service at Great Swamp NWR, NJ and Ankeny NWR, OR. John was currently living in OH and working at Home Depot. He is excited about the opportunity to be reinstated as a permanent employee.

Refuge Manager Kaehny attended the "Friends Workshop" that was held at the Regional Office in Hadley, MA, on March 27-29. Friends of Eastern Neck (FOEN) President Lynne Smith and Board Member Lou Smith also attended the three day session.

March 30 - April 3: Refuge Operations Specialist Ford attended the Collateral Safety Officer training in Hadley, MA.

April 8 - 9: Maintenance Worker Nicely attended RCRA training at the NCTC.

April 22: Refuge Manager Kaehny and ROS Ford attended the Project Leader's Meeting at the CBFO, Annapolis, MD, regarding the Ohio State University Report and regional reorganization.

April 29 -30: Refuge Operations Specialist Ford attended heavy equipment training at Eastern Shore of Virginia NWR, and was certified for front-end loader/backhoe, motor grader, and dozer crawler.

June 22-25: Refuge Manager Kaehny attended the Simplified Acquisition Training session held at the Chesapeake Bay Field Office, Annapolis, MD, to increase warrant authority to \$10,000.

July 10: A background investigation was finally underway for Assistant Manager's Ford LE position. Ford has had LE authority for five years but has never been determined fit for duty!

July 13: The initial progress review (after the first 90 days of employment) was completed for Maintenance Worker John Nicely.

August 4 - 6: Refuge Manager Kaehny and Maintenance Worker Nicely attended the FWS required Motor Boat Operators Safety Course in Annapolis, MD.

Refuge Manager Kaehny attended the National Wildlife Refuge Systems Conference held in Keystone, CO, on October 18-23. This first ever conference with project leaders from all the refuges within the system was a tremendous success with inspiring speakers, work groups addressing the recommendations in the September 18, 1998 "Fulfilling the Promise" draft report that will direct the future course of the National Wildlife Refuge System, and employees renewing old acquaintances from many years ago!

2. Youth Programs

Maintenance Worker Nicely worked with Eagle Scout Charles Cunningham in July to remove an old decrepit observation blind located off a spur of the Wildlife Trail and construct a new one. Manpower was provided by fellow scouts and friends. Charles was responsible for raising the required funds (\$351.48) to purchase the building materials.

The FY98 Annual Scouting Report was forwarded to the RO on November 4. Highlights of the report were: three (3) FWS employees supported Boy Scout activities involving 26 scouts (there were no Girl Scout activities). One Eagle Scout project was completed by Charles Cunningham. Additional scouting activities occurred on the refuge that did not require employee participation.

3. Other Manpower Programs - Green Thumb Program

Green Thumb, Inc., is a service employment training program for persons over the age of 55. Enrollees are placed in government or non-profit organizations for on-the-job training and experience at no cost to the host agency. Green Thumb pays their enrollees minimum wage and covers them under workman's compensation. The enrollees are permitted to work a set number of hours per week which varies from 20 - 28, depending on funding.

Refuge Manager Kaehny and ROS Ford met with Green Thumb representative Nelda Bigelow on February 10 to discuss bringing on board two (2) additional workers to assist with maintenance tasks. This resulted in the refuge receiving it's second Green Thumb employee when Mr. James Jones reported for work in the maintenance assistant position on March 17. A third Green Thumb worker, Mr. Jerry Gradel, reported for duty on May 4. Mr. Gradel was brought on board as a maintenance assistant.



NR-98-2 Mr. Jerry Gradel picking up beer bottles after 1998 MCK
Marty and Walt's drinking spree the night
before.

The Green Thumb Program provided 2,307.5 volunteer hours to the refuge by way of three employees: Ruth Sutton, Gerard Gradel, and James Jones. Ruth Sutton was used as an Administrative Assistant to greet visitors and run the refuge bookstore. James and Jerry were used as maintenance assistants and were responsible for a wide variety of maintenance tasks including lawn care, trail maintenance, litter patrol, equipment maintenance, etc.. A breakdown of their hours for the year are provided in the following table:

MONTH	R. SUTTON	G. GRADEL	J. JONES	TOTAL HOURS
January	77			77
February	88			88
March	96		51	147
April	93		108.5	201.5
May	110.5	107	112	329.5
June	100	102	103.5	305.5
July	103	94.5	101.5	299

August	88	88		176
September	87	77.5		164.5
October	103	96		199
November	88	71		159
December	91	70.5		161.5
TOTAL	1,124.5	706.5	476.5	2,307.5

Maintenance Assistant James Jones left the program on July 29 for a job in Richmond, VA, that paid considerably more than the Green Thumb program. James was a dedicated and enthusiastic worker who will be missed here at ENNWR. We wish him only the best of luck in his new endeavor!

4. Volunteer Program

Some of the more common tasks completed by the volunteers included waterfowl surveys, sign installation, administrative duties associated with the Friends of Eastern Neck, trail construction, building maintenance, grounds keeping, etc. The following summarizes by month the number of volunteers and volunteer hours contributed. It should be noted that the total time includes the individual's travel time to and from the refuge. Some of the volunteers have a four hour round-trip and that dedication and commitment to volunteering needs to be counted. Additional highlights to the volunteer program follow the table.

VOLUNTEER PROGRAM SUMMARY

MONTH	# OF VOLUNTEERS	# OF HOURS
January	10	203.5
February	10	206
March	13	453.5 ¹
April	11	387.5 ²
May	14	380
June	8	373.5
July	11	275.5
August	10	257.5
September	16	340
October	17	961.5 ³
November	11	342
December	12	299.5
TOTAL		4,479.9

¹ Includes 120 additional hours (estimated) received from many non-regular volunteers for a beach cleanup on 3/14.

² Includes 44 additional hours received from 22 non-regular volunteers that helped plant tree seedlings on 4/4.

³ Includes 240 additional hours (estimated) received from approximately 60 non-regular volunteers for a beach cleanup and painting effort on 10/24.



NR-98-3

Volunteers (left to right) Lou Smith, Zeeger deWilde, Lynne Smith and Howard McIntyre maintaining the butterfly garden.

04/16/98

The refuge staff honored twenty-four (24) volunteers for their volunteer efforts during 1997 at the annual volunteer awards dinner on March 12. Awards were given based on hours of service to the refuge. The first level of service was ten to one hundred hours. Barbara Benson, Peter Blank, Bill Brawner, Ryan Bucklew, Zeeger deWilde, Rev. William Dore, Heather and Todd Gsell, Ned and Joan Hasselquist, Don and Bea Heck, Jim Kelley, Dolly Minis, Lynne and Lou Smith, Thomas Stinchcomb and Karen Willis received certificates in this category. The second category was for service between one hundred and two hundred and fifty hours. George Bankey and Terry Willis were honored in this category. The third was a special honor for service over one thousand hours of service - Howard McIntyre was honored in this category along with being named Volunteer of the Year for a second time, having received the honor in 1996 as well. Refuge Operations Specialist Walter Ford, the volunteer coordinator, presented the awards and provided entertainment with the presentation of humorous 'dubious' awards. Refuge Manager, Martin Kaehny, expressed appreciation to the volunteers for their service during 1997, "which kept the understaffed refuge afloat". Volunteer hours including Green Thumb and interns provided over 3.2 man years.



NR-98-4 Walt giving "thanks" for our Volunteer of the Year. 03/12/98 MCK

Approximately 22 volunteers including local kids from 4-H clubs, cub scouts, and Washington College helped plant 1,700 tree saplings on a rainy April 4. Total volunteer time for this day was estimated at 44 hours.

The Friends of Eastern Neck NWR held their Annual Meeting at the lodge on October 10. Election for vacant board member seats and offices were completed. The newly elected FOEN Board consists of Lynn Smith, President; Howard McIntyre, Vice President; Leann Miller, Treasurer; Joan Hasslequist, Secretary; Lou Smith, Board Member; Heather Adams-Gsell, Board Member; Mickey Elsberg, Board Member; Jonathan King, Board Member; and Phil Cicconi, Board Member. Dr. Ed Delaney, North American Wildfowl Trust, Horseheads Institute, MD was the featured speaker. He gave a presentation on the re-introduction efforts currently underway for the Trumpeter swan into the Chesapeake Bay.

Refuge Operations Specialist Ford and Volunteer McIntyre staffed a table and provided information to college students at Washington College's annual Volunteer Fair, Chestertown MD, on October 20. The fair was held during lunch time hours, 11:00 am - 1:00 pm, outside the dining hall. Information was provided to eight (8) interested students.

Refuge staff and volunteers said thanks and so long to Terry Boyer, Akron, OH, on October 29. Terry volunteered at Eastern Neck from October 5 - 30, working at least 60 hours/week

on a wide assortment of projects. Terry is a long time friend of Maintenance Worker John Nicely and was recently laid off from work due to a plant closing. Their loss was our gain as the refuge benefitted greatly from the short time he was here.



NR-98-5 The cake was for Terry, but we thought he 11/29/98 WF
would share.

The total time given by refuge volunteers for 1998 was a whopping 4,479.5 hours, not including the Green Thumb workers nor college interns. The bulk of the hours were donated by nine dedicated individuals whose total time was 3,040.5 hours. Once again Howard McIntyre spent the most time volunteering, contributing 898 hours. Other major contributors include: Lynne Smith, 443 hours; George Bankey, 404.5 hours; Terry Willis, 330 hours; Lou Smith, 306 hours; Terry Boyer, 240 hours; Zeeger DeWilde, 165 hours; Phil Cicconi, 137.5 hours; and Randy Mitchell, 116.5 hours. Additional hours were donated by many groups and individuals during refuge cleanup campaigns and individuals that volunteered on a limited basis.

A Refuge Volunteer Appreciation Luncheon was given on December 17 for many of the hardworking volunteers that contribute their time on a weekly basis. Seventeen volunteers and staff gathered at the Hunting Lodge for a potluck luncheon. Everyone was very pleased with the affair, proof that a little appreciation goes a long way in fostering a good working relationship.

Volunteer hours contributed including Green Thumb employees and interns totaled 7,187.

a. College Internship Program

The refuge hosted one (1) college intern in 1998 compared to three (3) in 1997. Wildlife Ecology Major Michele Goode from the University of Maine at Orono, ME, completed a 12 week program from May through August 17, receiving three (3) college credits for her efforts. Michele was involved in the following refuge projects:

- conducting the protocol endangered Delmarva fox squirrel live trapping mark/recapture survey
- drafting several new interpretive signs for the refuge kiosks
- conducting environmental education activities on endangered species for Kent and Queen Anne's county 4'H'ers.



NR-98-6 Intern Michelle Goode.

MCK

College interns are an excellent resource for accomplishing the myriad of refuge programs that often do not get done due to lack of staff. These young people are usually quite bright and very eager to gain experience in their respective fields. At Eastern Neck the interns live in refuge housing and depending on the year's budget may or may not get a stipend of \$5-10 per day.

5. Funding

The following chart provides a five year summary of station funding. It should be noted that even though the total amount of 1260 funds has substantially increased, a large percentage of these funds are for salaries and earmarked projects. The amount of discretionary money, at least for this station, has actually decreased.

	FUNDING ACCOUNTS (\$000,s)							
FISCAL YEAR	1260	1113	1971 ¹	4960 ²	9251	7208 ³	7201 ⁴	8610 ⁵
98	344.0 ⁶	-	1.0	2.5	-	15.1	0.5	
97	258.5	-	1.7	7.4	10	17.6	0.5	2.5
96	230.5	-	4.0	4.4	-	19.9	0.6	1.6
95	262.5	3.0	0.6	4.8	-	23.4	0.6	5.6
94	285.9	3.0	25.0	2.9	-	-	0.6	8.1

¹Ducks Unlimited Grant

²Deer hunt fee

³Cost share reimbursable funds

⁴Contributed funds

⁵Quarters fund

⁶Regional Office took \$20,000 from the MMS 92053 pole building project

6. Safety

January 15: Refuge Operations Specialist Ford received a rabies booster shot to afford some protection when assisting with the Delmarva Fox Squirrel nest box survey.

January 20: Albert Davis, Inspector for MD's Pesticide Regulatory Program inspected the station's storage facility, application equipment, and record keeping. The station passed the inspection but was questioned on whether ventilation was adequate on the hazardous storage building, and recommended that additional ventilation be installed if at all possible. He also made a requirement that an anti-siphon device be installed on the garden hose that will be used for filling our spray equipment.

March 31 - April 3: Refuge Operations Specialist Ford attended collateral safety duty training at the RO. Ford is the designated Refuge Safety Officer.

May 11: A station safety meeting was attended by RM Kaehny, OA Bucklew, MW Nicely, ROS Ford, and the two (2) Green Thumb workers, Jones and Gradel. Ford was the designated chairperson and presented a summary of safety manuals that are available and procedures to follow in case of an accident.

May 28: Maintenance Worker Nicely reported that he was dizzy and nauseous, a condition that persisted from the previous afternoon after completing approximately three (3) hours of mowing with the International 674 farm tractor. A decision was made to have him checked out by his doctor and file the necessary paperwork for a possible claim with OWCP. Nothing conclusive was found by the examining physician but symptoms were indicative of carbon monoxide poisoning. The test results were received from the laboratory on June 1. The results were negative but the doctor confirmed it as CO poisoning based on symptoms. The time that had transpired before Nicely went to the doctor meant that the CO had probably been expelled from his body already. Refuge personnel evaluated the exhaust system of the tractor and determined that corrective action to the exhaust was necessary. An extension was added to the exhaust pipe to allow the fumes to pass over the tractor cab and the connection to the exhaust manifold was tightened.

Refuge Operations Specialist Ford wrote the Continuity of Operations Plan (COOP) as required by the Regional Safety Office. The COOP dictates what emergency action plans are to be implemented when a natural disaster is imminent or after a natural disaster has disrupted operations. The plan outlines how to notify the public in the case of an emergency, how to restore operations if the office is damaged or destroyed, and how to verify that all employees and refuge visitors are accounted for during an emergency evacuation or after a natural disaster.

November 9: A station safety meeting was held with all employees present. The topic was a review of the recently submitted COOP and the responsibilities of each employee during an emergency.

7. Technical Assistance

In March RM Kaehny submitted a letter of support to the North American Wetlands Conservation Council supporting a Conservation Fund grant proposal totaling one million dollars for preservation of the Conquest Farms located across the Chester River from Eastern Neck NWR.

On May 15 RM Kaehny was contacted by Mr. George Kendall, Town of Rock Hall, regarding an osprey nest covering the air vent on the town's water tower which could result in the collapse of the top of the tower. Kaehny referred the problem to the U.S. Department of Agriculture's Wildlife Services (formerly Animal Damage Control).

Advice and/or assistance was given on two separate occasions to concerned individuals that had fledgling osprey bail out of the nest prematurely. Both of the incidents were resolved successfully. Two additional incidents were reported that involved dead osprey, one was recovered for use as a taxidermic specimen at the refuge, the other was reported to the MD Department of Natural Resources.

8. Other

Refuge staff hosted a Christmas party at the Hunting Lodge on December 9 for all interested staff from nearby field stations including Blackwater NWR, Bombay Hook NWR, Prime Hook NWR, Delaware Bay Estuary Project, Chesapeake Bay Field Office, and Division of Law Enforcement/Cambridge MD. The Christmas party is an annual event meant to foster good working relations and cooperation among the various field stations in the surrounding vicinity. As always, a good time was had by all!

F. HABITAT MANAGEMENT

1. General

Eastern Neck NWR is located at the mouth of the Chester River on the eastern side of the Chesapeake Bay in Kent County, Maryland. It is a 2,286 acre island with habitat ranging from croplands and woodlots to brackish tidal marsh and freshwater ponds. Major habitat types and acreage are as follows:

Marsh	1,000
Cropland	630
Woodland	540
Grassland	50
Open Water	40
Administrative	<u>26</u>

TOTAL ACREAGE: 2,286

Habitats on Eastern Neck Island show a high degree of interspersed. There is an almost 50:50 split of marsh and upland habitat. In the uplands, there is another 50:50 split of croplands and woodlands. Croplands are farmed on a rotational basis with a mixture of corn, soybeans, clover, sunflowers, and native warm season grasses present in any given year. Furthermore, the woodlands category could be broken down into woodlots and hedgerows. This degree of habitat interspersed offers a high degree of habitat diversity. The relatively small size of the fields and woodlots and the presence of many hedgerows maximizes the percentage of edge habitat. In summary, Eastern Neck offers a wide variety of habitat types with a high degree of habitat diversity and a high percentage of edge habitat.

2. Wetlands

Salt meadows (790 acres) and regularly flooded salt marshes (200 acres) comprise most of Eastern Neck's wetlands. The marsh generally forms a fringe around the outer edge of the island in all areas except near the eroding bluffs on the western side. Plant composition does not vary much from year to year with vegetation in salt meadows including Spartina patens, Distichlis spicata, and Scirpus olneyi; and that in the tidal marsh being predominantly Spartina alterniflora. Management in salt and brackish marshes involves Phragmites spp. control which was initiated in 1995 on over 260 acres. To date, it is estimated that the island still has approximately 150 acres of this invasive reed grass in its marshes and fringes (see section F.10.).

Numerous tidal ponds are scattered throughout the marsh. Most of these ponds are less than 0.25 acre in size and normally support light to moderate stands of submerged aquatic vegetation (SAV) such as Ruppia maritima and Potamogeton spp, a food source for black ducks, mallards and other species.

a. Headquarters Pond

This pond has a moist soil unit at its northern end and drains into GTR#1 to the south. The pond was at or near full capacity January through mid March. Waterfowl use of the moist soil unit by Canada geese, mallards and black ducks was excellent. A partial de-watering began on March 23 through mid April. The pond was held near the 4 foot level through June 10 to have ample water for the National Fishing Week fishing derby.

Complete de-watering of the moist soil unit was accomplished by the end of June. A vegetation survey was conducted by zone biologist Hal Laskowski in November. Desirable vegetation including smartweeds, panic grass, cyperus, millet, softrush and beggarticks covered 63%, cocklebur 26% and bare ground 11% of the impoundment. Recommendations for 1999 by Zone Biologist Laskowski included drawing down the moist soil unit in April to decrease cocklebur and increase desirable vegetation.

The drought conditions from March through December resulted in the pond being at it's lowest level, 1.15 on December 7. By year's end the moist soil unit was dry except for the shallow swale.

b. Shop Pond

This small impoundment was established in 1992 to collect agricultural runoff and allow sediments, nutrients and other chemicals to settle in the pond rather than wash into the Chesapeake Bay. Water levels fluctuate based on the amount of rainfall received.

The water level continued a steady rise from January through March with the high level reached on March 23 at 3.23 feet. Waterfowl use was nominal. This was followed by a decline in water levels until August when the pond dried up and remained so throughout the rest of the year.

c. SCS Pond

This pond was constructed in 1991 to collect agricultural runoff and allow sediments, nutrients and agricultural chemicals to collect in the pond to settle and/or be taken up by the wetland plants rather than wash into the Chester River.

The year started with no water in the impoundment. It began to fill gradually from January 16 through April 6 when it reached it's maximum capacity for the year at 3.26 feet. Waterfowl use of this impoundment was nominal. By the latter half of July the impoundment was dry and remained so through the rest of the year.

d. Cedar Point Pond

This pond pre-dates the refuge and has a water control structure set higher than the pond bottom so it can never be totally drained. Located on the upper end of a tidal creek, it backfloods when there is an extremely high tide.

The year began with the water level at the four foot level and gradually increased to a high of 5.7 feet by mid February. This 2.5 acre pond received excellent waterfowl use with up to 400 ducks and geese regularly feeding or roosting in the pond.

De-watering of this pond was initiated on June 10 and by July 10 the level was down to 1.01 foot. In August the water was below the gauge and remained so through year's end. However, waterfowl use in the fall was excellent. Species reported during the weekly waterfowl surveys included Canada geese, mallards, black ducks, pintail, green winged teal and hooded mergansers.

Refuge Manager Kaehny met with the U.S. Corps of Engineers and Maryland Department of the Environment on April 13 for an on-site review of three wetland restoration sites on the refuge. Two project sites involve removing Sweetgum and planting preferred species such as willow and swamp chestnut oaks, sycamore and other preferred wetland species. The third site involves expanding the headquarters moist soil impoundment unit.

In September Chesapeake Bay Field Office Biologist John Gill made an on-site visit to the ten acre marsh restoration project at the southern end of the breakwater project. Since the completion of this project in 1995, approximately five acres of the marsh restoration site have been lost due to the dynamics of the water flow from the tidal gut and settling of the geotubes allowing wave action to erode the shoreline. The north section of the site is doing excellent, appears natural, and sand flats have been created where the erosion occurred.

On October 29 CBFO Biologist John Gill and eight representatives from the US Corps of Engineers visited the ten acre marsh restoration site.

3. Forests

Refuge woodlands totaling 540 acres are a mixture of hardwoods composed primarily of sweetgum, oak, hickory, and tulip poplar, with scattered loblolly pine. The woods are arranged as relatively small woodlots scattered throughout the island. Most are interconnected by hedgerows consisting primarily of black cherry and locust. The woodlots vary in attractiveness to Delmarva fox squirrels depending on the composition and understory density in each block.

This was the third year of a major cooperative upland restoration effort with the National Tree Trust involving the reforestation of agriculture fields along the Chesapeake Bay. The two primary objectives of this effort are to create a forested buffer zone between the bay and refuge agricultural fields and to provide future habitat and travel corridors for the endangered Delmarva fox squirrel.

In January arrangements were made with the National Tree Trust for the donation of 1700 tree seedlings including 600 Northern red oaks, 600 willow oaks and 500 sycamore trees. On April 4 refuge staff with the assistance of 22 volunteers planted the trees in two fields (Fields 10 and 12) along the western or bay side. A survival survey conducted during the summer showed an 82% survival rate. Drought conditions through the end of the year will probably show a much lower survival rate when the next survey is conducted in the spring of 1999.

In a cooperative effort with the Chesapeake Bay Field Office (CBFO), Annapolis, MD, RM Kaehny met with CBFO biologists Bill Schultz and Cheryl Amrani to discuss the restoration of riparian habitat along the bay and Chester River. This meeting resulted in grants totaling \$7,800 from American Forests through its Global Relief Forest Ecosystem Restoration Program and \$3,570 from the Chesapeake Bay Trust to plant 30 acres of riparian habitat on the refuge. Proposed plans for the spring of 1999 are to plant 16,140 seedlings including red and white oaks and loblolly pine in agricultural fields along the Chesapeake Bay and Chester River. The objectives of this project are the same as the previously mentioned objectives, to create a forested buffer zone and future Delmarva fox squirrel habitat. The two approved grants were due largely to the efforts of CBFO Biologist Cheryl Amrani.

The U.S. Department of Agriculture Forest Service completed their annual aerial survey of the refuge for the detection of gypsy moth damage in June. No damage was detected.

a. Green Tree Reservoirs

The refuge has five (5) green tree reservoirs (GTR) that are shallowly flooded in the winter to provide loafing and feeding areas for waterfowl. These flooded forests are utilized mostly by mallards, black ducks and wood ducks. Due to the drought conditions in 1998 it was decided not to flood these impoundments in the fall of 1998 and allow the soils to aerate. Following is a brief description and summary of management activity for each GTR.

GTR #1

This pond is designed to retain about 3.9 acres of water at full pool. It is the only GTR which is below the Headquarters Pond in the Durdin Creek drainage. Tree species present in this impoundment consist primarily of red maple (Acer rubrum), sweetgum (Liquidambar styraciflua), black gum (Nyssa sylvatica), and swamp chestnut oak (Quercus michauxii). The water control structure in this impoundment was opened all winter to allow the soil time to dry out and reduce stress to the trees resulting from long term seasonal flooding. However, rainfall from January through March slowly filled the impoundment with a high water level reading of 1.93 on March 23. The impoundment was kept dry through the fall of 1998.

GTR #2

The largest of the impoundments encompassing approximately 9.8 acres at full pool level, GTR #2 lies immediately northwest of the Headquarters Pond and drains into that body of water. Tree species in this impoundment are diverse, but are dominated by sweet gum, various oaks (Quercus spp) and red maple. This impoundment was left to dry with the water control structure left open in the fall of 1997. However, as with GTR#1 abundant rainfall January through March began filling the impoundment with a high level of 1.61 feet reached on March 20. This impoundment was utilized by 300-400 mallards, blacks and woodducks. The impoundment was kept dry through the fall of 1998.

GTR #3

The dominant tree species in this 2.8 acre pool is red oak (Quercus rubra) with many fine specimens scattered throughout the impoundment. This GTR was also allowed to dry out but abundant rainfall filled it above full pool level for a short period in March reaching a peak of 1.93 on March 23 (full pool is at the 1.5' mark). The water control structure was left open through the fall of 1998.

GTR #4

This smallest of our GTRs consisting of 2.0 acres is the most westerly impoundment. Tree species include various oaks (red oak, swamp chestnut oak, willow oak (Quercus phellos), sweetgum, black gum, hickory (Carva ovasa) and red maple. This is the only impoundment dependant on rainfall. The water control structure was closed in the late fall of 1997 but remained dry into January when we finally got sufficient rainfall to fill the impoundment by March. De-watering began on April 6 and was completed within two days. Use of this impoundment was mostly by mallards and wood ducks. This impoundment was kept dry through the fall of 1998.

GTR #5

The northern most impoundment, GTR #5, encompasses approximately 7.0 acres at full pool. Dominant tree species are red oak and red maple, with lesser numbers of swamp chestnut oak, black gum and sweet gum. This impoundment began the year at full pool level. Waterfowl use was excellent with hundreds of mallards, black ducks and wood ducks either feeding or loafing in this impoundment. De-watering began on April 6 and was completed by month's end. As with the other impoundments, the water control structure was left open through the fall of 1998.

4. Croplands

The current farming plan was written in the early 1980's. The basic theme is that 50 percent of the cropland is to be in clover and 50 percent in crops, primarily soybeans and corn. The program was started after the fields had lain idle (and many had become overgrown) after farming was abandoned in the late 1970's. This placed the burden of reestablishing field productivity on the farmer, Bobby Clark, Sr. A series of severe drought years during the last half of the 1980's placed an additional financial burden on the farmer, and the farming program drifted further and further away from the plan. Eventually he went bankrupt and the refuge farming was taken over by his son, Bobby Clark, Jr. The bottom line is that no corn or winter cover crops and little clover were grown for many years. In 1992, the refuge returned the farming plan to the original concept with 50 percent of cropland in clover, 25 percent in soybeans and 25 percent in corn each year. This ratio, coupled with the initiation of sustainable agriculture practices such as crop rotations, cover crop plantings, reduced tillage, and reduced chemical usage brought Eastern Neck NWR's farming program into the

90's.

During the past six years we have taken strides to encourage sustainable agriculture practices on and off the refuge. The following paragraphs summarize the past year of cropland management at the refuge.

On February 2 refuge staff began mowing the refuge's share of the 1997 crops (52 acres of corn) that the cooperative farmer left in fields #5, 6, 10 and 20. Mowing was nearly completed when wet weather abruptly ended this operation on February 18. A large population of blackbirds, mostly grackles and red-winged black birds numbering in the hundreds of thousands had made short work of the standing corn and left little for migratory waterfowl.



NR-98-7 Like the Alfred Hitchcock movie "The Birds" 01/12/98 WF

The refuge staff met with the cooperative farmer on February 18 to develop the 1998 crop plan. The plan was finalized on March 2 with the following crops and acreages planted in 1998:

Corn -	151.1 acres
Soybeans -	205.4 acres
1st year clover -	92.6 acres
2nd year clover -	55.5 acres
wildlife food plots -	46.8 acres
warm season grasses -	8.5 acres
sunflower -	9.3 acres
TOTAL ACRES	569.2 acres

The cooperative farmer is charged \$50.00 per acre on his corn and soybean acreage totaling 356.5 acres for a total rent value of \$17,825. He provided \$16,890 worth of seed, lime and equipment utilization to plant the clover, food plots, warm season grasses and sunflowers. The balance (\$935) owed was paid for by mowing the refuge clover fields. The refuge share totaling 212.7 acres included the clover, food plots, warm season grasses and sunflower fields. The cooperative farmer double cropped winter wheat in 11 corn fields totaling 149 acres. Double cropping removes excess nitrogen from the soil, prevents soil erosion and provides excellent browse for wintering Canada geese. The following table provides crop yields for 1998.

1998 CROP RESULTS			
CROP	TOTAL ACRES	TOTAL BUSHEL	BUSHEL/ACRE
Wheat	205.4	9,013	43.88
Corn	151.1	14,654	96.98
Soybeans	205.4	6,663	32.44

Chesapeake Wildlife Heritage (CWH), a private nonprofit organization that works with public and private landowners on habitat projects, donated \$2,000 to the refuge for crop year 1998. This donation was made through the Waterfowl Sanctuary Program to provide a supplemental food source for migratory waterfowl through the purchase of standing corn from the cooperative farmer and the planting of winter wheat as a cover crop on refuge fields. Approximately 1.0 acre of corn was purchased (\$500) and the remaining \$1,500 was utilized to plant winter wheat.

Refuge Manager Kaehny attended the Farmer's Field Day held at Chesapeake Farms in Chestertown, MD, on August 13. The theme of the program was Nutrient Management and Sustainability. Four years of research on water quality showing how four different farming systems affect water quality, nutrient management, and the agronomic and economic impact of each system was featured in their sustainable agricultural project.

In a cooperative effort with Chesapeake Wildlife Heritage, University of Maryland Cooperative Extension Service, U.S.D.A. Beltsville Agricultural Research Center and the Future Harvest: Chesapeake Alliance for Sustainable Agriculture, the refuge hosted a Farmer's Field Day on September 9 to showcase the refuge's sustainable agricultural program. The theme of the program was herbicide band spraying with cultivation in field crops as compared to the costs of conventional broadcast spraying of herbicides. There were 35 people in attendance and the star of the show was our cooperative farmer, Mr. Clark, whose detailed records of crop yields and the cost for weed control for both systems showed decreased costs utilizing band spraying and cultivation. Mr. Clark also discussed crop rotation and the use of cover crops, techniques that reduce plant pest infestations, soil erosion and nitrogen run-off.

5. Grasslands

In June MW Nicely planted a mixture of native warm season grasses and wildflowers along the bayview butterfly trail on approximately two acres.

In a cooperative effort with the U.S. Department of Agriculture Natural Resources Conservation Service, the refuge planted 114 acres of native warm season grasses off refuge (see Section J.1).

10. Pest Control

Pest plant control at Eastern Neck consists mainly of herbicide use directed at weeds in croplands and grasslands and the control of the invasive reed grass, *Phragmites* spp. The State of Maryland requires landowners to control Canada Thistle and Johnson grass. This can be accomplished by spraying or mowing to prevent the plant from going to seed. Both herbicides and mechanical (mowing) control techniques were utilized.

Phragmites control was initiated on the refuge in 1995 and this effort has continued annually through 1998. East Coast Helicopter, Gettysburg, PA, was contracted to spray 180 acres of *phragmites* at \$26.50 per acre. The refuge supplied the chemical (Rodeo) purchased at a cost of \$88.90 per gallon for 60 gallons totaling \$5,334 from Arborchem Products Co. Ducks Unlimited provided \$942 for this wetland restoration project. East Coast Helicopter conducted the aerial application treatment on September 19. An additional 20 acres were sprayed on an adjacent landowners property (Mr. Robert Strong) north of the refuge.

The refuge initiated control treatment for the exotic mile-a-minute weed whose acreage has expanded exponentially on the refuge in recent years. The herbicide Round-up was used to spray infestations along the entrance road on September 15.

The U.S. Forest Service conducted an aerial gypsy moth forest defoliation survey on the island on June 15. No defoliation was found on Eastern Neck Island nor in the surrounding vicinity.

The following chart summarizes herbicide usage during calendar year 1998.

PESTICIDE USE REPORT FOR CY 1998						
1	2	3	4	5	6	7
PESTICIDE COMMON NAME & PROPOSAL #	TARGET SPECIES	TOTAL AREA TREATED (ACRES OR VOLUME)	TOTAL POUNDS PRODUCT APPLIED	COSTS	RESULTS	APPROVAL
Harmony Extra 51590-98-01	Broadleaf weeds & grasses in small grains	210 acres	4.9#AI	No cost	Good	RO
Banvel 51590-98-06	Weeds in corn (post-emerg)	140.3 acres	17.54#AI	No cost	Good	RF
Beacon 51590-98-09	Broadleaf weeds in corn	140.3 acres	1.11#AI	No cost	Good	RF
Dual 8E 51590-98-08	Johnson grass & broadleaf in corn (post-emerg)	151.1 acres	151.12#AI (18.89gal)	No cost	Good	RF
PESTICIDE COMMON NAME & PROPOSAL #	TARGET SPECIES	TOTAL AREA TREATED (ACRES OR VOLUME)	TOTAL POUNDS PRODUCT APPLIED	COSTS	RESULTS	APPROVAL
Fusion 51590-98-12	Grasses in soybeans	27.0 acres	6.40#AI (2.50 gal)	No cost	Good	RF

Pursuit DG 51590-98-	Broadleaf weeds & grasses in soybeans	177.4 acres	11.2#AI	No cost	Good	RO
Rodeo 51590-98-05	Phragmites	180.0 acres	360.0#AI (90.00 gal)	\$9,204.00	Good	RO
Round-UpUltra 51590-98-07	Weeds in soybeans & corn	254.2 acres	188.05#AI (59.35 gal)	No cost	Good	RF
Tilt 51590-98-02	Leaf blight & glume blotch in winter wheat	161.7 acres	16.9#AI	No cost	Good	RO

12. Wilderness and Special Areas

Hail Point Research Natural Area consists of a loblolly pine-American holly woodland surrounded by marsh at the southeastern tip of the island. When it was originally designated in 1975, it contained 149.5 acres. Subsequent erosion of the island tip has reduced this acreage slightly. Hail Point is barely connected to the rest of the island by a narrow strip of marsh and is actually an island during higher than normal tides. A pair of bald eagles nest on Hail Point (see Section G2).

G. WILDLIFE

1. Wildlife Diversity

Eastern Neck Island is separated from a long narrow peninsula, Eastern Neck, by approximately 100 yards. Surrounding waters vary from extensive mud flats to relatively deep channels. The island itself has several small "bays" formed by shallow tidal creeks. A fringe of marsh habitat borders most of the island. Small scattered woodlots and hedgerows are interspersed within a mosaic of rotated cropland and grass fields. Despite the relatively small size (2,286 acres), this admixture of habitat types creates many miles of edge. Habitat diversity is said to be the key to wildlife diversity; this is indeed true at Eastern Neck. Three endangered and/or threatened species, waterfowl, waterbirds, songbirds, both large and small mammals, reptiles, amphibians, fish, and shellfish abound on the island and in the surrounding waters of the Chesapeake Bay and Chester River.

Two members of the Columbia Chapter of the National Audubon Society, Pat Durken and Richard Smith, conducted butterfly surveys on July 3 and August 21. This is a cooperative effort to develop a butterfly species list and brochure for the refuge which resulted from two meetings with the National Audubon Society concerning their Wildlife Refuge Campaign Program and Audubon Refuge Keepers Workshop. A total of 20 species were recorded during the two surveys.

2. Endangered and/or Threatened Species

Delmarva Fox Squirrels

Eastern Neck NWR has expended significant effort toward determining the population status and distribution as well as the habitat availability and use of the endangered DFS on the island per recommendations from the 1994 Delmarva fox squirrel (DFS) Recovery Plan. Permanent study areas were established in four benchmark sites around the refuge: Site 1 - Hail Point (located along the Shipyard Creek trail); Site 2 - Boxes Point South (located along the southern end of crop field #1 across from Boxes Point Trail); Site 3 - Boxes Point North (located along Boxes Point Trail); and Site 4 - Ingleside (located in the woods surrounding God's Little Acre). Each site contains nest boxes set up along designated transects for a total of 50 nest boxes.

The Recovery Plan also established a standardized censusing protocol consisting of a five year mark-recapture survey involving a nest box check in the winter followed by live trapping and marking in the spring.

The fourth year of the five year nest box survey was completed by March 3. Once again the results of the nest box survey were disappointing with no confirmed Delmarva fox squirrel usage. The survey of 50 boxes resulted in only 45 usable boxes. All 45 usable nest boxes (100%) had nest material of various wildlife species with 28 boxes occupied by gray squirrels (62% of usable boxes) and 17 boxes with unidentifiable nests (38% of usable boxes).

The following chart summarizes the Delmarva box survey for the winter of 1997-1998.

1997-98 EASTERN NECK NWR DFS BOX SURVEY					
SITE	NUMBER OF BOXES	DFS NEST	GRAY SQUIRREL NEST	OTHER NESTS	UNUSED
Shipyard (Hail Pt.)	10	0	6	3	1
Boxes Pt. (North)	10	0	7	2	1
Boxes Pt. (South)	10	0	8	1	1
Ingleside	20	0	7	11	2
TOTALS	50	0	28	17	5

The protocol live trapping mark recapture survey was conducted from May 26 - June 10. Per the recommendations in the Recovery Plan, traps were set along the nest box transects, pre-baited for five (5) days with the traps locked open followed by three (3) days of actual trapping. No Delmarva fox squirrels were trapped.

The following chart provides a summary of four years of nest box checks and trapping results:

YEAR	No. DFS Using Nest Boxes (50 nest boxes)	No. DFS Live Trapped (50 traps)
1995	1	3
1996	0	0
1997	0	2
1998	0	0

Bald Eagles

The refuge had two active bald eagle nests in 1998. The Maryland Department of Natural Resources conducted three aerial bald eagle nesting surveys of the refuge in 1998. The first survey occurred on February 9 and both nesting pairs were near their nests but not yet incubating. The second survey on March 5 found both pairs on the nest and were assumed to be incubating. The third flight on May 20 found the Hail Point nest empty, the first time since 1986 (12 years) that the Hail Creek nesting pair failed to fledge young. The Boxes Point nest contained two eaglets, approximately ten weeks old.

On December 2 a third pair of nesting bald eagles was discovered within close proximity to the refuge shop.

3. Waterfowl

Waterfowl surveys are conducted on a weekly basis by refuge volunteers during the migration and wintering period (January - April and October - December). The survey includes 24 points overlooking various bodies of water and all agricultural fields. The surveys are not all inclusive of available refuge habitat but provide a good basis for long term waterfowl trends on the refuge.

The year started with a January 1 waterfowl population count of 13,550 birds including 7000 Canada geese. Canada geese began their northern migration in earnest the last two weeks in February. The last pintails and American widgeon were observed on February 26. Tundra swans began staging at Eastern Neck in waves from mid-February through March 12 with the last few observed on March 19. Coots, scaup and ruddy duck numbers peaked the last week of March through the first week in April before they continued on with their migration. The first wood ducks and blue winged teal to arrive were observed on February 12 and March 19 respectively.

The first blue winged teal, our earliest migrants, were first observed on September 11.

During the fall migration pintail, American wigeon, Canada geese and ruddy ducks were the first to arrive in appreciable numbers in October. The tundra swan arrived late in small waves from the last week in October to the second week in November. During the late evening hours on November 11 and through November 12, 4,041 swans arrived. This was later than usual, probably due to the unseasonably mild weather up north.



NR-98-8

So much for sneaking up on the them
during the waterfowl survey.

10/98 Volunteer McIntyre

By mid November the waterfowl population increased to 30,500+ with large numbers of pintail and American widgeon and large rafts of ruddy ducks, totaling nearly 10,000 birds, observed on November 19. On November 8 a pair of cinnamon teal were reported, a first for the refuge. This pair stayed in the area through mid-December.

By the end of December the refuge waterfowl population had dropped to approximately 19,000 birds.

The following charts provide the average and peak monthly waterfowl populations and agricultural field counts for 1998.

Canvasback	31	180	870	70	0	0	0	0	0	236	854	3315
Canada Goose	1877	832	0	0	0	0	0	0	0	2469	4091	1469
Bufflehead	369	232	302	238	0	0	0	0	0	1	369	519
Common Goldeneye	117	81	62	1	0	0	0	0	0	0	48	117
Snow Goose	0	0	0	0	0	0	0	0	0	0	0	0
Oldsquaw	0	0	0	0	0	0	0	0	0	0	0	0
Tundra Swan	513	431	121	0	0	0	0	0	0	0	2582	1530
Mute Swan	92	19	71	83	0	0	0	0	0	231	181	61
American Coot	411	416	403	774	0	0	0	0	0	75	212	330
Common Loon	0	0	1	1	0	0	0	0	0	0	0	0
Hooded Merganser	9	0	0	0	0	0	0	0	0	0	4	15
Common Merganser	0	7	0	0	0	0	0	0	0	0	0	0
Surf Scoter	0	0	0	0	0	0	0	0	0	0	0	0
Red-breasted Merganser	17	19	24	27	0	0	0	0	0	0	8	13
Ruddy Duck	41	10	36	590	0	0	0	0	0	626	5239	1521
Horned Grebe	0	0	1	3	0	0	0	0	0	0	2	4
Pied-billed Grebe	0	0	0	0	0	0	0	0	0	0	3	0
Unknown Waterfowl	218	17	2	0	0	0	0	0	0	67	432	377
Unknown Scaup Species	121	296	1392	735	0	0	0	0	0	100	1787	4737

**GROUND CENSUS
AVERAGE MONTHLY WATERFOWL POPULATIONS
AGRI. FIELD BIRDS**

Eastern Neck National Wildlife Refuge

Calendar Year 1998

SPECIES NAME	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Greater White-fronted Goose	0	2	0	0	0	0	0	0	0	0	0	0
Mallard	0	75	37	0	0	0	0	0	0	0	0	0
American Black Duck	0	65	20	0	0	0	0	0	0	0	0	0
Canada Goose	1567	0	0	0	0	0	0	0	0	2373	2947	2480

Calendar Year 1998

[illegible]

Canvasback	89	250	2750	70	0	0	0	0	0	709	1770	4211
Canada Goose	4917	1633	0	0	0	0	0	0	0	2742	6858	2428
Bufflehead	759	297	440	238	0	0	0	0	0	5	732	785
Common Goldeneye	300	100	193	1	0	0	0	0	0	0	121	206
Snow Goose	0	0	0	0	0	0	0	0	0	0	0	0
Oldsquaw	0	0	0	0	0	0	0	0	0	0	0	0
Tundra Swan	1047	454	317	0	0	0	0	0	0	0	4041	2341
Mute Swan	197	32	87	83	0	0	0	0	0	286	302	94
American Coot	547	500	450	774	0	0	0	0	0	200	331	600
Common Loon	1	1	2	1	0	0	0	0	0	0	3	3
Hooded Merganser	24	0	0	0	0	0	0	0	0	0	15	41
Common Merganser	0	22	0	0	0	0	0	0	0	0	0	0
Surf Scoter	0	0	0	0	0	0	0	0	0	0	0	0
Red-breasted Merganser	42	38	36	27	0	0	0	0	0	0	27	21
Ruddy Duck	148	19	137	590	0	0	0	0	0	1703	9784	4001
Horned Grebe	2	2	6	3	0	0	0	0	0	0	4	14
Pied-billed Grebe	1	0	1	0	0	0	0	0	0	0	12	1
Unknown Waterfowl	1050	50	8	0	0	0	0	0	0	202	1700	1226
Unknown Scaup Species	283	468	3436	735	0	0	0	0	0	300	5383	6125

**GROUND CENSUS
PEAK MONTHLY WATERFOWL POPULATIONS
WATERFOWL**

Eastern Neck National Wildlife Refuge

Calendar Year 1998

SPECIES NAME	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Greater White-fronted Goose	2	5	0	0	0	0	0	0	0	0	0	0
Mallard	0	150	70	0	0	0	0	0	0	0	0	0
American Black Duck	0	130	25	0	0	0	0	0	0	0	0	0
Canada Goose	4227	0	0	0	0	0	0	0	0	5853	6976	4110

A special Use Permit was issued to MD DNR on January 6 for the purpose of monitoring neck collared Canada geese on the refuge to assist in their analysis of the population dynamics of the resident goose population.

On February 9 Tri-State Bird Rescue, Newark, DE, released three Tundra Swan on the refuge. The swans were found in Minnesota after having flown into a power line and suffering broken wings. The birds were taken to the School of Veterinary Science at the University of Minnesota for treatment. One of the birds had a particularly nasty break that required surgery to insert pins into the shattered wing bone. Once stabilized, the birds were flown to Tri-State Bird Rescue in DE via commercial airline for rehabilitation. There was some doubt whether the bird with the pinned wing would be able to fly, as it sustained a permanent wing droop; however, shortly after it's release, to the surprise of everyone, it got airborne. No one expects it make the lengthy migration north.



NR-98-9 Okay fellow swans, step high and follow me! 03/20/98 KBB

On March 20 Tri-State Bird Rescue released 14 rehabilitated tundra swans that had been lead poisoned from pellets picked up in a field near Lewes, Delaware. In February a large number of swans from a flock of 200 were found ill or dying from ingested lead shot. Over 35 swans had died and 30 birds were captured and brought to Tri-State Bird Rescue for treatment. These 14 birds are the first to recover sufficiently for release. The refuge was chosen as a release site due to the fact that the refuge affords protection and is a major staging area for tundra swans during the migration.

Volunteers Heather and Todd Gsell checked the refuge's wood duck boxes on April 25. The results are as follows: 23 out of 33 boxes were checked, 13 had evidence of wood duck use, two (2) had screech owls, one (1) had a large black snake, and 1 had an unknown bird species with 5 nestlings. There was a total of 111 wood duck eggs present (this is an approximation, the hen was not purposely chased off the nest to count eggs, two (2) boxes with hens on the nest are reported to have had 20 eggs - possibly used as a dump nest prior to nesting activity), 8 newly hatched ducklings (seven (7) in one box and one found dead in another box with nine (9) eggs), and three (3) membranes in a box left over from last year. The two (2) boxes containing screech owls consisted of one box with an adult and four young, while the other box had only one owl with three dead mice. Eight boxes couldn't be found, two were inaccessible without a canoe, and three of the boxes are in need of repair or replacement. Many boxes are still located in open water and need to be relocated to nearby wooded habitat.

A lone Tundra Swan was seen by refuge staff at Ingleside Recreation Area on May 8. It appeared to be the one that had surgery on a wing, as one wing did not lay close to its body. The swan was leg banded which was indicative of the birds released by Tri-State Bird Rescue earlier this year. Apparently the same Tundra Swan was observed at Strong's Boat Rentals by Assistant Manager Ford on May 9. Strong reported that a swan was at his premises and not behaving properly. However when Ford observed the bird it walked off in a stately manner and appeared to be a strong swimmer as it paddled off. The wing deformity was evident and it came as no surprise that it didn't migrate with the other swan.

The long anticipated arrival of the Tundra Swan finally occurred November 11-12. They began arriving during the late evening hours of the 11th and continued to arrive during the 12th. Their arrival this year was later than in recent years. It is assumed that due to the unseasonably mild weather that extended all the way to Canada, where the swans were staged, they had no impetus to migrate until a cold spell prompted them. The number of swans counted during their initial arrival was 4,041 (November 12). The high for the month was 4,494 (November 20).

A Special Use Permit was issued to Edward "Zak" Zakrajsek, Geo-Marine, Inc., on November 3. Zak is a "Radar Ornithologist" on contract to US Air Force's Air Combat Command, Bird Hazard Working Group using NEXRAD weather radar data, weather forecasts, and known bird distributions to identify bird hazards and provide advisories to military aircraft conducting low altitude, high-speed training. Eastern Neck NWR was selected because of the known hazards to military aircraft training in the area associated with the arrival and departure of Tundra swan, and other waterfowl. The study is affectionately called BASH (Bird Aircraft Strike Hazard), the end result is the Avian Hazard Advisory System to pinpoint actual bird movement to achieve more effective risk management.

5. Shorebirds, Gulls, Terns and Allied Species

Refuge volunteers conducted point count marsh and shorebird surveys from July through mid September. The following table provides the peak monthly count for each species observed.

1998 PEAK MARSH AND SHOREBIRD COUNTS			
Species	Jul	Aug	Sep
Great Blue Heron	8	8	8
Green-backed Heron	6	2	4
Great Egret	0	0	1
Snowy Egret	5	1	15
Dunlin	0	0	2
Cattle Egret	8	7	1
Killdeer	0	0	2
Great Blacked Backed Gull	5	5	0
Lesser Blacked Backed Gull	1	0	0
Herring Gull	92	195	101
Laughing Gull	11	23	19
Ring-billed Gull	0	0	83
Bonaparte's Gull	0	0	0
Least Little Tern	5	15	1
Forster's Tern	0	0	0
Common Tern	1	5	3
Royal Tern	0	0	0
Greater Yellowlegs	0	2	1
Lesser Yellowlegs	0	0	3
Spotted Sandpiper	0	6	0
Semi-palmated Plover	0	0	5
Cormorants	0	21	1

6. Raptors

The first ospreys returned from their southern wintering grounds the week of March 8.

Dozens of kestrels made an appearance at the refuge on September 13 during their southward migration and stayed for a couple of weeks.

7. Other Migratory Birds

Eastern Neck NWR, Friends of Eastern Neck and volunteers joined the Maryland Ornithological Society, Kent Chapter, for their annual survey in Kent County in May. Volunteers Peter Blank and Howard McIntyre identified some 80 species of birds during their midnight through 3:00 p.m. survey of the Refuge. When the final tallies were in, Floyd Parks, survey coordinator/compiler, declared 147 species identified in Kent County. This number was down from last year due in large part to the inclement weather.

During November Eastern meadowlarks were frequently seen in the ladino clover fields throughout the month.

Volunteer Howard McIntyre compiled the results of the refuge's bluebird nest box program. The results are given in the table below:

1998 Bluebird Nest Box Results - 57 Nest Boxes Available				
Species	# of nests	# of eggs	# hatched	# fledged
Eastern Bluebird	29	109	73	66
House Wren	6	46	27	27
Tree Swallow	14	67	53	53
Carolina Wren	1	5	5	5
Totals	50	227	158	151

8. Game Mammals

Eastern Neck NWR held a special deer hunt day on Saturday, January 17. The need for the hunt was based on a spotlight survey of refuge fields on December 17, 1997. The refuge's 1997 annual deer hunt which ended on October 31 resulted in the fifth highest harvest (126 deer) since hunts were established in 1966. However, following the closure of the state firearms deer hunt in December, a night spotlight survey of refuge fields resulted in an

extremely high count of 164 deer necessitating the need for an additional hunt day.

The hunt was a huge success as 115 hunters harvested 114 deer, with 77 hunters bagging one or more deer. This brought the total 1997-1998 annual hunt harvest to a record 242 deer, beating the old record of 241 established in 1993.

The following table provide a breakdown by age classification and weight for the one day January hunt.

JANUARY DEER HARVEST AGE CLASS DATA								
	½ YEAR		1 ½ YEAR		2 ½ YEAR		2 ½+ YEAR	
	BUCKS	DOES	BUCKS	DOES	BUCKS	DOES	BUCKS	DOES
# Of Deer	18	28	9	32	5	12	1	9
Average Weight in Lbs.	68	62	108	106	156	113	99	112

The 1998 annual deer hunt began in September as the refuge held four days of hunting including two days of archery (September 14 and 18), one special non-ambulatory hunt (September 21) and one special youth hunt (September 26). This resulted in 190 hunters harvesting 18 deer for a success rate of 9.5%. Age class and weight data were collected and are summarized in the following chart:

SEPTEMBER DEER HARVEST AGE CLASS DATA								
	½ YEAR		1 ½ YEAR		2 ½ YEAR		3 ½+ YEAR	
	BUCKS	DOES	BUCKS	DOES	BUCKS	DOES	BUCKS	DOES
No. of Deer	6	2	4	1	2	3	0	0
Average Weight	41	42	107	80	162.5	90		

In October six days of deer hunting were completed including three days of muzzle loader, and three days of shotgun. A summary of October's deer harvest age class data is given below:

OCTOBER DEER HARVEST AGE CLASS DATA								
	½ YEAR		1 ½ YEAR		2 ½ YEAR		3 ½+ YEAR	
	BUCKS	DOES	BUCKS	DOES	BUCKS	DOES	BUCKS	DOES
No. of Deer	16	7	10	12	10	4		1
Average Weight	47.25	47.25	123.0	89.75	120.75	100.25		131.0

The 1998 annual deer hunt ended on October 30. The ten day annual hunt resulted in 758 hunters harvesting 78 deer (48 bucks; 30 does) for 10.3% success rate. This was the lowest harvest since 1990 and 32% below the record harvest of 242 deer last year. The number of deer harvested per day is given under the Public Use portion of this report.

TOTAL 1998 DEER HARVEST AGE CLASS DATA								
	½ YEAR		1 ½ YEAR		2 ½ YEAR		3 ½+ YEAR	
	BUCKS	DOES	BUCKS	DOES	BUCKS	DOES	BUCKS	DOES
No. of Deer	22	9	14	13	12	7	0	1
Average Weight	45.3	46.1	118.4	89.1	140.2	96.0	0	131

A spotlight survey of the refuge's deer population on December 4 revealed 75 deer resulting in a decision not to hold a special hunt in January. It was clearly apparent that the late season hunt held in January of this year had the desired effect of substantially thinning the herd. Survey conditions were clear, moonless, about 45° F, and only a slight breeze. Most of the deer observed were lying along the field edges. The survey was conducted between seven (7) and nine (9) pm by OA Kim Bucklew, volunteer Ryan Bucklew, and ROS Ford.

15. Animal Control

On January 22 a red fox with scabies was euthanized near Tubby Cove. The animal was seen repeatedly nosing around stopped traffic on the main refuge road and it's appearance could be described as hideous; a naked tail, very scruffy coat, no apparent ears, and slits for eyes. The ears and eyes were misshapen by severe scabs about the face.

On May 12 a mute swan nest containing six eggs was located in the wetland near the Duck Inn Trail. The eggs were oiled with Mazola Corn Oil, a product highly recommended by the

state, to halt their developmental progress. The State oiled several swan nests on the island's perimeter on May 8.



NR-98-10 Over 300 mute swans in one cove.

09/19/98 WF

Cooperative farmer Bobby Clark reported removing 15 groundhogs from farm fields during the season as authorized by a special use permit to reduce crop depredation.

H. PUBLIC USE

1. General

In a cooperating outreach effort to promote Service programs, Ms. Barbara Benson, Chesapeake Bay Field Office (CBFO), arranged for refuges and other field offices to set up displays at no cost in Maryland Highway Visitor Centers throughout the state. Refuge Manager Kaehny and Ms. Benson set up a display for Eastern Neck NWR in the Bay Country Welcome Center on Route 301 on January 6. The Eastern Neck exhibit will be on display for two months.

Refuge visitation for 1998 assumes the national average of 3 people/car and is summarized in the following table:

	MAIN ROAD NORTH		BOGLES WHARF ROAD		INGLESIDE ROAD		MAIN ROAD SOUTH	
MONTH	# VEH.	# VIS.	# VEH.	# VIS.	# VEH.	# VIS.	# VEH.	# VIS.
January	1,706	5,118	N/A	N/A	N/A	N/A	N/A	N/A
February	1,592	4,776	N/A	N/A	N/A	N/A	N/A	N/A
March	1,750	5,250	N/A	N/A	N/A	N/A	N/A	N/A
April	1,312	3,936	N/A	N/A	N/A	N/A	N/A	N/A
May	1,900	5,700	N/A	N/A	563 ¹	1,689	801 ²	2,403
June	2,026	6,078	N/A	N/A	737	2,211	1,140	3,420
July	6,896	20,688	N/A	N/A	2,263	6,789	2,957	8,871
August	2,348	7,045	1,477 ³	4,431	1,444	4,331	1,039	3,116
September	2,218	6,654	898	2,694	926	2,778	1,047	3,141
October	877 ⁴	2,631	1,289	3,867	N/A ⁵	N/A	1,121	3,363
November	3,454 ⁶	10,362	582	1,746	N/A	N/A	1,212	3,636
December	1,244	3,734	543	1,628	N/A	N/A	506	1,518
TOTAL	27,323⁷	81,969	4,789⁸	14,367	5,933⁹	17,799	9,823⁷	29,469

¹ Traffic counter was installed on 5/8.

² Traffic counter was installed on 5/8.

³ Traffic counter was installed on 8/3.

⁴ Traffic count was too low, counter needed calibration.

⁵ Area is closed for the fall and winter season.

⁶ Traffic count was too high, needed additional calibration.

⁷ Suspected error due to questionable data in October and November.

⁸ Partial year data only.

Total annual visits to the refuge in 1998 is estimated at 85,000. The counter data does not include an estimated 3-5,000 fisherman who fish off the bridge at the refuge entrance and do not cross a traffic counter.

2. Outdoor Classrooms - Students

Refuge Manager Kaehny and ROS Ford met with the Kent County Board of Education Director, Kent County Extension Service, Maryland Department of Natural Resources and Kent County Department of Natural Resources Conservation Service representatives on February 5 to plan the Kent County 4th grade environmental education program spring session that was held on April 27-30.

Refuge Manager Kaehny and ROS Ford met with 4-H leader Elizabeth Hill on February 12 to discuss a two-day environmental education camp for 4-H members on the refuge during the month of June. The 4-H members, ages 9-18, from Kent and Queen Anne's Counties will receive instruction on endangered and threatened species, wetlands, insects, bird watching, agriculture, wildlife enhancement, reptiles and amphibians, and more. A second meeting was held on April 21 to finalize plans for the two day program.

On April 18 ROS Ford gave a short presentation about the FWS and Eastern Neck NWR to Boy Scout Troop 251, from Newark, DE. The troop, eight boys and three adult leaders, camped out on the lawn near the lodge 4/17 - 19.

On April 20 ROS Ford gave a very short talk about habitat needs for various kinds of wildlife to 12 very short people from the Little School of Kent School, a pre-kindergarten class on an outing to learn about nature.

Volunteer Howard McIntyre met with school administrators and fourth grade teachers on April 21 to finalize plans for the Kent County spring session of the 4th grade environmental education program. The program was held at Turner's Creek on April 27-18. Approximately 200 students from Rock Hall, Worton, Millington and Chestertown Elementary Schools attended the two day session.

On April 22 Eastern Neck NWR hosted the Kent County High School students participating in the Envirothon.

On May 2 and 3, 15 students and adults from Potomac School conducted environmental education activities on wetlands.

The refuge hosted a two day environmental education program for 17 Kent and Queen Anne's County 4-H'ers June 15-16. The program was a cooperative effort between the Kent County Extension Service, Wye Research and Education Center, Bombay Hook and Eastern Neck NWR's. The two day program included sessions on wetlands (Marian Johnson-Pohlman - Bombay Hook NWR), endangered species (Intern Michele Goode - Eastern Neck NWR), birding (EN Volunteer Howard McIntyre), amphibians and reptiles (Bill Hillen - Wye Research and Education Center), insects (Beth Hill - Kent County Extension Service) and agriculture (John Hall - Kent County Extension Service).

On September 10 RM Kaehny met with the Kent County Board of Education, Kent County elementary principals, and the Extension Service, to plan the two day Kent County 4th Grade Environmental Education Program slated for early October at Eastern Neck NWR.

On September 15 Volunteer Randy Mitchell instructed a group of 15 students from Rourke Middle School, Washington, DC, on bay ecology. They did a seining of the bay and Randy then identified the organisms and gave them an ecology lesson. Upon completion, they were then given a short briefing on the FWS, Eastern Neck NWR, and a brief overview of wildlife management by ROS Ford.

On September 15 ROS Ford spoke to a cub scout pack from Annapolis, MD, about the refuge and wildlife management. The pack consisted of eight members, 8 - 10 years of age, and an additional eight family members.

On September 28 and 29 Eastern Neck NWR hosted 220 fourth grade students from Kent County elementary schools for their annual two day environmental education program. Marion Johnson-Pohlman from Bombay Hook NWR coordinated the refuge's portion of the program and also brought with her Tina Watson and Frank and Betty Loftus to assist. Eastern Neck volunteer Randy Mitchell also helped with the EE activities. This program is an annual cooperative effort involving Eastern Neck and Bombay Hook NWR's, Kent County Extension Service, Natural Resources Conservation Service, Maryland Department of Forest Service and Kent County Board of Education.

On October 17 two students from Millersville University spent the day seining in the Bay to determine species compositions for an ecology class wetland project.

On October 28 ten students and two adults from Echo Hill Outdoor School, Worton, MD, spent the day on Eastern Neck NWR to study wetlands, part of their environmental education

curriculum.

4. Interpretive Foot Trails

Refuge Manager Kaehny and ROS Ford met with Chesapeake Bay Field Office and U.S. Corps of Engineers personnel on February 3 to assess storm damage erosion to the Boxes Point Trail. Recent rain, high winds and tides washed away a 100' section of this access road. Plans are to rip rap this section and rebuild the road. It was determined that we needed to file for a permit which was completed and submitted to Maryland Department of the Environment on February 24. Work was initiated on the project in December (see Equipment and Facilities - Rehabilitation).

On March 12 Refuge Manager Kaehny, ROS Ford, and FOEN Vice President McIntyre, met with the ecologist from Adkins Arboretum to discuss native plants suitable for the planned "Butterfly Trail" from the Refuge Office to the bay shore. The meeting resulted in many good ideas that could be incorporated into the design of the trail. The scope of the project also became larger than first conceived and will have to be built in stages if it is to be accomplished.

On May 13 a \$5,000 grant from the National Wildlife Refuge Association and a \$200 grant from American Legion Post 228, Rock Hall, MD, was received to build the butterfly/bay view trail from the office to the bluff overlooking the Chesapeake Bay (see Section I.1).

Refuge Manager Kaehny and Assistant Refuge Manager Ford met with Ms. Barbara Benson, CBFO, and Gary Mulliner, Joan Carol Design and Exhibit Group on October 28 to plan an exhibit for the Wildlife Trail kiosk.

5. Interpretive Tour Routes

Refuge Manager Kaehny gave a tour of the refuge to 15 members of the Port of Chester Questers on April 20.

On June 9 ROS Ford and Maintenance Worker John "The Chauffeur" Nicely, gave a bus tour to 23 people enrolled in an environmental studies course at Washington College, Chestertown, MD.

On September 19 Friends of Eastern Neck President Lynne Smith gave a tour of the refuge to members of the New Columbia Chapter of the Audubon Society.

6. Interpretive Exhibits/Demonstrations

In a cooperative effort with the Chesapeake Bay Field Office, the refuge set up a refuge and endangered species exhibit at the Bay Country Welcome Center, Route 301, on May 4. Despite the event occurring on a Monday, the turnout was better than expected with

approximately 100 visitors.

ROS Walt Ford was featured at the Chestertown Wildlife Exhibition on Saturday, October 24. He presented a slide show about the Service and Eastern Neck NWR at both 11 a.m. and 1 p.m. to a near capacity crowd. The 11 a.m. show was attended by 28 and the 1 p.m. show was standing room only with 47 people in attendance (it was a small room). The 40 minute slide show was followed by a question and answer period of about 15 minutes, with the mute swan issue of primary concern for many (all comments received were in favor of lethal control of mute swan).

Eastern Neck National Wildlife Refuge held an open house and beach clean-up on March 14 to celebrate the 95th birthday of the National Wildlife Refuge System. The beach clean-up from 10 a.m. to 12 p.m. was a huge success with more than 30 tires, two dumpsters full of garbage and hundreds of pounds worth of aluminum, plastic and glass recyclables picked up by the Kent County Public Works-Recycling Department. The open house at the historic hunting lodge included various craft activities for children with endangered species as the theme. The Maryland Department of Natural Resources live animal Scales and Tales program (that was funded by the Friends of Eastern Neck and the Friends of Blackwater support groups) and an endangered species exhibit and program by Chesapeake Bay Field Office Outreach Specialist Ms. Barbara Benson were huge successes.



NR-98-11 Always a favorite of both adults and children. 03/14/98 MCK

On March 23 Volunteer George Bankey and ROS Ford installed the Chesapeake Bay Access sign that was given to the refuge by the Chesapeake Bay Access Work Group at Bogles Wharf. The informational sign promotes wise use of the Chesapeake Bay and also provides information about the refuge.

To celebrate Migratory Bird Week, May 10-16, refuge volunteers Peter Blank and Howard McIntyre conducted scheduled guided bird walks throughout the week. Public participation was less than expected due to inclement weather.

Refuge Manager Kaehny met with the producer and director of Middleton/Stroh Communications on May 14 to develop a television production about the upper bay with footage of Eastern Neck. The TV production entitled "On the Water" will be a half hour weekly television series with 13 episodes shot from the perspective of being on a boat and featuring locations throughout the U.S. and Caribbean.

On May 27 the MD DNR helicopter flew a camera crew from CNN over the refuge to observe the Mute Swan problem. CNN is doing a series on exotic species to air later this year. While refuge staff were not involved or asked to comment on the problem, they were happy to hear that CNN will take the problem to a National level and hopefully enlighten the uninformed.

On June 9 the refuge hosted the Washington College's Summer Institute, a week long program on the Chesapeake Environment, sponsored by Washington College and the

University of Maryland Center for Environmental Sciences at Horn Point. Refuge Operations Specialist Walt Ford provided a presentation and tour of the refuge to 23 participants and Volunteer Howard McIntyre guided the group on bird walks throughout the refuge.

Eastern Neck participated in the Town of Rock Hall's annual July 4th celebration with a display, mounts and information about the refuge at the Rock Hall Civic Center. Refuge supporters Kelly and Jonathan Margolis designed and constructed a float representing Eastern Neck NWR. The float was a giant duck made from vegetation. The theme of the float was "Nature's Spectacle" and won the trophy for the most original float. The Margolis' also purchased approximately 250 sunglasses with an Eastern Neck NWR inscription which were passed out to children along the parade route by the Friends of Eastern Neck.

The refuge and the Friends of Eastern Neck set up an exhibit for the "Party on the Bay" festival on Saturday, August 15, in Rock Hall, MD. The event was a huge success and the refuge exhibit was well received by hundreds of interested citizens.

In a cooperative effort with the town of Rock Hall, a "kick-off concert" was held in the refuge lodge on October 8 to promote the town's first ever Fall Fest Celebration and Eastern Neck's open house on October 10 in honor of National Wildlife Refuge Week. The concert, by a local folk group called Terra Nova, attracted 62 people who thoroughly enjoyed the evening. Refuge Operations Specialist Ford provided opening comments and refreshments were provided by the Friends of Eastern Neck.

Eastern Neck NWR held an open house on October 10 in honor of National Wildlife Refuge Week. Refuge Management bus tours were given to all interested visitors and refuge volunteers were set up with spotting scopes in strategic locations along the entrance road and encouraged visitors to view the waterfowl. In addition, activities at the lodge consisted of several arts and crafts projects for youngsters, a decoy carving demonstration, wildlife exhibit of taxidermic mounts, and many items from the refuge book store were available for sale. Refreshments were provided by the Friends of Eastern Neck. The weather was less than ideal and visitation was low as a result, but the visitors that came in spite of the weather were very impressed with the refuge and the Friends of Eastern Neck support group.

The Friends of Eastern Neck staffed an information booth at the Rock Hall Fall Fest on October 10. The weather was less than perfect but attendance was very good and the Friends got several new memberships and provided information to approximately 250 interested visitors.

Refuge Manager Kaehny met with the Prince George's County Chapter of the Audubon Society in Greenbelt, MD, on October 13. Kaehny presented a slide show about the refuge and its management programs followed by a discussion of projects that the Chapter could get involved in on the refuge.

The Maryland Ornithological Society and Chester River Association held waterfowl survey

field trips at the refuge on November 5. Refuge Manager Kaehny and Volunteer Howard McIntyre guided the groups. No one was disappointed as waterfowl populations were diverse and abundant.

On November 8 the Central Atlantic States Audubon Naturalists Society held a birding field trip to the refuge that proved to be very exciting for all 13 participants. Paul Dumont, Field Trip Coordinator for the group, reported that 12 of the participants got a new bird species on their life list, a pair of Cinnamon teal. The pair were seen by the Eastern Neck Bridge. Additional species of interest seen by the group were Caspian tern and a Red-throated loon. Dumont put the teal sighting on the Osprey, an internet birder hot line, which resulted in a significant amount of interest from birders around the area for the remainder of the month. The teal pair were seen with some regularity near the bridge for the entire month.

8. Hunting

The refuge held a special one day deer hunt on January 17 based on the high number of deer counted during a spotlight survey on December 17, 1997. Approximately 300 applications were received by the January 5 deadline and a drawing was held on January 6 to select the 100 permittees. The hunt was a huge success with 115 hunters harvesting 114 deer. The hunter success rate was 66.9% with 77 hunters bagging one or more deer (38 hunters got the daily limit of two deer). This brought the total season harvest to 242 deer, a new record, beating the old record of 241, established in 1993.

The 1998 Annual Deer Hunt included ten days of hunting as follows.

Archery	Sept. 14 and 18
Special Non-Ambulatory Hunt	Sept. 21
Youth Hunt	Sept. 26
Muzzleloader	Oct. 2, 5, and 9
Shotgun	Oct. 16, 23, and 30

Hunters were permitted to harvest two deer one of which had to be antlerless. The deer harvested on the refuge did not count against their state tags, thus refuge deer were bonus deer.

A news release was issued to area newspapers on June 18 announcing the deer hunt and application procedures.

Office Automation Bucklew processed the applications in August. The computerized lottery was completed on 8/25 for the 1,014 applicants received. The number of applications for

each hunt category received are as follows:

Archery	130	Total available	230
Muzzleloader	401	Total available	200
Shotgun	403	Total available	200
Youth	60	Total available	60
Non-ambulatory	20	Total available	50

This compares to a total of 1,174 hunt applications received for the 1997 hunt. There is no apparent reason for the decline in interest for the refuge hunt, unless hunters were skeptical that there were insufficient deer present after the record harvest of 242 taken during the last season.

In September the refuge staff and volunteers spent the first half of the month preparing for the start of the 1998 annual deer hunt. The "No Hunting Zone" around the lodge, residence, shop, and office and designated parking areas were posted on September 10 and the hunter check station was set up at the entrance on September 11.

The following table summarizes the hunter use and success for hunt days in September:

HUNTER USE/SUCCESS				
HUNT TYPE	DATE	NUMBER OF HUNTERS	DEER HARVESTED	PERCENT (%) SUCCESS
ARCHERY	9/14	101	11	10.9%
ARCHERY	9/18	22	1	4.5%
NON-AMBULATORY	9/21	17	1	6%
YOUTH	9/26	50	5	10%



NR-98-12 What we all dream about!

09/26/98 WF

The following table summarizes the hunter use and success for hunt days in October.

HUNTER USE/SUCCESS				
HUNT TYPE	DATE	NUMBER OF HUNTERS	DEER HARVESTED	PERCENT (%) SUCCESS
Muzzleloader	10/02/98	97	12	12.4
Muzzleloader	10/05/98	107	7	6.5
Muzzleloader	10/09/98	76	3	3.9
Shotgun	10/16/98	100	15	15.0
Shotgun	10/23/98	86	14	16.3
Shotgun	10/30/98	102	9	8.8

The following table provides a breakdown of hunter success, average weights of deer harvested, etc. for the last 10 years (1989 - 1998) for comparison purposes.

CY	% Success	Male	Female	Total Kill	Ave Wt. Males	Ave Wt. Females	Number Hunters
89	13	49	37	86	104.8	70.4	645
90	13	45	32	77	112.3	68.8	599
91	15.9	59	52	111	117.7	75.6	700
92	16.1	85	80	165	101.6	66.2	1,025
93	22	109	132	241	---	---	1,106
94	9.9	51	42	93	---	---	936
95	15	66	60	126	---	---	843
96	17	85	52	137	---	---	783
97	26	107	135	242	---	---	920
98	10.3	48	30	78	---	---	758

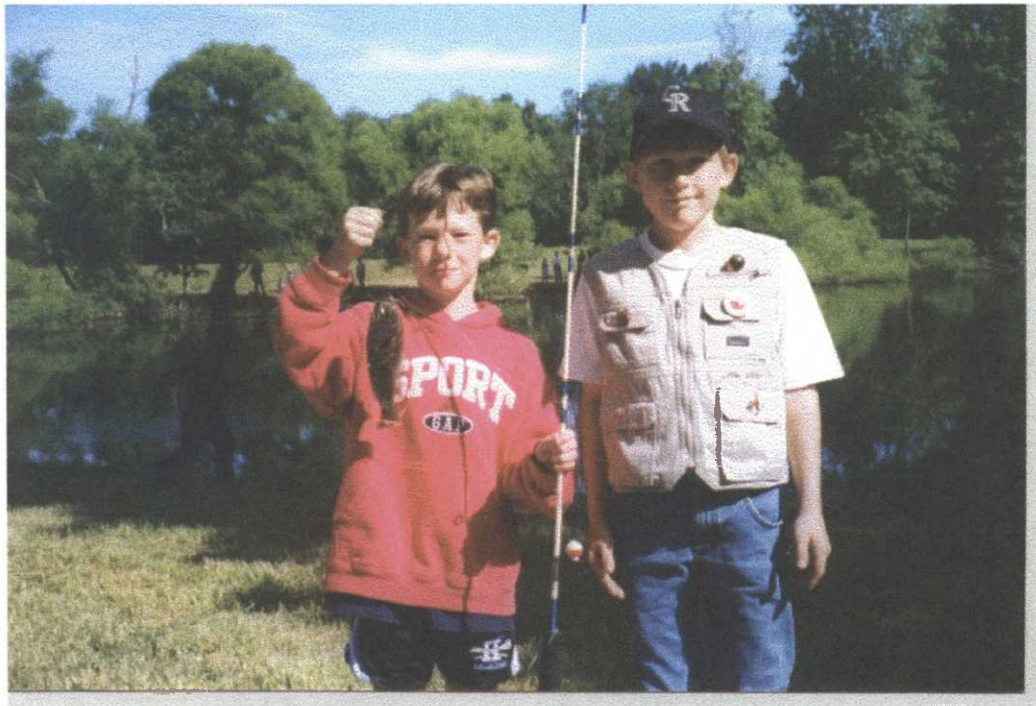
TOTAL KILL 1966-1998: 3,240

33 YEAR AVERAGE: 98.18

On November 3 MW Nicely removed all of the parking area and no hunting zone signs that were in place for the September and October deer hunt.

9. Fishing

Eastern Neck NWR hosted a Children's Fishing Derby on June 6 to celebrate National Fishing Week. The day was picture perfect with 58 kids vying for numerous prizes consisting of rods and reels, tackle boxes, and assorted fishing tackle. Many of the prizes were generously donated by Toy's Outdoor World, Rock Hall, MD. The Friends of Eastern Neck provided lemonade and cookies for all participants. They also provided many hours of time organizing and working at the event to make it a huge success. Following the fishing derby, a covered dish picnic was held at the lodge for all FOEN members, guests, and prospective members.



NR-98-13 A team effort to land this lunker.

06/06/98 WF

11. Wildlife Observation

The annual Audubon Christmas Bird Count on the refuge was completed by the local Audubon club on December 20. Survey results are forth coming.

17. Law Enforcement

On January 12 RM Kaehny found the Nature Trail informational sign and supporting posts snapped off at the ground level. Tracks revealed someone had pushed it with their vehicle. We assumed just another case of vandalism and filled out an incident report. However, during the special January refuge deer hunt while checking in the hunters, one group told us about watching some hunter who had come scouting on the designated scout day and was backing out of the Nature Trail parking lot and hit the sign by mistake.

On February 8 our cooperative farmer, Bobby O. Clark, notified ROS Ford at approximately 7:40 a.m. that vandalism had occurred during the night on the refuge. The restroom at Tubby Cove was damaged and the stop sign at the intersection of Bogle's Wharf Road was pulled over. Ford immediately contacted the Kent County Sheriff's Office to report the incident and then went to the area to await an officer to aid in the investigation. Sheriff's Deputy Will Dempsey arrived shortly thereafter. The investigation revealed that the vent on the women's restroom door was kicked in, leaving a hole nearly large enough for a person to crawl

through to the inside. No other damage at Tubby Cove was found. The stop sign at Bogle's Wharf Road was pulled up and left lying in the middle of the intersection. Officer Dempsey mentioned that several mail boxes on Highway 445 that leads to the refuge had been knocked over as well. He would file a report and let us know if anything develops.



NR-98-14 I guess the culprit would prefer a yield sign! 02/08/98 WF

On February 10 the vandals were back again during the previous night and continued to inflict further damage on the previously damaged door to the women's restroom, no damage was inflicted on the men's restroom door. The stop sign was again removed and left lying in the road. It was also noted at this time that a pedestrian crossing sign was missing near the Tubby Cove parking area. It is unknown if the sign disappeared that night or from the previous vandalism. This incident was also reported to the Kent County Sheriff's Office.

On February 15 ROS Ford discovered additional vandalism recently inflicted on the boardwalk. Someone had apparently used a machete or hatchet and marred the handrails on the boardwalk on numerous spots. It looked as if they were walking along and intermittently whacking it, almost nonchalantly. They also did damage to a tree near the observation tower and nearly chopped a sign post in half at the start of the boardwalk. It's unknown when the damage exactly occurred but is thought to have happened recently as it was discovered on

a Sunday. The previous vandalism occurred on Friday or Saturday night. The Kent County Sheriff's Office was again notified and they promised to step up patrols, especially on weekends.

On March 7 vandalism occurred during the night of 3/6. An unknown vehicle purposely ran over the Duck Inn Trail sign located adjacent to the roadway by the Duck Inn Trail parking lot. Vehicle tracks were clearly visible in the grass leading up to the sign and then there were clear indications that the vehicle spun all four tires pushing the sign over and snapping off the wooden posts that supported the sign. The sign was undamaged but a new frame and support posts needed to be built and installed.

Refuge Manager Kaehny attended the first annual law enforcement training session at the NCTC in Sheperdstown, West Virginia, Mary 30-April 3. This was the first time that the instruction was held at the NCTC.

Refuge Operations Specialist Ford attended the second annual law enforcement training session on April 6-10. The firearms qualifications was held at a shooting range maintained by MD State Prisons, near Hagerstown, MD.

On July 27 ROS Ford gave FWS Special Agent Mike Weaver, Cambridge, MD, a tour of the refuge. The tour allowed Ford to describe the deer hunt program and possible compliance checks he could perform during the hunts. Ford also took the time to relay other problems encountered, i.e., vandalism, illegal dumping of trash, ARPA violations, and suspected migratory waterfowl (sea duck) hunting violations adjacent to the refuge in the Chesapeake Bay. SA Weaver told Ford that he would be interested in doing compliance checks in the field during the deer hunts.

On August 25 OA Bucklew discovered an overturned vehicle off the entrance road upon arriving at work at 6:00 a.m. (early arrival). She contacted Refuge Officer Ford to learn if it was previously reported. She then called the Kent County Sheriff's Office to report the accident. Ford responded to the accident and checked the vehicle for occupants, there were none. The windshield was kicked out and a soggy pair of cutoffs was found lying near the vehicle. Additional searching yielded a wallet with ID belonging to Christopher M. Pinder, Chestertown, MD. The vehicle was also registered to a Pinder at the same address. An individual at the scene (he responded due to hearing about the accident on his scanner) said that C. Pinder was at his home sleeping, after coming home in the early morning hours with his step son. The Sheriff's Officers went to his home and retrieved the two individuals for questioning.

Pinder, age 21, soon admitted that he was driving and that they both were quite intoxicated at the time of the accident. They had been drinking for about eight hours (they weren't really sure what time the accident occurred). The vehicle tracks clearly showed that they failed to negotiate a curve in the road and that speed was also a likely factor in the accident. Pinder and his male companion claimed they walked to Rock Hall after the accident, eight (8) miles

away, and Pinder was in his boxers the whole time. The Sheriff's Office charged Pinder with failure to return to the scene of an accident. No Federal charges were made, but the "boys" were required to clean up the roadside of all debris as a result of the accident.

Refuge Manager Kaehny and ROS Ford requalified with their service weapons at Patuxent Research Refuge October 17.

Refuge Operation Specialist Ford, a Service Firearms Instructor, traveled to Prime Hook NWR on October 6 to provide a required re-qualification session for Refuge Officers from Prime Hook (4) and Bombay Hook (2) NWR's.

On October 30 the final minutes of the 1998 deer season failed to end at the required time of 5:07 pm (official sunset). Former ENNWR Manager Paul Daly, presently the manager of Bombay Hook NWR, was hunting near Bogle's Wharf and reported hearing late shooting further South on the island. No refuge officers were available to investigate at the time. Activity at the trailer was quite busy with hunters checking out for the day. At approximately 6:30 pm there were four (4) hunters still unaccounted for and Refuge Officer Ford went looking for the missing parties. Ford was signaled by a flashlight in the field across from the Wickes Historic Site. Ford encountered Edward E. McCall, Jr., Bozman, MD, who told Ford that he had a deer in the next field (field # 29). He was on his way to get his pick-up while his hunting buddy field dressed the deer. Ford asked him what time he shot the deer, he replied at 5:25. Ford then asked him if he knew what the legal shooting hours were for the day. McCall said "½ hour after sunset, about 5:35 pm". Ford then informed McCall that he had committed a late shooting violation. Refuge regulations require that hunting stops at sunset, which was 5:07 pm on that particular day. McCall was cited for "failure to comply with refuge special hunting regulations", more specifically, "hunting deer after legal shooting hours". An NOV was subsequently sent to Mr. McCall. The violation has a \$100.00 collateral.

On November 29 ROS Ford found a brown Isuzu Trooper illegally parked near the gated road to the Ingleside Recreation Area. Upon investigating, Ford found one (1) male, two (2) female companions, and two (2) unleashed dogs, on the rocky beach near the canoe launch. The male was the driver of the vehicle. An NOV was issued to him on 12/1 for failure to comply with terms/conditions for access...or use of NWR areas. The NOV carries a \$50.00 collateral.

A suspicious vehicle was found at the Wicke's Historic Site on November 29. It was the second Sunday in a row that the vehicle was seen there with no driver present. A thorough search of the area did not reveal the driver's whereabouts.

18. Cooperating Associations

1998 sales from the "Friends of Blackwater" Cooperating Association outlet at Eastern Neck NWR is given in the table below. Sales from 1997 are shown for comparison purposes. All

figures include Maryland's 5% state sales tax.

MONTH	1998 SALES	1997 SALES
January	\$303.17	\$84.79
February	\$287.23	\$99.75
March	\$668.58	\$815.79
April	\$708.31	\$363.96
May	\$568.62	\$1,076.64
June	\$703.97	\$458.46
July	\$792.03	\$767.93
August	\$740.38	\$1,056.74
September	\$378.83	\$378.94
October	\$1,130.89	\$604.89
November	\$728.35	\$515.29
December	\$143.59	\$93.98
TOTAL	\$7,153.95	\$6,317.16

I. EQUIPMENT AND FACILITIES

1. New Construction

On January 5 Relay Electric arrived to inspect job requirements and work up a materials list for getting the three new fuel storage tanks in service. The concrete tanks, manufactured by Con Vault Mid-Atlantic, Inc., McLean, VA, include two 1,000 gallon tanks and a 500/500 gallon split tank (18,000 pounds each) and were installed on 11/25/97. The cost of the tanks and their individual concrete pads was \$33,213.10 (FY97 \$). The cost of the crane rental was \$633.25 (FY97 \$), Anderson's Crane Service, Queenstown, MD.

Relay Electric finally arrived on January 16 to begin electric hook up of the fuel tanks.

On June 18 MW Nicely began construction on the new informational kiosk located at the Tubby Cove Boardwalk parking area. The project was completed in November.

In June refuge staff planted four (4) acres of native warm season grass around the proposed

Bayview/Butterfly Trail site and refuge volunteers planted 37 trees and shrubs donated by Adkin's Arboretum along both sides of the proposed trail route. Construction of the trail by refuge volunteers began in August and by year's end the first section of the trail was completed and construction of the observation platform was in progress.



NR-98-15 Trail layout.

08/19/98 MCK



NR-98-16 Watching the tamper do the work!

10/98 MCK



NR-98-17 Stone dust finish.

10/98 MCK

2. Rehabilitation

January 8: Ford and Volunteer Bankey removed a downed tree from the Wildlife Trail.

January 12: The Wildlife Trail sign located in the trail parking area was broken off by a vehicle during the weekend. It was removed and taken to the shop to be rebuilt.

March: Regional Office Engineer Jim McPherson and representatives from two architectural engineering firms, Christoph Design, P.A. and PKP Engineers, P.C., visited Eastern Neck NWR on March 3 regarding preliminary plans for the restoration of the lodge.

April 14: Mini-blinds were ordered for the lodge and the residence. The blinds will aid in regulating heat from the summer sun and prevent prying eyes from looking inside when buildings are unoccupied.

May 12: Mini-blinds were installed in the lodge on the remaining uncovered windows (12) for a cost of \$695.25 plus \$192 for labor.

July 23: Refuge Operations Specialist Ford met with representatives of PKP Engineers, P.C., Washington D.C., and Cates Engineering, Ltd., Centreville, VA. The purpose of the meeting was to review preliminary plans made for rehabilitation of the lodge. The lodge was given a thorough examination for structural integrity, termite damage, roof damage, septic system and well condition, electrical limitations, etc.. In addition to this they reviewed the existing floor plans and made recommendations for the renovation.

July 29: Refuge Operations Specialist Ford and MW Nicely reviewed plans for repairing the Boxes Point Trail and began solicitation of bids from local contractors for materials and labor. Fifteen thousand dollars is available in an account maintained in the RO for this project for repairs from storm damage.

August 20: Refuge Operations Specialist Ford met with representatives from PKP Engineers, P.C. and Cates Engineering, Ltd., to discuss plans for restoring/converting the hunting lodge into refuge office space. Two different floor plans were presented for consideration; Scheme B was selected because it would be more user friendly for staff and visitors. This scheme also allows for a slightly larger conference room and larger rest room facilities requiring a small addition to be built and will cost approximately 30k more but still falls within their allocated budget.

August 28: Enviroserve, Inc. representatives Larry Reed and Project Manager Sonja Potterton met with RM Kaehny regarding the lodge asbestos abatement project scheduled to start on September 8.

Enviroserve, Inc., began the lodge asbestos abatement project on September 8. The project involved the removal of 1,320 square feet of asbestos containing floor tile and contaminated soil in the 4,700 square foot crawl space. The contractor completed the job by September 25 following testing and approval by the Maryland Department of the Environment.

September 11: Refuge Manager Kaehny and ROS Ford had a conference call with RO staff including Dave Washburn, Engineering; Jim McPherson, Engineering; Terry Neyhart, RW; and John Wilson, RW regarding the lodge restoration project. The RO was concerned about the proposed addition for the public rest room, a major component of scheme B which was selected by refuge staff as the preferred plan for renovating the lodge. In short order the RO told refuge staff that the decision had been made for us and scheme B was not an option due to the increased costs associated with the addition. A quick brainstorming session then ensued and refuge staff proposed a compromise somewhere between scheme A and scheme B. This plan kept many of the advantages of scheme B and eliminated the addition.

On December 10 refuge personnel met to discuss architectural designs for the Hunting Lodge. The refuge asked for a few minor changes to Scheme E, which when presented to RO Engineering received a positive response. Scheme E with the approved revisions were sent to PKP Engineers to proceed to the 35% design stage.

September 15: Enviroserve, Inc., removed the old bulk fuel storage tanks located at the maintenance shop.

October 1 - 2: Maintenance Worker Nicely removed the fuel oil tanks at the residence and replaced the dilapidated wooden pad with a concrete pad. The old tanks were re-set on the new pad, a new fuel line was installed and the furnace was serviced.

Refuge staff and volunteers re-roofed the headquarters in November using money that was designated for the project by way of a storm damage account (approximately \$7,800). The project was put out on bids and the only bid received was for \$10,000. This bid was way too high so it was decided to do the project in-house. By using volunteers and staff, the job was completed for less than \$5,000. This total cost also included items that were not included in the original bid, including replacing the rain gutters, two windows that had rotted sills, and vinyl siding on two small areas that were left deficient after the layers of old shingles were removed.

On December 2 Park Cleaners, Chestertown, MD cleaned the headquarter's carpets.

On December 10 refuge personnel met to discuss architectural designs for the Hunting Lodge. The refuge asked for a few minor changes to Scheme E, which when presented to RO Engineering received a positive response. Scheme E with the approved revisions were sent to PKP Engineers to proceed to the 35% design stage.

Lindstrom Excavating Contractors, Inc., began the Boxes Point Trail Rehabilitation Project on December 22. The project involved rehabilitating a 200' section of road due to storm damage. The repairs call for lining the washout with filter cloth and filling in with stone topped with four inches of crusher run #1 stone. The contract also included repairing the trail with 100-200 tons of #57 stone with chip stone. By month's end the contractors had completed installation of the filter cloth and rip rap.



NR-98-18 Before - looking north

12/98 MCK



NR-98-19 After - looking south

12/98 MCK

3. Major Maintenance

January: There were four flat tires fixed during the month: two on the 92 Ranger, one on the 86 Chevy, and one on the 86 Reliant wagon.

March: Maintenance Worker Nicely spent the bulk of his time (approximately two weeks) cleaning, inventorying, and organizing the maintenance area to make it more user friendly.

March 8: The 92 Ford Ranger developed another flat tire and was repaired with a tube.

April: MW Nicely repaired woodpecker holes in the lodge and at the residence by replacing the cedar shakes, serviced the Truax no-till drill, serviced the bus and two other vehicles, repaired the utility trailer, fixed the women's bathroom door at Tubby Cove, welded the mowing deck on the JD bat wing mower, as well as many more miscellaneous tasks.

May 6: Another flat tire was repaired on the 92 Ford Ranger.

May 14: The 92 Ford Ranger had the air conditioner fixed at a cost of \$598.29; \$362.18 for parts and \$215.00 for labor. The leak in the fire wall was again repaired, this time at no cost to the refuge, as it was still under warranty from the "repairs" made in February.

May: Maintenance Worker Nicely built sign frames and installed the large "Do/Don't" signs at the refuge entrance, repaired the winch on the dozer and did a routine service, repaired the public restroom at Tubby Cove, installed traffic counters, mowed road sides and graded roads.

June 1: Fixed ignition short on International 674 tractor.

June 10: Serviced the Chevy 4X4 and the Reliant wagon.

June 11: Fixed electrical short on JD 3155 tractor that affected wipers, lights, and flashers. Corrected and extended the exhaust on the 674 International tractor.

June 15: Bled brakes on Chevy 4 X 4.

June 17: Filled in holes on several secondary roads.

July 3: Replaced drive belt on JD 316 mower.

July 8: Rebuilt the carburetor on a weed trimmer and serviced the refuge boat motor and fuel system.

July 14: Mowed refuge roads.

July 22: Replaced blown hydraulic hoses on JD 1508 mower and replaced the battery on the ATV.

July 29: Replaced solenoid on ATV, installed a new traffic counter, and cleaned and adjusted the carburetor on a chain saw.

August: Maintenance Worker Nicely cleaned and flushed out the radiator, repaired the ignition switch, and also repaired a faulty light switch on the 1992 Ford Ranger.

September 2: Replaced a front tire on the backhoe.

September 8: Removed the radiator from the 92 Ford Ranger, cleaned the fins, re-flushed (the radiator was flushed last month but overheating continued due to the plugged fins), and tightened the valve pan.

September 15: A front tire on the JD 3155 tractor blew and was repaired by Caldwell's.

September 21: The JD 3155 tractor had another flat tire on the front end and was again repaired by Caldwell's.

September 23: The exhaust pipe on the JD 3155 broke off and was welded back on. In addition, welding repairs were made to the deck of the JD bat-wing mower.

September 28: Serviced the fuel oil furnaces at the office and the maintenance shop.

September 29: Built forms for a new concrete pad to be poured at the residence for the fuel oil tanks.

September 30: Replaced a broken pulley and serviced the JD 316 lawn tractor.

October 3: Maintenance Worker Nicely replaced the starter on the 92 Ford Ranger and did a winter service. He also rebuilt a carburetor on a Stihl chain saw.

October 15: Maintenance Worker Nicely replaced the fuel filters on the backhoe.

October 29: Maintenance Worker Nicely welded the broken lift arm for the front-end loader. It was a major break that required considerable time to repair. Replacement of the loader/backhoe is considered a priority by the Regional Equipment Coordinator, but no money is available to make it a reality.

November 2: Relay Electric, Chestertown, MD, was at the residence to inspect the condition of the electrical supply from the transformer to the meter, and from the meter to the line that enters the house. Connectiv Power Delivery, formerly Delmarva Power Company, was called to the residence the previous week due to flickering lights. They found a low voltage

problem, a negative ground problem, and said that neither of the two problems could be dealt with appropriately until a new supply line and electric meter were installed. Relay Electric installed the new supply line and meter on November 19.

November 5: Maintenance Worker John Nicely did a complete service and tune-up on the bus. He also replaced a broken oil hose to the compressor.

December 3: The 92 Ford Ranger was taken to Gambacorta Motorcars, Inc., Chestertown, MD for repairs to the electrical system. The vehicle would have a dead battery after it sat idle 3 - 4 days, indicating some sort of minor electrical short. Gambacorta notified the refuge that the 92 Ranger was ready for pick up. However, on December 8, after paying for the repairs, it was discovered that the vehicle still wouldn't start when refuge personnel tried to drive it home. The vehicle was left with Gambacorta. By year's end the problem still was not solved.

December 31: The furnace at the residence failed to light. Maintenance Worker Nicely was able to repair it by changing the nozzle tip, filter, and draining the supply line that appeared to be contaminated with rust. The fuel that was drained was as black as used motor oil.

4. Equipment Utilization and Replacement

April 17: Maintenance Worker Nicely and ROS Ford purchased essential tools for the maintenance shop: 1 reciprocating saw, 1 cross cut miter saw, 1 impact wrench, 1 set gauges for the acetylene welder, and assorted attachments and supplies. Total cost for the tools and accessories was \$1,092.89.

December 3: Maintenance Worker Nicely wasted no time investigating the availability and cost of used loader/backhoes from area dealers after learning of \$18,000 (out of a projected 24k Small MMS Project Allocations) being allocated for one's purchase. Four local vendors were eventually contacted that had similar tractors for sale.

December 4: Maintenance Worker Nicely traveled to several used equipment dealers to inspect the loader/backhoes that he had located the previous day. The best tractor was found at Walter G. Coale, Inc., Churchville, MD. The tractor is a 1986 Model 655A Ford, with 4-wheel drive, a 1 yard loader bucket, and a standard 15' backhoe with a 24" backhoe bucket. The replacement engine has only 1,200 hours and the dealer agreed to install new tires.

The refuge acquired the aforementioned backhoe for \$20,470 with a trade in value of \$2,100 for the refuge's 1980 International 250 A loader/backhoe, for a total acquisition cost of \$18,370.

December 18: Maintenance Worker Nicely drove to Blackwater NWR to obtain the use of their semi-tractor trailer to retrieve two 3/4 ton Chevy Blazer surplus vehicles from a military depot in Sparta, WI. One of the vehicles was for Wallkill NWR.

On December 19 MW Nicely departed for WI and arrived back at the refuge on 12/22. A snowstorm chased him across IL and OH, so for much of the time he had to limit his speed to 35 mph due to the icy roads.

Patuxent Research Refuge borrowed the refuge bus for the period of December 18 through mid-February.

5. Communications Systems

August 3 and 6: Magnum Electronics, Dover, DE was on site to repair several mobile radios that had minor problems and to transfer the mobile radio from the seldom used stake truck to the 96 Jeep Cherokee.

August 11: A new FAX and answering machine were purchased to replace ones rendered inoperable by a lightning strike on the evening of 8/10. The weather was also responsible for damaging several phone lines that were repaired by Bell Atlantic.

6. Computer Systems

January 21: The Refuge Manager's and Refuge Operation Specialist's computers were updated with the installation of Window's 95. The installation was done by a computer technician from Kentronics, a local computer store in Chestertown, MD.

January 23: The updated version of ccmail 6.0 was installed on Administrative Assistant Bucklew's computer with the assistance of Computer Specialist Steblein via telephone.

March 8: Refuge staff installed ccmail on the Refuge Manager's and ROS's computers. The installation was completed with the assistance of Computer Specialist Steblein via telephone.

8. Other

April 28: Office staff rearranged the main office, occupied by Office Automation Bucklew and Ruth Sutton, her Green Thumb aid, organizing the work station to make things more readily accessible.

September 15: Enviroserve, Inc., removed three above ground fuel storage tanks from the refuge. The tanks were replaced late last year with three 1,000 gallon ConVault fuel tanks.

J. OTHER ITEMS

1. Cooperative Programs

In January RM Kaehny was contacted by National Audubon Society National Wildlife Refuge Campaign representative Ms. Cecily Vix, who is trying to get the 900 or so NAS members that are located on the Delmarva peninsula (there are no local chapters) involved with refuges in their respective areas. Ms. Vix was provided with refuge brochures, maps and a briefing statement about Eastern Neck NWR for presentation to the National Audubon Council on January 20.

Refuge Manager Kaehny attended the Chesapeake Bay Program Public Access Work Group meeting in Annapolis, MD, on January 20. The primary purpose of this group is to promote recreational access on the Chesapeake Bay per the 1987 Chesapeake Bay Agreement between the governors of the Bay states, mayor of Washington, D.C., and the Chesapeake Bay Commission. The work group discussed revisions to and issues regarding the 1990 Chesapeake Bay Area Public Access Technical Assistance Report including SAV beds, bay use conflicts, recreational use carrying capacities of bay tributaries and waste disposal of bay users (boats, fishermen, etc.). The work group also discussed revising the Public Access Guide that was developed and printed in 1995.

Refuge Manager Kaehny attended the Chester River Association (CRA) Board of Director's meeting in Centreville, MD, on February 3. The CRA was founded in 1986 to increase public awareness of local issues affecting the Chester River and it's watershed to help preserve the natural, recreational and cultural integrity of the river. Major topics discussed at the meeting included an up date on the Quality Assurance Plan currently being developed for the CRA's volunteer Chester River Water Quality Monitoring Project to assure the scientific validity of the data.

Refuge Manager Kaehny met with the Friends of Eastern Neck, Inc. on March 4 to discuss upcoming events, fund raising and an update of refuge programs.

In March RM Kaehny assisted Vice President of the FOEN, volunteer Howard McIntyre, with developing a \$5,000 grant proposal for the National Wildlife Refuge Association for developing a bayview/butterfly trail from the office to the bluff overlooking the bay as a project that the FOEN can showcase to pique the interest of potential members.

Refuge Maintenance Worker John Nicely planted nine (9) acres of native warm season grasses on two private land sites in Kent County in cooperation with the Department of Agriculture Natural Resources Conservation Service on April 15.

Refuge Manager Kaehny participated in a workshop sponsored by the National Audubon Society (NAS), Washington, DC, on April 18-19 at their new Wells Point Farm in St.

Michaels, MD, to establish cooperative projects between the NAS and refuges on the Eastern Shore (Eastern Neck and Blackwater NWRs). This was one of six workshops the NAS will be hosting around the county this year as part of the National Audubon Society's (NAS) Wildlife Refuge Campaign that was launched last year with the signing of a Memorandum of Understanding with the Service. The second day of the workshop was spent touring Eastern Neck NWR.

Refuge Manager Kaehny and ROS Ford met with Rock Hall Town Manager and Kent County Commissioner Ron Fithian on April 23 to tour the refuge and discuss issues of concern and management programs. Of primary concern to the refuge is the issue of installing an automatic gate at the entrance to the refuge to control vehicle access on the refuge at night. Mr. Fithian requested that we develop a written proposal and send it to the County Commissioners. A major concern is the ability of waterman to check their boats 24 hours/day during storms.

In May RM Kaehny was contacted by Ms. Pat Durkin of the New Columbia Chapter of the Audubon Society regarding the Chapter adopting Eastern Neck NWR and also to develop a butterfly list brochure for the refuge. This partnership resulted from the National Audubon Society's Refuge Keeper's workshop held in St. Michael's, MD, in April.

During May MW Nicely seeded approximately 75 acres of warm season grasses as well as some wildflowers on private lands nearby. The land has been converted because of its erodible nature and entered into the Conservation Reserve Program (CRP) and/or Conservation Reserve Enhancement Program (CREP) by the Department of Natural Resource Conservation Services and the Kent Soil and Water Conservation District. The acreage has been contracted to be maintained for a minimum of ten years in the CRP program.

In June MW, John Nicely, seeded an additional 30 acres of warm season grasses off refuge, 15 acres at nearby Chesapeake Farms and 15 acres at the Naval Base, Annapolis, MD.

On June 18, in a cooperative effort with the Chesapeake Bay Field Office, MW Nicely planted three acres of native warm season grasses as a buffer zone on a wetland restoration site at the Cliff Brown Farm in Kent County. To date, the refuge has planted 117 acres of native warm season grasses on private lands in Kent and Anne Arundel counties.

A memorandum of Understanding between the Service and Kent County to operate and maintain the Ingleside Recreation area was submitted to the Regional Office for approval. Per the MOU, Kent County Parks and Recreation agrees to maintain the Ingleside picnic area (tables grills and grounds) from May 1 through September 30.

The Delaware Division of Wildlife picked up the refuge's Truax no-till grain drill to plant 150 acres of native warm season grasses on private lands in Delaware.

On July 6 the refuge provided MD State Parks with a copy of the Cooperative Farming

Agreement as was requested. They have been searching for a method of making their farm acres more environmentally friendly and a recommendation was received that they inquire about the methodology at ENNWR. However, when ROS Ford described the refuge program as one with no money exchange, that payment was made with a portion of the crop left for wildlife use, it threw a bit of a wrinkle into their plan. It seems that the park superintendents are dependant on the cash rent revenue for maintaining and/or improving visitor services at the state parks. Even so, they still appreciated the information provided and hoped that at least some of the farming techniques could be incorporated into their farm program.

A Memorandum of Understanding was signed by the Kent County Commissioners effective July 16, 1998, regarding the Kent Count Department of Parks and Recreation operating and maintaining the Ingleside Recreation Area. The MOU is for an indefinite period and stipulates that the county will maintain the picnic area, picnic tables, barbecue pits and water access area during the period May 1 - September 30.

The Town of Rock Hall, in an effort to become more involved with the refuge, resulting from meetings with the town manager, requested the refuge to participate in their four day special event, "Fallfest". Coordinator of the festival activities, Mr. Tom McHugh, proposed to the town's festival committee that the festival's opening event and a free concert be held at the refuge. Mr. McHugh met with RM Kaehny, and following an on site visit it was decided that the opening event and free concert would be held in the historic hunting lodge the evening of October 8.

The refuge hosted a wetland plant identification workshop in the lodge from October 19-23 for 20 state and federal employees.

The National Audubon Society in cooperation with Eastern Neck held an "Audubon Work Day at the Refuge" on October 24. Activities included a major beach clean-up along the western shore of the bay, scraping and painting windows on the lodge and visiting six stations where the 60 participants learned about refuges, the different threats to refuges and how they can assist. Prizes were awarded compliments of Starbucks. The Kent County Department of Public Works provided a recycling truck to recycle all tin, aluminum, plastic and glass debris. Well over one ton of material was picked up along the shoreline and 14 windows on the lodge were completed.



NR-98-20 Old fence removed . . .

10/25/98 Volunteer
Howard McIntyre



NR-98-21 Scraping and painting lodge windows . . . 10/25/98 MCK



NR-98-22 and marsh clean-up.

10/25/98 WF

Refuge Manager Kaehny attended the Chester River Association (CRA) Board of Directors Meeting in Centreville, MD, on November 2. The primary topics of discussion were an update on the Quality Assurance Plan being developed for the CRA's volunteer Chester River water quality monitoring project to assure scientific validity and planning for 1999 and the future of the Association.

Refuge Manager Kaehny attended the inaugural meeting of the Chesapeake Bay Environmental Enforcement Coalition on December 16 in Annapolis, MD. The coalition includes federal and state agencies involved in enforcement of environmental laws including the Defense Criminal Investigative Service, Federal Bureau of Investigation, U.S. Naval Criminal Investigation Service, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Coast Guard and Maryland Department of Natural Resources. The primary objective of the coalition is to share information between federal, state and local government agencies and concerned citizens groups involved in protecting the bay. The coalition established a hotline to the U.S. Attorney's Office enabling anyone who sees, hears or knows of a violation to report it at anytime, 24 hours a day, seven days a week. All emergency calls will be acted on immediately by the U.S. Coast Guard and non-emergency calls will be taken by the U.S. Attorney's Office and they will get the proper authority to investigate.

3. Items of Interest

On January 9 GARD Jeff Underwood visited the refuge. Jeff briefed the refuge staff on regional and central office issues of concern. Following the staff briefing, RM Kaehny gave Jeff a tour of the refuge and discussed refuge programs and issues of concern.

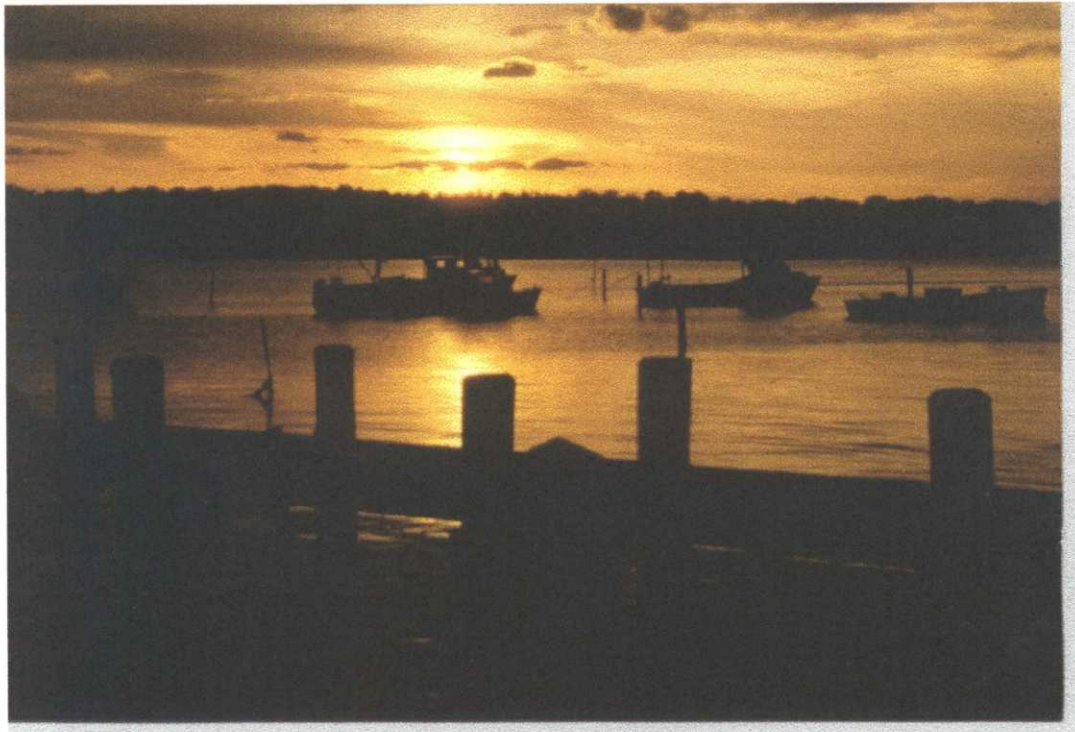
November 10: A spry 89 year old gentleman stopped by the refuge office for a visit while doing some birding in the area. His name was Luther Goldman, he was the first Refuge Manager of the Salton Sea NWR, CA, in 1939. He later became the Refuge Manager of Laguna Atascosa, TX, before he was requested to serve in the Washington Office in 1959. Luther worked with land acquisition for several years before he moved into the "Biological Photographer" position which he held until his retirement in 1974. After his retirement he worked as a guide that lead groups on wildlife photographic expeditions in many exotic areas of the world. He still lives in the D.C. area and travels quite a bit to visit birding hot spots. His only complaint was that his ears weren't as sharp as they use to be. He survived a couple of bouts of skin cancer on his face that he blames on exposure to the intense South Texas sun. Luther is with out a doubt one of the most active and alert 89 year old people that ever visited this office.

Refuge Manager Kaehny met with Ms. Deane Winegar, outdoor writer for Deane's Outdoors on December 4. Ms. Winegar is writing a travel/tourist book on the Chesapeake Bay to include all points of interest such as refuges, parks, historic sites, etc. The book is scheduled to be printed this fall by Longstreet Press, Atlanta, GA.

On December 9, RM Kaehny met with Federal Communications Commission District Manager Charles C. Magin and Compliance Specialist Thomas G. Scarrion regarding their need to find a site for a 40' tower. They were requested to send a written proposal for review. By year's end we had not heard from them.

Credits

Kudos go to Refuge Operations Specialist Ford for compiling and writing most of this document, RM Kaehny for reviewing/editing and selecting the photos, and OA Bucklew for making final revisions and corrections to the final version.



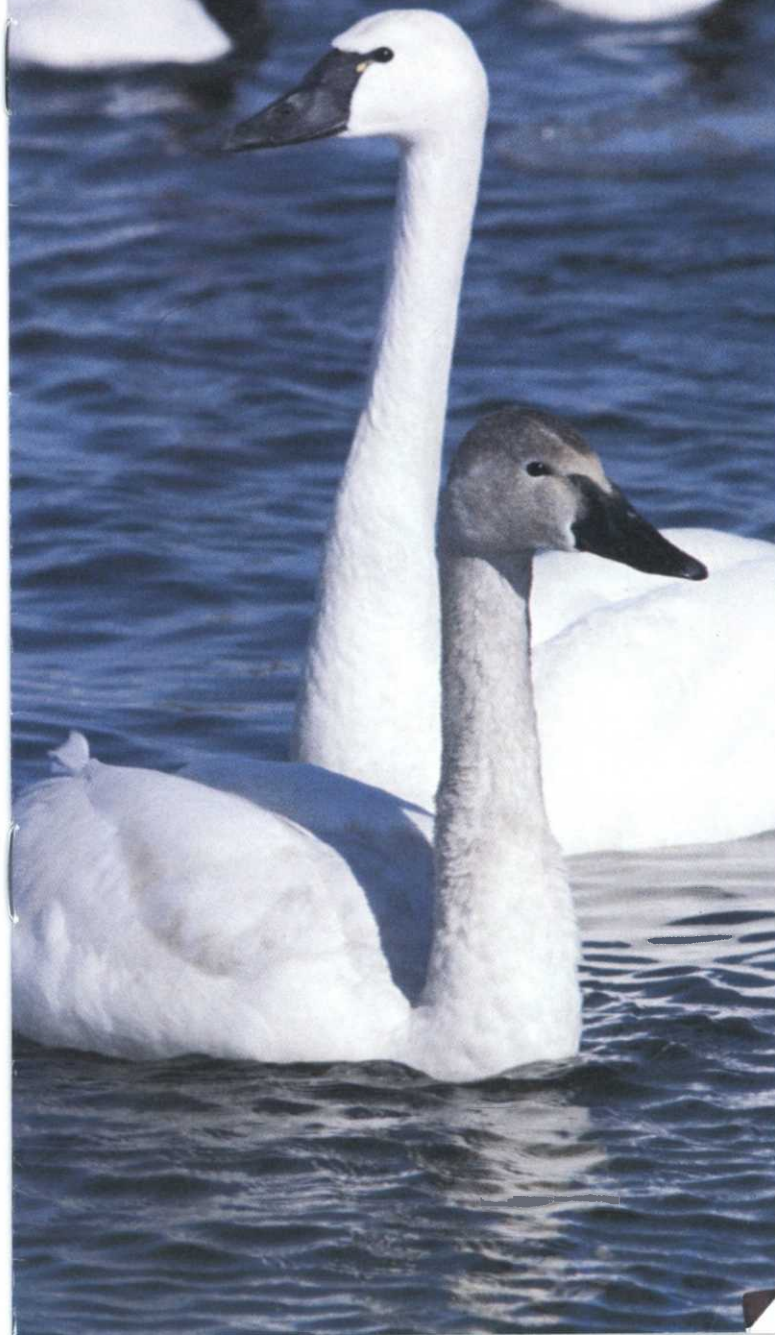
NR-98-23 Eastern Neck Sunset.

MCK

U.S. Fish & Wildlife Service

Eastern Neck

National Wildlife Refuge



Eastern Neck National Wildlife Refuge, located at the mouth of the Chester River in Kent County, Maryland, was established in December 1962. This 2,285-acre island refuge is a major feeding and resting place for migratory and wintering waterfowl on Maryland's famed "Eastern Shore." The refuge is also home to the endangered Delmarva fox squirrel and the threatened southern bald eagle.

Sunset, photo M.C. Kaehny

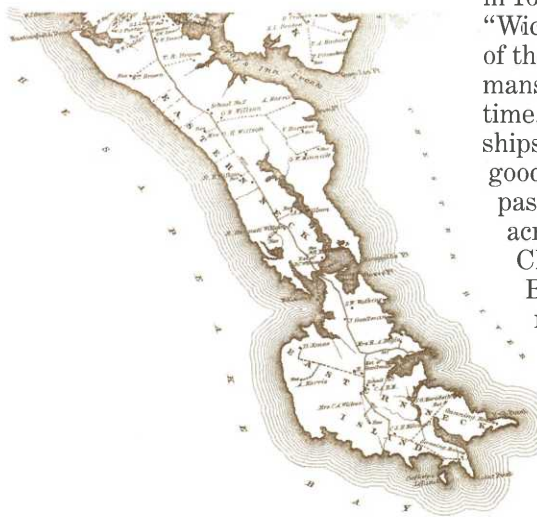
cover photo: Swans, Heather Davidson

Settlers and Packet Ships

Eastern Neck, strategically located at the confluence of river and bay, has a long and varied history. The island was among the first settled areas in the New World. Here Major Joseph Wickes obtained a grant of 800 acres

in 1650 and built "Wickliffe," one of the finest mansions of the time. Packet ships that carried goods and passengers across the Chesapeake Bay made regular stops at Bogle's Wharf on the east side of the island from colonial days until

1924. Farming and waterfowl hunting were the most important land uses prior to the establishment of the refuge. The island was known as one of the best hunting grounds on the bay and was a favorite with gunning clubs.



USFWS

Wildlife

The varied habitats on Eastern Neck, including 1,000 acres of brackish tidal marsh, 600 acres of cropland, 500 acres of forest, 100 acres of grassland and 40 acres of open water impoundments, provide a home for a variety of wildlife species. Three threatened and/or endangered species, 243 species of birds, and a variety of mammals, amphibians and reptiles inhabit the island.



T. Goettel

Diamondback terrapin

Birds

The fall and spring months are the best times to view migratory song birds with October through mid-March the best time for viewing the thousands of migratory waterfowl that winter in the Chesapeake Bay. The refuge staff has documented peaks of 40,000+ waterfowl on the refuge and 33 different species have been reported. The most common



Dave Sorflaten

Canvasback duck



USFWS

Great blue heron



©National Wildlife Federation

Woodpecker

Mammals

species include Canada geese (20,000+), tundra swans (7,000+), canvasbacks (15,000+), mallards, widgeons, ruddy ducks, black ducks, lesser scaups, buffleheads, pintails, green- and blue-winged teal, oldsquaw and scoters and other sea ducks provides for an interesting diversity of species.

Great blue and green-backed herons and great and snowy egrets are common sites in the marshes and mud tidal flats of the refuge. Numerous marsh and shore birds including killdeer, greater and lesser yellowlegs, least, spotted, and semipalmated sandpipers and woodcock arrive in the spring and can be observed through the fall.

The refuge woodlands, hedgerows, open fields, and other habitats provide excellent opportunities to observe woodpeckers, hawks, falcons, vultures, flycatchers, swallows, chickadees, wrens, kinglets, eastern bluebirds, warblers, finches and many other colorful species. A bird list is available upon request.

The refuge is home to a variety of mammals including white-tailed deer, beaver, red fox, raccoon, muskrat, opossum, woodchuck, eastern gray squirrel and the endangered Delmarva fox squirrel. The abundance of wildlife offers high quality wildlife observation opportunities for the attentive visitor.



USFWS

White-tailed deer

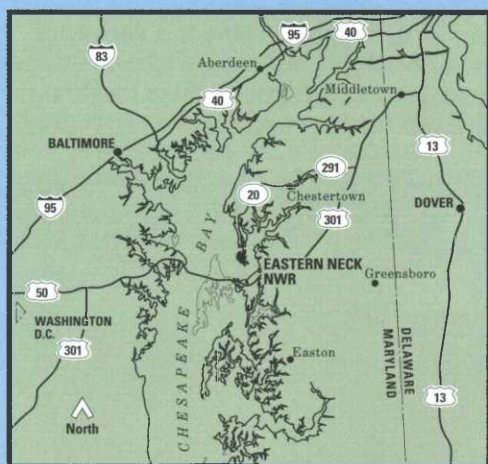
Eastern Neck

National Wildlife Refuge

Chesapeake Bay



Chester River



Butterfly Bayview Trail
Refuge Headquarters

Ingleside Recreation Area
open April 1-Sept. 30

Maintenance Compound

Residence

Lodge

Wickes Historic Site

Baybush Point

Panhandle Point

Narrows Point

Cedar Point

Hail Point

Bogles Wharf Landing

Boxes Point

Fryingpan Cove

Boxes Point Trail

Duck Inn Trail

Durbin Creek

Shipyard Creek

Hail Creek

Tubby Cove

Calpurne Cove

445

445

Legend

- Refuge Headquarters
- Parking Area
- Restroom (HP accessible)
- Observation Tower
- Public Fishing Access
- Marsh
- Refuge Boundary
- Buildings
- Gate
- Refuge Roads (Public)
- Refuge Roads (Restricted)
- Refuge Hiking Trails

0 1 Kilometer
0 .5 1 Mile

**Refuge
Management**
*Endangered
and/or
Threatened
Species*

USFWS



*Delmarva Fox
Squirrel*

The refuge is one of seven benchmark sites where remnant populations of the endangered Delmarva squirrel exist. This species of squirrel that once occurred throughout the Delmarva Peninsula and into southeastern Pennsylvania and southern New Jersey, now persists naturally only in portions of four counties on the Eastern Shore of Maryland. Management activities to enhance the refuge population of this species include a nest box program and live trapping survey, reforestation, prescribed burning and timber stand improvement to maintain the preferred habitat of this species.

Threatened southern bald eagles, our national symbol, are also found on the refuge and have nested and successfully fledged eaglets every year since 1986. Management includes monitoring and providing constant protection for these majestic birds.

A third endangered species which occasionally uses the refuge is the endangered peregrine falcon, which may be seen during migration in the fall. Management for "the world's fastest animal" includes protection and the maintenance of a nesting tower to hopefully attract a nesting pair to the refuge.

Waterfowl

USFWS



Wood duck

Management activities to enhance refuge habitat for nesting and migratory waterfowl include upland and water level management practices. A cooperative farming program provides a variety of browse and grain crops for wintering waterfowl and planting native grasses provides nesting cover. Managing fresh water levels in impoundments encourages the production of moist soil plants, while brackish marsh management encourages the growth of native

marsh grasses. Water level manipulation in five green tree reservoirs, or winter flooded woodlands, allows wood ducks, black ducks and other species to forage for mast and the invertebrates in the leaf litter on the forest floor.

Wildlife Calendar
January-April

Waterfowl are abundant through the month of March. Bald eagles are nest building in January and laying eggs through February. The eaglets begin hatching in April. Great horned owls begin nest building in January and lay eggs through mid-April. Hatching may begin in late February. Woodcock may be seen performing their courtship displays in February and egg hatching begins in April. Blue- and green-winged teal migrate through the area in April, and resident ducks begin incubating their eggs.

May-August

Songbird northern migration peaks in late April-early May. Woodcock chicks and deer fawns are born and osprey eggs begin to hatch in May. In June young eagles and great horned owls are learning to fly. Eagles and blue birds fledge in July. In August ospreys may start their migration south while blue-winged teal, the earliest waterfowl migrants, begin to arrive from their northern breeding grounds.

*September-
December*

Songbird southern migration peaks in late September-October. Waterfowl numbers gradually increase and great horned owls begin to establish territories in October. Between the last week in October and the second week in November, depending on the weather, tundra swans stage on the refuge. Arriving by the thousands from the Great Lakes area, it is a spectacular sight. Waterfowl populations peak in November. Bald eagles establish territories and start nest building in December.

**Visitor
Opportunities**
*Hiking/Wildlife
Observation*

Nearly six miles of roads and trails are open to visitors most of the year. Four wildlife trails and a handicap-accessible boardwalk and observation tower are available for those wishing to observe the varied habitats of the refuge.

Note: Ticks, chiggers and mosquitoes are abundant. The use of a repellent is highly recommended.



K. Bucklew

*Boating/Fishing
and Crabbing*

Kent County operates the Ingleside Recreation Area and Bogle's Wharf landing within the refuge. The Ingleside Recreation Area, on the northwest side of the refuge, has facilities for crabbing and car-top boat launching from April 1 to September 30. Picnic tables are available for use during these months.

Bogle's Wharf landing is located on the east side of the refuge and offers trailered boat launching facilities (county permit required—not available at the refuge office).

Additionally, fishing opportunities are available at the refuge entrance from the bridge that spans the Eastern Neck Narrows.

**Protect Your
Wildlife**

In order to protect wildlife and habitat, certain restrictions are in effect on the refuge. Camping, off-road vehicles, fires and firearms (except under permit during the refuge hunting season) are prohibited. Pets must be on a hand-held leash. Other restrictions may apply; contact the refuge manager for further information.



USFWS

Bloodroot

**U.S. Fish and
Wildlife Service**

Eastern Neck is one of over 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, technical assistance, and the conservation and protection of migratory birds, certain marine mammals and threatened and endangered species.

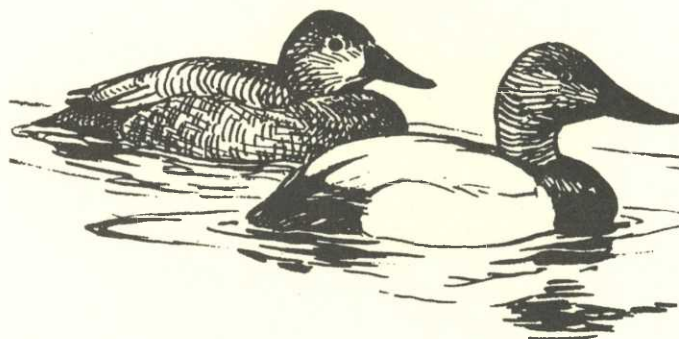
Eastern Neck National Wildlife Refuge
1730 Eastern Neck Road
Rock Hall, Maryland 21661
Telephone: 410/639-7056
Fax: 410/639 2516
E-mail: r5rw_ennwr@fws.gov
Hearing impaired visitors may call the Maryland Relay
Center at 800/852 2258 TDD/voice.

U.S. Fish & Wildlife Service
P 800/344 WILD
<http://www.fws.gov/>

May 1999



Eastern Neck



EASTERN NECK
National Wildlife Refuge
Rock Hall, Maryland

Welcome

Eastern Neck National Wildlife Refuge, which is located at the mouth of the Chester River on the eastern side of the Chesapeake Bay in Kent County, Maryland, was established in December 1962. This 2,285-acre island refuge is a major feeding and resting place for migratory and wintering waterfowl on Maryland's famed "Eastern Shore." The refuge is also home to the endangered Delmarva fox squirrel and the threatened southern bald eagle.



Settlers and Packet Ships

Eastern Neck, strategically located at the confluence of river and bay, has a long and varied history. The island was among the first settled areas in the New World. Here Major Joseph Wickes obtained a grant of 800 acres in 1650 and built "Wickliffe," one of the finest mansions of the time. Packet ships that carried goods and passengers across the Chesapeake Bay made regular stops at Bogle's Wharf on the east side of the island from colonial days until 1924. Farming and waterfowl hunting were the most important land uses prior to the establishment of the refuge. The island was known as one of the best hunting grounds on the bay and was a favorite with gunning clubs.

Wildlife

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Birds

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Refuge Management

Endangered and/or Threatened Species

The refuge is one of seven benchmark sites where remnant populations of the endangered Delmarva fox squirrel exist. This species of squirrel that once occurred throughout the Delmarva Peninsula and into southeastern Pennsylvania and southern New Jersey, now persists naturally only in portions of four counties on the Eastern Shore of Maryland.

Management activities to enhance the refuge population include a nest box program and surveys to obtain population estimates. Forest management activities include reforestation, prescribed burning in woodlands and hedgerows, and timber stand improvement help to maintain the open understory habitat preferred by this species.

Threatened southern bald eagles, our national symbol, are also found on the refuge and have nested and successfully fledge eaglets every year since 1986. Management includes monitoring and providing constant protection for these majestic birds.

A third endangered species which occasionally uses the refuge is the endangered peregrine falcon, which may be seen during migration in the fall. Management for "the world's fastest animal" includes protection and the maintenance of a nesting tower to hopefully attract a nesting pair to the refuge.



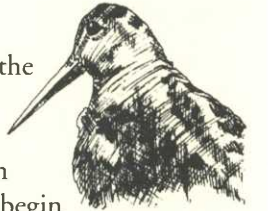
Waterfowl

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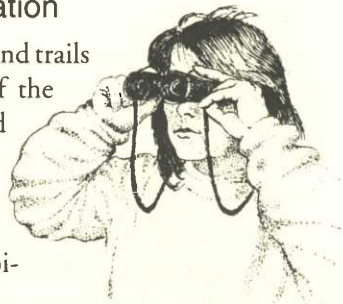


Robert Savannah

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Boating/Fishing and Crabbing

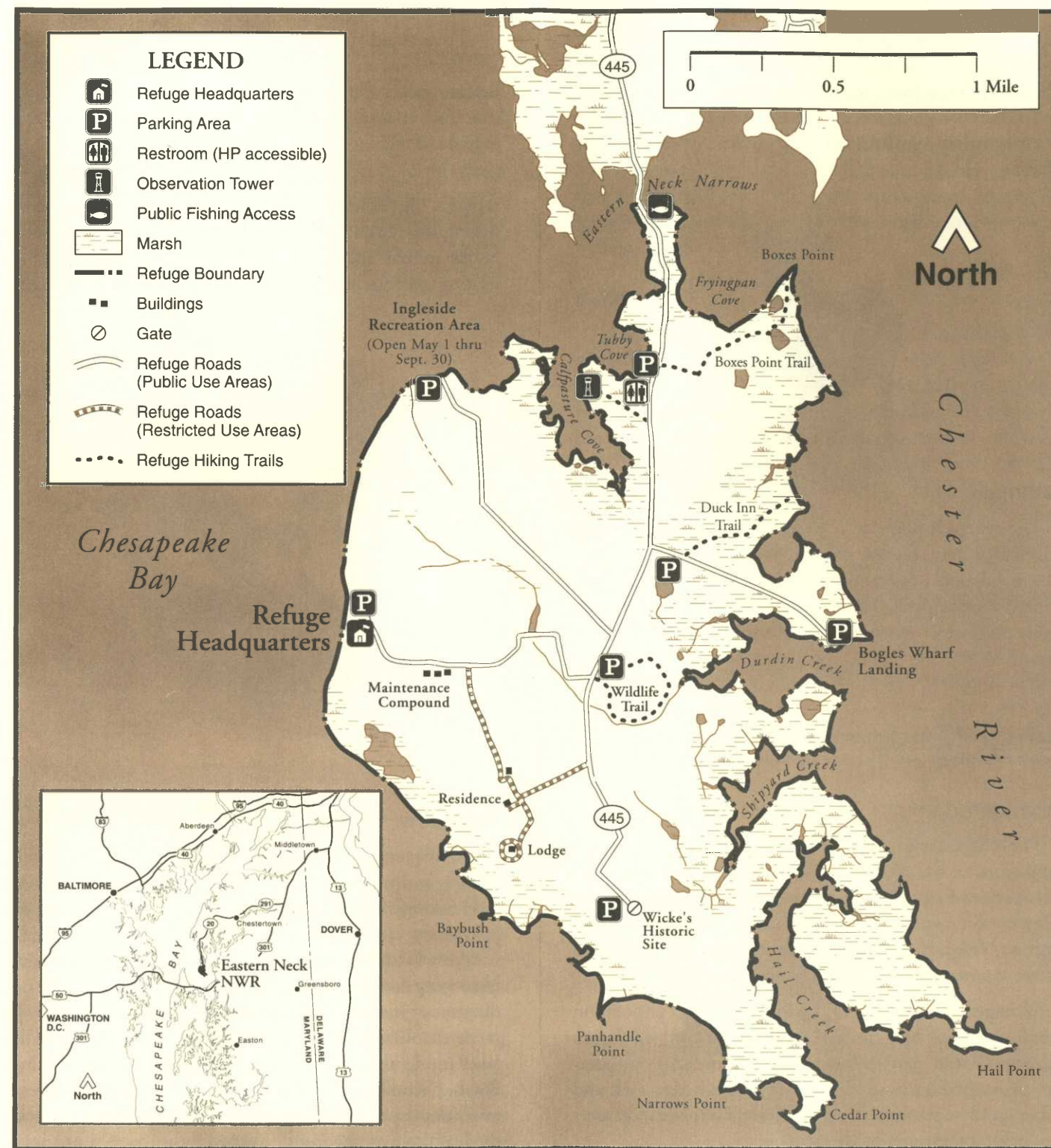
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U.S. Fish and Wildlife Service

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For further information, please contact:

Refuge Manager
Eastern Neck National Wildlife Refuge
1730 Eastern Neck Road
Rock Hall, Maryland 21661
Telephone: (410) 639-7056

Hard of hearing or deaf visitors may call the Maryland Relay Service at 1-800-735-2258 TDD/voice.

This brochure is also available upon request in a large print version.



DEPARTMENT OF THE INTERIOR

U.S. Fish and Wildlife Service

January 1996

U.S. Fish & Wildlife Service

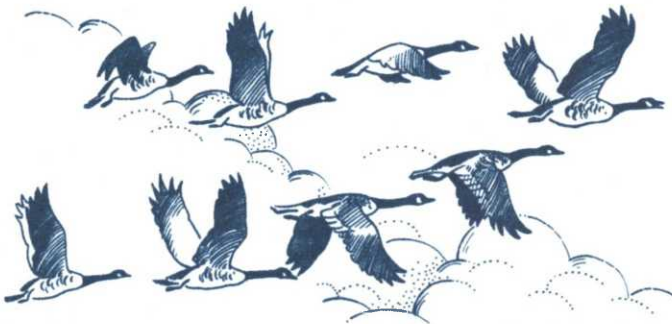
The History of Eastern Neck Island

*Eastern Neck
National Wildlife
Refuge*



The History of Eastern Neck Island

Eastern Neck Island is located at the mouth of the Chester River on the eastern shore of Chesapeake Bay in Kent County, Maryland. Its abundant natural resources have been the basis of a long and varied history. Today, the 2,285-acre island is a national wildlife refuge which is managed to provide habitat for many species of migratory birds, and endangered and threatened species including Delmarva fox squirrels, peregrine falcons and bald eagles. Farming, fishing and hunting still occur on the refuge, although they are now tailored to suit the needs of wildlife.



© Meryl Henderson

The Island in Prehistoric Times

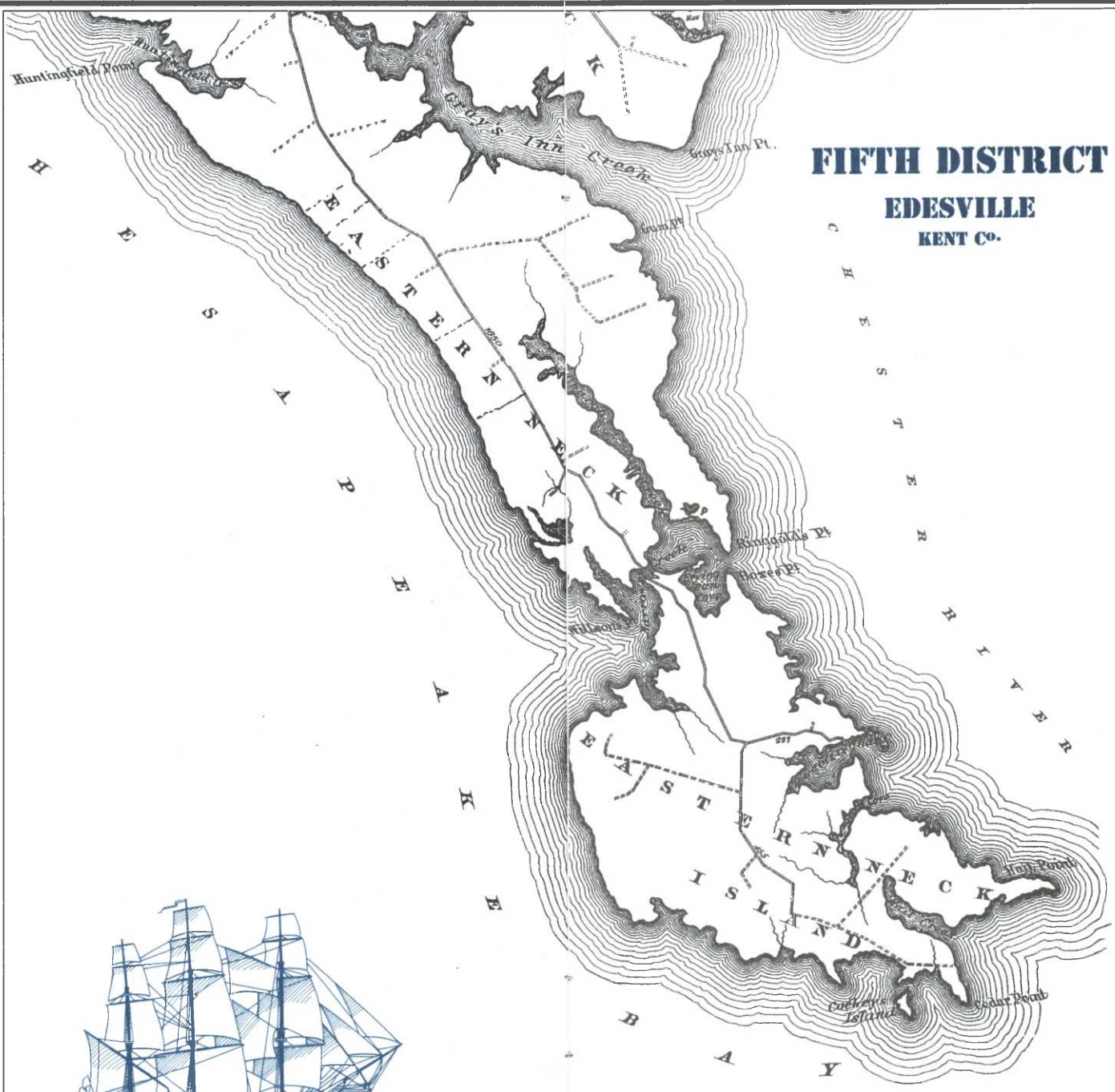


© Meryl Henderson

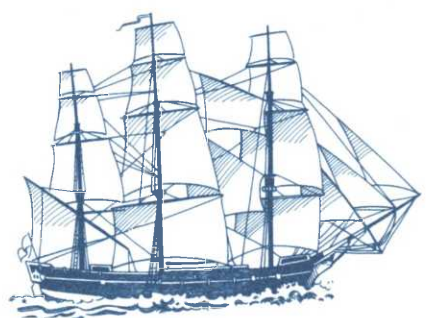
During the time of the last great ice sheet ten thousand years ago, Eastern Neck Island was not an island at all. Native Americans may have paused here while hunting to look out over a wide forested valley to the west. There, the Susquehanna River was carving through fine-grained deposits placed by meltwaters and wind during earlier glacial cycles on its long way to the sea. The Atlantic Ocean's shore at that time was 200 miles east of its present location.

As the last glacier melted, sea levels slowly rose. Sea waters swallowed up the Atlantic coastal plain and drowned the river valley. By 4,000 years ago the ancient hunters would not have recognized the area where their descendants, the Woodland Period Indians, now fished and gathered shellfish from the brackish waters of the Chesapeake Bay. After the Woodland people began to settle down and cultivate crops at inland sites around 1300 A.D., they still used the island as a seasonal foraging area. They left behind huge mounds of discarded oyster shells, called middens, as well as pottery pieces, stone tools, and arrowheads as evidence of their presence.

When Captain John Smith explored this area in 1608, he made contact with the Ozinie Indians, who were related to the Algonquin-speaking Nanticokes. This tribe was noted for their exceptional beadwork made from shells. In less than 100 years after this first contact, the Indians living in the area had all been killed by introduced diseases, warfare with Europeans, or warfare between tribes as various displaced groups sought new territories.



FIFTH DISTRICT
EDESVILLE
KENT CO.



© Meryl Henderson

European Settlement

In 1631 William Claiborne began the first permanent settlement on the Eastern Shore, a fur trading post on Kent Island. Colonel Joseph Wickes, another early settler on Kent Island, could look east across the Chester River from his plantation on Love Point to the lands that came to be called Eastern Neck, where he decided to acquire land as well.

From 1658 to 1680, Wickes and his partner, Thomas Hynson, were granted tracts until they owned all of Eastern Neck Island. Joseph Wickes built a home, "Wickliffe," one of the finest mansions of the time. He made his living by raising tobacco and other crops, and exporting them on ships built at the family's shipyard. For a time, the island may have been the County seat, for Wickes was Chief Justice of Kent County. "Hail Point" was named because it was a place where all ships coming and going on the Chester River could be seen and hailed to enforce shipping regulations. In 1675 the settlement of "New Yarmouth" was established just north of Eastern Neck Island at Gum Point. This town became the county seat until 1696, when the county government moved to the fast-growing port of Chestertown.

The American Revolution

Joseph Wickes' most famous descendant was his grandson, Captain Lambert Wickes, the first Navy officer named by Congress in 1776 to carry the American flag in European waters. During the Revolutionary War he terrorized British shipping, capturing at least twenty-eight "prizes." He also carried Benjamin Franklin to France aboard his flagship, the *Reprisal*, when Franklin was trying to gain French support for the American Revolution.

Lambert Wickes was lost at sea when his ship foundered and sank in a severe storm off Newfoundland on a return trip from France in 1777. A memorial to Captain Wickes is found on Eastern Neck Island, near the Wickliffe site.



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Quieter Times

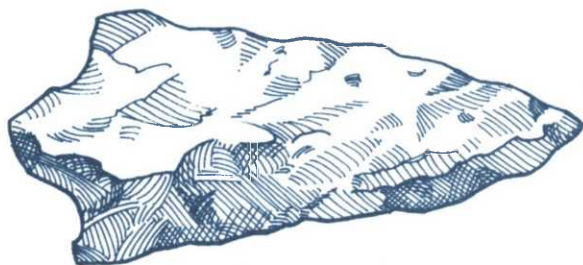
Hynson's heirs eventually sold all their Eastern Neck Island lands to Wickes' heirs, and the island was owned by the Wickes family until 1902. The period from 1800 to 1900 witnessed the division of the original parcels of land among the Wickes family and the diversification of farming activities. Small family farms and sharecroppers engaged in logging, dairying, raising sheep and horses, and growing peaches, pears, asparagus, and various other crops for subsistence and cash. A small fishing village, which included an oyster-shucking plant, was located at Bogles wharf. The Chester River Steamboat Company operated a wharf nearby that was regularly served by steamships from Baltimore and other ports.

As society became increasingly mobile in the 1920s, wealthy individuals from surrounding cities were attracted by the area's notable concentrations of waterfowl and bought portions of the island for hunting retreats. One of the hunting lodges, built in 1930, still stands; it is now used for refuge programs.

In the 1950s a developer bought a large tract and subdivided it into 293 small lots for a housing development. The U.S. Fish and Wildlife Service, responding to concerns over the development expressed by the local community, acquired the entire island between 1962 and 1967 to preserve its valuable wildlife habitat. The present refuge office is the only house ever built in the "Cape Chester" subdivision.

Artifact Hunting

Artifact hunting has long been a popular activity for visitors to Eastern Neck. However, this practice is no longer allowed because when an artifact is removed from its original location, not only does the object itself disappear, but the story it could have told an archaeologist is also lost forever. Since all of the sites and artifacts on the refuge are now protected by Federal and State law, if you discover any artifacts on the refuge, please leave the object in place and report its location to the refuge staff.



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Eastern Neck National Wildlife Refuge
1730 Eastern Neck Road
Rock Hall, MD 21661
Telephone 410/639 7056

U.S. Fish & Wildlife Service
1 800/344 WILD
<http://www.fws.gov>

June 1998



U.S. Fish & Wildlife Service

Eastern Neck

*National Wildlife
Refuge*

Birds





This goose, designed by Ding Darling, has become a symbol of the Refuge System.

Eastern Neck is one 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.

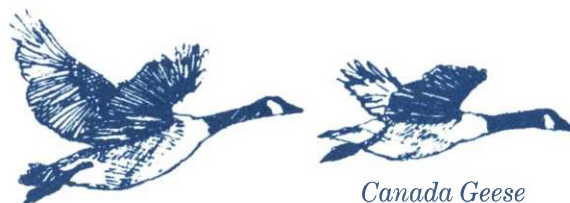
The Service also manages national fish hatcheries, and provides federal leadership in habitat protection, fish and wildlife research, technical assistance, and the conservation and protection of migratory birds, certain marine mammals and threatened and endangered species.

*cover photo:
Ruth Pfeffer*

Eastern Neck National Wildlife Refuge in Kent County on Maryland's Eastern Shore was established in 1962 for the protection and management migratory birds.

The 2,285 acres of diversified habitat on the island, plus the waters of Chester River and Chesapeake Bay, provide habitat for a wide variety of bird life. Diving and puddle ducks, swans and geese concentrate around the island in late fall and early winter. Peak concentrations occur from November to January.

This folder lists the birds that are found in the area of Eastern Neck Wildlife Refuge. A total of 244 species have been recorded on the refuge. Seven accidental species are also listed. Seasonal abundance data for each species apply to the general Eastern Neck (upper Chesapeake Bay) region and may not reflect the species' status on the refuge.



Canada Geese

This list follows the Sixth American Ornithologists Union Checklist and was updated in 1986 by the Maryland Ornithological Society, Kent County Chapter. It is subject to change as more birds are identified on the refuge.

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

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

• Birds known to nest on or near the refuge
Italics indicate threatened/endangered species

LOONS - GREBES

	s	S	F	W
Common Loon	u		c	
• Pied-billed Grebe	u	r	c	u
Horned Grebe	u		c	u
Red-necked Grebe	r		r	r

GANNET - PELICANS - CORMORANTS

Double-crested Cormorant	c	u	c	o
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Green Heron

BITTERNS - HERONS - IBISES

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

SWANS - GEESE - DUCKS

Fulvous Whistling-Duck			r	
Tundra Swan	c		a	a
• Mute Swan	c	c	c	c
Greater White-fronted Goose			r	r
Snow Goose	u		u	u
Brant			r	r
Canada Goose	a		a	a
• Wood Duck	c	c	c	u
Green-winged Teal	c		c	r
• American Black Duck	c	c	c	c
• Mallard	a	a	a	a

	s	S	F	W
Northern Pintail	c		c	c
• Blue-winged Teal	c	r	c	r
Northern Shoveler	u		c	o
Gadwall	c	r	c	c
Eurasian Wigeon	r		r	r
American Wigeon	u		c	c
Canvasback	c		c	c
Redhead	u		u	u
Ring-necked Duck	u		u	u
Greater Scaup	u		u	c
Lesser Scaup	c		c	c
Oldsquaw	c		c	c
Black Scoter	u		u	u
Surf Scoter	u		u	u
White-winged Scoter	u		u	c
Common Goldeneye	a		c	a
Bufflehead	c		c	c
Hooded Merganser	u		o	u
Common Merganser	u		r	u
Red-breasted Merganser	u		r	u
Ruddy Duck	u		c	c

VULTURES - HAWKS - FALCONS

• Black Vulture	c	c	c	c
• Turkey Vulture	a	a	a	a
• Osprey	a	a	c	
• Bald Eagle	c	u	c	u
Northern Harrier	c		c	c
Sharp-shinned Hawk	u		c	u
Cooper's Hawk	o		o	o
• Red-shouldered Hawk	u	u	u	u
Broad-winged Hawk	o		c	
• Red-tailed Hawk	c	c	c	c
Rough-legged Hawk	r		r	r
Golden Eagle	r		r	r
• American Kestrel	a	u	a	a
Merlin	r		o	r
Peregrine Falcon			o	

GROUSE - QUAIL - TURKEY

• Northern Bobwhite	c	c	c	c
• Wild Turkey	c	c	c	c

RAILS - CRANES

Clapper Rail	r	r	r	
• King Rail	c	c	c	c
• Virginia Rail	a	a	a	u
Sora	u		u	u
Common Moorhen	r	r	r	
American Coot	u		u	c

PLOVERS – SANDPIPERS

	s	S	F	W
Black-bellied Plover	u	u	u	
Semipalmated Plover	u	u	u	
• Killdeer	c	c	c	u
Greater Yellowlegs	c	c	c	
Lesser Yellowlegs	c	u	c	
Solitary Sandpiper	u	u	u	
Spotted Sandpiper	c	u	c	
Ruddy Turnstone			r	
Sanderling			r	r
Semipalmated Sandpiper	c	c	c	
Western Sandpiper	r	r	r	
Least Sandpiper	c	c	c	r
White-rumped Sandpiper		u	u	
Pectoral Sandpiper	u	u	u	
Dunlin	c	u	c	r
Stilt Sandpiper		r	r	
Short-billed Dowitcher	u	u	u	
Common Snipe	u		u	u
• American Woodcock	c	u	c	u

JAEGERS – GULLS – TERNS – AUKS

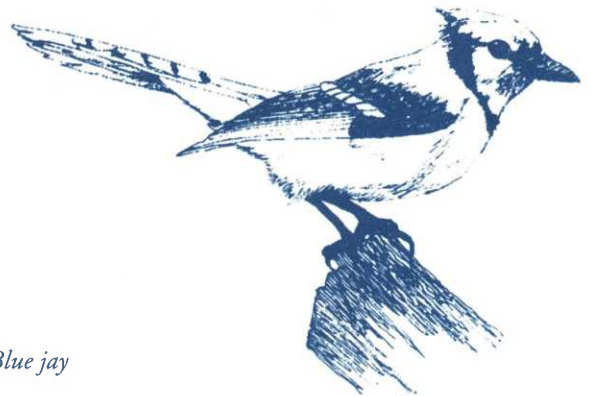
Laughing Gull	c	u	c	r
Bonaparte's Gull	o		o	o
Ring-billed Gull	a	c	a	c
Herring Gull	c	u	c	c
Lesser Black-backed Gull	r		r	r
Great Black-backed Gull	u	r	c	c
Caspian Tern	u		u	
Royal Tern	r		u	
Common Tern	u	u	u	
Forster's Tern	r	o	c	
Least Tern	r	u	u	

DOVES – CUCKOOS – OWLS – HUMMINGBIRDS

• Rock Dove	u	u	u	u
• Mourning Dove	c	c	c	c
• Black-billed Cuckoo	o	o	o	
• Yellow-billed Cuckoo	c	u	u	
• Common Barn Owl	u	u	u	u
• Eastern Screech-Owl	c	c	c	c
• Great Horned Owl	c	c	c	c
Snowy Owl			r	r
• Barred Owl	u	u	u	u
Short-eared Owl	o		o	o
Northern Saw-whet Owl			r	r
• Common Nighthawk	u	u	c	
Chuck-will's widow	u	u	r	
• Whip-poor-will	u	u	c	
• Chimney Swift	c	c	c	
• Ruby-throated Hummingbird	c	u	c	
• Belted Kingfisher	u	u	u	u

WOODPECKERS – FLYCATCHERS

	s	S	F	W
Red-headed Woodpecker	r	r	r	r
• Red-bellied Woodpecker	c	c	c	c
Yellow-bellied Sapsucker	u		u	u
• Downy Woodpecker	c	c	c	c
• Hairy Woodpecker	u	u	u	u
• Northern Flicker	c	c	c	c
• Eastern Wood-Pewee	c	c	c	
Yellow-bellied Flycatcher	o		o	
• Acadian Flycatcher	u	u	u	
• Eastern Phoebe	c	u	c	r
• Great Crested Flycatcher	u	c	u	
• Eastern Kingbird	c	c	c	



Blue jay

LARKS – SWALLOWS – JAYS – CROWS

• Horned Lark	c	c	u	u
• Purple Martin	u	c	u	
• Tree Swallow	c	c	a	r
• Northern Rough-winged Swallow	u	u	u	
• Bank Swallow	u	u	u	
Cliff Swallow	r		r	
• Barn Swallow	a	a	a	
• Blue Jay	c	c	a	c
• American Crow	c	c	c	c
• Fish Crow	c	c	c	u

TITMICE – NUTHATCHES – WRENS

Black-capped Chickadee			r	r
• Carolina Chickadee	c	c	c	c
• Tufted Titmouse	c	c	c	c
Red-breasted Nuthatch	u		u	u
• White-breasted Nuthatch	u		u	u
Brown Creeper	u		u	u
• Carolina Wren	c	c	c	c
• House Wren	c	c	c	r

	s	S	F	W
___ Winter Wren	u		u	u
___ •Sedge Wren	o	o	o	r
___ •Marsh Wren	c	c	c	r

KINGLETS – THRUSHES – THRASHERS

___ •Golden-crowned Kinglet	u		c	c
___ Ruby-crowned Kinglet	u		c	c
___ •Blue-gray Gnatcatcher	c	r	u	r
___ •Eastern Bluebird	a	a	c	c
___ Veery	u		u	
___ Gray-cheeked Thrush	u		u	
___ Swainson's Thrush	c		c	
___ Hermit Thrush	u		u	u
___ •Wood Thrush	c	c	c	
___ •American Robin	a	c	a	u
___ •Gray Catbird	c	c	c	o
___ •Northern Mockingbird	c	c	c	c
___ •Brown Thrasher	c	c	c	o

WAXWINGS – SHRIKES – STARLINGS

___ Water Pipit	r		r	r
___ •Cedar Waxwing	c	r	c	u
___ Loggerhead Shrike	r		r	r
___ •European Starling	c	c	a	c

VIREOS – WOOD WARBLERS

___ •White-eyed Vireo	c	u	c	
___ Solitary Vireo	o		o	
___ •Yellow-throated Vireo	u	u	u	
___ •Warbling Vireo	r	r	r	
___ •Red-eyed Vireo	c	u	c	
___ Blue-winged Warbler	u		u	
___ Tennessee Warbler	o		u	
___ Orange-crowned Warbler			r	
___ Nashville Warbler	r		r	
___ •Northern Parula	c	u	u	
___ •Yellow Warbler	a	c	u	
___ Chestnut-sided Warbler	u		u	
___ Magnolia Warbler	u		u	
___ Cape May Warbler	r		u	
___ Black-throated Blue Warbler	u		c	
___ Yellow-rumped Warbler	a		a	c
___ Black-throated Green Warbler	u		u	
___ Blackburnian Warbler	u		u	
___ •Yellow-throated Warbler	u	o	u	
___ •Pine Warbler	u	u	u	r
___ •Prairie Warbler	u	u	u	
___ Palm Warbler	u		u	o
___ Bay-breasted Warbler	u		u	
___ Blackpoll Warbler	u		u	
___ •Black-and-white Warbler	c	r	c	

	s	S	F	W
___ American Redstart	c	r	c	
___ •Prothonotary Warbler	u	u	u	
___ •Ovenbird	u	u	c	
___ Northern Waterthrush	u		u	
___ •Louisiana Waterthrush	u	r	u	
___ •Kentucky Warbler	u	o	u	
___ Connecticut Warbler	r		o	
___ Mourning Warbler	r		o	
___ •Common Yellowthroat	c	a	c	r
___ Wilson's Warbler	r		r	
___ Canada Warbler	u		u	
___ •Yellow-breasted Chat	u	u	u	r



American goldfinch

TANAGERS – SPARROWS

___ •Summer Tanager	r	o	r	
___ •Scarlet Tanager	c	o	c	
___ •Northern Cardinal	c	c	c	c
___ Rose-breasted Grosbeak	o		u	
___ •Blue Grosbeak	o	u	o	
___ •Indigo Bunting	c	c	c	
___ •Rufous-sided Towhee	c	c	c	u
___ American Tree Sparrow	o		o	u
___ •Chipping Sparrow	c	c	c	o
___ •Field Sparrow	c	c	c	c
___ Vesper Sparrow	r	r	r	r
___ Savannah Sparrow	u		u	u
___ •Grasshopper Sparrow	u	u	u	
___ •Henslow's Sparrow	r	r	r	
___ Sharp-tailed Sparrow	r	r	r	r
___ •Seaside Sparrow	r	r	r	r
___ Fox Sparrow	r		u	u
___ •Song Sparrow	a	c	a	c
___ Swamp Sparrow	c	r	c	c
___ White-throated Sparrow	a		a	a
___ White-crowned Sparrow	u		u	u
___ Dark-eyed Junco	a		a	a
___ Snow Bunting			o	o

BLACKBIRDS – FINCHES

	s	S	F	W
___ Bobolink	u		c	
___ •Red-winged Blackbird	a	a	a	a
___ •Eastern Meadowlark	c	c	a	c
___ Rusty Blackbird	o		u	o
___ •Common Grackle	c	a	a	c
___ •Brown-headed Cowbird	c	c	c	c
___ •Orchard Oriole	c	u	u	
___ •Northern Oriole	c	u	u	r
___ Purple Finch	u		u	u
___ House Finch	u	u	u	u
___ Red Crossbill				r
___ Pine Siskin	o		o	o
___ •American Goldfinch	c	u	c	c
___ Evening Grosbeak	o		o	o
___ •House Sparrow	o	o	o	o

ACCIDENTAL SPECIES

Accidental species that have only been seen once or twice on the refuge.

___ Red Loon	
___ Northern Goshawk	
___ Northern Shrike	
___ Lawrence's Warbler	
___ Yellow-headed Blackbird	
___ Western grebe	
___ Cinnamon Teal	

NOTES

Location _____

Date _____ Time _____ Total _____

Observers _____

Weather _____ Wind _____

Please report any sightings of birds not in agreement with this list to:

Refuge Manager

Eastern Neck National Wildlife Refuge

1730 Eastern Neck Road

Rock Hall, MD 21661

Telephone: 410/639-7056

Hearing impaired visitors may call the Maryland Relay Service at 1-800-735-2258 TDD/voice.

Eastern Neck National Wildlife Refuge
1730 Eastern Neck Road
Rock Hall, MD 21661
Telephone: 410/639 7056
Fax: 410/639 2516
Email: r5rw_ennwr@mail.fws.gov

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