

W0

PRESQUILE NATIONAL WILDLIFE REFUGE
CHESTERFIELD COUNTY, VIRGINIA
JAMES RIVER NATIONAL WILDLIFE REFUGE
PRINCE GEORGE, VIRGINIA

ANNUAL NARRATIVE REPORT
Calendar Year 1991

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

PRESQUILE NATIONAL WILDLIFE REFUGE
Chesterfield County, Virginia

ANNUAL NARRATIVE REPORT
Calendar Year 1991

Review and Approvals


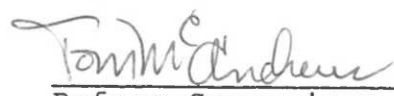

 Refuge Manager	<u>2/19/92</u> Date	 Refuge Supervisor Review	<u>10 Mar 92</u> Date
 ARD-Wildlife Resource Review		<u>3-11-92</u> Date	

TABLE OF CONTENTS

Page

INTRODUCTION

A. HIGHLIGHTS 3

B. CLIMATIC CONDITIONS 3

C. LAND ACQUISITION

1. Fee Title - Nothing to report.
2. Easements - Nothing to report.
3. Other - Nothing to report.

D. PLANNING

1. Master Plan - Nothing to report.
2. Management Plan - Nothing to report.
3. Public Participation - Nothing to report.
4. Compliance with Environmental Mandates- Nothing to report.
5. Research and Investigations 4

E. ADMINISTRATION

1. Personnel 4
2. Youth Programs - Nothing to report.
3. Other Manpower Programs - Nothing to report.
4. Volunteer Programs 4
5. Funding 10
6. Safety 10
7. Technical Assistance - Nothing to report.
8. Other Items 10

F. HABITAT MANAGEMENT

1. General 10
2. Wetlands 11
3. Forests 11
4. Croplands 13
5. Grasslands 13
6. Other Habitat - Nothing to report.
7. Grazing - Nothing to report.
8. Haying - Nothing to report.
9. Fire Management - Nothing to report.
10. Pest Control 15

F. HABITAT MANAGEMENT

Page

11. Water Rights - Nothing to report.
12. Wilderness and Special Areas - Nothing to report.
13. WPA Easement Monitoring - Nothing to report.

G. WILDLIFE

1. Wildlife Diversity	15
2. Endangered and/or Threatened Species	16
3. Waterfowl	16
4. Marsh and Water Birds	17
5. Shorebirds, Gulls, Terns, and Allied Species	17
6. Raptors	17
7. Other Migratory Birds - Nothing to report	
8. Game Mammals	17
9. Marine Mammals - Not applicable.	
10. Other Resident Wildlife	17
11. Fisheries Resources - Nothing to report.	
12. Wildlife Propagation and Stocking - Nothing to report.	
13. Surplus Animal Disposal - Nothing to report.	
14. Scientific Collections - Nothing to report.	
15. Animal Control - Nothing to report.	
16. Marking and Banding	17
17. Disease Prevention and Control - Nothing to report.	

H. PUBLIC USE

1. General	17
2. Outdoor Classroom - Students	19
3. Outdoor Classroom - Teachers - Nothing to report.	
4. Interpretive Foot Trails	19
5. Interpretive Tour Routes - Nothing to report.	
6. Interpretive Exhibits/Demonstrations - Nothing to report.	
7. Other Interpretive Programs	19
8. Hunting	19
9. Fish - Nothing to report.	
10. Trapping - Nothing to report.	
11. Wildlife Observation	20
12. Other Wildlife Oriented Recreation - Nothing to report.	
13. Camping - Nothing to report.	
14. Picnicking - Nothing to report.	
15. Off-Road Vehicling - Nothing to report.	
16. Other Non-Wildlife Oriented Recreation	20
17. Law Enforcement	20
18. Cooperating Associations - Nothing to report.	
19. Concessions - Not applicable.	

I. EQUIPMENT AND FACILITIES

Page

1. New Construction - Nothing to report.	
2. Rehabilitation	22
3. Major Maintenance	22
4. Equipment Utilization and Replacement	22
5. Communications Systems - Nothing to report.	
6. Energy Conservation - Nothing to report.	
7. Other	25

J. OTHER ITEMS

1. Cooperative Programs - Nothing to report.	
2. Items of Interest	25
3. Credits	25

INTRODUCTION

The Presquile National Wildlife Refuge is an island in the historic James River, five miles north of Hopewell, Virginia. It is situated in the northeast corner of Chesterfield County, and borders both Charles City County to the east and Henrico County to the west.

The refuge comprises 1329 acres of marsh, farmland, pasture, and hardwood swamp. The refuge is approximately two miles long, with an average width of one mile. The island elevation averages twenty feet above sea level.

Presquile National Wildlife Refuge was established in March 1953, one year after the 1329 acre island was bequeathed to the United States Department of Interior by Dr. A. D. Williams of Richmond. The portion of the James River surrounding the refuge was closed to the hunting of migratory birds by Secretarial Order of August 13, 1954, published in the Federal Register of August 19, 1954 Volume 19, Number 161.

The land encompassed within the Presquile NWR was occupied by prehistoric Native Americans. In the early 1600's, English settlers established Bermuda Hundred, the first settlement up river from Jamestown. The land within the refuge boundary was part of that settlement. Mr. William Randolph immigrated to "Presque Isle" in 1660, and lived on the property for many years. Mr. Randolph was the ancestor of many notable Virginians including Thomas Jefferson, John Marshall, and Robert E. Lee. Union troops occupied the area during the Battle of Petersburg. This was a time when City Point (Hopewell) was a major Union stronghold. The Union used the land within the refuge, then known as Turkey Bend, as a key observation point for river traffic coming south from Richmond, Virginia. In more recent years, Dr. A.D. Williams, DDS owned the island, and utilized the property as a dairy farm, and country estate.

In March of 1991, the U.S. Fish and Wildlife Service acquired James River NWR located approximately 15 miles southeast of Presquile NWR. The responsibility for managing this new satellite refuge was given to the staff of Presquile NWR.

Administrative headquarters for the Presquile/James River NWR are located in the Commons Complex, Prince George, Virginia. A manned sub-headquarters is located on Turkey Island.

Although small in size, Presquile averages annual wintering flocks of 3,000 Canada geese and 1,000 ducks annually. Presquile provides a valuable link in the chain of Atlantic Flyway refuges.



Presquile NWR Refuge Ferry. -BGB

A. HIGHLIGHTS

1. Presquile National Wildlife Refuge receives a station inspection. (Section I.7)
2. Presquile NWR receives new office space. (Section I.7)

B. CLIMATIC CONDITIONS

A summary of precipitation and temperature for the area is found in the table below:

CY91	<u>Precipitation</u>		<u>Temperature (°F)</u>			
	<u>Total</u>	<u>+/- Normal</u>	<u>High</u>	<u>Low</u>	<u>X</u>	<u>+/- Normal</u>
Jan.	3.62	+0.39	49.7	30.7	40.2	+3.60
Feb.	1.09	-2.04	56.0	32.0	44.2	+5.30
Mar.	5.87	+2.30	61.5	40.1	50.8	+3.60
Apr.	0.87	-2.03	71.5	48.8	60.1	+2.20
May	0.91	-2.64	84.1	60.1	72.1	+6.00
June	6.24	+2.64	87.3	71.3	75.5	+2.00
July	3.47	-1.67	90.0	68.5	80.7	+2.90
Aug.	3.32	-1.69	88.7	68.4	78.6	+1.80
Sept.	2.69	-0.83	82.9	60.0	71.5	+1.30
Oct.	2.50	-1.24	72.7	47.0	60.2	+1.60
Nov.	1.70	-1.59	60.8	38.2	49.5	+0.60
Dec.	<u>4.53</u>	<u>+1.14</u>	55.2	33.9	44.5	+4.60
Total	36.81	-7.26				

1991 was relatively warm with temperatures constantly averaging above normal. Precipitation was below average for the year with a -2.50 difference from the norm.

The refuge experienced extremely high tides and dense fog in the month of October caused by a northeastern storm.

D. PLANNING5. Research and Investigations

A research paper, entitled Nest Box Selection By Prothonitary Warblers, was published in the Journal of Field Ornithology Vol.62 No.3 during the summer of 1991. Submitted by Charles R. Blem and Leann B. Blem, the paper is the culmination of a two year study. The research took place on and around Presquile NWR.

E. ADMINISTRATION1. Personnel

1. Barry G. Brady, Refuge Manager, GS-12, EOD 9/17/84 PFT
2. Oscar Reed, Jr., Refuge Operations Specialist, GS-7
EOD 6/2/91 PFT
3. Irene S. Lipchak, Secretary, GS-4, EOD 1/6/64 PPT
4. Luther B. Vick, Jr., Maintenance Mechanic, WG 9
EOD 3/6/67 PFT

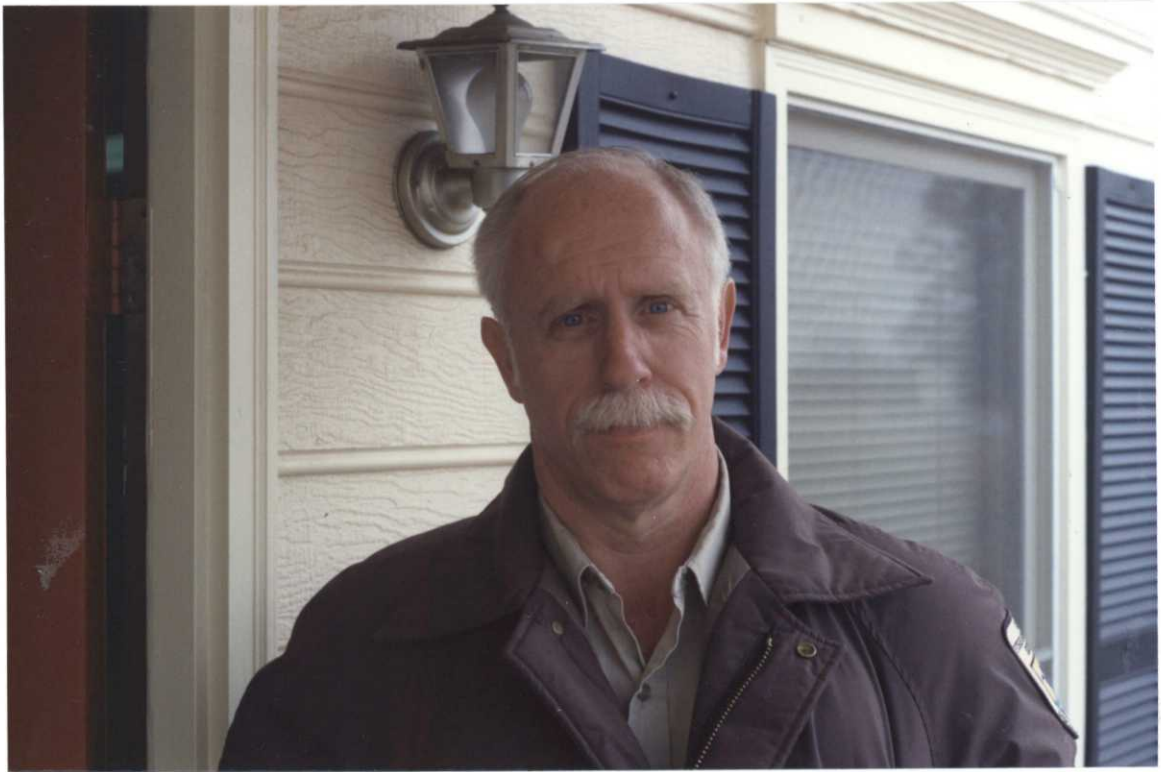
Mr. Oscar Reed, Jr. reported for work on June 2, 1991. Oscar transferred to James River/Presquile NWR from Chincoteague NWR, where he held the position of Refuge Operations Specialist. ROS Reed filled a position that had been vacant for the past four years.

The number of permanent and temporary personnel on board at Presquile during the last five years is given below:

	<u>Permanent Full-time</u>	<u>Permanent Part-time</u>	<u>Temporary</u>	<u>Volunteer</u>	<u>Total FTE</u>
FY 91	3	1	0	1	3.6
FY 90	2	1	0	3	2.6
FY 89	2	1	0	0	2.6
FY 88	2	1	0	1	2.6
FY 87	2	1	0	1	2.6

4. Volunteer Program

Timothy Sylvester was again a valuable asset to both Presquile and James River refuges and their daily operations. He faithfully



Barry G. Brady, Refuge Manager. - OR



Oscar Reed Jr., Refugee Operations Specialist. -BGB



Mrs. Irene Lipchak, Refuge Secretary. -BGB



Luther B. Vick, Jr. Maintenance Mechanic. -BGB



Timothy Sylvester, Refuge Volunteer. -BGB

assisted Maintenance Mechanic Vick on a daily basis. His services are most appreciated.

Several "volunteer" hours were donated to the refuge by the local judicial system in the form of persons working community service retribution.

5. Funding

A summary of Presquile's funding for the last five fiscal years is given below:

Type of Funds

	<u>87</u>	<u>88</u>	<u>89</u>	<u>90</u>	<u>91</u>
Operations	\$95,789	\$99,435	\$87,529	\$62,647	\$114,000
Quarters	3,000	1,345	1,345	1,618	941
ARRMS	62,000	117,209	57,200	75,000	42,833
Fire	0	0	0	0	16,300
Total	\$160,789	\$217,989	\$146,074	\$139,265	\$174,074

6. Safety

As in 1990, Presquile experienced an accident/incident free year in 1991.

Asst. Manager Westphal from the Harrison Lake NFH, performed a station safety inspection in September 1991. ROS Reed performed a reciprocal safety inspection at the Harrison Lake NFH in October 1991.

8. Other (North American Wetlands Restoration)

ROS Reed was scheduled for a one week detail to the St. Lawrence Basin wetlands restoration effort. The assignment was cancelled before the report date.

F. HABITAT MANAGEMENT

1. General

Presquile is an island in the middle of the James River. The island is approximately three miles long and one mile wide. The refuge does not have any water control structures. All refuge waters are tidal waters of the James River with an average daily

amplitude of three feet. River height fluctuates several feet of normal on occasion as a result of wind, rain, and/or lunar tides.

Submergent vegetation does not exist in the James River itself due to the polluted, turbid condition of the water. Pollution is mainly by industrial wastes and effluent from sewage treatment plants. The river is somewhat cleaner now than a decade ago thanks to stronger environmental laws, but it will take even stiffer laws and, more importantly, a consistent enforcement program before significant improvements in water quality can be realized.

The air quality of the refuge is thought to be very close to that of Hopewell, Virginia (two river-miles down stream). In a 1989 report issued by the National Wildlife Federation, it cited the Allied-Signal, Inc. fibers plant in Hopewell, as the third major air polluter in the nation, spewing 49.8 million pounds of 19 toxic compounds into the air, river, and the local sewage treatment plant. The major emission from the plant was 43.5 million pounds of ammonium sulfate. The above figures were based on 1987 EPA data. Allied-Signal is just one of several local industries that surrounds the refuge and discharges hazardous materials into the air. Despite the above data, the local officials in Hopewell insist that the air quality in the vicinity is good.

2. Wetlands

Presquile has 250 acres of tidal marsh which are rather consistent producers of high quality waterfowl foods. Predominant plant species are rice cutgrass (Leersia crysoides), arrow arum (Peltandra virginica), beggartick (Bidens sp.), and wild rice (Zizania aquatica). The rich muck-silt characteristics and the large quantities of effluent in the river at various times throughout the year contribute to an extremely robust growth of marsh vegetation. Seed production was bountiful this year. Invasion of woody vegetation is limited mainly to narrow bands along the river edge and swamp border although some patchy intrusions occur elsewhere. A good burn would benefit the marsh but attempts at burning in the past have been futile. Because of the current condition and productivity of the north and east marshes, no management practices are being considered at this time.

3. Forests

Hardwood swamp comprises approximately 60 percent (800 acres) of the land on Presquile. It is an excellent example of a pristine river swamp environment, becoming so scarce in this area of Virginia. It is uniformly low in elevation and is subject to partial or total inundation during high river tides only. Trees are mostly excellent mast producers including black gum, water tupelo, ash, red maple, and some oaks. Two large creeks and numerous tidal cuts penetrate the swamp providing excellent feeding



A view of the East Marsh as seen from the nature trail. -BGB

and resting areas for waterfowl. The swamp also provides a haven for refuge deer although food is sparse for them there. It's highly unlikely that anyone would be interested in harvesting timber on a commercial basis as the only access to the refuge is by boat or small ferry, not to mention the difficulty of removing timber from the swamp itself once it has been cut.

4. Croplands

Refuge staff combined efforts to prepare for planting, 120 acres of cropland by mowing and discing the encroaching Johnson grass that had reached an average height of ten feet. The 120 acres were then planted in winter wheat for incoming waterfowl expected in October.

The refuge remains very comfortable in its force account farming activities. The acquisition of improved farming equipment would provide the refuge with the capability to better benefit the wildlife resource.

The ten acre Ladino clover field was mowed to reduce encroaching vegetation.

5. Grasslands

The grasslands consist of 121 acres of upland habitat. The primary objective of the grassland management program is to maintain a buffer strip between the wooded areas and the farmland. These buffers protect the farmland from invasions of woody plant species. The planned evaluation of this objective would be to insure that no woody plants encroach into the upland habitat. An added benefit of this objective is the biodiversity produced for resident wildlife species. The following breakdown is by field types and management purposes of the separate habitats contained within the 121 acres of grassland.

a. Permanent Pasture

Represented by 46 acres, these fields contain: sloping hillsides subject to erosion; low lands subject to flooding from rainfall and high tides; and level land portions which are suited to row cropping.

These fields are mainly in fescue and are mowed periodically to prevent grass from becoming too rank. A substantial buffer strip (30-40 ft.) is left unmowed along field borders to provide additional cover for resident wildlife. Geese have a considerable preference for winter wheat and will generally graze on fescue as a last resort. Because of this preference fescue has proven to be very good "emergency food" for the geese during extended freeze-up periods when natural foods and more succulent browse are no longer available. Deer graze heavily on fescue during the winter.



A billboard on Route 460 South describes the farming philosophy of Presquile National Wildlife Refuge. - BGB

b. Semipermanent Pasture

This field is level and contains 16 acres, a portion of which extends into the spoils area. Various annual and perennial grasses and clover are suited here. Ladino clover is planted in this field every two or three years depending on the success of the clover to reseed itself. Ladino clover is a relatively high preference browse of geese and deer in this area and is a forage of higher nutritional value than fescue and other refuge grasses.

c. Spoils Area

This field is level and contains 16 acres. Various grasses grow in this area, predominately fescue and milkweed. There are also several cedars within the area.

Fourteen Washington Hawthorn trees were planted in this area to increase biodiversity and to enhance habitat for the Loggerhead Shrike. Though the soil is extremely sandy and unfit for many plant species the hawthorn trees should thrive in this soil type.

d. Headquarters Area

This field contains nine acres and is planted in fescue and Ladino clover. It is mowed periodically during the summer and is occasionally grazed by geese and deer.

10., Pest Control

Johnson grass as it occurs on Presquile, is a pernicious weed. In the Commonwealth of Virginia it is classified as a noxious weed and is therefore subject to mandatory control. A single seed may produce a plant with one to one hundred seventy stems. The seed crop produced by Johnson grass can be as much as 502 kg/ha.

In an ongoing attempt to control Johnson grass on the refuge the grass was mowed and disced before planting winter crops. This mechanical manipulation of the noxious weed was done in concurrence with a Region wide effort to reduce pesticide use.

No chemical pesticides were applied this year. This break in chemical use should benefit the refuge environment.

G. WILDLIFE

1. Wildlife Diversity

Refuge personnel planted a total of fourteen Washington Hawthorn trees in compliance with the objective of establishing new habitat with wildlife food plantings. The Hawthorns were planted primarily

to benefit the Loggerhead Shrike, a State of Virginia Endangered Species. The Loggerhead Shrike is known to prefer the Hawthorn tree for its roosting, nesting, and foraging activities. It is expected that these trees will also benefit other passerine species, as well as, small mammals.

Fifteen acres of refuge farmland is planted in Ladino clover. It received excellent use by Canada Geese, White-tailed deer, and wild turkeys. The refuge plans to plant additional acreage of clover during the coming planting season.

2. Endangered and Threatened Species

The bald eagle is the only endangered or threatened species that occurs on the refuge. Although the bald eagle does not nest on the island, up to five eagles can be seen roosting on the island throughout the year. The ecotones between the farmland and the swamp and between the swamp and the James River provide excellent roosting habitat.

3. Waterfowl

The refuge Wood Duck boxes were checked, cleaned and rejuvenated. The boxes that had not been used the over the last several years were removed.

One hundred and twenty acres of farm fields were planted with winter wheat for migrating waterfowl.

The refuge Canada Goose populations continue to be at an all time low. The refuge peak goose population for January, 1991, was 2000 birds. The decline in the goose use at Presquile was first noticed in 1990. In 1989, an average of 6000 Canada Geese utilized the 150 acres of winter wheat that was provided in the refuge farm field. In 1990, refuge goose use averaged 1000 birds. Peak goose use figures for the fall/winter season was 2000 birds occurring in December. Several factors are thought to be at work to cause the decline of the Canada Goose population at Presquile NWR. First, the owners of the Curles Neck Marsh (adjacent to Presquile) have actively "farmed" the marsh for the past three years. The planted aquatic vegetation holds the geese during the months of November and December. Canada Goose populations have been on the increase over the last several years near the Flowerdew Hundred Plantation, Brandon Plantation, and the property owned by the James River Corporation. All of these properties are less than 10 miles down river from Presquile. The James River Corporation property is a series of farm fields, man-made ponds, natural marsh, wetland, and riparian habitats, that have been developed over the past several years to attract, and produce waterfowl. The Corporation has won several awards for their conservation efforts. Canada geese continue to utilize the farm fields at Presquile, but the geese are also attracted to newly developed areas, that were not available

to them, as few as, two years ago.

4. Marsh and Waterbirds

Key refuge species are the double crested cormorant, great blue heron, and cattle egret. These species account for over 90% of the marsh and waterbird use on the refuge.

5. Shorebirds, Gulls, Terns, and Other Species

One of the primary overnight roosting sites for gulls in this area is in Tar Bay which is located about seven miles below the refuge. During the winter period thousands of gulls can be observed at day break heading west along the James toward Richmond.

6. Raptors

Though they don't nest on the refuge, osprey were seen frequently in the spring searching for fish along the James River. The usual compliment of marsh, red-shouldered, and red-tailed hawks were present during the year.

8. Game Mammals

The white-tailed deer is the only game mammal that occurs on Presquile. Population estimates are steady, and the island herd appears to be quite healthy.

10.; Other Resident Wildlife

Wild turkey sightings are common, especially in and around the fescue fields bordering the swamp.

Black snakes are plentiful on the island and seen quite frequently.

16. Marking and Banding

On October 4, Manager Brady attended a meeting in which Hal Laskowski, regional biologist, and George Constanso, state biologist, discussed the new techniques to be used for Canada Goose banding along with a new type of neck collar that would be used.

Preparations were made for made for winter banding and collaring on the refuge.

H. PUBLIC USE

1. General

Public use at Presquile National Wildlife Refuge is predominantly wildlife oriented. Most visits occur in group form with many being



Views along East Marsh Nature Trail. -BGB



school and special interest groups. Visitation exceeded 2000 visitors. The refuge is open to visitation from Monday - Friday, 7:30 a.m. - 4:00 p.m. It is closed on weekends and holidays and in cases of adverse weather conditions that make crossing the channel hazardous.

Upon visiting the refuge, wildlife observers can walk through the 3/4 mile nature trail that represents five of the refuge's habitat types. The nature trail terminates at the picnic area where most people eat a lunch before leaving the refuge.

The refuge also has a hunting program that attracts hunters from all over the state.

2. Outdoor Classroom - Students

Several school groups visited the refuge along with groups of other interests. Most of the school groups come from neighboring counties and range from kindergarten to 12th grade.

4. Interpretive Foot Trails

Presquile National Wildlife Refuge offers the use of a 3/4 mile wildlife foot trail designed to better acquaint visitors with the refuge and its wildlife program. The self-guided trail also provides an excellent opportunity for visitors to study the island's flora and fauna, and highlight special points of interest such as: the spoils area, marsh, and swamp edge. Most of the refuge visitors use this trail during their visit to the refuge.

7. Other Interpretive Programs

Manager Brady and ROS Reed represented the Service at the Cravin' Catfish Festival held on October 26, 1991, in the City of Hopewell. Hundreds of coloring books, brochures and stickers were given to festival goers. Mrs. Mary Calos, the event coordinator, was very appreciative of the refuge and felt that it was the main attraction of the festival.

8. Hunting

The drawing for the annual deer hunt for Presquile NWR was conducted on September 16, 1991. All of the 92 hunters that applied were drawn for the hunt. A dramatic decrease in hunter participation was noted from previous hunts. The suspected reason is the twenty dollar per day hunt fee that was initiated in 1990.

A total of five days were open to hunting on Presquile National Wildlife Refuge a breakdown of the results is as follows:

<u>Type Hunt</u>	<u>Date</u>	<u>No. of Hunters</u>	<u>No. of Hunt Hours</u>	<u>Harvested</u>	<u>Buck</u>	<u>Doe</u>
Bow	Oct. 12	17	158	0	0	0
	Oct. 18	2	18	1	0	1
	Oct. 19	<u>3</u>	<u>30</u>	<u>1</u>	<u>0</u>	<u>1</u>
	<u>Subtotal</u>	<u>22</u>	<u>206</u>	<u>2</u>	<u>0</u>	<u>2</u>
Gun	Nov. 18	34	321	30	11	19
	Nov. 19	<u>15</u>	<u>136</u>	<u>5</u>	<u>1</u>	<u>4</u>
	<u>Subtotal</u>	<u>49</u>	<u>457</u>	<u>35</u>	<u>12</u>	<u>23</u>
	<u>Total</u>	<u>71</u>	<u>663</u>	<u>37</u>	<u>12</u>	<u>25</u>

The hunts are operated on a permit basis, so that the refuge staff has a control on the number of hunters that are using the refuge at any one time.

The refuge operates a Virginia Big Game check station located on the refuge and all hunters that harvest deer during the refuge hunt are required to check the deer at that station.

The refuge maintains a law enforcement presence during the refuge hunt, by having three permanent full time refuge officers present during all refuge hunt days.

11. Wildlife Observation

Wildlife observation has always been an important recreational activity at Presquile. Although birding groups contribute much of the activity hours for this program, most of our visitors will spend some of their time participating in this activity.

16. Other Non-Wildlife Oriented Recreation

All refuge use on Presquile is wildlife oriented. Off refuge boating and skiing are major summer activities in the James River which surrounds the refuge. Our main problem is getting carefree boaters to stop while the cable-operated ferry is crossing the channel. There are several large signs and warning lights on the ferry warning boaters to stop, but there are always a few who challenge the warning and attempt to beat the ferry.

17. Law Enforcement

In April 1991, Manager Brady and Maintenance Mechanic Vick attended a one-week law enforcement refresher at the Eastern Shore Va. NWR. At the refresher training both Manager Brady and Maintenance



Oscar's home away from home. -BGB

Mechanic Vick re-qualified with their duty weapons.

Maintenance Mechanic Vick was notified that the 2.5 inch blue steel Smith and Wesson service revolver that was issued to him for his law enforcement activities, was determined to be unsafe by Special Agent Kuncir, Annapolis, Maryland. Mechanic Vick was issued a replacement stainless 2.5 inch Smith and Wesson revolver, with which he qualified.

On October 7, 1991, Manager Brady, ROS Reed, and Maintenance Mechanic Vick, re-qualified with their duty weapons at the Eastern Shore of Virginia NWR.

I. EQUIPMENT AND FACILITIES

2. Rehabilitation

The refuge staff painted structures on the island as the weather permitted. The painting program included all buildings, as well as, the ferry ramps and cab.

The refuge 'bone yard' was completely cleaned, and reorganized.

The Presquile ferry was refurbished during this period, with new galvanized chain link fencing on the sides, bow, stern, and both ferry ramps. This is the first fencing replacement on the ferry in more than fifteen years. In addition, the ferry ramps and ferry deck were repainted. A red beacon was installed on the cab top makes the ferry more visible, especially at night.

The carpet in residence 44 was professionally cleaned in June.

3. Major Maintenance

The refuge staff constructed an A-frame shelter over the existing 250 gallon above-ground fuel tank. It was built large enough to accommodate two tanks of this size. The function of the structure is to protect the tank from the elements, including shading the tank from direct sunlight.

4. Equipment Utilization and Replacement

A 250 gallon, above-ground, fuel storage tank was acquired for the storage and dispensing of diesel fuel. It was placed along side of the existing above-ground gasoline tank.

The refuge welding machine was replaced with a much improved and more versatile unit.

Three new chainsaws were acquired. They were needed to replace and supplement the existing chainsaws.



New fuel storage area. -BGB



"Desk ???" "What Desk???"
Mrs. Lipchak, during the office move
to the Prince George Commons Complex. -BGB

7. Other

A station inspection was performed on May 6-7, 1991. The inspection team consisted of Tom McAndrews, Associate Manager, Refuges South; Tom Comish, Regional ORP; and Hal Laskowski, Biologist, Refuges South. The station inspection was a real benefit to all concerned, because the refuge received some needed constructive criticism. An amazing amount of material was covered during the two day period.

On November 7, 1991, the refuge staff moved into a new office consisting of three office spaces, a reception area, and a conference room. The suite, located in Prince George County, essentially doubles the space of the old Hopewell office. The new office was brought to us courtesy of GSA, Philadelphia, Pennsylvania. End of the year acquisitions included much needed items for the new office space such as, video equipment, and office furniture including: filing cabinets, desks, credenzas, and chairs.

J. OTHER ITEMS

2. Items of Interest

Manager Brady attended the Drug Free Work Place training session held at the Patuxent National Wildlife Research Center, Laurel, Maryland, on May 15, 1991.

The entire refuge staff attended the retirement luncheon given for Mrs. Francis Foege, Secretary for the FWS LE office in Richmond, on June 26, 1991. Mrs. Foege was a great help to the Presquile NWR staff.

Refuge personnel completed the required 8 hour defensive driver training course, given by the the National Safety Council. Maintenance Mechanic Vick was recertified in Cardio-pulmonary Resuscitation in July.

Manager Brady and ROS Reed attended the Region 5 Project Leaders meeting from September 9-13, 1991. Both felt that the meeting was most productive and informative.

3. Credits

This year's narrative was crafted by Oscar Reed, Jr.

Photographs by: Barry G. Brady (BGB) and Oscar Reed, Jr. (OR)

JAMES RIVER NATIONAL WILDLIFE REFUGE
PRINCE GEORGE COUNTY, VIRGINIA

ANNUAL NARRATIVE REPORT
CALENDER YEAR 1991

REVIEW AND APPROVALS


REFUGÉ MANAGER

2/19/92
DATE

ASSOCIATE MANAGER DATE


ARD - WILDLIFE RESOURCES DATE 3-11-92

INTRODUCTION

James River National Wildlife Refuge, managed by the U.S. Fish and Wildlife Service, was established for the protection of the endangered bald eagle. The James River National Wildlife Refuge is located in Prince George County, Virginia. The Refuge is six miles southeast of the City of Hopewell and thirty miles south of Richmond. The Refuge is bordered by Powells Creek on the west, James River to the north, and the Flowerdew Hundred Plantation to the south.

James River National Wildlife Refuge was established as the 468th National Wildlife Refuge on March 27, 1991. The refuge is identified as the largest summer roosting area for juvenile bald eagles east of the Mississippi river. The James River National Wildlife Refuge, consists of 3,538 acres of hardwood and cut over loblolly pine. Though it is most heavily used in the summer, James River NWR provides roosting and feeding habitat for both mature and immature bald eagles throughout the year. Bald eagles have been prominent users of the James River area of Virginia since before colonial days.

Stone Container, the previous landowner, harvested forest products from the large tract of forest within the James River eagle concentration area. The Nature Conservancy purchased 3538 acres of the Stone Container Corporation land in May 1988, to ensure that continued eagle use would not be jeopardized. The U.S. Fish and Wildlife Service purchased the land from The Nature Conservancy in March 1991, under the authority of the Endangered Species Act.

The primary objective of James River National Wildlife Refuge is to provide suitable habitat for the protection, and enhancement of the roosting and nesting bald eagles that utilize the refuge. Secondarily, to provide an opportunity to view wildlife in its natural environment, so that the public may better appreciate the refuge role in the conservation of the wildlife resources.

James River NWR is rich in history and archaeological sites. The refuge was once occupied by prehistoric Native Americans, Colonists, Civil War troops, and early residents of Prince George County. James River National Wildlife Refuge is within two river miles of where General Grants troops crossed the James River in his preparation for the Battle of Petersburg. General Grants Troops are known to have crossed over what is now refuge land.

The James River National Wildlife Refuge is administered as a satellite of the Presquile National Wildlife Refuge. Administrative headquarters for the Presquile/James River National Wildlife Refuges are located in the Commons Complex, near the Prince George Courthouse, Prince George, Virginia.

TABLE OF CONTENTS

Page

INTRODUCTION

A. HIGHLIGHTS 1

B. CLIMATIC CONDITIONS 1

C. LAND ACQUISITION

1. Fee Title 1
2. Easements - Nothing to report.
3. Other 2

D. PLANNING

1. Master Plan - Nothing to report.
2. Management Plan 5
3. Public Participation 5
4. Compliance with Environmental Mandates-Nothing to report.
5. Research and Investigations 8

E. ADMINISTRATION

1. Personnel 8
2. Youth Programs - Nothing to report.
3. Other Manpower Programs - Nothing to report.
4. Volunteer Programs 8
5. Funding 9
6. Safety - Nothing to report.
7. Technical Assistance - Nothing to report.
8. Other Items 9

F. HABITAT MANAGEMENT

1. General 13
2. Wetlands 14
3. Forests 14
4. Croplands - Nothing to report.
5. Grasslands - Nothing to report.
6. Other Habitat - Nothing to report.
7. Grazing - Nothing to report.
8. Haying - Nothing to report.
9. Fire Management - Nothing to report.
10. Pest Control - Nothing to report.

11. Water Rights - Nothing to report.
12. Wilderness and Special Areas - Nothing to report.
13. WPA Easement Monitoring - Nothing to report.

G. WILDLIFE

- | | |
|--|----|
| 1. Wildlife Diversity | 14 |
| 2. Endangered and/or Threatened Species | 15 |
| 3. Waterfowl | 15 |
| 4. Marsh and Water Birds | 15 |
| 5. Shorebirds, Gulls, Terns, and Allied Species | 15 |
| 6. Raptors | 16 |
| 7. Other Migratory Birds | 16 |
| 8. Game Mammals | 16 |
| 9. Marine Mammals - Not applicable. | |
| 10. Other Resident Wildlife | 16 |
| 11. Fisheries Resources | 17 |
| 12. Wildlife Propagation and Stocking - Nothing to report. | |
| 13. Surplus Animal Disposal - Nothing to report. | |
| 14. Scientific Collections - Nothing to report. | |
| 15. Animal Control - Nothing to report. | |
| 16. Marking and Banding - Nothing to report. | |
| 17. Disease Prevention and Control - Nothing to report. | |

H. PUBLIC USE

- | | |
|---|----|
| 1. General | 17 |
| 2. Outdoor Classroom - Students | 18 |
| 3. Outdoor Classroom - Teachers | 18 |
| 4. Interpretive Foot Trails - Nothing to report. | |
| 5. Interpretive Tour Routes - Nothing to report. | |
| 6. Interpretive Exhibits/Demonstrations - Nothing to report. | |
| 7. Other Interpretive Programs - Nothing to report. | |
| 8. Hunting | 18 |
| 9. Fish - Nothing to report. | |
| 10. Trapping - Nothing to report. | |
| 11. Wildlife Observation - Nothing to report. | |
| 12. Other Wildlife Oriented Recreation - Nothing to report. | |
| 13. Camping - Nothing to report. | |
| 14. Picnicking - Nothing to report. | |
| 15. Off-Road Vehicling - Nothing to report. | |
| 16. Other Non-Wildlife Oriented Recreation - Nothing to report. | |
| 17. Law Enforcement | 19 |
| 18. Cooperating Associations - Nothing to report. | |
| 19. Concessions - Not applicable. | |

I. EQUIPMENT AND FACILITIES

Page

1. New Construction - Nothing to report.
2. Rehabilitation - Nothing to report.
3. Major Maintenance - Nothing to report.
4. Equipment Utilization and Replacement - Nothing to report.
5. Communications Systems - Nothing to report.
6. Energy Conservation - Nothing to report.
7. Other 19

J. OTHER ITEMS

1. Cooperative Programs - Nothing to report.
2. Items of Interest 20
3. Credits 20

A. HIGHLIGHTS

1. James River National Wildlife Refuge established. (Section C.1.)
2. Virginia Governor L. Douglas Wilder visits James River National Wildlife Refuge. (Section C.3.)

B. CLIMATIC CONDITIONS

James River NWR is situated in the southern portion of Virginia's Piedmont Plateau. The area is characterized by mild winters and warm humid summers. The average yearly temperature for the Hopewell Petersburg area is 59.9 degrees F., with the average daily maximum temperature of 50.2 degrees F in January, to 90 degrees F in July. Precipitation averages 44.5 inches in a typical year, with the highest monthly rainfall recorded in July and August at 5.07 inches and 4.71 inches respectively. Average annual snowfall totals 8.8 inches. Summer thunderstorms and hurricanes occur in late summer and fall and produce heavy rainfall, which results in peak discharge from the tidal creeks, and flooding of the James River.

C. LAND ACQUISITION

1. Fee Title

The Nature Conservancy purchased 3538 acres from the Stone Container Corporation in May 1988 to assure that continued eagle use would not be jeopardized. The U.S. Fish and Wildlife Service purchased the land fee simple in March of 1991 under the authority of the Endangered Species Act, thereby establishing the James River National Wildlife Refuge as the 468th National Wildlife Refuge in the National Wildlife Refuge System. The establishment of the James River National Wildlife Refuge culminated a four year process to protect nationally significant bald eagle roosting and nesting habitat.

Responsibility for the management of James River NWR, is assigned to the Refuge Manager of Presquile NWR. Both Refuges are administered through the refuge headquarters office located in the Commons Complex near the Prince George County Courthouse.

The James River NWR was established to provide the long term protection of nationally significant habitat for the endangered bald eagle. The refuge is identified as the largest summer roosting area for juvenile bald eagles east of the Mississippi River. The James River NWR, combined with the adjacent James River provides excellent foraging habitat for juvenile bald eagles that begin to arrive in the area in early April. The refuge eagle population peaks in July and August with a population of 125 eagles. Nesting bald eagles begin their nesting activities in November, and will

occupy the refuge well into the summer months. Small numbers of mature bald eagles are seen throughout the year using the refuge as a roosting and feeding area. The land surrounding the refuge has been monitored by researchers for several years, is now considered threatened by land use changes being brought on by residential development, forestry practices, and sand and gravel operations.

3. Other

The 613 acre parcel of land adjacent to the James River NWR, known as the Bogese Tract was approved for acquisition by the Service in May 1990. The property is identified as having the largest diurnal feeding roost for the bald eagle in the entire length of this portion of the James River. The property is also the potential site of a major housing development. The owner wishes to subdivide the property into five acre lots, build homes on each lot, and sell them at premium prices. The owner also stated that he was a willing seller and agreed to sell the entire property to the Service. In an attempt to protect the property from development, The Nature Conservancy bought an option for the right of first refusal in 1991. This option expires in late 1992. If funding does not become available before option expires, the owner will go ahead with the plans to subdivide the property. When the Bogese Tract is purchased and becomes part of the James River NWR, two bald eagle nests, the areas two largest nocturnal bald eagle roosts, and the areas largest diurnal feeding roosts would be protected within the boundary of the James River National Wildlife Refuge.

Virginia State Governor L. Douglas Wilder participated in a bald eagle census along the south bank of the James River from Maycocks Point, to Flowerdew Hundred Plantation. The boat trip, sponsored by the Virginia Commission of Game and Inland Fisheries, occurred on August 21, 1991. The invited guests that were aboard the Governors boat, included Governor Wilder; Ms. Elizabeth Haskell, State Secretary of Natural Resources; Mr. Bud Bristow, Director of the Virginia Commission of Game and Inland Fisheries; Mr. George Fenwick, Nature Conservancy; Dr. Mitchell Byrd, Professor, College of William and Mary; Mr. Dana Bradshaw, Nongame biologist, State of Virginia; and Mr. Barry Brady, Manager, James River NWR. During the 45 minute boat trip, Governor Wilder was given a complete briefing on the status of the James River bald eagle population, the history and importance of James River NWR, the status and importance of the potential acquisition of the 620 acre Bogese tract.

Governor Wilder saw more than 40 bald eagles during his trip. Governor Wilder, Secretary Haskell, and Mr. Bristow all stated that the State of Virginia supported Federal funding for the 620 acre Bogese tract, and would actively work to gain additional support and funding.



Virginia Governor L. Douglas Wilder, and Virginia State Secretary of Natural Resources, Elizabeth Haskell relax during their boat trip to the James River NWR. - BGB



Dr. Mitchell Byrd talks about the James River bald eagle population to those aboard the Governor's boat. -BGB



George Fenwick (TNC) and Secretary Elizabeth Haskel (VFGC) have a discussion following the survey. -BGB

At the end of the fiscal year, funding for the Bogese Tract had been appropriated and authorized for expenditure by the United States House of Representatives and the United States Senate, only to fall out of consideration during the year end conference committee meeting. The prospects for the purchase of the Bogese Tract in 1992, is not known.

D. PLANNING

2. Management Plan

The James River NWR was the subject of an objective setting session from May 8 to May 10, 1991. The objective setting team was made up of the entire Presquile staff, Mr. Tom McAndrews, Associate Manager, Refuges South; Mr. Tom Comish, Regional ORP; Mr. Hal Laskowski, Biologist Refuges South; Mr. Curt Laffin, Technical Services; Mr Alan Carter, Regional Fire Coordinator; Mr. Gib Chase, Realty; Ms. Dianne Pence, Regional Nongame Bird Coordinator; and Dr. Mitchell Byrd, College of William and Mary. The three day session was quite beneficial, as it set priorities, objectives, and goals for the refuge, for the next three to five years. The meeting resulted in the approval of the James River NWR Station Management Plan being approved in July 1991.

It was determined during the objective setting session that the management direction for James River NWR for the next three to five years will focus on converting refuge land from being managed and used under private ownership to management that is consistent with policies and guidance of the National Wildlife Refuge System, establishing a long term (50 year) eagle management program, controlling the refuge deer herd, planning for the long term management of public uses, protection of additional James River eagle habitat, controlling wildfire, planning for the protection of historic and archeological resources, and responding to staff, facility, and other administrative needs.

3. Public Participation

The acquisition, and existence of the James River National Wildlife Refuge has been, and continues to be a politically sensitive issue within the County of Prince George, Virginia. The individuals that had traditionally used the land prior to the establishment of the refuge, were not at all enthusiastic about the property coming under "Federal Ownership".

Manager Brady met with staff representatives of Senator John Warner, Senator Charles Robb, and Congressman Sisisky, during the week of May 19, 1991. The function of the meetings was to alert the respective offices of the changes that would affect their constituents, as a result of the establishment of James River National Wildlife Refuge.



"James River NWR Manager's House"
Old hunt club house slated for demolition.



Remnants of dog kennels after the dogs had been removed. -BGB



James River NWR Picnic Pavilion. -BGB



James River Skeet Range. -BGB

Manager Brady then met with the traditional land users, to tell them of the land use changes that would occur as a direct result of the establishment of the James River National Wildlife Refuge. During this period, Manager Brady met with The Riddle Hunt Club, The Circle Hunt Club, The Fine Hunt Club, The Milam Hunt Club, The Blackwater Hunt Club, The C.C.C. Hunt Club, The Powells Creek Hunt Club, The Stone Container Corporation, and The Chesapeake Bay Foundation. Close contact was also maintained between Manager Brady, and the administrative staffs of Congressman Sisisky, Senator Robb, and Senator Warner, during the course of the meetings.

5. Research and investigations

Manager Brady met with Mr. Dana Bradshaw, Nongame Biologist, Virginia Commission of Game and Inland Fisheries, to discuss the research needs of James River NWR. Mr. Bradshaw was involved with the long term monitoring of the bald eagles that utilized the refuge prior to its establishment. Mr. Bradshaw agreed to continue the monitoring of the James River NWR bald eagle population, including all active nest and roost sites. In addition Mr. Bradshaw is continuing his Nongame Breeding Bird Survey within the refuge. The methods that are being used in the Breeding Bird Survey are consistent with those recommended by Ms. Dianne Pence, FWS Nongame Biologist, Boston. Mr. Bradshaw is also interested initiating a study to identify all of the species of mammals, amphibians, and reptiles that currently inhabit the refuge.

E. ADMINISTRATION

1. Personnel

1. Barry G. Brady, Refuge Manager, GS-12, EOD 9/17/84 PFT
2. Oscar Reed, Jr., Refuge Operations Specialist, GS-7
EOD 6/3/91 PFT
3. Luther B. Vick, Jr., Maintenance Mechanic, WG-9
EOD 3/6/67 PFT
4. Irene S. Lipchak, Secretary GS-4 EOD 1/6/64 PFT

The James River NWR is a satellite of the Presquile NWR. As a result, the staff is the same for both refuges. All staff members work on both refuges. No one staff member is assigned specifically to James River NWR.

4. Volunteer Program

Mr. Timothy Sylvester was a full time refuge volunteer for both Presquile and James River NWR. Mr. Sylvester helped Maintenance

Mechanic Vick post the James River NWR boundary. The majority of Mr. Sylvesters volunteer service occurred at Presquile.

5. Funding

The James River National Wildlife Refuge is funded as a satellite of the Presquile NWR. Funding for James River NWR is reflected in Presquile NWR 1991 Annual Narrative. The total funding for James River NWR in calendar year 1991 was \$5,000 to purchase signs, and post the refuge boundary.

8. Other

The establishment of the James River National Wildlife Refuge meant that numerous special interest groups and traditional land users would not be allowed to engage in those activities that they had participated in for over forty years. As a result, several meetings were held to help gain compliance and support for the refuge.

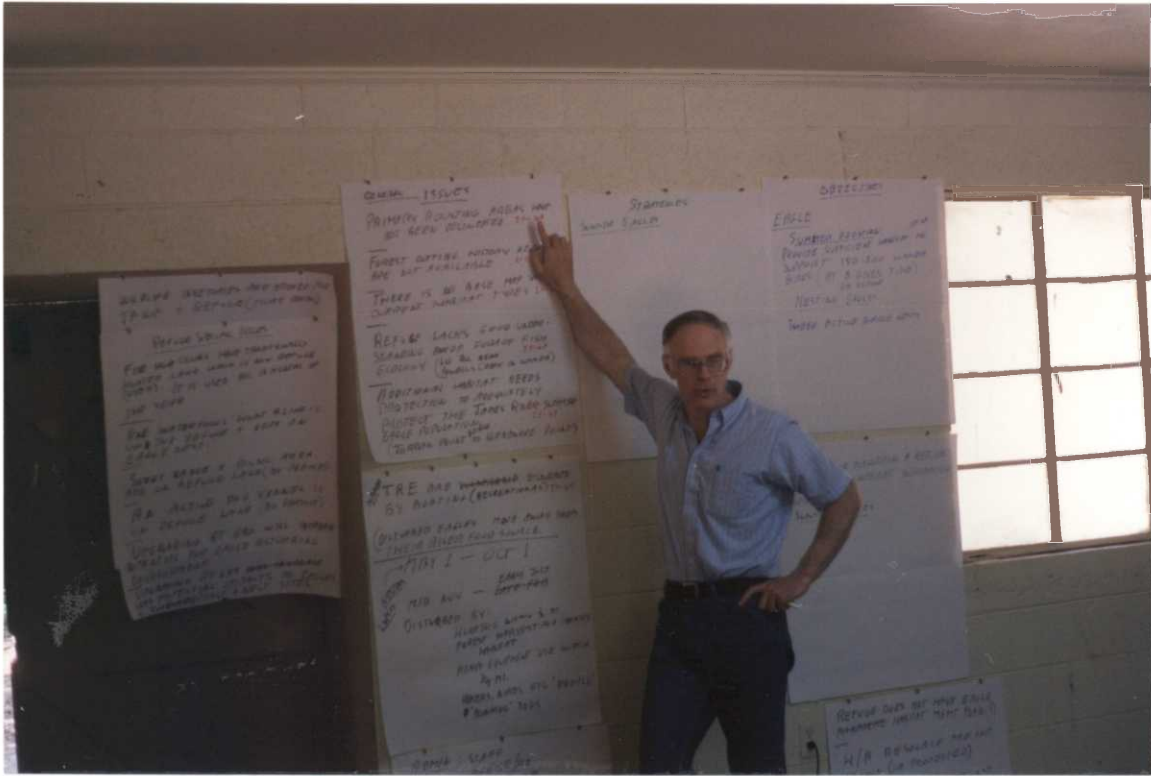
Manager Brady met with the representatives of the five hunt clubs that have traditionally hunted on the area that is now incorporated within the boundaries of the James River NWR. The hunt clubs were allowed to hunt under the conditions of a sole source lease with the previous landowners. The lease also allowed for the running of dogs on the property. The function of the June 6, 1991 meeting was to explain the land use changes that would occur as a result of the establishment of the James River NWR.

The June 6, 1991 meeting, was attended by more than 35 members of the 5 hunt clubs. Manager Brady began the meeting, by explaining the background of the National Wildlife Refuge System, and how the James River NWR was part of that system. The meeting continued with an explanation of the objectives of James River NWR, and the process that must be followed to open a National Wildlife Refuge to an activity such as hunting. Once the background information was given, Manager Brady told those in attendance, the changes that would directly impact the hunt clubs.

1. The refuge would go through the process of opening James River NWR to the hunting of white-tailed deer only. The hunting of small game, waterfowl, turkeys, and all other game species would not be allowed.

2. No hunting would occur on James River NWR in the fall of 1991, because of time constraints needed to go through the process of opening the refuge to hunting. This also includes the lead time, and preparation time needed to write and have approved all of the reports needed to complete the process.

3. If James River NWR is open to the hunting of white-tailed deer in the fall of 1992, or at sometime in the future, the members of



Curt Laffin Technical Services, Boston,
 moderated the James River NWR Station objective setting session. -BGB



The members of the James River NWR objective setting session from left to right: Luther Vick, Dianne Pence, Barry Brady, Tom Comish, Tom McAndrews, Hal Laskowski, Alan Carter, and Curt Laffin. Not pictured: Gib Chase and Mrs. Irene Lipchak. - BGB

the hunt clubs would be allowed to apply for hunting permits along with other members of the general public. The individual hunt clubs would not have sole source leases to hunt on defined areas within the refuge.

4. If, or when the James River NWR white-tailed deer hunt was approved, the hunt would be open to the general public, the hunt would be on a permitted basis, with the permits being drawn on a lottery type system, and the hunt plan would designate the areas within the James River NWR to be hunted.

5. There would be no running of dogs for any reason on James River NWR, and specifically the use, and running of dogs during hunting season would not be allowed.

The hunt club members in attendance, for the most part, agreed to, or at least understood the reasons for the changes that would take place as a result of establishment of James River NWR.

Manager Brady met with five representatives of the Stone Container Corporation, Hopewell, Virginia. The function of the meeting was to explain to Stone Container the changes that would occur to their use of the picnic pavilion, and the skeet range, resulting from the establishment of the James River NWR.

During the June 10, 1991, meeting Manager Brady gave an overview of U.S. Fish and Wildlife Service, The National Wildlife Refuge System, presented the Service's policy on picnicking, and an explanation of the objectives of James River NWR. Once the background information was given, Manager Brady told those in attendance, that the following changes that would occur concerning the future use of the picnic pavilion, and skeet range.

1. The U.S. Fish and Wildlife Service would allow Stone Container to utilize the picnic pavilion for previously scheduled company oriented events for the duration of the 1991 summer season.

2. Picnicking involving non-Stone Container Corporation oriented events, would not be scheduled by Stone Container Corporation, and would not be permitted.

3. All uses of the picnic pavilion by Stone Container Corporation would end as of November 1, 1991.

4. An official determination on the use of the skeet range has yet to be made, and that there would be no use of the skeet range, until a determination was made.

Mr. Hargrave appreciated the fact that the service allowed Stone Container Corporation to utilize the picnic pavilion for the duration of the 1991 season.

Manager Brady met with Mr. Henry Watkins and Mr. Steven Brown Jr., both individuals are responsible for the leadership of the Powells Creek Hunt Club and Mr. Charles Smith, representative of the CCC Hunt Club, regarding the storage of dogs on James River NWR. Both hunt clubs at one time hunted on the land now known as James River NWR. Due to the high cost of hunt fees imposed by a previous landowner, the hunt clubs moved off of the land for their hunting activities, but arranged under contract with The Stone Container Corporation, to store their dogs on what is now refuge land. The function of the meetings was to explain to all concerned the changes that would occur pertaining to the storage of dogs, as a result of the establishment of James River NWR.

The following two changes were discussed and agreed to during the course of the meeting:

1. All dogs are to be moved to a location off James River NWR, no later than August 15, 1991.
2. All wire enclosures, wire, posts, dog houses, trash, debris, animal feces, and other animal waste products are to be moved to a location off James River NWR no later than August 15, 1991.

The hunt club leaders stated that they understood the reasons for moving the dogs. Both clubs moved the dogs prior to the August 15, 1991 deadline.

F. HABITAT MANAGEMENT

1. General

James River NWR is composed of silty or sandy loams. The refuge has good soils for timber production. Soils are dominated by Peawick-Emporia-Wickham types formed primarily in clayey fluvial sediments on uplands. These soils as described by the USDA Soil Conservation Service (1983) are "deep, moderately well-drained and well-drained soils that have clayey or loamy subsoil".

James River NWR is located in the coastal plain physiologic province of southeastern Virginia. The area is drained to the west by Powells Creek, to the east by Flowerdew Hundred Creek, and to the south Nobles Swamp. The geology of the site is classified according to two formation types: The Charles City Formation and The Shirley Formation. The Shirley Formation consists of basal gravel overlain by sand and capped by silt and clay. This formation extends from the floodplain to the 40 foot contour elevation. The Charles City Formation is similar in depositional characteristics and stratigraphy, but is found at higher upland elevations. Holocene alluvial deposits of sand, silt, clay, and organic detris 20 to 40 feet in thickness comprise the wetland areas of Powells

and Flowerdew creeks. The topography of James River NWR is described as gently forested rolling forested upland, which drops off rather sharply near Powells and Flowerdew Hundred creeks. Maximum elevation is 70 feet above mean sea level.

James River NWR consists of 3538 acres of predominantly hardwood and cut over loblolly pine. Two state roads cross the property. The roads are maintained by the state and are in good condition. The site has numerous dirt roads that traverse the property and serve as fire lanes. There are several old structures on the refuge, including a picnic pavilion, one house site, two dog kennels, and a skeet range. James River NWR consists of the following habitat types: 3168 acres in forest, 50 acres of open wetland, 20 acres of administrative property, and 5 miles of state maintained road.

2. Wetlands

Powells Creek and Flowerdew Hundred Creek are tidal freshwater systems supporting a mixture of emergent, scrub-shrub, and forested wetlands. Wet areas, stream bottoms, and steep slopes remain in hardwoods.

3. Forests

The majority of James River NWR is cut over loblolly pine plantations. The property has a mixture of mature, middle-aged, and young pine stands. Mixed hardwood stands consisting primarily of oak, hickory, maple, gum, and poplar characterize the James River NWR shoreline. The undergrowth in the Loblolly pine stands is extremely thick, and is a deterrent to pedestrian access. Powells Creek and Flowerdew Hundred Creek are tidal freshwater systems supporting a mixture of emergent, scrub-shrub, and forested wetlands. Wet areas, stream bottoms, and steep slopes remain in hardwoods. Tree species other than Loblolly pine that are known to occur on James River NWR; include southern red oak, white oak, water oak, willow oak, red maple, yellow poplar, sweetgum, and scrub pine.

G. WILDLIFE

1. Wildlife Diversity

James River NWR supports a diverse and dynamic variety of flora and fauna. The property has been identified as the largest summer juvenile bald eagle roost east of the Mississippi River. The refuge has also been identified as having the suitable location and habitat for several endangered plant species.

2. Endangered and/or Threatened Species

The James River National Wildlife Refuge currently supports two known roosting sites, and two active bald eagle nests. Bald eagle surveys conducted by Dr. Mitchell Byrd, College of William and Mary, and a member of the bald eagle recovery team, indicates that the eagles have a well defined territory that extends along the James River from Hopewell downstream to Wards Creek. A peak of 125 eagles were documented using the refuge in 1990, and 135 in 1991. It has been estimated by Dr. Byrd that as many as 1000 individual bald eagles visit the refuge over the course of a summer. The population is composed equally of immature and mature birds. Most of the adult eagles are thought to be post breeding birds from southeastern states and juvenile birds from the entire east coast.

The Department of Conservation and Historic Resources conducted a rare plant inventory along Powells Creek to investigate the potential for rare freshwater tidal marsh plants. The Prairie Senna, a globally rare plant species and a category two candidate for federal listing was documented. The largest population of this plant currently documented in the state is located along Powells Creek on refuge land. Extant occurrences of Sensitive Joint Vetch, and Longs Bittercress, are found in similar habitat near the refuge, but were not found within the refuge boundaries. Both of these species are globally rare and are category two candidates for federal listing as threatened or endangered plants. No rare or exemplary natural communities were documented within James River NWR.

3. Waterfowl

Waterfowl concentrations are fairly high in the river along the wooded swamps and tidal marshes of Powells and Flowerdew Hundred Creeks. These wetland areas are used by migrating and nesting mallards, black ducks, and wood ducks. There is a high potential for wood duck production along the creeks.

4. Marsh and Water birds

Egrets and herons are common in the marshes and along the rivers edge. Colonies of double-crested cormorants and cattle egrets frequent the numerous sunken barges in the river. These sites represent the only known nesting colony of cormorants in Virginia, and the only known colony of cattle egrets west of the Chesapeake Bay in Virginia. Wild turkeys are common in the upland hardwood and mixed forested areas of the refuge.

5. Shorebirds, Gulls, Terns and Allied Species

On July 16, 1991 a pair of spotted sandpipers with two young were observed by Mr. Dana Bradshaw, State of Virginia Nongame Biologist, on the riverfront portion of the refuge. It is thought by Mr.

Bradshaw that other nesting pairs of spotted sandpipers also utilize this section of the James River. This account, and the Coopers Hawk pair mentioned below, are good species records for the coastal plain of Virginia.

6. Raptors

Three species of raptors have been recorded to date on James River National Wildlife Refuge, including the bald eagle, the red-tailed hawk, and Coopers hawk. The bald eagle and Coopers hawk are known to nest on the property.

The occurrence of the Coopers hawk nest on the refuge deserves special mention, as it is uncommon in the coastal plain of Virginia. Although not found to be successful breeders, a pair of Coopers hawks were discovered constructing a nest in mid-April. An adult female and an immature male were seen in attendance at the nest on separate occasions, although there was no evidence that eggs were laid. Given the minimum disturbance that this nest was exposed to, it is suspected that this was a mismatched pair with a reproductively immature male. It is likely that this pair will try to nest next year.

7. Other Migratory Birds

A biological inventory of James River NWR has been ongoing since the establishment of the refuge on March 27, 1991. To date, a total of 63 species of birds have been identified within the boundary of James River NWR. Of the 63 species, 54 species are known to be breeding birds. One of the more important species that nest on the refuge is the Coopers Hawk. The number of species of birds known to occur on the refuge will increase as more time is devoted to the inventory.

8. Game Mammals

The white-tailed deer is the only game mammal that occurs on James River National Wildlife Refuge. The population estimate for the refuge and the lands surrounding the refuge is 275 animals.

10. Other Resident Wildlife

A biological inventory of James River NWR has been ongoing since the establishment of the refuge on March 27, 1991. To date, the following species of mammals are known to occur on the refuge; racoon, red fox, cottontail rabbit, gray squirrel, muskrat, and white-tailed deer. The number of species of mammals known to occur on the refuge will increase, as more time is devoted to the inventory.

11. Fisheries Resources

The James River and its tributaries below Richmond serve as important spawning and nursery sites for fishes of the Alosa. Powells Creek and Flowerdew Hundred Creek both support anadromous populations of alewives and blueback herring. These two species typically spawn in the upper reaches of tributary streams including both Powells and Flowerdew Hundred Creeks. Dip netting of herring is a significant local recreational sport fishing activity during the spring runs.

The tidal freshwater of the James River also serve as important spawning areas for striped bass, American Shad, hickory shad, and gizzard shad. Sport fishing is conducted for white catfish, channel catfish, largemouth bass, white perch, and longnose gar.

H. PUBLIC USE

1. General

The resources at James River Refuge provide an opportunity for teachers at all grade levels to expose their students to a quality wildlife education experience. It was decided during the James River NWR objective setting session that for the next three to five years public use should be kept to a bare minimum. As the refuge becomes operational, and with the addition of an Outdoor Recreation Planner to the refuge staff, the refuge plans to have a visitor center, interpretive walks, self-guiding trails, and audiovisual programs to help visitors better enjoy their visit and learn about the management programs of the James River NWR. Since the James River is a new refuge, the process of developing refuge facilities into a world class public use program is just beginning.

James River Refuge is rich in historical and archaeological sites. The refuge was once occupied by prehistoric Native Americans, European immigrants, and early residents of Prince George County. The refuge is within two river miles of where General Grants troops crossed the James River in his preparation for the Battle of Petersburg. Grants Troops are known to have crossed over what is now refuge land.

The following chart documents the refuge public use for the James River NWR first ten months of operation.

	<u>March 91 to Decmber 1991</u>
Outdoor Classroom- Students	265
Outdoor Classroom- Teachers	13
Picnicking	<u>326</u>
Total	604

2. Outdoor Classrooms-Students

Manager Brady met with The Chesapeake Bay Foundation and The Virginia Living Museum during the Fall of 1991 to come to an agreement as to the amount of public use visitation that the refuge would allow in 1991. The Chesapeake Bay Foundations field trip season begins each year in march, and ends in November. The Foundation visited the refuge a total of ten times in 1991. The refuge agreed to continue allowing the Foundation to visit the refuge. The Virginia Living Museum did not visit the refuge in 1991, but are very much interested in using the refuge as a learning resource in 1992.

The typical trip by the Chesapeake Bay Foundation, consists of entering the refuge with a trailer load of canoes, accessing Powells Creek at the end of Diggers road, spending up to eight hours doing environmental education activities, and then leaving the refuge. While involved in this activity the groups participate in environmental education activities including wildlife observation, water sampling, fish sampling, plant identification, and marsh ecology. The groups are monitored and supervised at all times by qualified staff members, and require no assistance from the current refuge staff. The foundation is required to notify the refuge in advance of each visit, and is also required to notify the refuge after the visit to report the total number of people that were involved in each trip.

3. Outdoor Classrooms-Teachers

The refuge provides the resource site and staff expertise for those groups interested in participating in an outdoor classroom environment. During 1991, The Chesapeake Bay Foundation was the only group that used of the refuge. Because of the small staff size and the lack of an Outdoor Recreation Planner, the refuge staff does not have the time to become actively involved with each group as much as is needed to be effective.

Manager Brady gave a two hour presentation to a group of 13 middle school teachers that were visiting the James River NWR as part of a research vessel cruise of the James River. The one week cruise was sponsored by the Chesapeake Bay Foundation. The theme of the July cruise was The ecology and natural history of the James River.

8. Hunting

The James River National Wildlife Refuge was closed to the hunting of white-tailed deer in 1991 because of the administrative constraints involved in opening a National Wildlife Refuge to hunting. A draft Environmental Assessment to open James River NWR to big game hunting was written in September 1991. Manager Brady met with Mr. Donald Schwab, Big Game Biologist for the Virginia State Commission of Game and Inland Fisheries. The meeting was to determine the condition of the of the James River National Wildlife

Refuge deer herd.

The Environmental Assessment was sent out for public comment November 11, 1991. Over sixty copies of the Assessment were sent to concerned citizens, politicians, refuge neighbors, and others for comment. A news release announcing the release of the assessment was sent to the four area newspapers including The Hopewell News, The Progress Index, the Richmond Times Dispatch, and the Richmond News Leader.

As a result of the mailings and news releases, eleven written comments were received from the general public, and two individuals telephoned the refuge to comment on the Assessment. At year's end, the comments from the general public were being addressed in the Assessment prior to submittal to the Regional Office for approval. It is expected that the James River NWR will have a white-tailed deer shotgun only hunt in calendar year 1992.

14. Picnicking

Refuge picnicking is allowed incidentally to wildlife oriented activities. The following activities were allowed due to the refuge agreement with The Stone Container Corporation.

One hundred and twenty five people attended a family reunion, given by Mr. Thomas McGee of Hopewell. The Reunion was held at the James River NWR picnic Pavilion on July 6, 1991.

One hundred and fifty employees of Stone Container Corporation attended a picnic at the James River NWR picnic pavilion in September.

Stone Container Corporation employees held their last picnic at the James River NWR on October 23, 1991.

17. Law Enforcement

Vandalism has already begun at James River NWR, as a total of nine Closed Area signs and the posts that they were fastened to were stolen over the course of two consecutive weekends in June. The vandalism was expected, and the signs and posts were replaced within a day of being stolen.

I. EQUIPMENT AND FACILITIES

7. Other

The James River National Wildlife Refuge was posted with Closed Area signs along both sides of state routes 639 and 640 in June 1991. The entrances to all fire lanes were also posted. A total of eighty signs were installed.

STV/Lyon Associates of Baltimore, Maryland were under contract to perform a transverse survey of the James River NWR. This type of survey is needed prior to a refuge boundary survey. Work was initiated in November 1991, and was completed in December.

J. OTHER ITEMS

3. Items of Interest

Manager Brady met with Mr. Chris Davidson, and Mr. Robert Smith, VPI Forestry Research Associates, in October to discuss the potential for studying Gypsy Moth use of James River NWR. Fortunately for the refuge and unfortunately for Mr. Davidson, the occurrence of Gypsy Moths on the refuge was determined by the state extension office to be extremely low, and would not fit the requirements of Mr. Davidsons study.

Manager Brady met with Mr. David Harrison, Owner of the Flowerdew Hundred Plantation, to discuss future of the James River NWR and the Flowerdew Plantation. Mr. Harrison was enthusiastic about the public use that the refuge will provide.

A meeting was held with the White Marsh Ecological Services office, U.S. Army Corps of Engineers, Virginia Game and Inland Fisheries, Dr. Byrd, College of William and Mary, the James River NWR to discuss the permitting of landowners to construct piers and like structures on the waterfront along the seven mile stretch of the James River adjacent to the refuge that is used for roosting by roosting bald eagles. The issue bald eagle habitat acquisition arose and the future of the Bogese Tract was also discussed.

4. Credits

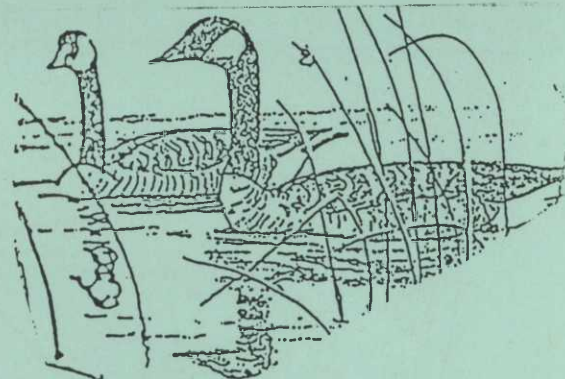
The entire 1991 James River National Wildlife Refuge was written by Refuge Manager Barry G. Brady.

Photographs by: Barry G. Brady (BGB)



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

PRESQUILE
NATIONAL WILDLIFE REFUGE



INFORMATION

Presquile National Wildlife Refuge, established in 1952, is located on a man-made island in historic James River near the town of Hopewell, Virginia. Originally the island's 1329 acres lying in Chesterfield County, were approximately four-fifths encircled by water as the river formed a long ox-bow bend. In 1934 a navigation channel was cut across the narrow base of the peninsula making Presquile a true island. In 1954, 1,000 acres of water in the river around the refuge was closed to hunting of waterfowl by Secretarial Order, thus increasing the effectiveness of Presquile as a refuge.

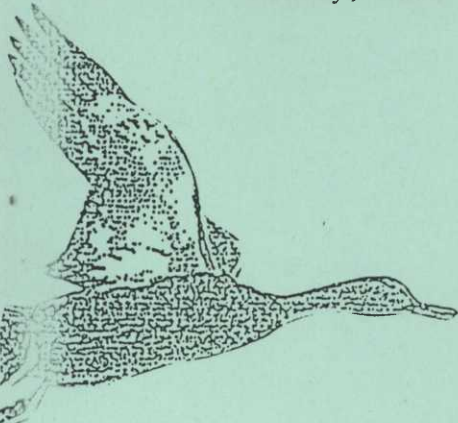
Three distinct types of habitat are found on the island. There are more than 800 acres of tidal swamp, 250 acres of tidal marsh, and 275 acres of agricultural land. The refuge is managed primarily for waterfowl. Birdlife is of most interest in winter when there are large concentrations of waterfowl. Canada geese sometimes exceed 10,000 in number. As many as 200 snow and blue geese and 7,500 ducks may be seen. Ducks are mainly puddle ducks, although several kinds of divers regularly use the refuge in small numbers. There are usually about 50 pairs of wood ducks present and an occasional pair of black ducks nest in the refuge swamp and marsh. A variety of raptors can be seen including an occasional bald eagle.

The refuge has a 3/4 mile nature trail and small picnic area for use by the public. Transportation for groups can be arranged to and from the refuge on a Government-owned and operated ferry. Interested parties should contact us in advance by writing the Refuge Manager, Presquile National Wildlife Refuge, P. O. Box 189 Prince George, Virginia 23875-0189 or calling (804) 733-8042 on Monday, Wednesday or Friday.

PLEASE NOTE

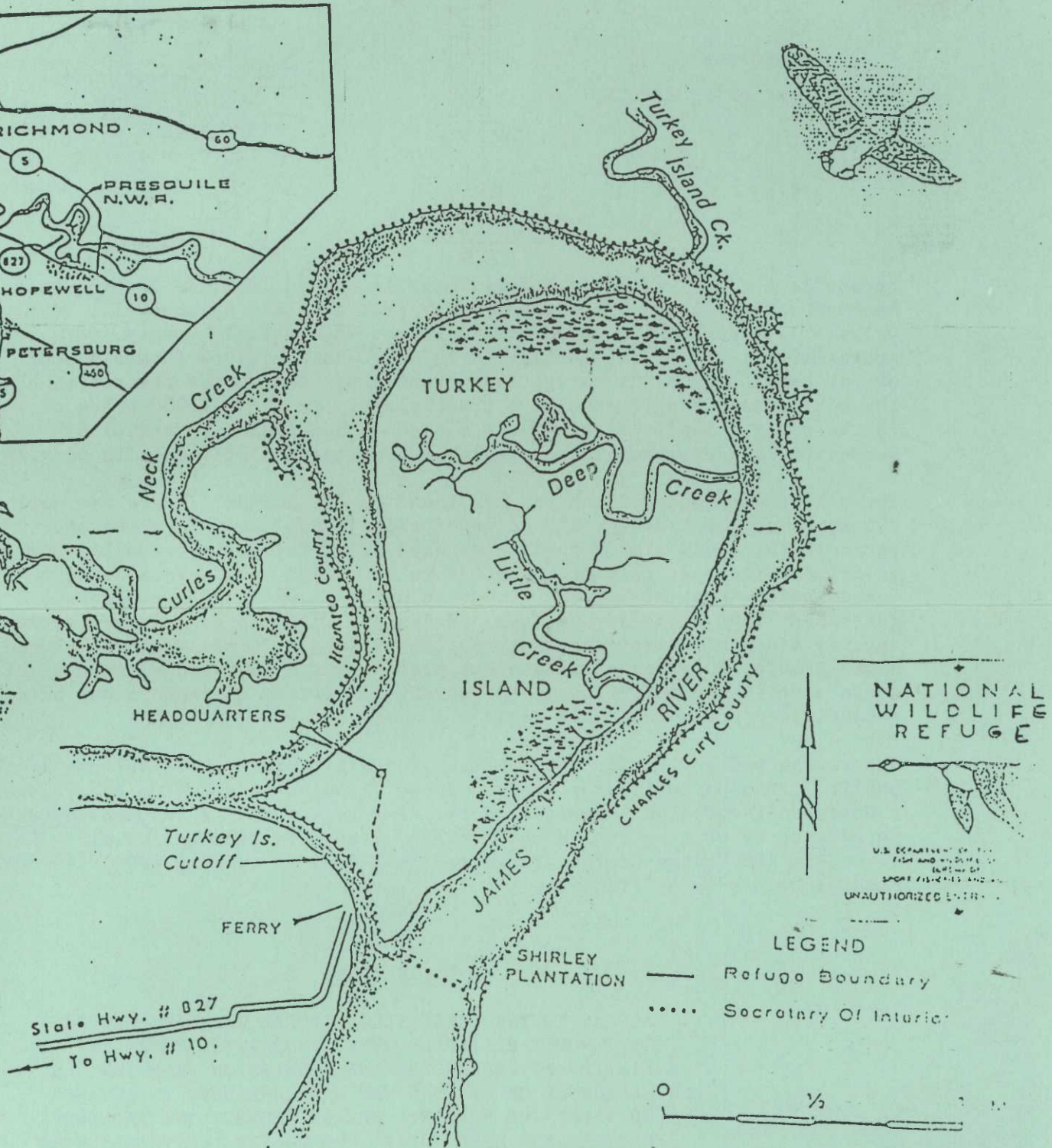
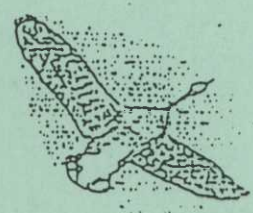
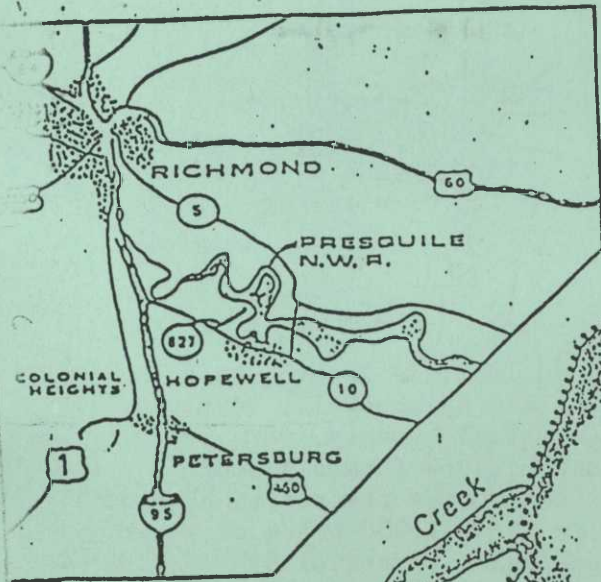
ACCESS TO THE PRESQUILE NATIONAL WILDLIFE REFUGE IS THROUGH PRIVATELY OWNED PROPERTY. ENTRY IS LIMITED TO PERSONS HAVING PERMISSION FROM THE LANDOWNER OR PERSONS WHO HAVE ARRANGED IN ADVANCE TO VISIT THE REFUGE. PLEASE RESPECT THE LANDOWNERS DESIRES AND HEED THEIR "NO HUNTING OR TRESPASSING" SIGNS.

TAKE PRIDE IN AMERICA....THIS LAND IS YOUR LAND!



Presquile National Wildlife Refuge

Chesterfield County, Virginia



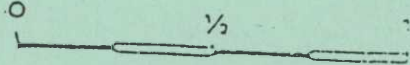
NATIONAL WILDLIFE REFUGE

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WATERFOWL AND WILDLIFE
UNAUTHORIZED ENTRY

LEGEND

- Refuge Boundary
- Secretary Of Interior

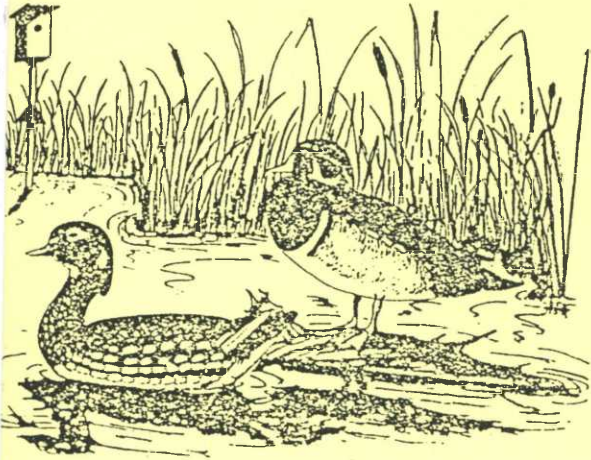
State Hwy. # 027
To Hwy. # 10.



BIRDS OF PRESQUILE

National Wildlife Refuge

Virginia



Presquile National Wildlife Refuge, established in 1952, consists of a 329-acre man-made island in the historic James River near the town of Hopewell, Virginia. In 1954, 1,000 acres of water in the river around the refuge was closed to hunting of waterfowl by Secretarial Order.

Three distinct types of habitat are found on the island; tidal swamp (800 acres), tidal marsh (250 acres), and agricultural land (275 acres). The refuge is managed primarily for waterfowl. December and January are the best months to observe the wintering flocks of ducks and geese. Wood ducks and an occasional pair of black ducks nest in the refuge swamp and marsh. A colony of bank swallows, nesting in the steep clay banks adjacent to the navigational channel, is the only one known in a radius of 100 miles.

Transportation can be arranged to and from the refuge by a Government-owned and operated ferry.

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
 t = Nesting has occurred on the refuge

RELATIVE ABUNDANCE

a - abundant a species which is very numerous.
 c - common certain 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 seen at intervals of 2 to 5 years.

This list contains 198 species that have been identified on Presquile. Names and order of listing are in accord with the Fifth A.O.U. Checklist, as amended.

LOONS - GREBES - CORMORANTS and HERONS

	S	S	F	W
Common Loon	o	o	u	
Horned Grebe	o	o	u	
Pied-billed Grebe	c	u	c	
Double-crested Cormorant	r	r	u	
Great Blue Heron	c	c	c	c
Green Heron	u	c	u	
Little Blue Heron	r	c	r	
Cattle Egret	u	r	u	
Great Egret	c	c	c	r
Snowy Egret	o	u	o	
Black-crowned Night Heron	o	o	o	
American Bittern	u	o	u	c

SWANS, GEESE and DUCKS

Whistling Swan	r	r	r	
Canada Goose	a	o	a	a
Snow Goose	u	c	c	
Mallard	c	u	a	a
Black Duck	c	c	a	a
Gadwall	u	u	u	
Pintail	c	c	c	
Green-winged Teal	c	c	c	
Blue-winged Teal	u	c	r	
American Wigeon	c	u	c	
Shoveler	u	r	u	
Wood Duck	c	c	a	a

Redhead	r	o		
Ring-necked Duck	u	u	u	
Canvasback	r	r	o	
Greater Scaup	o	o	u	
Lesser Scaup	u	u	c	
Common Goldeneye	o	o	o	
Bufflehead	u	u	u	
Ruddy Duck	c	c	c	
Hooded Merganser	o	u	u	
Common Merganser	c	u	c	
Red-breasted Merganser	c	u	r	

VULTURES and HAWKS - QUAIL - RAILS and COOTS

Turkey Vulture	c	c	c	c
Black Vulture	a	a	a	a
Sharp-shinned Hawk	u	u	u	
Cooper's Hawk	o	o	o	
Red-tailed Hawk	c	c	c	c
Red-shouldered Hawk	c	c	c	c
Broad-winged Hawk	u	u	u	
Bald Eagle	u	u	u	u
Marsh Hawk	u	u	c	
Osprey	c	u	c	
Peregrine Falcon	r	r		
American Kestrel	u	u	c	
Bobwhite	c	c	c	c
Turkey	c	c	c	c

King Rail	u	u	u	
Virginia Rail	u	u	u	
Sora	u	c		
American Coot	u	r	u	u

PLOVERS, SNIPES and SANDPIPERS

Semipalmated Plover	u	u		
Killdeer	c	c	c	c
American Woodcock	u	u	u	u
Common Snipe	u	u	c	
Spotted Sandpiper	c	u	c	
Solitary Sandpiper	c	c		
Greater Yellowlegs	c	c	c	
Lesser Yellowlegs	c	c	c	
Least Sandpiper	u	u	u	
Semipalmated Sandpiper	u	u	u	
Western Sandpiper	r	r		

GULLS and TERNS - DOVES - CUCKOOS - OWLS - NIGHTHAWKS

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

Black Skimmer	o	o	o	
Mourning Dove	a	a	a	a
Yellow-billed Cuckoo	c	c	c	c
Black-billed Cuckoo	c	o	c	
Barn Owl	u	u	u	u
Screech Owl	u	u	u	u
Great Horned Owl	u	u	u	u
Barred Owl	c	c	c	c
Short-eared Owl	o	o	u	

Chuck-will's-widow	o	u	o	
Whip-poor-will	u	c	o	
Common Nighthawk	o	c	o	
Chimney Swift	u	a	u	u

HUMMINGBIRDS - KINGFISHERS - WOODPECKERS - FLYCATCHERS - and SWALLOWS

Ruby-throated Hummingbird	c	c	c	c
Belted Kingfisher	c	c	c	c
Common Flicker	c	c	c	c
Pileated Woodpecker	c	c	c	c
Red-bellied Woodpecker	c	c	c	c
Red-headed Woodpecker	u	u	u	u
Yellow-bellied Sapsucker	u	u	c	
Hairy Woodpecker	u	u	u	u
Downy Woodpecker	c	c	c	c
Eastern Kingbird	c	c	c	c
Great Crested Flycatcher	c	c	c	c
Eastern Phoebe	c	c	c	r
Acadian Flycatcher	c	c	c	
Eastern Wood Peewee	c	c	c	c
Horned Lark	u	u	u	u
Tree Swallow	c	c	a	
Bank Swallow	c	c	c	
Rough-winged Swallow	u	u	u	u
Barn Swallow	a	a	a	
Cliff Swallow	o	o		
Purple Martin	o	o	o	

JAYS, CROWS, TITMICE, NUTHATCHES and WRENS

Blue Jay	c	c	c	c
Common Crow	a	a	a	a
Fish Crow	c	a	c	r
Carolina Chickadee	c	c	c	c
Tufted Titmouse	c	c	c	c
White-breasted Nuthatch	u	u	u	u
Red-breasted Nuthatch	o	o	r	
Brown Creeper	c	c	c	

House Wren	c c c o
Winter Wren	c c c
Bewick's Wren	r r r
Carolina Wren	c c c c
Long-billed Marsh Wren	o o o

MOCKINGBIRDS, THRUSHES - GNAT -
CATCHERS, KINGLETS and WAXWINGS

Mockingbird	a a a a
Gray Catbird	c c c o
Brown Thrasher	c c c c

American Robin	c c c u
Wood Thrush	c c c
Hermit Thrush	u u u
Swainson's Thrush	u r u
Gray-cheeked Thrush	u u u
Eastern Bluebird	c c c c

Blue-gray Gnatcatcher	u c u
Golden-crowned Kinglet	c c c
Ruby-crowned Kinglet	c c c
Water Pipit	u u c

Cedar Waxwing	u u u
-------------------------	-------

SHRIKES, VIREOS, WARBLERS,
BLACKBIRDS and TANAGERS

Loggerhead Shrike	c c c c
-----------------------------	---------

Starling	a a a a
--------------------	---------

White-eyed Vireo	c c c
Yellow-throated Vireo	u c u
Red-eyed Vireo	c a c

Black-and-white Warbler	c c c
Prothonotary Warbler	a a a
Blue-winged Warbler	r r r
Orange-crowned Warbler	r r r
Northern Parula	a a a
Yellow Warbler	u u u
Cape May Warbler	u o u
Black-throated Blue Warbler	o r o
Yellow-rumped Warbler	c c c
Black-throated Green Warbler	u o u
Yellow-throated Warbler	c c c
Chestnut-sided Warbler	o r o
Blackpoll Warbler	c o c
Pine Warbler	c c c r
Prairie Warbler	c c c
Palm Warbler	o o o
Ovenbird	c c c
Louisiana Waterthrush	c c c
Kentucky Warbler	c c u
Common Yellowthroat	a a a r
Yellow-breasted Chat	c c c
Hooded Warbler	c c c
American Redstart	c c c

House Sparrow	a a a a
-------------------------	---------

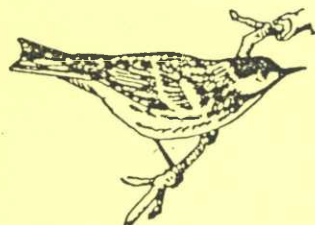
Bobolink	c o c
Eastern Meadowlark	a a a a

Red-winged Blackbird	a a a a
Orchard Oriole	c c c r
Northern Oriole (Baltimore)	r r r
Rusty Blackbird	c c c r
Common Grackle	a a a r
Brown-headed Cowbird	c c c c

Scarlet Tanager	u u u
Summer Tanager	u c u

GROSBEAKS, BUNTINGS
and SPARROWS

Cardinal	a a a a
Rose-breasted Grosbeak	o o o
Blue Grosbeak	u u u
Indigo Bunting	c a c
Dickcissel	o o o
Evening Grosbeak	o o o
Purple Finch	u u u
Pine Siskin	r r r
American Goldfinch	c c c r
Rufous-sided Towhee	c c c c
Savannah Sparrow	a a r
Grasshopper Sparrow	c c c
Henslow's Sparrow	r r r
Vesper Sparrow	o o o
Bachman's Sparrow	o o o
Dark-eyed Junco	a a a
Tree Sparrow	u u u
Chipping Sparrow	c c c
Field Sparrow	c c c c
White-crowned Sparrow	u u o
White-throated Sparrow	a a a
Fox Sparrow	u u u
Swamp Sparrow	c c c
Song Sparrow	c c c c



Anyone having suggestions or questions are requested to contact the Refuge Manager, Presquile National Wildlife Refuge, P.O. Box 620, Hopewell, Va. 23860.

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

