

# Cape May National Wildlife Refuge



## STATION MANAGEMENT PLAN

U.S. FISH & WILDLIFE SERVICE - REGION 5  
DECEMBER 1992

# STATION MANAGEMENT PLAN

## Cape May National Wildlife Refuge New Jersey

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Date: 27 Nov. 1992

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Date: Nov. 30, 1992

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Date: 11-30-92

## **PREFACE**

The following plan is the result of the refuge planning process used in Region 5 to produce general management guidance for individual field stations. Through this planning approach, refuge objectives and management strategies are arrived at by consensus of knowledgeable professionals. It is applied to stations where management issues are relatively clear. Management direction for Cape May Refuge is projected for the next one to three years in this plan.

This plan is subject to revision as new information and insights emerge. The plan for Cape May National Wildlife Refuge has been prepared through the joint efforts of:

**U.S. Fish and Wildlife Service  
Regional Office  
300 Westgate Center Drive  
Hadley, MA 01035-9589**

**Cape May National Wildlife Refuge, NJ  
Cape May Court House, NJ**

## TABLE OF CONTENTS

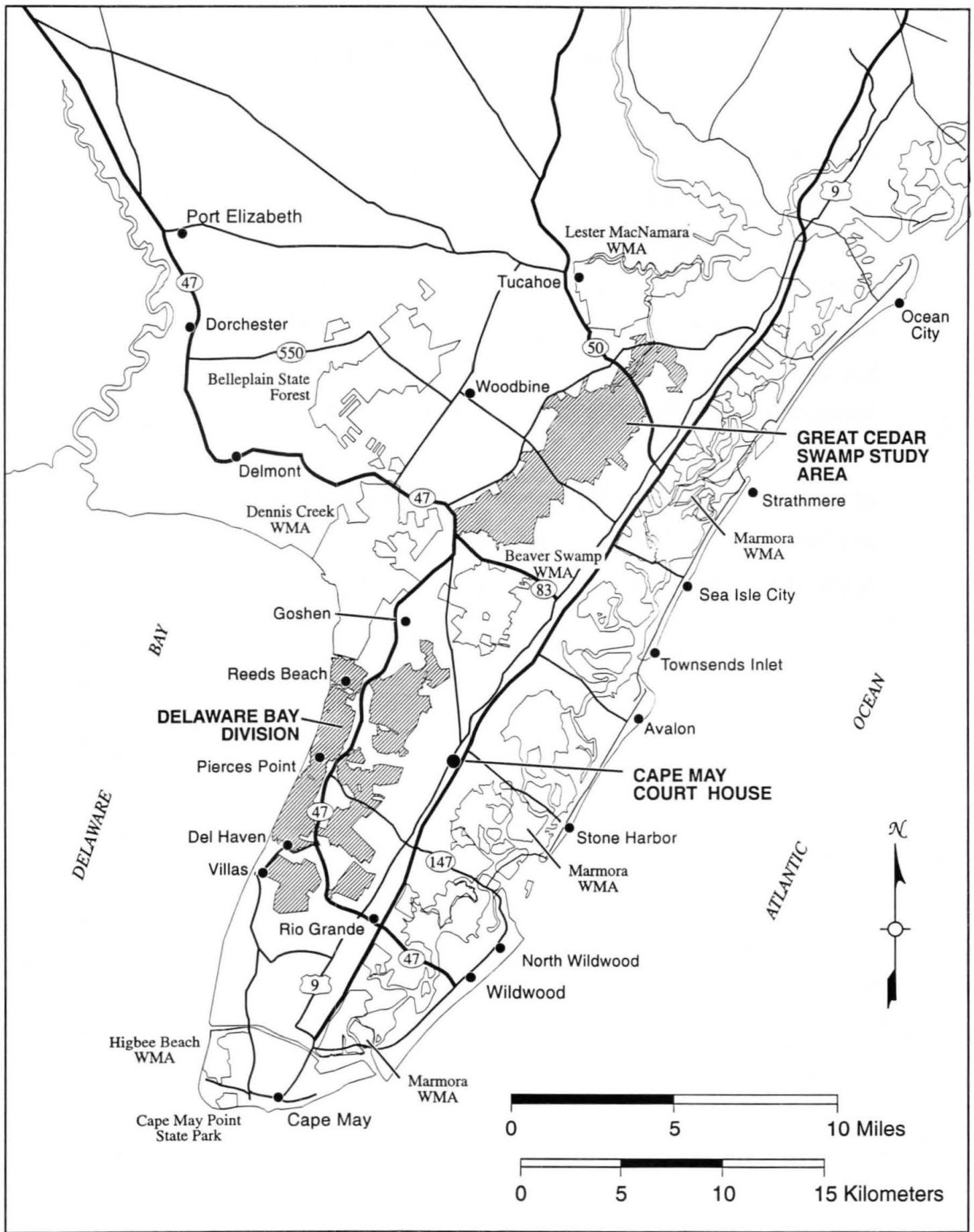
INTRODUCTION . . . . .	5
BACKGROUND INFORMATION . . . . .	7
REFUGE SYSTEM MANAGEMENT GUIDANCE . . . . .	9
PLAN DEVELOPMENT . . . . .	11
ISSUES, OBJECTIVES AND STRATEGIES ACCORDING TO GOALS . . . . .	13
MANAGEMENT PROGRAM SUMMARY . . . . .	27
MANAGEMENT PROGRAM BY FISCAL YEAR (FY-92 to FY-94) . . . . .	29

APPENDIX A: State and Federal Threatened and Endangered Species

APPENDIX B: Species of Management Concern

APPENDIX C: Vegetation Community Types





## INTRODUCTION

This Station Management Plan provides the Refuge Manager with one to three year guidance for 1) acquiring or otherwise protecting high quality migratory bird habitat in Cape May County, New Jersey, 2) developing and implementing a data base containing information needed to guide biological and public use management decision making and, 3) acquiring the staff and facilities needed to implement this plan.

A Fish and Wildlife Service planning team met in Cape May County on January 27-29, 1992 to set objectives and develop strategies for their accomplishment. A 1-3 year time period was projected with an understanding that the plan would be evaluated and updated in approximately one year.

This planning document provides overall management direction for the Refuge. Specific management plans will be developed by the Refuge Manager for numerous subjects.

This document will be distributed to groups and agencies who have expressed interest in the Service's proposed management of Cape May Refuge. It is also available to anyone upon request. Potentially controversial actions and actions that warrant public review through the National Environmental Policy Act will be processed accordingly prior to implementation.

Participants in the workshop included:

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Kelly Wolcott  
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Refuge Manager, Cape May Refuge  
Primary Assistant Refuge Manager  
Biologist, Refuges Central

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Walt Quist  
Rick Jorgensen

FWS Regional Office  
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## BACKGROUND INFORMATION

### 1. Location

The designated acquisition boundary of Cape May National Wildlife Refuge was originally set in 1989 at approximately 15,300 acres entirely within Cape May County, New Jersey. As of August, 1992, the Service had acquired approximately 5600 acres. The refuge is divided into two similarly sized divisions (Great Cedar Swamp and Delaware Bay) and fourteen units based roughly on the six watersheds within the proposed boundary (Cedar Swamp Creek, Dennis Creek, Bidwell Creek, Dias Creek, Green Creek and Fishing Creek).

### 2. History

Cape May County has, until recently, remained a relatively rural, agricultural area. Isolated in the extreme southern portion of the State, the area's economy is based on seasonal tourism, fishing and agriculture. Rapid casino and resort development in the Atlantic City area accelerated commercial and residential growth in Cape May County during the 1980's.

### 3. Environment

The Cape May area has a humid and temperate climate with strong coastal influences. Heavy winds and high seas that frequently accompany coastal storms flood a large portion of the designated refuge acquisition area. The winters are mild, January temperatures average 35 degrees. Precipitation is distributed fairly evenly throughout the year and averages 47.6 inches annually.

### 4. Resources

Cape May is renowned for spectacular concentrations of migrating birds during spring and fall. Its unique configuration and location between Delaware Bay and the Atlantic Ocean concentrate millions of birds (songbirds, shorebirds, raptors, woodcock, etc.) as they funnel south to Cape May Point during the fall. Faced with 12 miles of Delaware Bay water to cross, migrants linger in the area to rest and feed until favorable winds allow them to cross the Bay or head north along the eastern shore of Delaware Bay. More than 200,000 hawks, 80 to 90 percent of them immatures, pass through Cape May every year. The overwhelming majority of passerines migrating through Cape May in the Fall are also immatures. Immatures are particularly vulnerable to the hazards of migration and expend large amounts of energy finding food. Although songbird numbers are relatively difficult to estimate, Peter Dunne of the New Jersey Audubon Society has seen songbird migrations "... so massive that forest birds went wanting for perches, swallows in flocks so dense their wingtips brushed people's faces." Although these large flocks often accumulate at Cape May Point, they frequently retreat up the peninsula into the refuge acquisition area for evening roosting. In spring, North America's second largest concentration of shorebirds occurs along the Delaware Bay shore. In May, virtually the entire North American population of Red Knots (150,000 to 200,000) gathers along strips of tidal land such as Reed's and Moore's Beaches.

Studies on habitat use by migrating songbirds have shown that forest habitats are among the area's most valuable, because they support the largest number and greatest diversity of species. Of the eighteen recognized vegetation communities that probably occur within the refuge acquisition area, eleven are forested.

The New Jersey Natural Heritage Program lists two communities, the Cape May Lowland Swamp and the Brackish Tidal Marsh Complex, under S1 -- the highest conservation priority within their system. There are also four S2 communities. The Cape May NWR will substantially contribute to the conservation of the Cape May Lowland Swamp.

*[ S1= Critically imperiled in NJ because of extreme rarity (5 or fewer occurrences) or species formerly more abundant or species restricted to 3% or less of the total area of the State. S2= Imperiled in NJ because of rarity (6-20 occurrences) and species in habitats restricted to 10% of total state area.]*

## **5. Land Status**

As of August 1992, Cape May NWR had acquired approximately 5600 acres of wildlife habitat. There are more willing sellers offering property than funds can accommodate. The Regional Division of Realty has planned funds for continued acquisition through fiscal year 1997. Currently, most properties are non-contiguous, although there are several large blocks acquired in the Cedar Swamp Division and one large block in the Delaware Bay Division.

## **6. Current Management Direction**

The Project Leader and Assistant Manager have and will continue to invest most of their time in land acquisition review, facilities development, habitat and wildlife inventory and planning. The acquisition and management activities focus on the upland areas most at risk in Cape May County.

Because of Cape May's importance for migratory birds and the mix of habitat types found in the refuge, biodiversity and the conservation of neotropical migrants has received a high management priority. Management for neotropical migrants, forest-interior breeding birds and raptors is possible and may be highly effective in Cape May County. Wetland management will be given higher priority in the future, but current acquisition will focus on upland areas.

# REFUGE SYSTEM MANAGEMENT GUIDANCE

## 1. Legal Direction

Approval for the Cape May National Wildlife Refuge was granted on January 20, 1989. Initial funding for land acquisition came from the Land and Water Conservation Fund. Additional funding was made available from the Migratory Bird Conservation Account.

Management will comply with federal environmental laws, executive orders and regulations affecting land and water use as well as the conservation and management of fish and wildlife resources.

Management is further guided by the National Wildlife Refuge Management System Administration Act of 1966 that authorizes the Secretary of Interior to permit any uses of a refuge *"...whenever it is determined that such uses are compatible with the major purposes for which such areas were established."*

The Refuge Recreation Act of 1962 requires that any recreational use of refuge lands be compatible with the primary purposes for which a refuge was established and not inconsistent with other previously authorized operations.

The National Historic Preservation Act of 1966 provides for the management of historic and archaeological resources that occur on any refuge.

## 2. Policy Direction

The policies of the Fish and Wildlife Service for the National Wildlife Refuge System (NWRS) are stated in its primary management document, the Refuge Manual:

The goal of the NWRS is to *"provide, preserve, restore, and manage a national network of lands and waters sufficient in size, diversity, and location to meet society's needs for areas where the widest possible spectrum of benefits associated with wildlife and wildlands is enhanced and made available."*

To achieve this goal, each refuge emphasizes contributions that are consistent with the following long-range NWRS objectives (given in priority order):

- a. To preserve, restore, and enhance in their natural ecosystem (when practical) all species of animals and plants endangered or threatened with becoming endangered.
- b. To perpetuate the migratory bird resource.
- c. To preserve natural diversity and abundance of flora/fauna on refuge lands.
- d. To provide an understanding and appreciation of fish and wildlife ecology and people's role in their environment; and to provide refuge visitors with high quality, safe, and enjoyable wildlife-oriented recreational experiences, to the extent that these activities are compatible with the purposes for which the refuge was established.

**GREAT CEDAR SWAMP  
DIVISION**

UNITED STATES  
FISH AND WILDLIFE SERVICE



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0 1 2 3 4 KILOMETERS

MEAN  
DECLINATION  
1972



## PLAN DEVELOPMENT

The Planning Team followed basic planning procedures to arrive at its conclusions. The Refuge background was considered as well as current management guidance and direction that affect all national wildlife refuges. Using this foundation, the team developed issues, objectives and strategies that are organized consistent with the Assistant Regional Director's goals for Region Five refuges:

- I. AN UP-TO-DATE BIOLOGICAL INFORMATION BASE ON REFUGE RESOURCES
- II. MAXIMUM USE OF FWS LANDS TO RESTORE THREATENED AND ENDANGERED SPECIES
- III. MAXIMUM USE OF AVAILABLE HABITAT TO PERPETUATE THE MIGRATORY BIRD RESOURCE
- IV. HEALTHY POPULATIONS OF FISH SPECIES ON REFUGES
- V. CONTAMINANT FREE NATIONAL WILDLIFE REFUGES
- VI. A PUBLIC THAT; 1) VALUES FISH AND WILDLIFE RESOURCES; 2) UNDERSTANDS EVENTS AND ISSUES RELATED TO THESE RESOURCES; AND 3) ACTS TO PROMOTE FISH AND WILDLIFE CONSERVATION
- VII. ACQUISITION AND PROTECTION OF ADDITIONAL HABITAT TO PERPETUATE THE WILDLIFE RESOURCE
- VIII. MINIMAL LOSS OF HABITAT AND PROPERTY CAUSED BY WILDFIRE
- IX. COMPLIANCE WITH HISTORIC AND ARCHAEOLOGICAL RESOURCE PROTECTION LAWS AND REGULATIONS
- X. EFFICIENT ADMINISTRATION OF FUNCTIONS THAT SUPPORT RW OBJECTIVE ACCOMPLISHMENT

The Team first identified issues that must be resolved in order to:

- a. Maintain or accelerate the current land acquisition schedule;
- b. Develop a data base on Refuge wildlife and other natural resources and;
- c. Develop and implement long-term habitat/wildlife, public use and related management programs. These issues were developed to clarify causes of problems.

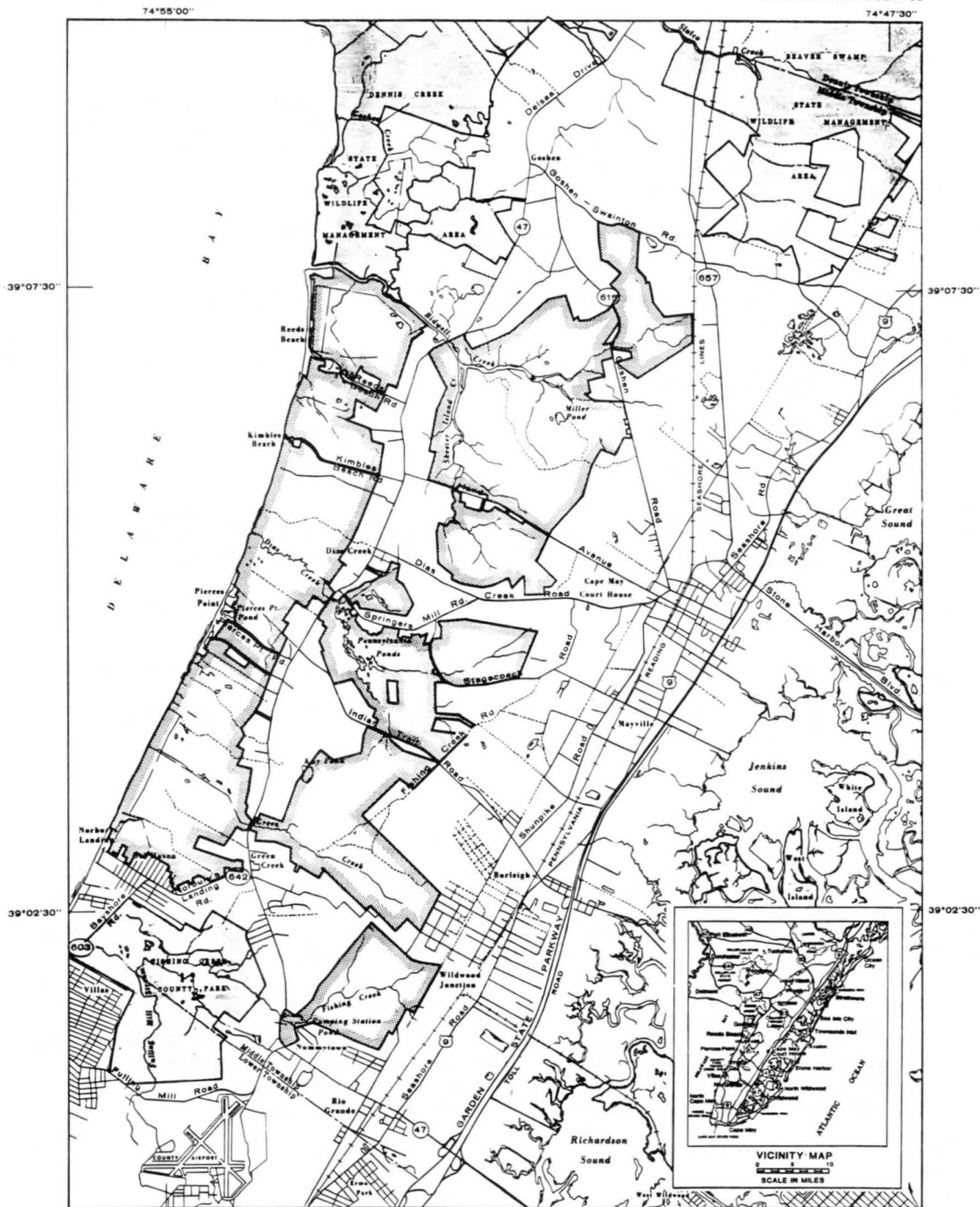
Objectives were then formulated. They state what has to be accomplished to deal with the issues. Next, strategies were developed for each objective. The team concluded that objectives related to land acquisition and the Refuge data base will be given priority over the next two years. Short-term management will focus on establishing a Refuge office and developing an interim public use management program. In approximately one year, the planning team will reassess the Refuge's status and update this plan.



## DELAWARE BAY DIVISION

CAPE MAY COUNTY, NEW JERSEY

UNITED STATES  
FISH AND WILDLIFE SERVICE



COMPILED IN THE DIVISION OF  
REALTY FROM SURVEYS AND  
MAPS BY U.S.G.S. & U.S.F.W.S.

NEWTON CORNER, MASSACHUSETTS DECEMBER 1987  
REVISED: OCTOBER 1992



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MAG. N. TRUE N.  
MEAN DECLINATION 1972

# ISSUES, OBJECTIVES, AND STRATEGIES ACCORDING TO REGION 5 GOALS

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## **GOAL 1. AN UP-TO-DATE BIOLOGICAL INFORMATION BASE ON REFUGE RESOURCES**

### **Current Status**

The New Jersey Heritage Program and the Service's Fish and Wildlife Enhancement New Jersey Field Office in Pleasantville have data relevant to endangered and threatened species found in the area. In addition, the Cape May Bird Observatory, which has been operating since 1976, has a considerable amount of data and important anecdotal information concerning the wildlife of Cape May County. The refuge staff is currently developing a data base in R-Base that will be used to prioritize species management activities and track species population changes. Data will be used to foster land acquisition and habitat management decisions that will most effectively increase or sustain waterfowl, neotropical migrant, shorebird, raptor and other migratory bird species that use Cape May.

### **Issues**

- A Cape May Refuge wildlife/habitat inventory program has not been developed and implemented.
- The Refuge lacks the computer hardware, software and training needed to automate and operate the biological data base developed by the Refuge during FY-92.
- An effective communication network that will provide Refuge access to other applicable natural resource data bases has not been established.

### **Objectives and Strategies**

#### **OBJECTIVE (FY-92/93)**

- \* Develop and implement a wildlife/habitat inventory program that is oriented toward management actions related to species of concern to Cape May Refuge. Components of Cape May Refuge biological data base will be:
  1. List of indicator species to be monitored:
    - o Individual Species and Species Guilds
    - o Species in Decline
    - o Plants
    - o Natural Community Types
  2. List of habitat types used by the indicator species with definitions specific to Cape May Refuge
  3. Refuge-specific habitat structure profiles for each species and guild to be monitored:
    - o Feeding and nesting components
    - o Cover and food needs
    - o Roosting needs
  4. Location of monitoring sites and a schedule for monitoring each.

Strategy

- o The Primary Assistant Refuge Manager will develop components of the data base during FY-92.
- o A biologist will be added to the Refuge staff to participate in program development and to manage its implementation in FY-93.
- o The Refuge staff will recruit local researchers, cooperative education students, etc. to develop habitat structure profiles for the species and guilds to be monitored at Cape May Refuge.
- o The Refuge Manager will work with the Regional National Wetlands Inventory Project Leader and other sources to develop a Cape May County habitat cover type map.

OBJECTIVE (FY-93)

- \* Obtain adequate computer equipment and training to automate and operate the Cape May Refuge wildlife/habitat data base.

Strategy

- o Work with the Regional Data Manager and other data management experts to determine the equipment and training needs of Cape May Refuge.
- o Purchase, set up and operate the Cape May data base computer hardware and software.

OBJECTIVE (FY-93/94)

- \* Develop a partnership to improve the effectiveness of wildlife and habitat data collection and management in Cape May County. Examples of partners are:
  - New Jersey Natural Heritage Program
  - Cape May Bird Observatory (NJ Audubon)
  - Wetlands Institute
  - The Nature Conservancy
  - Rutgers University

Strategy

- o The potential interest in a Cape May County partnership will be assessed through consultations with other wildlife/habitat data collection groups and agencies.
- o If sufficient interest is generated, the Refuge Manager will formalize a data collection/management partnership.

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## **GOAL II. MAXIMUM USE OF FWS LANDS TO RESTORE THREATENED AND ENDANGERED SPECIES**

### **Current Status**

The area within the Cape May National Wildlife Refuge acquisition boundary has an estimated 37 Federal or State-listed Endangered, Threatened or Federal Candidate species (see Appendix A). Although the State Heritage program and the US Fish & Wildlife Service New Jersey Field Office have some data regarding the occurrence of these species, exact locations of plant and mobile animal species are poorly documented.

The Refuge is concerned with, and will monitor, threatened and endangered (T&E) species occurring throughout Cape May County, NJ. Several groups of species are included in this category:

- a. Listed as Federally threatened or endangered:
  - Bald Eagle
  - Peregrine Falcon
  - Swamp Pink
- b. Candidates for Federal listing:
  - Glade Spurge (Category 2, globally endangered)
  - Boykin's Lobelia
  - Pine Barrens Boneset
  - Approximately 21 species of insects
- c. Listed as threatened or endangered by the State of New Jersey. (See Appendix A)

### **Issues**

- Information on the location of T&E species within the Refuge boundary is fragmented and is located at a variety of sources.
- Information on the location of T&E species within Cape May County is fragmented and is located at a variety of sources.
- Refuge management efforts to benefit T&E species may cause conflict because the numerous species occurring in Cape May County have competing habitat needs.
- T&E species management techniques unique to Cape May County have not been developed.

### **Objectives and Strategies**

#### **OBJECTIVE (Ongoing)**

- \* Obtain and manage currently available information on the Federal or State (T&E) species, and Federal candidate species occurring within the Refuge boundary.

#### **Strategy**

- o Access to existing T&E species data bases, e.g. The Nature Conservancy's (TNC) Biological and Conservation Data Base, will be sought and coordinated with the FWS-Endangered Species Coordinator (NJ Field Office) and the Regional Data Manager.

Strategy

- o T&E species information that is collected through the Refuge wildlife monitoring program will be submitted to the Service's New Jersey Endangered Species Coordinator for incorporation into the TNC and other data bases.

**OBJECTIVE (Ongoing)**

- \* Maintain awareness of Federal or State (T&E) species and Federal candidate species status throughout Cape May County.

Strategy

- o The Refuge Biologist will maintain communication with the Service's NJ Endangered Species Coordinator and with State, private and other agencies who work with T&E species.

**OBJECTIVE (FY-93)**

- \* Develop population and/or habitat objectives for Federal or State T&E species that occur on Cape May Refuge.

Strategy

- o Available T&E species information will be analyzed to project the potential for accommodating the habitat needs of the various species.
- o The Refuge Manager will determine priorities for cost-effective T&E species management on Refuge lands through application of the results gained through implementation of the previous strategy.
- o Objectives and management plans will be written for high priority Federal or State T&E species.

**OBJECTIVE (FY-93/94)**

- \* Develop management techniques for the Federal or State T&E species that use, or have the potential to use, Refuge lands.

Strategy

- o Guidance and assistance will be obtained from recovery teams and other experts who have management knowledge of, and/or experience with, management techniques having the potential to benefit Federal or State T&E species that occur on Refuge lands.
- o The Refuge Manager will develop and implement management actions that are responsive to Cape May Refuge T&E species objectives.
- o The Refuge Manager will evaluate effectiveness of T&E management actions toward accomplishing related Refuge objectives.

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**GOAL III. MAXIMUM USE OF AVAILABLE HABITAT TO PERPETUATE THE  
MIGRATORY BIRD RESOURCE**

**Current Status**

The Cape May area is internationally known for its importance as a concentration point for migrating birds. Refuge staff are currently assessing the population status of breeding and migratory birds in Cape May County and will develop management activities to improve habitat for species of concern. Proposed species management concern for the Cape May NWR are listed in Appendix B.

The Environmental Assessment that established the Cape May Refuge boundary proposed the following species and species groups as being of management concern at the Refuge: Woodcock, Shorebirds, Raptors, Neotropical migrants, Waterfowl, especially black ducks

**Issues**

- Migratory bird species of management concern have not been confirmed for Cape May Refuge.
- The Refuge has not developed species or habitat management plans.

**Objectives and Strategies**

**OBJECTIVE (FY-92)**

- \* Determine migratory bird species of management concern for Cape May NWR.

**Strategy**

- o Consultations with cooperating migratory bird experts to help guide and assist the Refuge Manager toward, 1) refining the species of management concern list and, 2) developing management programs for these species.
- o A list of Cape May Refuge species of management concern will be finalized following analysis of cooperators' comments.

**OBJECTIVE (FY-93)**

- \* Develop and implement a forest/upland habitat mgmt. plan for the area within Refuge acquisition boundary that addresses habitat needs of species of concern to the Refuge.

**Strategy**

- o Refuge Manager to determine the natural communities of concern at Cape May NWR and to develop refuge specific definitions for them.
- o Refuge Manager to write a Cape May NWR forest/upland management plan that will generate a management direction for all forest and uplands within the Refuge boundary.



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#### **GOAL IV. HEALTHY POPULATIONS OF FISH SPECIES ON REFUGES**

##### **Current Status**

The refuge staff has not researched fish populations and their status in the six watersheds in the approved acquisition boundary.

##### **Issues**

- The status and condition of forage and sport fish populations within the Refuge boundary are not known.
- Watershed degradation will cause the quality and quantity of the Refuge forage and sport fish populations to decline.

##### **Objectives and Strategies**

###### **OBJECTIVE (FY-94)**

- \* Develop an information base that monitors the presence and status of forage fish (wildlife food source) and sport fish within the Refuge boundary.

###### **Strategy**

- o Fish monitoring and management guidance and assistance will be requested from the Service's Division of Fish and Wildlife Management Assistance.

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#### **GOAL V. CONTAMINANT-FREE NATIONAL WILDLIFE REFUGES**

##### **Current Status**

There are numerous contaminant sources in Cape May County.

##### **Issues**

- Demand for water to support development will diminish groundwater available to wetland habitats and increase the potential for water contamination.
- Increasing quantity of water required for human consumption is becoming a political issue in Cape May County.
- Contaminants transported to the Refuge from upgradient sources will degrade Refuge water and habitat quality.
- Habitat management and construction activities on Refuge lands could release contaminants from soils and sediments.
- Oil spills in Delaware Bay could impact Refuge beaches and wetlands.



## Objectives and Strategies

### OBJECTIVE (FY-92/93)

- \* Complete the Fish and Wildlife Enhancement (FWE) contaminant survey (DDT/DDE and heavy metals) within the Refuge boundary.

#### Strategy

- o Logistic support to be provided to FWE staff during data collection.
- o Results of the contaminants survey will be incorporated into the Refuge's Biomonitoring of Environmental Status and Trends (BEST) program.

### OBJECTIVE (Ongoing)

- \* Maintain awareness of stream and groundwater monitoring done by State, or others, on land near or within the Refuge boundary.

#### Strategy

- o Communication with water quantity and quality monitoring agencies will be established and maintained.
- o Appropriate enforcement agencies will be notified when contaminant "hot spots" are identified.
- o Monitoring results will be incorporated into the Refuge's Biomonitoring of Environmental Status and Trends (BEST) program.

### OBJECTIVE (FY-93)

- \* Clarify and implement the Refuge role in working with the Philadelphia-based U.S. Coast Guard's Multi-Agency Spill Response Team for Delaware Bay.

#### Strategy

- o Guidance/assistance will be sought from the Regional Contaminants Specialist.

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## ***GOAL VI. A PUBLIC THAT, 1) VALUES FISH AND WILDLIFE RESOURCES, 2) UNDERSTANDS EVENTS AND ISSUES RELATED TO THESE RESOURCES, AND 3) ACTS TO PROMOTE FISH AND WILDLIFE CONSERVATION***

### **Current Status**

Cape May County, NJ is a high profile area for several reasons: 1) international recognition as one of the 10 best birding areas in the U.S., 2) less than a four-hour drive from four major metropolitan areas, and 3) history as a summer vacation and resort area (summer population increases from 110,000 to 620,000). A "short-term" public use management plan will be drafted in FY 1993. In FY-94, a long-term public use management concept will be developed to guide future public use management planning for Cape May Refuge.

### **Issues**

- Uncontrolled access to a majority of Refuge land will generate management problems.
- Public use activities have potential to disturb habitat and wildlife.
- Public interest in gaining access to wildlife viewing opportunities is high and growing.
- The Refuge is not equipped or staffed to respond to the demand for public use activities.

## Objectives and Strategies

### OBJECTIVE [SHORT-TERM PUBLIC USE MANAGEMENT] (FY-93)

\* Develop an interim public use management plan that contains 1) the station message, and 2) two-year management direction related to:

1. existing public use resources and opportunities that can mesh into Refuge activities with minimal effort or expense;  
Examples:
  - Accessible wildlife observation points,
  - Facilities owned and operated by wildlife-oriented groups and agencies,
  - Wildlife-oriented institutions
2. The advantages, disadvantages, and ecological impacts of wildlife-oriented, consumptive and non-consumptive refuge activities, including hunt programs, birding, and wildlife observation;
3. Implementation of a Refuge volunteer program;
4. Opportunities to interact with established volunteer programs;
5. Strategies for the recruitment of organizers for a non-profit "friends" group.
6. Planning a Refuge education program and identifying appropriate education audiences;
7. Planning a Refuge outreach program and identifying appropriate outreach audiences;
8. The compatibility, advantages, disadvantages, and ecological impacts of non-wildlife-oriented activities such as horseback riding, off-road vehicle use, and other activities.
9. A Refuge leaflet, other public use oriented literature, slide show and other media.

#### Strategy

- o The Assistant Refuge Manager will obtain guidance and assistance from the Regional Public Use Specialist, a Regional Landscape Architect, the Edwin B. Forsythe NWR Outdoor Recreation Planner, the Delaware Bay Estuary Project staff and others to set priorities and develop an interim (two-year) public use management program.

### OBJECTIVE [LONG-TERM PUBLIC USE MANAGEMENT] (FY-94)

\* Develop and implement a refuge public use management plan consistent with Refuge Manual release R-5:007 as revised by the ARD's memo regarding Public Use Plans.

#### Strategy

- o An Outdoor Recreation Planner (ORP) will be added to the Refuge staff in FY-94.
- o The Regional Public Use Specialist will guide and assist the Refuge ORP with developing the Cape May Refuge public use plan.

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**GOAL VII. ACQUISITION AND PROTECTION OF ADDITIONAL HABITAT TO  
PERPETUATE THE WILDLIFE RESOURCE**

**Current Status**

Land acquisition has been the most active program at Cape May Refuge since the Refuge was established and will continue to be for the foreseeable future. Emphasis is on protecting upland habitat used by migrating birds.

**Issues**

- Land use changes threaten to diminish the value of wildlife habitat within the current Refuge boundary.
- The current Refuge boundary does not provide for the protection of sufficient habitat to assure perpetuation of the Cape May County migratory bird resource.
- The current refuge boundary does not adequately protect upland groundwater recharge areas vital for maintenance of ground water aquifers. The shallowest aquifer feeds Refuge wetlands and is used by most of the area's private wells.
- Land acquisition funds are not adequate to allow the Service to take full advantage of the currently depressed real estate market.

**Objectives and Strategies**

**OBJECTIVE (Ongoing)**

- \* Acquire forested tracts most vulnerable to land use changes.

**Strategy**

- o Tract acquisition priority will be determined through analysis of wildlife use, habitat value, willingness of owner and other realty related criteria.

**Habitat Criteria**

1. The ecological value of the tract in relation to protecting a large block of contiguous forested habitat,  
Example: Consider 250 acre the minimum block size to satisfy breeding habitat requirements of most interior forest nesting passerine bird species.
2. Occurrence of threatened or endangered species (includes Federal-listed, Federal candidate, and State-listed species).
3. Value as a groundwater recharge area and its sensitivity to incompatible development.
4. Habitat manageability
5. Potential for use by Woodcock, Shorebirds, Raptors, Waterfowl (especially black duck), Neotropical migrant bird species

**Realty Criteria**

1. Threat of being developed
2. Willingness of seller
3. Cost

**OBJECTIVE**            **(FY-93)**

- \* Submit a proposal to the Chief of Realty to increase land acquisition funding for Cape May Refuge.

**Strategy**

- o Prepare and submit a proposal that includes at least:
  1. Projected annual costs to acquire all willing seller land within the boundary by the end of FY-97, i.e., to follow the current schedule,
  2. Projected annual costs to acquire all willing seller land within boundary by the end of FY-95,
  3. Estimated acres and ecological value of habitat that will be lost to development and other causes between 1995 and 1997 if the current schedule is followed, and
  4. Estimated land costs to be saved by acquiring all willing seller land by the end of FY-95 instead of the end of FY-97.

**OBJECTIVE**            **(FY-93)**

- \* Submit a boundary redefinition proposal to the Chief of Realty.

**Strategy**

- o Guidance and assistance will be obtained from sources such as:
  - Ascertainment Section of the Realty Division,
  - FWS Zone Biologist,
  - Delaware Bay Estuary Project,
  - Other appropriate FWS experts, and
  - State agencies.
- o Information that will contribute to a complete boundary redefinition will be acquired from sources such as:
  - The Nature Conservancy
  - New Jersey Audubon
  - The NJ Pinelands Commission
  - The NJ Conservation Foundation
  - New Jersey Natural Heritage Program
- o The Refuge Manager will prepare the most complete boundary redefinition that can be anticipated.
- o Local communities and leaders will be informed about the progress of the boundary redefinition proposal.
- o Public outreach will be used to inform the general public about the progress of the boundary redefinition proposal.

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**GOAL VIII. MINIMAL LOSS OF HABITAT AND PROPERTY CAUSED BY WILDFIRE**

**Issues**

- The refuge has no wildfire protection plan.

**Objectives and Strategies**

**OBJECTIVE (Ongoing)**

- \* Develop wildfire protection cooperative agreements with fire departments in Middle Township, Dennis Township, Upper Township, and the NJ Forest Fire Service.

**Strategy**

- o The Refuge Manager will meet with departments to develop cooperative agreements.

**OBJECTIVE (FY-92)**

- \* Develop an interim Fire Management Plan in accordance with Acting Director Malar's Dec. 2, 1991 Fire Management Planning Guidance.

**OBJECTIVE (FY-93)**

- \* Develop a Cape May Refuge Fire Management Plan during FY-93.

**Strategy**

- o Fire management planning guidance and assistance will be sought from the Regional Fire Management Coordinator.
- o The Refuge Manager will prepare a Refuge Fire Management Plan.

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**GOAL IX. COMPLIANCE WITH HISTORIC AND ARCHAEOLOGICAL RESOURCE PROTECTION LAWS AND REGULATIONS**

**Issues**

- Archaeological and historic resources that are acquired with Refuge land must be properly protected.

**Objectives and Strategies**

**OBJECTIVE (Ongoing)**

- \* Comply with NHPA and ARPA regulations for all Refuge activities.

**Strategy**

- o Disturbance of resources that may have historic or archaeological resource value will be reported to the Regional Historic Preservation Officer.

**OBJECTIVE [LONG-TERM] (FY-94)**

- \* Complete a survey of historic and archaeological resources on land within the Refuge boundary.

Strategy

- o The Regional Historic Preservation Officer will be requested to develop a proposal for scheduling and funding a survey.
- o A survey of historic/archaeological resources within the Refuge boundary will be completed.
- o Museum Property regulations will be followed.

\*\*\*\*\*

**GOAL X. EFFICIENT ADMINISTRATION OF FUNCTIONS THAT SUPPORT  
REFUGE AND WILDLIFE OBJECTIVE ACCOMPLISHMENT**

**Current Status**

The current staff consists of three people: the Refuge Manager (entered duty 2/91), the Primary Assistant Refuge Manager (entered duty 10/91), and the Office Assistant (entered duty 8/92). The office is in a GSA-leased suite in Cape May Court House, NJ close to the center of the refuge. The refuge has two new vehicles: a 1992 Chevy Suburban 4x4 and a 1992 Dodge Dakota 4x4 pick up truck. The refuge has two, surplus, mobile low-band radios for the vehicles.

Contact has been made with township and county planning/zoning boards, township environmental commissions, and local elected officials. Refuge personnel attend planning/zoning board meetings dealing with properties adjacent to refuge holdings.

**Issues**

- The Refuge has no maintenance facilities or equipment.
- The Refuge has no procedure or guidance for deciding the fate of buildings and other structures acquired with Refuge land.

**Objectives and Strategies**

**OBJECTIVE (FY-92)**

- \* Develop and submit for approval a long-range staffing chart for Cape May Refuge.

Strategy

- o Prepare a Refuge organizational chart for a staff similar to the following:
  - 1 - Refuge Manager(Project Leader)
  - 1 - Primary Assistant Refuge Manager
  - 1 - Biologist (with forest habitat mgmt background)
  - 1 - Biological Technician
  - 1 - Outdoor Recreation Planner
  - 1 - Education Coordinator
  - 1 - Recreation Aide
  - 2 - Maintenance worker
  - 1 - Office Assistant
  - 1 - Secretary

**OBJECTIVE** (FY-93)

- \* Request that Engineering develop plans for an office facility that will accomodate the proposed staff needs.

**Strategy**

- o Obtain office planning guidance and assistance from Engineering and a Landscape Architect.

**OBJECTIVE** (FY-93)

- \* Request Regional assistance in developing plans for maintenance/storage facilities that will accomodate refuge needs for at least ten years.

**Strategy**

- o Obtain planning guidance and assistance from Engineering and a Landscape Architect. Current anticipated needs are for a four-bay, 3400 sf maintenance/storage building.

Probable equipment needs:

- 3 - pickup truck
- 2 - sedan
- 1 - suburban vehicle
- 1 - 4x4 tractor with front-loader
- 1 - dump truck with trailer
- 1 - 16' boat with motor and trailer

**OBJECTIVE** (FY-93)

- \* Develop and implement a procedure for deciding the fate of newly- acquired buildings within six months of purchase.

**Strategy**

- o Obtain guidance and assistance from Engineering, a Landscape Architect, Reg. Historic Preservation Officer, and other experts for developing a procedure for deciding how newly- acquired buildings will be maintained or disposed of.



# MANAGEMENT PROGRAM SUMMARY

## 1. Management Deficit

Cape May National Wildlife Refuge currently operates with a staff of three; Refuge Manager, Assistant Refuge Manager, and Office Assistant; out of an 800 sf, GSA-leased suite in Cape May Court House, NJ, close to the center of the refuge. This is a vast improvement over the situation from February 1991 through May 1992 when the staff worked out of E.B.Forsythe NWR, about 42 miles north of Cape May Court House.

Biological and maintenance staff have to be hired and basic management equipment remains to be obtained.

Funds and personnel are currently inadequate to acquire lands at a reasonable pace in Cape May County. There are more landowners willing to sell their lands to the Service than funds can accommodate. When the real estate market recovers, our reliance on the goodwill and interest of landowners to promote habitat conservation will increase.

## 2. Management Program

Refuge management will be influenced by objective priority and the sequencing of strategy implementation. Work on all objectives is anticipated between now and the end of FY-94 (note time frame). The following array groups objectives by the fiscal year(s) during which related strategies will be implemented.

### Ongoing Objectives

Ongoing work at Cape May Refuge focuses on obtaining and managing information on Cape May County wildlife and habitat resources. Awareness of habitat alterations due to land use changes and contaminant conditions will also require ongoing involvement. Land management will continue to focus on acquisition of uplands, and passive protection of resources on Service lands.

### FY-92 Objectives

The Refuge staff will determine species of concern and identify habitat types in need of protection to effectively benefit these species. Concurrently, a Refuge/Cape May County wildlife/habitat inventory program will be developed and implemented to provide adequate information for good decision making relative to the species and habitats of concern.

Evolving long-term management for the Refuge will be blended with identification of public use management opportunities and audiences. This will be used to develop a "short-term" public use management plan in FY-93.

As the biological focus becomes more clear, the refuge boundary will be reconsidered and a proposal to redefine the boundary will be developed.

Long-term staffing needs will be projected during FY-92.

### FY-93 Objectives

Implementation and automation of the Refuge wildlife inventory program will be well underway in FY-93. Results of a DDT/DDE and heavy metals contaminant survey will have been completed by Fish and Wildlife Enhancement and applied to land acquisition decision making. Implementation of the short-term public use management plan will have begun.

Information from the wildlife and habitat data base will be used to develop realistic objectives for management of Federal and State listed threatened and endangered species on Refuge lands. Plans will also be developed for general management of Refuge forests and other uplands to benefit species of concern.

Long-term building and facilities needs (e.g., storage/maintenance buildings, visitor facilities) will be projected during FY-93. The Office of Engineering will begin development of specifications for office buildings and facilities.

Some additional staff positions will be filled and the Office of Engineering will begin development of specifications for maintenance and visitor buildings and facilities.

### FY-94 Objectives

Potential for management of fish resources on and adjacent to refuge lands will be evaluated. The Service's Office of Fish and Wildlife Management Assistance will be asked to assess forage fish populations (prey sources for migratory birds) and species sought for recreational fishing on and adjacent to Refuge lands.

An outdoor recreation planner will be added to the staff and a long-term public use management plan will be prepared. Implementation of some long-term public use actions will begin.

Historic and archaeological resource inventories of land within the Refuge boundary will be conducted.

The full implementation and completion of this plan is contingent upon the hiring of a biologist and a maintenance worker in FY -93; and a forester, an outdoor recreation planner, and a maintenance worker helper in FY-94. Although none of the individual objectives are absolutely contingent upon the addition of this staff, the objectives as a whole would be impossible to complete shorthanded. Should staffing be delayed, the objectives as a whole will be prioritized and the work schedule revised.

# MANAGEMENT PROGRAM BY FISCAL YEAR (92-94)

## Fiscal Year 1992 Objectives

### OBJECTIVE (FY-92)

- \* Determine the migratory bird species of management concern for Cape May Refuge.

### OBJECTIVE (FY-92)

- \* Develop an Interim Fire Management Plan in accordance with Acting Director Malar's Dec.2, 1991 Fire Management Planning Guidance.

### OBJECTIVE (FY-92)

- \* Develop and submit for approval a long-range staffing chart for Cape May Refuge.

### OBJECTIVE (FY-92/93)

- \* Develop and implement a wildlife/habitat inventory program that is oriented toward management actions related to species of concern to Cape May Refuge.

### OBJECTIVE (FY-92/93)

- \* Complete the DDT/DDE and heavy metals contaminant survey within the Refuge boundary.

## Ongoing Objectives

*Ongoing objectives will influence Refuge operations most years.*

### OBJECTIVE (Ongoing)

- \* Obtain and manage currently available information on the (Federal or State, and Federal candidate species) T&E species occurring within the Refuge boundary.

### OBJECTIVE (Ongoing)

- \* Maintain awareness of (T&E) species status throughout Cape May County.

### OBJECTIVE (Ongoing)

- \* Maintain awareness of stream and groundwater monitoring done by State and other agencies of land near or within the Refuge boundary.

### OBJECTIVE (Ongoing)

- \* Acquire forested tracts most vulnerable to land use changes.

### OBJECTIVE (Ongoing)

- \* Develop wildfire protection cooperative agreements with fire departments in Middle Township, Dennis Township, Upper Township, and the New Jersey Forest Fire Service.

### OBJECTIVE [SHORT-TERM] (Ongoing)

- \* Protect historic and archaeological resources on refuge land from theft, vandalism or inadvertent disturbance.

## Fiscal Year 1993 Objectives

### OBJECTIVE (FY-93)

- \* Submit a boundary redefinition proposal to the Chief of Realty.

### OBJECTIVE (FY-93)

- \* Obtain adequate computer equipment and training to automate and operate the Cape May Refuge wildlife/habitat data base.

### OBJECTIVE (FY-93)

- \* Clarify and implement Refuge role on the Philadelphia Coast Guard's Multi-Agency Spill Response Team for Delaware Bay.

### OBJECTIVE (FY-93)

- \* Develop population and/or habitat objectives for Federal or State T&E species that occur on Cape May Refuge.

### OBJECTIVE (FY-93)

- \* Develop and implement a forest/upland habitat management plan for the area within the Refuge acquisition boundary that addresses habitat needs of species of concern to the Refuge.

### OBJECTIVE (FY-93)

- \* Request Regional assistance in developing plans for maintenance/storage facilities that will accommodate Refuge needs for at least a ten year period.

### OBJECTIVE [SHORT-TERM PUBLIC USE MANAGEMENT] (FY-93)

- \* Develop an interim public use management plan that contains 1) the Station Message, and 2) two-year management direction.

### OBJECTIVE (FY-93)

- \* Develop and implement a procedure for deciding the fate of newly acquired buildings within six months of purchase.

### OBJECTIVE (FY-93)

- \* Submit a proposal to the Chief of Realty to increase land acquisition funding for Cape May Refuge.

### OBJECTIVE (FY-93)

- \* Request Regional assistance in developing plans for an office facility to accommodate the proposed station staff.

### OBJECTIVE (FY-93/94)

- \* Develop management techniques for the Federal or State T&E species that use, or have the potential to use, Refuge lands.

### OBJECTIVE (FY-93)

- \* Develop a Cape May Refuge Fire Management Plan during FY-93.

### OBJECTIVE (FY-93/94)

- \* Develop a partnership to improve the effectiveness of wildlife and habitat data collection and management in Cape May County.

## **Fiscal Year 1994 Objectives**

### **OBJECTIVE (FY-94)**

- \* Develop an information base that monitors the presence and status of forage fish (wildlife food source) and sport fish within the Refuge boundary.

### **OBJECTIVE [LONG-TERM PUBLIC USE MANAGEMENT] (FY-94)**

- \* Develop and implement a refuge public use management plan consistent with Refuge Manual release R-5:007 as revised by ARD's 12/27/91 memo regarding Public Use Plans.

### **OBJECTIVE [LONG-TERM] (FY-94)**

- \* Complete a survey of historic and archaeological resources on land within the Refuge boundary.

## APPENDIX A: Endangered and Threatened Species on or near Cape May NWR

### APPENDIX A-1: Endangered and Threatened Birds

(For data codes see attached sheet)

NAME	FSt	SSt	WI	SP	SU	EF	LF	BB	NM	ARS
-----	--	--	--	--	--	--	--	-	-	--
Pied-billed Grebe		En	2F	2F	4O	4O	2F	n	y	n
American Bittern		Th	4O	3U	-	4O	2F	n	y	n
Great Blue Heron		Th	1C	1C	2F	1C	1C	Y	y	n
Little Blue Heron		Th	4O	1C	1C	1C	1C	Y	y	n
Yellow-crowned Night Heron		Th	5R	2F	2F	2F	2F	Y	y	n
Osprey		Th	-	1C	2F	1C	1C	Y	n	n
Bald Eagle	En	En	3U	3U	4O	2F	2F	n	n	n
Northern Harrier		En	1C	1C	3U	1C	1C	Y	2	n
Cooper's Hawk		En	2F	1C	5R	2F	1C	n	2	n
Northern Goshawk		Th	4O	5R	-	-	3U	n	2	n
Red-shouldered Hawk		Th	3U	3U	4O	4O	1C	Y	2	y
Peregrine Falcon	En	En	4O	4O	4O	2F	1C	Y	1	n
Black Rail		Th	-	4O	4O	5R	5R	Y	y	n
Piping Plover	En	En	-	2F	2F	2F	5R	Y	y	n
Upland sandpiper		En	-	4O	-	3U	5R	n	1	n
Roseate Tern	En	En	-	5R	-	4O	-	n	y	n
Least Tern		En	-	1C	1C	1C	3U	Y	y	n
Black Skimmer		En	5R	1C	1C	1C	1C	Y	y	n
Barred Owl		Th	4O	4O	4O	4O	4O	Y	n	n
Long-eared Owl		Th	4O	-	-	5R	3U	n	2	n
Short-eared Owl		Th	3U	3U	-	-	3U	n	2	n
Red-headed Woodpecker		Th	4O	3U	3U	3U	3U	Y	n	n
Cliff Swallow		En	-	4O	-	3U	2F	n	1	n
Sedge Wren		En	5R	5R	-	5R	5R	Y	2	n
Loggerhead Shrike		En	-	-	-	4O	5R	n	2	n
Vesper Sparrow		En	-	5R	-	-	4O	n	2	n
Savannah Sparrow		Th	1C	1C	-	4O	1C	n	2	n
Grasshopper Sparrow		Th	-	5R	5R	5R	4O	Y	1	n
Bobolink		Th	-	1C	5R	1C	1C	n	1	n

### APPENDIX A-2: Endangered and Threatened Amphibians and Reptiles

(For data codes see attached sheet)

Genus	species	variety	Common Name	FSt	SSt
-----	-----	-----	-----	--	--
Clemmys	muhlenbergi		Bog Turtle	C2	En
Elaphe	guttata	guttata	Corn Snake		En
Pituophis	melanoleuca	melanoleuca	N. Pine Snake	C2	Th
Ambystoma	tigrinum	tigrinum	E. Tiger Salamander		En
Pseudotriton	montanus	montanus	E. Mud Salamander		Th
Hyla	andersonii		Pine Barrens Treefrog		En

# APPENDIX A-3: Endangered and Threatened Plants

(For data codes see attached sheet)

Genus	species	Common Name	Status
Arabis	drummondi	Drummond's Rock Cress	SE
Arenaria	peploides	Sea-beach Sandwort	SE
Asclepias	lanceolata	Smooth Orange Milweed	SE
Asclepias	variegata	White Milkweed	SE
Calamovilfa	brevipilis	Pine Barrens Reed Grass	F3C
Carex	barretti		F3C
Centrosema	virginianum	Spurred Butterfly Pea	SE
Cleistes	divaricata	Spreading pogonia	SE
Clitoria	mariana	Butterfly Pea	SE
Corema	conradii	Broom-Crowberry	SE
Diodia	virginiana	Large Buttonweed	SE
Eleocharis	brittonii	Britton's Spikerush	SE
Eleocharis	melanocarpa	Black-fruited Spikerush	SE
Eleocharis	tortilis	Twisted Spikerush	SE
Eriophorum	tenellum	Rough cottongrass	SE
Eupatorium	capillifolium	Dog Fennel	SE
Euphorbia	purpurea	Glade Spurge	FC2 SE
Fraxinus	profunda	Pumpkin Ash	SE
Galactia	volubilis		SE
Galium	hispidulum	Coast bedstraw	SE
Gentiana	autumnalis	Pine Barren Gentian	F3C
Gymnopogon	brevifolius	Short-lvd Skeleton Grass	SE
Helonias	bullata	Swamp Pink	FT SE
Hottonia	inflata	Featherfoil	SE
Isoetes	melanopoda	Black-based Quillwort	SE
Juncus	brachycarpus	Short-fruited rush	SE
Juncus	coriaceus	Awl-lvd Rush	SE
Lobelia	boykinii	Boykin's Lobelia	Fc2 SE
Manisurus	rugosa	Wrinkled Jointgrass	SE
Muhlenbergia	torreyana	Pine barrens Smoke Grass	F3C
Oenothera	humifusa	Seaside Primrose	SE
Plantago	pusilla	slender plaintain	SE
Platanthera	ciliaris	Yellow-fringed Orchid	SE
Platanthera	flava v flava	Southern Rein Orchid	F3C SE
Platanthera	integra	Southern Yellow Orchid	F3C SE
Platanthera	nivea	Bog Torch; Snowy Orchid	SE
Platanthera	peramoena	Purple Fringeless Orchid	F3C SE
Pluchea	foetida	Stinking Fleabane	SE
Polygonum	glaucum	Seabeach Knotweed	SE
Potamogeton	confervoides	Algae-like Pondweed	FC2 SE
Quercus	imbricaria	Shingle Oak	SE
Quercus	nigra	Water Oak	SE
Ranunculus	cymbalaria	Seaside Crowfoot	SE
Rhexia	aristosa	Awmed Meadowbeauty	FC2 SE



# APPENDIX A-3 (cont'd): Endangered and Threatened Plants

Genus	species	Common Name	Status
Rhododendron	atlanticum	Dwarf Azalea	SE
Rhynchospora	globularis	Grass-like Beaked Rush	SE
Rhynchospora	glomerata	Clustered Beak Rush	SE
Rhynchospora	rariflora	Rare-flwring Beaked Rush	SE
Ruellia	caroliniensis	Carolina petunia	SE
Sacciolepis	striata	American Cupscale	SE
Sagittaria	teres	Slender Arrowhead	SE
Schizaea	pusilla	Curly Grass Fern	F3C
Schwalbea	americana	Chaffseed	FPE SE
Scirpus	longii	Long's Bulrush	FC2 SE
Scleria	verticillata	Whorled Nutrush	SE
Triadenum	walteri	Walter's St. John's Wort	SE
Utricularia	resupinata	Reversed Bladderwort	SE
Valerianella	radiata	Beaked Corn Salad	SE

## APPENDIX B: Species of Management Concern on or near Cape May NWR

### APPENDIX B-1: Bird Species of Management Concern

(For data codes see attached sheet)

NAME	BB	NM	ARS	FSt	SSt	NC66	NC78	AudB	SB	SN	Habitat	Use
Pied-billed Grebe	n	y	n		En	-1.1			E	S	fw	
Horned Grebe	n	n	n					2BAB		S	cst;lks	
Red-necked Grebe	n	n	n							D	cst;lks	
American Bittern	n	y	n		Th	-1.3		3BB	T	S	fw;swt	
Least Bittern	Y	y	n					4B	D	S	fw;swt	
Great Blue Heron	Y	y	n		Th	1.7			T	S	fw;swt	
Little Blue Heron	Y	y	n			-1.8			T	S	swt	
Green-backed Heron	Y	y	n			-0.5			S	S	fw;swt	
Black-crowned Night Heron	Y	y	n			0.2			D	S	swt	
Yellow-crowned Night Heron	Y	y	n		Th				T	T	swt	
Wood Duck	Y	y	n			3.2					fw	
American Black Duck	Y	n	n					7SB			swt;fw	
Northern Pintail	n	y	n			-6.4					fw;swt;lks	
Hooded Merganser	n	y	n								fw;lks	
Osprey	Y	n	n		Th	2.5			T	T	swt;cst;lks;rvr	
Bald Eagle	n	n	n	En	En						swt;fw;cst;nw	
Northern Harrier	Y	n	n		En	-0.9		4B	E	U	swt;fw;fld	
Sharp-shinned Hawk	n	y	n			0.3		3BB	U	U	for	
Cooper's Hawk	n	y	n		En	0.1		3BB			for	
Northern Goshawk	n	n	n		Th				T	T	for	
Red-shouldered Hawk	Y	n	y		Th	2.3		2BAB	E	T	for;fw	
Merlin	n	y	n					7SB		S	swt;cst	
Peregrine Falcon	Y	y	n	En	En						swt	
Ruffed Grouse	Y	n	n			-1.1					for	
Northern Bobwhite	Y	n	n			-2.3					fld;thc	
Black Rail	Y	y	n		Th				T	T	swt	
Clapper Rail	Y	n	n					7SB			swt	
King Rail	Y	y	n					8S	U	U	fw	
Virginia Rail	Y	y	n								fw	
Sora	n	y	n			-2.3					fw	
Piping Plover	Y	y	n	En	En			4B			bch	
American Avocet	n	y	n			-1.0				I	swt	
Upland sandpiper	n	y	n		En	3.7		3BB			fld	
Hudsonian Godwit	n	y	n							D	swt	
Marbled Godwit	n	y	n							D	swt	
Ruddy Turnstone	n	y	n							S	bch;swt	
Red Knot	n	y	n							D	bch;swt	
Sanderling	n	y	n							D	bch	
Semipalmated Sandpiper	n	y	n							S	swt	
Baird's Sandpiper	n	y	n							D	fld;swt	
American Woodcock	Y	n	n								fw	
Least Tern	Y	y	n		En						bch;cst	
Black-billed Cuckoo	Y	y	n			2.0	-5.9		S	S	for;fed	

# APPENDIX B-1 (cont'd): Bird Species of Management Concern

NAME	BB	NM	ARS	FST	SST	NC66	NC78	AudB	SB	SN	Habitat	Use
Yellow-billed Cuckoo	Y	y	y			-1.4	-5.0	4B	S	S	for;fed:Mgs	
Common Barn Owl	Y	n	n					8S	S	S	fld;frm	
Barred Owl	Y	n	n		Th	1.1			T	T	for;fwf:Mgs	
Long-eared Owl	n	n	n						T	T	mxu;cof	
Short-eared Owl	n	y	n		Th			3BB	E	U	fld;swt;fwf	
Common Nighthawk	n	y	n			0.1		3BB	S	S	mxu	
Whip-poor-will	Y	y	y			-0.7	-0.8	3BB	D	S	for	
Ruby-throated Hummingbird	Y	y	y			1.6	1.8	3BB	D	S	mxu	
Red-headed Woodpecker	Y	n	n		Th	-1.2		8S	T	T	for	
Hairy Woodpecker	Y	n	n			1.1		7SB	S	S	for:Mgs	
Olive-sided Flycatcher	n	y	n			-3.7	-5.7			S	for;fed;fwf	
Eastern Wood Peewee	Y	y	n			-1.4	-0.7		S	S	for	
Acadian Flycatcher	Y	y	n			0.4	-1.3		I	S	for;Awc	
Least Flycatcher	n	y	n			-0.4	-0.2		S	S	for	
Eastern Phoebe	Y	y	n			-0.2		7SB	S	S	for;fed;nw	
Great-crested Flycatcher	Y	y	y			0.2	-0.3		S	S	for	
Eastern Kingbird	Y	y	n			-0.5			D	D	mxu	
Horned Lark	Y	n	n			-0.6			D	S	fld	
Purple Martin	Y	y	n			0.9		6SAB	D	S	fwf;swt;mxu	
Cliff Swallow	n	y	n		En	1.4			T	S	fwf;fld	
Sedge Wren	Y	n	n		En			5SA		S	fwf;swt	
Marsh Wren	Y	n	n			1.7			D	S	swt;fwf	
Eastern Bluebird	Y	y	n			0.9		7SB	S	S	mxu	
Veery	n	y	y			-0.9	-2.4		S	S	for	
Wood Thrush	Y	y	y			-2.1	-4.0		S	S	for	
Grey Catbird	Y	y	n			-0.3	-1.4		S	S	fed;ofd;Awc	
Brown Thrasher	Y	n	n			-1.2			D	S	ofd;fed;hdr	
Loggerhead Shrike	n	y	n		En	-3.7		3BB		S	mxu	
White-eyed Vireo	Y	y	n			-0.4	-1.2		D	S	ofd;fed	
Yellow-throated Vireo	Y	y	y			-2.2	-0.9		S	S	for	
Warbling Vireo	n	y	n			1.4	0.3		S	S	for;nw	
Red-eyed Vireo	Y	y	y			1.5	0.2		I	I	for	
Golden-winged Warbler	n	y	n			-2.0	-1.9	7SB	D	S	ofd;fed	
Northern Parula	n	y	y			1.4	-2.1		P	S	For	
Yellow Warbler	Y	y	n			1.0	1.6	8S	S	S	ofd;fed;fwf	
Black-throated Green Warbler	n	y	n			-0.7	-3.1		S	S	For	
Yellow-throated Warbler	Y	y	n			0.3	-0.4		S	S	for;nw	
Cerulean Warbler	n	y	n			-3.2	-0.9		S	S	For	
American Redstart	Y	y	y			-0.2	-1.2		S	S	for;FEd	
Prothonotary Warbler	Y	y	y			-0.1	1.1		I	S	for;fwf	
Worm-eating Warbler	Y	y	y			0.3	-2.0		S	S	for;Awc	
Ovenbird	Y	y	y			0.6	-1.0		S	S	for	
Kentucky Warbler	Y	y	y			-0.7	-1.6		S	S	for	
Common Yellowthroat	Y	y	n			-0.4	-1.9		S	S	Thc;OFd;Fwf;Swf	
Hooded Warbler	Y	y	y			1.9	0.4		D	S	for	
Yellow-breasted Chat	Y	y	n			-0.8	1.2		D	S	OFd;FEd	

# APPENDIX B-1 (cont'd): Bird Species of Management Concern

NAME	BB	NM	ARS	FST	SST	NC66	NC78	AudB	SB	SN	Habitat	Use
-----	-	-	--	--	--	----	----	----	-	-	-----	-----
Summer Tanager	Y	y	y			0.0	-0.8			S	for;Cnf;Awc	
Scarlet Tanager	Y	y	y			0.7	-1.2		S	S	for	
Dickcissel	n	y	n			-1.9		8S	X	U	fld	
Vesper Sparrow	n	y	n		En	-1.0				S	fld	
Savannah Sparrow	n	y	n		Th	-0.7			T	T	fld;swt	
Grasshopper Sparrow	Y	y	n		Th	-4.4		4B	T	T	fld	
Seaside Sparrow	Y	n	n						S	S	swt	
Bobolink	n	y	n		Th	-0.8			T	T	Fld	
Eastern Meadowlark	Y	y	n			-2.0		6SAB	D	S	fld;Swt	
Orchard Oriole	Y	y	n			-1.5	1.1	7SB	S	S	MxU;FE	

# APPENDIX B-2: Reptiles and Amphibians of Management Concern

(For data codes see attached sheet)

Common Name	Genus	species	variety	SSt	CP
-----	-----	-----	-----	--	--
E. Mud Turtle	Kinosternon	subrubrum	subrubrum	U	3
Spotted Turtle	Clemmys	guttata		U	3
Bog Turtle	Clemmys	muhlenbergi		En	1
N. Diamondback Terrapin	Malaclemys	terrapin	terrapin	D	2
Red-bellied Turtle	Pseudemys	rubriventris		U	3
Five-lined Skink	Eumeces	fasciatus		U	3
Ground Skink	Scincella	lateralis		U	3
E. Smooth Earth Snake	Virginia	valeriae	valeriae	U	3
E. Hognose Snake	Heterodon	platyrhinos		D	2
E. Worm Snake	Carphophis	amoenus	amoenus	U	3
N. Black Racer	Coluber	constrictor	constrictor	U	3
Corn Snake	Elaphe	guttata	guttata	E	1
Black Rat Snake	Elaphe	obsoleta	obsoleta	U	3
N. Pine Snake	Pituophis	melanoleuca	melanoleuca	Th	1
E. King Snake	Lampropeltis	getulis	getulis	U	3
N. Scarlett Snake	Cemphora	coccinea	copei	U	3
E. Tiger Salamander	Ambystoma	tigrinum	tigrinum	En	1
Four-toed Salamander	Hemidactylim	scutatum		D	2
N. Red Salamander	Pseudotriton	ruber	ruber	D	2
E. Mud Salamander	Pseudotriton	montanus	montanus	T	1
E. Spadefoot Toad	Scaphiopus	holbrooki	holbrooki	D	1
N. Cricket Frog	Acris	crepitans	crepitans	U	3
Pine Barrens Treefrog	Hyla	andersonii		En	1
Barking Treefrog	Hyla	gratiosa		U	3
Carpenter Frog	Rana	virgatipes		U	3

# APPENDIX B-3: Plant Species of Management Concern

(For data codes see attached sheet)

Genus	species	Common Name	StatNatH	Status
Andropogon	ternarius	silvery beardgrass	G5 S2	
Arabis	drummondi	Drummond's Rock Cress	G5 S1.1	SE
Arenaria	peploides	Sea-beach Sandwort		SE
Arisaema	dracontium	Green Dragon		
Asclepias	lanceolata	Smooth Orange Milweed	G5 S2	SE
Asclepias	rubra	Red Milkweed	G4G5 S2	
Asclepias	variegata	White Milkweed	G5 S2	SE
Asclepias	verticillata	Whorled Milkweed	G5 S2	
Aster	concolor	Sivory Aster	G4? S2	
Calamovilfa	brevipilis	Pine Barrens Reed Grass	G3 S3	F3C
Carex	barretti		G3 S3	F3C
Carex	livida		G5 S3	
Carex	lupuliformis	Hop Sedge	G3G4Q S2	
Carex	mitchelliana	Mitchell's Sedge	G3G4 S2	
Carya	pallida	Sand Hickory	S3 G5	
Centrosema	virginianum	Spurred Butterfly Pea	G5 SH	SE
Chionanthus	virginicus	Fringe Tree	G5 S3	
Cleistes	divaricata	Spreading pogonia	G4 SH	SE
Clitoria	mariana	Butterfly Pea	G5 S1	SE
Corema	conradii	Broom-Crowberry	G3 S1	SE
Cornus	foemina	Stiff Dogwood	G? S1	
Desmodium	strictum		G3G4 S2	
Diodia	virginiana	Large Buttonweed	G5 S1	SE
Dioscorea	hirticaulis	Wild Yam		
Eleocharis	brittonii	Britton's Spikerush	G? S1.1	SE
Eleocharis	melanocarpa	Black-fruited Spikerush	G4 S1	SE
Eleocharis	quadrangulata	Four sided Spike Rush	G4 S2	
Eleocharis	tortilis	Twisted Spikerush	G5 SH	SE
Eriophorum	tenellum	Rough cottongrass	G5 S1	SE
Eupatorium	aromaticum	Small White Boneset	G4G5 S2	
Eupatorium	capillifolium	Dog Fennel	G5 S1	SE
Eupatorium	coelestinum	Blue Boneset; Mist Flower	G5 S3	
Euphorbia	purpurea	Glade Spurge	G2 S1	FC2 SE
Fraxinus	profunda	Ash, Pumpkin	G4G5 S1	SE
Galactia	volubilis		G5 SH	SE
Galium	hispidulum	Coast bedstraw		SE
Gentiana	autumnalis	Pine Barren Gentian	G3 S3	F3C
Gentiana	saponaria	Soapwort Gentian	G5 S3	
Gratiola	virginiana	rnd-fruited hedge-hyssop	G4G5 S2	
Gymnopogon	brevifolius	Short-lvd Skeleton Grass	G5 S1	SE
Hedyotis	uniflora	Clustered bluet	G5 S3	
Helonias	bullata	Swamp Pink	G3 S3	FT SE
Hottonia	inflata	Featherfoil	G3G4 S1	SE
Hydrocotyle	verticillata	whorled pennywort	G5 S2	
Hypericum	gymnanthum	Claspng lvd St Johns Wort	G4G5 S2	
Isoetes	melanopoda	Black-based Quillwort	G5 SH	SE

# APPENDIX B-3 (cont'd): Plant Species of Management Concern

Genus	species	Common Name	StatNatH	Status	Juncus
Juncus	articularis	Jointed Rush	G5 S2		
Juncus	brachycarpus	Short-fruited rush	G4G5 SH	SE	
Juncus	coriaceus	Awl-lvd Rush	G5 S1	SE	
Juncus	torreyi	Torrey's Rush	G5 SU		
Lemna	perpusilla	Minute Duckweed	G5 SH		
Limonium	nashii				
Listera	australis	Southern Twayblade	G4 S21		
Lobelia	boykinii	Boykin's Lobelia	G2 S1	Fc2 SE	
Lobelia	canbyi	Canybi's Lobelia	G4 S3		
Ludwigia	hirtella	Hairy Ludwiga	G5 S2		
Ludwigia	linearis	Linear lvd Ludwiga	G5 S2		
Lycopus	rubellus	Stalked Water Hoarhound	G5 S2		
Malaxis	uniflolia	Adder's Mouth			
Manisurus	rugosa	Wrinkled Jointgrass		SE	
Muhlenbergia	torreyana	Pine barrens Smoke Grass	G3 S3	F3C	
Myrica	heterophylla	Bayberry, Evergreen; Wax-	G5 SU		
Oenothera	humifusa	Seaside Primrose	G5 S1	SE	
Panicum	hemitomom	Maiden Cane	G5? S2		
Panicum	oligosanthes	few flwrdr panic grass	G5 S2		
Panicum	wrightianum	Wright's Panic Grass	G4 S2		
Pinus	serotina	Pond Pine	G4q S2		
Pinus	taeda	Loblolly Pine	G5 S2		
Plantago	pusilla	slender plaintain	G5 SH	SE	
Platanthera	ciliaris	Yellow-fringed Orchid	G5 SH	SE	
Platanthera	cristata	Yellow-crested Orchid	G5 S3		
Platanthera	flava v flava	Southern Rein Orchid	G4TU S1	F3C SE	
Platanthera	integra	Southern Yellow Orchid	G3G4 S1	F3C SE	
Platanthera	nivea	Bog Torch; Snowy Orchid	G5 S1	SE	
Platanthera	peramoena	Purple Fringeless Orchid	G5 SH	F3C SE	
Pluchea	foetida	Stinking Fleabane	G5 S1	SE	
Polygala	mariana	Maryland Milkwort	G5 S2		
Polygala	ramosa	Branching Milkwort	G5 SX.1		
Polygonum	glaucum	Seabeach Knotweed	G3 S1	SE	
Polygonum	setaceum	Bristly Smartweed	G5 S2		
Populus	heterophylla	Swamp Cottonwood	G5 S2		
Potamogeton	confervoides	Algae-like Pondweed	G5 S3	FC2 SE	
Potamogeton	oakensianus	Oake's Pondweed	G4 S2		
Prenanthes	autumnalis	Pine Barren Rattlesnake R	G4G5 S2		
Psilocarya	nitens				
Pyrus	angustifolia	narrw-lvd wild crab apple	G5? S2		
Quercus	imbricata	Shingle oak	G5 S1.1	SE	
Quercus	michauxii	Oak, Swamp Chestnut	G5 S3		
Quercus	muhlenbergii	Yellow Chinquapin	G5 S3		
Quercus	nigra	Oak, Water	G5 S1	SE	
Quercus	prinus	Swamp White Oak			
Ranunculus	cymbalaria	Seaside Crowfoot	G5 SH	SE	
Rhexia	aristosa	Awned Meadowbeauty	G2 S1	FC2 SE	
Rhododendron	atlanticum	Dwarf Azalea	G4G5 S1	SE	

# APPENDIX B-3 (cont'd): Plant Species of Management Concern

Genus	species	CName	StatNatH	Status
Rhynchospora	cephalantha	Lrg-hded beak rush	G5 S3	
Rhynchospora	globularis	Grass-like Beaked Rush	G5 S1	SE
Rhynchospora	glomerata	Clustered Beak Rush	G5 SH	SE
Rhynchospora	inundata	Horned Beak Rush	G3G4 S2	
Rhynchospora	rariflora	Rare-flwring Beaked Rush	G5 S1	SE
Rotala	ramosior	Tooth-cup	G5 S3	
Ruellia	caroliniensis	Carolina petunia	G5 SH	SE
Sabatia	dodecandra	Large Marsh Centaury	G5? S2	
Sacciolepis	striata	American Cupscale	G5 S1	SE
Sagittaria	teres	Slender Arrowhead	G3 S1	SE
Schizaea	pusilla	Curly Grass Fern	G3 S3	F3C
Schwalbea	americana	Chaffseed	G2 S1	FPE SE
Scirpus	longii	Long's Bulrush	G2 S2	FC2 SE
Scleria	minor	Slender Nut rush	G4G5 S3	
Scleria	verticillata	Whorled Nutrush	G4? S1	SE
Sclerolepsis	uniflora	Bog Buttons	G4 S2	
Sesuvium	maritimum	Sea-beach Purslane	G5 S2	
Solidago	ludoviciana			
Solidago	microcephala			
Spiranthes	lucida	Shining Ladies Tresses	G5 S2	
Spiranthes	praecox	Grass-lvd ladies Tresses		
Spiranthes	tuberosa	Little Ladies Tresses	G5 S3	
Tipularia	discolor	Crane-fly orchid	G4G5 S3	
Toxicodendron	radicans	Poison Ivy	G4G5 S3	
Triadenum	walteri	Walter's St. John's Wort	G5 S1	SE
Trisetum	pennsylvanicum	Swamp Oats	G3G5 S2	
Utricularia	gibba	Humped Bladderwort	G5 S3	
Utricularia	purpurea	Purple Bladderwort	G5 S3	
Utricularia	resupinata	Reversed Bladderwort	G4 S1	SE
Valerianella	radiata	Beaked Corn Salad	G5 S1	SE
Viola	emarginata			
Xyris	smalliana			



## DATABASE CATAGORIES AND CODE

- WI: Winter frequency according to the Cape May Bird Observatory (CMBO). 1C = Common, 2F = Fairly Common, 3U = Uncommon, 4O = Occasional, 5R = Rare
- Sp, Su, EF, LF: Spring, Summer, Early Fall and Late Fall frequencies according to the CMBO.
- BB: Breeds locally.
- NM: Neotropical Migrant according to Rappole, et al, 1983.
- CM: Management Status, Cape May NWR. M = Species of Management Concern.
- ARS: Area sensitive species according to Robbins, et al, 1989.
- FSt: Federal Endangered and Threatened Species status.
- SSt: (Birds) State (NJ) Endangered and Threatened species status.
- SSt: (Reptiles and Amphibians) State population status according to the Department of Environmental Protection. S=Stable; D= Declining; T or Th= Threatened; E or En= Endangered; U= Unknown; I or In= Increasing.
- NC66: Population status according to the Breeding Bird Survey, 1966-1989.
- NC78: Population status according to the Breeding Bird Survey between 1978-1987 from Robbins, et al, 1989.
- Sg: Statistical Significance of the above data. \* = < .05, \*\* = < .01.
- AudBl: Blue listed and Special Concern birds according to Audubon's Blue List of 1986. 2BAB = Blue listed, between greatly declined and declined in the Hudson-Delaware Region, 3BB = Blue-listed and in decline in region, 4B = Blue-listed nationally, 5SA a species of Special Concern and greatly declined in the region, 6SAB = of special concern and between greatly declined and declined in region, 7SA = of special concern and declining in state, 8S = of special concern in state but not know to be declining in region.
- SB: Breeding population in Decline (D), Increasing (I), Stable (S), Extinct (X) or status unknown (U) according to the state Department of Environmental Protection (DEP).
- SN: State non-breeding population status according to the state DEP. Uses the same codes as SB.
- Status: SE=State Endangered, FE=Federal Endangered, FC\*=Federal Candidate, FPE=Proposed federal endangered species
- StatNatH: Natural Heritage Program Status symbols. G\*=Global Element Rank. G1=Critically imperiled due to extreme rarity, G2= Imperiled globally due to rarity, G3=Either very rare or local throughout its range or due to factors making it vulnerable to extinction throughout its range, G4=Apparently secure globally, though may be rare in parts of its range, G5=Demonstrably secure globally, GH=Formerly part of the established biota, GU=Possibly in peril range-wide, but status uncertain, GX= Believed to be extinct throughout range, G?= species has not been ranked, Q= taxon is of questionable taxonomic standing. S\* = State Element Ranks. S1= Critically imperiled in NJ due to extreme rarity (5 or fewer occurrences) or species formerly more abundant or species restricted to 3% or less of the total area of state, S2= Imperiled in New jersey due to rarity (6-20 occurrences) and species in habitats restricted to 10% of total state area, S3= Rare in state (21-50 occurrences). S4= Apparently secure in state, S5= demonstrably secure in state, SH= Formerly occurred in area, SR= species reported from NJ but w/o adequate documentation, SU= species believed to be in peril but degree of rarity uncertain, SX= species extirpated from NJ, .1= species documented from a single location. Ranges between two categories are expressed by combining two ranks.
- CP: Cape May NWR Management Priority Status. On a scale of 1 to 5 ranked management or conservation priorities, 1 being the highest priority.
- Habitat Use: Preferred habitat during breeding according to Ehrlich, 1988.

## APPENDIX C: Vegetation Community Types found on or near Cape May NWR

### Upland Communities

#### *Forested*

Terrestrial/Closed Canopy  
Virginia Pine-Oak Forest  
Mesic Coastal Plain Mixed Oak Forest  
Southern Coastal Plain Mixed Oak Forest  
Dry Pine-Oak Forest  
Dry Oak-Pine Forest  
-  
Terrestrial/Open Canopy  
Pine Plains  
Coastal Dune Woodland

#### *Non-Forested*

Terrestrial/Open Canopy  
Coastal Dune Grass Community

### Wetland Communities

#### *Forested*

Estuarine Wetland/Tidal  
Freshwater Tidal Swamp\*  
-  
Palustrine Wetland/Non-Tidal  
Cape May Lowland Swamp\*  
Pitch Pine Lowland Forest  
Pine Barren Hardwood Swamp  
Coastal Plain Atlantic White Cedar Swamp

#### *Non-Forested*

Palustrine/Open Canopy/Non-Tidal  
Coastal Interdunal Marsh  
Coastal Plain Intermittent Pond  
Pine Barren Shrub Swamp  
Robust Emergent Marsh  
-  
Palustrine/Open Canopy/Tidal/  
Freshwater-Oligohaline  
Freshwater Tidal Marsh Complex  
-  
Estuarine Intertidal Brackish  
Brackish Tidal Marsh Complex  
-  
Marine Intertidal Saline  
Salt Marsh Complex

\* Listed by the State of New Jersey as critically imperiled.

ONGOING OBJECTIVES (1)

<b>Objective: Obtain and manage currently available information on the (T&amp;E) species occurring on Refuge.</b>				
STRATEGIES	WHO	WHEN	COMMENTS	STATUS
1. Seek access to existing T&E spp. data bases (TNC, NJ ) with coordination with the FWS NJ Field Office.				
2. Submit Cape May Refuge T&E species info to the FWS NJ Field Office for use by other agencies, organizations.				
<b>Objective: Maintain awareness of (T&amp;E) species status throughout Cape May County.</b>				
STRATEGIES	WHO	WHEN	COMMENTS	STATUS
1. The Refuge Biologist to maintain communication with the FWS NJ Field Office and with NJ, private, and other agencies who work with T&E species.				
<b>Objective: Maintain awareness of stream and groundwater monitoring done by State and other agencies upgradient of land on Refuge.</b>				
STRATEGIES	WHO	WHEN	COMMENTS	STATUS
1. Communication with water quality monitoring agencies will be established and maintained.				
2. Notify appropriate enforcement agencies when contaminant "hot spots" are identified.				
3. Incorporate monitoring results into the Refuge BEST program.				

## ONGOING OBJECTIVES (2)

Objective: Acquire forested tracts most vulnerable to land use changes.				
STRATEGIES	WHO	WHEN	COMMENTS	STATUS
1. Determine tract acquisition priority through analysis of wildlife use, habitat value, willingness of owner and other criteria.				

### Habitat Criteria

1. Ecological value of tract in relation to protecting a large block of contiguous forested habitat. Example: 250 acres is considered the minimum block size that will satisfy the breeding habitat requirements of most interior forest nesting passerine bird species. Other species groups have similar needs.
2. Occurrence of threatened or endangered species. Include Fed.-listed, Fed.-candidate, State-listed species.
3. Potential for use by:
  - Woodcock
  - Shorebirds
  - Raptors
  - Neotropical migrant bird species waterfowl, especially black ducks
4. Potential to be managed for refuge purposes.

### Realty Criteria

1. Threat of being developed
2. Willingness of seller
3. Cost

ONGOING OBJECTIVES (3)

<b>Objective: Develop wildfire cooperation with local fire depts. in all towns where refuge is located. Complete agreements w/in 1yr. of acquiring land.</b>				
STRATEGIES	WHO	WHEN	COMMENTS	STATUS
1. Ref. Mgr. to meet with local fire depts. to develop agreements.				
<b>Objective: Protect historic and archaeological resources on refuge from theft, vandalism, or inadvertent disturbance.</b>				
STRATEGIES	WHO	WHEN	COMMENTS	STATUS
1. Report disturbances of resources with historic or archaeological value to RHPO.				

FY 1992 OBJECTIVES (1)

<b>Objectives: Determine the migratory bird species of management concern for Cape May Refuge.</b>				
STRATEGIES:	WHO	WHEN	COMMENTS	STATUS
1. Convene a workshop of migratory bird experts d to assist Ref. Mgr.1) refine species of mgmt concern list , 2) develop mgmt. programs for these species.				
2. Finalize list of Cape May Refuge species of mgmt concern following analysis of workshop results.				
<b>Objective: Submit boundary redefinition proposal to Chief of Realty.</b>				
STRATEGIES	WHO	WHEN	COMMENTS	STATUS
1. Seek guidance / assistance from Realty-Ascertainment, FWS Zone Biologist, Del. Bay Project, NJ.				
2. Obtain boundary redefinition info from NJ- End. spp., Audobon, NJ-Pinelands, NJ-Conservation Foundation				
3. Prepare most complete boundary redefinition possible.				
4. Inform local communities and general public about the progress of the boundary proposal.				
<b>Objective: Develop and submit for approval a long-range organizational chart for Cape May Refuge.</b>				
STRATEGIES	WHO	WHEN	COMMENTS	STATUS
1. Prepare a refuge organizational chart. See text list for staff positions.				

FY92 OBJECTIVES (2)

Objective: Develop wildlife/habitat inventory program that is oriented toward management actions for species of concern to Cape May Refuge.				
STRATEGIES:	WHO	WHEN	COMMENTS	STATUS
1. Develop components of data base	Prim.Asst.			
2. Add biologist to refuge staff.				
3. Recruit local researchers, co-op, etc. to develop habitat structure profiles for species/guilds monitored on refuge.				

Biological data base components

1. Indicator species to be monitored: individuals, guilds, plants, etc.
2. Habitat types with definitions specific to Cape May Refuge.
3. Refuge-specific habitat structure profiles for each species/guild to be monitored: feeding, nesting, cover needs, etc.
4. Location of monitoring sites and schedule for monitoring each.

Objective: Complete the FWE contaminant survey on the Refuge.				
STRATEGIES:	WHO	WHEN	COMMENTS	STATUS
1. Provide logistic support to FWE staff during data collection.				
2. Incorporate results of the contaminants survey into Refuge's BEST program.				

Objective: Develop interim Fire Management Plan				
STRATEGIES:	WHO	WHEN	COMMENTS	STATUS
1. Seek assistance from Regional Fire Manager				



FY 1993 OBJECTIVES (1)

<b>Objective: Obtain adequate computer equipment and training to automate and operate the Cape May Refuge habitat data base.</b>				
STRATEGIES	WHO	WHEN	COMMENTS	STATUS
1. Work with Regional Data Mgr., etc. to assess equipment and training needs of Cape May Refuge. Purchase, set up and operate the Cape May data base computer hardware and software.				
<b>Objective: Define and implement Refuge role in the Philadelphia Coast Guard's Multi-Agency Spill Response Team for Delaware Bay.</b>				
STRATEGIES	WHO	WHEN	COMMENTS	STATUS
1. Seek guidance / assistance from the Regional Contaminants Specialist.				
<b>Objective: Develop population and/or habitat objectives for T&amp;E species that occur on Cape May Refuge.</b>				
STRATEGIES	WHO	WHEN	COMMENTS	STATUS
1. Analyze avail. T&E species information to project the potential for accommodating the habitat needs of the various species.				
2. Determine priorities for cost-effective T&E species mgmt. on Refuge lands through the development and application of appropriate criteria.				
3. Write objectives and mgmt plans for high priority T&E species.				

FY 1993 OBJECTIVES (2)

<b>Objective: Develop management techniques for T&amp;E species that use, or have potential to use the refuge.</b>				
STRATEGIES	WHO	WHEN	COMMENTS	STATUS
1. Obtain guidance/assistance from recovery teams and others with experience in management of T&E species of the refuge.				
2. Develop mgmt. actions that are responsive e to Cape May Refuge T&E species objectives.				
<b>Objective: Develop a partnership to improve effectiveness of wildlife and habitat data collection and mgmt. in Cape May County. Examples of partners are: Cape May Bird Observatory (NJ Audubon) ,Wetlands Institute, The Nature Conservancy</b>				
STRATEGIES	WHO	WHEN	COMMENTS	STATUS
1. Consult on wildlife/habitat data collection to assess potential interest in Cape May Co. Partnerships include Wetlands Institute, TNC, NJ-Audobon.				
2. If sufficient interest is generated, formalize a data collection / management partnership.				
<b>Objective: Submit a proposal to the Chief of Realty to increase land acquisition funding for Cape May Refuge.</b>				
STRATEGIES	WHO	WHEN	COMMENTS	STATUS
1. Prepare and submit a proposal for annual costs to acquire all land by the end of FY-97; end of FY-95.				
2. Estimate acres and ecological value of habitat lost to development , etc. between 1995 and 1997 if the current schedule is followed. Estimate land costs saved by acquiring all willing seller land by the end of FY-95 instead of end of FY-97				

FY 1993 OBJECTIVES (3)

<b>Objective: Develop and implement Forest/Upland Habitat Mgmt. Plan that addresses habitat needs of species of concern.</b>				
STRATEGIES	WHO	WHEN	COMMENTS	STATUS
1. Write a Refuge Forest/ Upland Mngt. Plan to give mgmt. direction for all forest and uplands w/in refuge boundary.				
<b>Objective: Develop and implement procedure for deciding fate of newly acquired buildings within six months of purchase.</b>				
STRATEGIES	WHO	WHEN	COMMENTS	STATUS
1. Seek assistance from Engineering, RHPO, etc. to develop procedure for disposing/maintaining acquired bldgs.				
<b>Objective: Request proposal from Engineering to develop plans for an office facility to accommodate proposed staff .</b>				
STRATEGIES:	WHO	WHEN	COMMENTS	STATUS
1. Seek assistance from Engineering and Landscape Architect.				
<b>Objective: Write proposal for Engineering and Lands. Arch. to develop plans for maintenance facility which meets refuge needs for 10 years.</b>				
STRATEGIES	WHO	WHEN	COMMENTS	STATUS
1. Obtain guidance/assistance from Eng. and Lands. Arch.				

FY 1993 OBJECTIVES (4)

<b>Objective: Develop interim Public Use Plan with 1) Station message , 2) 2-yr management direction.</b>				
STRATEGIES:	WHO	WHEN	COMMENTS	STATUS
1. Seek assist. from the RPUS, a R-5 L.A., EBF ORP, Del. Bay Project to set priorities and develop an interim , 2yr plan.				
<u>Public Use Plan compnoents</u>				
1. Public use resources / opportunities that mesh into Refuge activities with min. effort/ expense. E.g. Accessible wildlife observation points, facilities owned and operated by wildlife oriented groups and agencies, willdlife oriented institutions.  2. Desirability and feasibility of conducting a recreational deer hunt  3. Implementation of a Refuge volunteer force  4. Opportunites to interact with established volunteer programs  5. Organization of a Refuge "friends group"  6. Plan a Refuge education program and identifiy appropriate education audiences  7. Plan a Refuge outreach program and identify appropriate outreach audiences  8. Serve birding enthusiasts as a refuge- oriented audience  9. Refuge leaflet, other public use oriented literature, slide show and other media.				

F Y 1994 OBJECTIVES (1)

<b>Objective: Develop information base that monitors presence and status of forage fish and sport fish on Refuge.</b>				
STRATEGIES	WHO	WHEN	COMMENTS	STATUS
1. Request fish monitoring and management guidance from FWS Fisheries Assistance.				
<b>Objective: Develop Public Use Plan consistent with Refuge Manual R-5:007, per 12/27/91 ARD memo.</b>				
STRATEGIES	WHO	WHEN	COMMENTS	STATUS
1. Add ORP to refuge staff				
2. Request guidance from regional Public Use Specialist in developing Public Use Plan.				
<b>Objective: Develop Cape May Fire Management Plan</b>				
STRATEGIES	WHO	WHEN	COMMENTS	STATUS
1. Seek assistance from RFMC to develop Fire Plan.				
2. Ref. Mgr. to prepare a Fire Mngt. Plan.				
<b>Objective: Complete survey of historical &amp; archaeological resources on refuge.</b>				
STRATEGIES	WHO	WHEN	COMMENTS	STATUS
1. RHPO to develop schedule & funding for survey.				
2. Complete survey of H & A resources on refuge.				

