Chapter 1

USFWS

Impoundment at Supawna Meadows NWR

The Purpose of and Need for Action

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Introduction

This Comprehensive Conservation Plan (CCP) for Supawna Meadows National Wildlife Refuge (Supawna Meadows NWR, the refuge) was prepared pursuant to the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (16 U.S.C. 668dd et seq.; Refuge Improvement Act). An environmental assessment (EA), required by the National Environmental Policy Act of 1969 (NEPA), was prepared with the draft CCP.

This final CCP presents the combination of management goals, objectives, and strategies that the U.S. Fish and Wildlife Service (Service, we, our) believes will best achieve our vision and goals for the refuge, contribute to the mission of the National Wildlife Refuge System (NWRS, Refuge System), achieve the refuge purposes, fulfill legal mandates, address key issues, incorporate sound principles of fish and wildlife management, and serve the American public. This CCP will guide management decisions and actions on the refuge over the next 15 years. It will also help us communicate our priorities to the natural resource agencies of New Jersey, our other conservation partners, local communities, and the public.

Chapter 1, "The Purpose of and Need for Action," sets the stage for chapters 2 through 5.

The chapter
- describes the purpose and need for a CCP for the refuge;
- defines the planning analysis area;
- identifies national and regional mandates and plans that influenced this document;
- highlights establishing purposes and land acquisition history of the refuge; and
- presents the vision and goals that drive refuge management.

Chapter 2, "The Planning Process," explains the planning process we followed in developing this document, and describes the key issues, concerns, and opportunities that arose as we developed the plan.

Chapter 3, "Existing Environment," describes the physical, biological, and human environment of the refuge.

Chapter 4, "Management Direction and Implementation," presents the management strategies for meeting refuge goals and objectives that will guide our decisions.

Chapter 5, "Consultation and Coordination," summarizes how we involved the public and our partners in the planning process and credits Service and non-Service contributors.

The glossary with acronyms, literature cited, and nine appendixes provide additional documentation and references to support our narratives and management decisions.

The Purpose of and Need for Action

We developed a final CCP for the refuge that, in the Service's best professional judgment, best achieves the refuge's establishing purposes, vision and goals, contributes to the mission of the Refuge System, adheres to relevant Service policies and mandates, addresses key public and conservation issues, and uses sound principles of fish and wildlife science.

Our purpose in developing a CCP for Supawna Meadows NWR is to establish management direction that best meets the following goals:

Goal 1: Protect, enhance, and restore biological integrity, diversity, and environmental health of tidally influenced habitats to support native wildlife and plant communities including species of conservation concern.

Goal 2: Protect, enhance, and restore biological integrity, diversity, and environmental health of upland habitats to support native wildlife and plant communities with emphasis on migrating and wintering birds and other species of concern.

Goal 3: Protect, enhance, and restore biological integrity, diversity, and environmental health of non-tidal wetland habitats to support native wildlife and plant communities with emphasis on breeding, migrating, and overwintering birds and other species of conservation concern.

Goal 4: Provide opportunities for compatible, high-quality, wildlife-dependent public uses.

Goal 5: Protect cultural resources on the refuge.

Goal 6: Enhance refuge management through partnerships, friends, volunteers, and community outreach.

Developing a CCP is vital for the future management of every national wildlife refuge. A CCP provides strategic management direction for the next 15 years by

- providing a clear statement of desired future conditions for habitat, wildlife, visitor services, staffing, and facilities;
- providing state agencies, refuge neighbors, visitors, and partners with a clear understanding of the reasons for management actions;
- ensuring refuge management reflects the policies and goals of the Refuge System and legal mandates;
- ensuring the compatibility of current and future public use;
- providing long-term continuity and direction for refuge management; and
- providing direction for staffing, operations, maintenance, and annual budget requests.

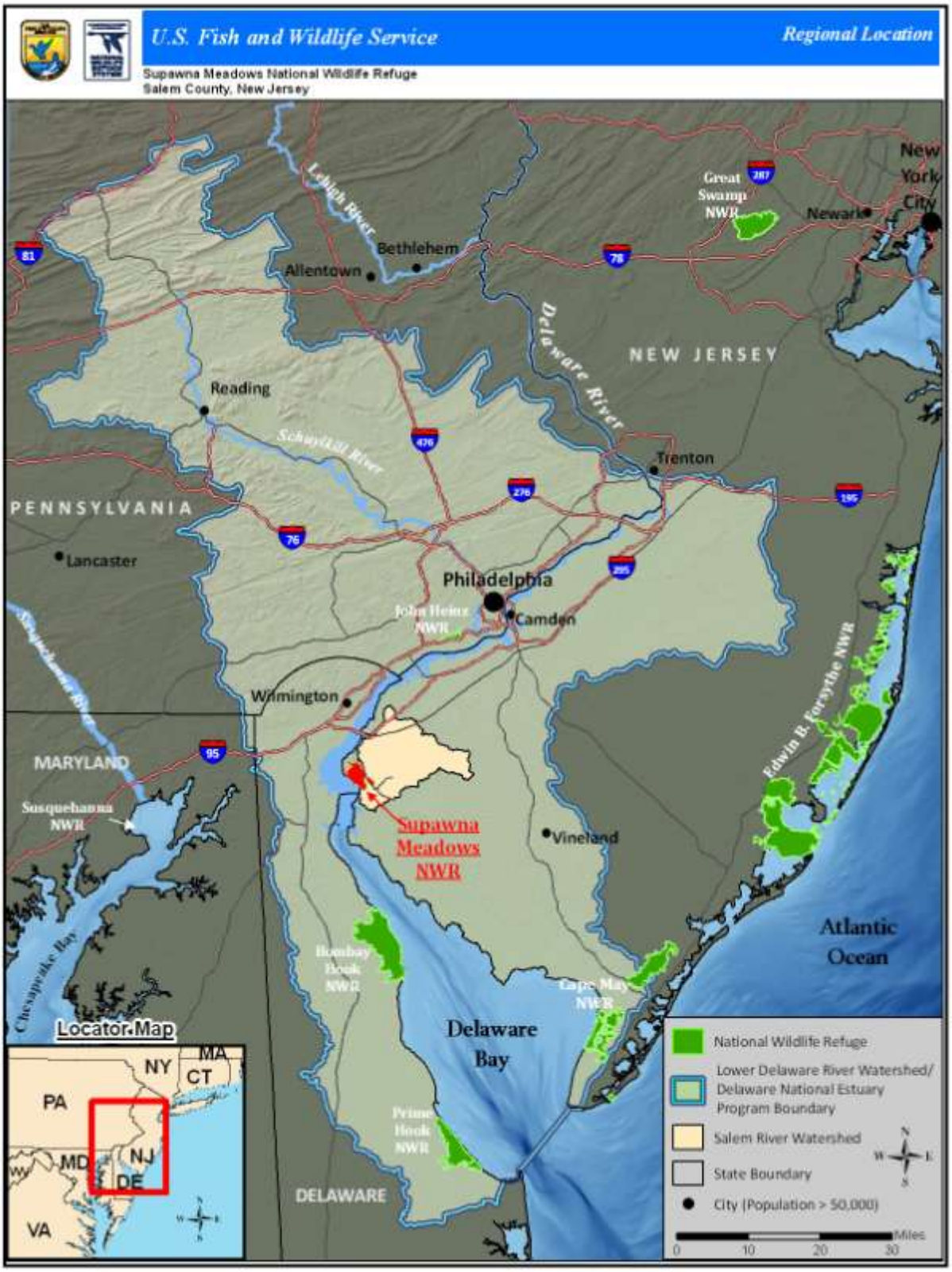
The need to develop a CCP for the refuge is threefold. First, the Refuge Improvement Act requires that all refuges have a CCP in place to help fulfill the mission of the Refuge System. Second, the refuge was administratively complexed with Cape May NWR (located in Cape May Court House, New Jersey) in March 2004 to increase management efficiencies, which resulted in changes to onsite staffing. The CCP for Cape May NWR was completed separately in June 2004. Third, there is currently no master plan establishing priorities and ensuring consistent and integrated management for Supawna Meadows NWR. A vision statement, goals, objectives, and management strategies are needed to effectively manage the refuge's natural resources. Public and partner involvement is critical to resolving issues related to public use, cultural resources, and habitat management.

Project Area

Supawna Meadows NWR is located along the shoreline of the Delaware River where it widens to become the Delaware Bay estuary (map 1.1) in Salem County, New Jersey (map 1.2). The refuge currently includes 3,016 acres of tidal waters and marsh[1], grassland, shrubland, and forest habitats. The approved refuge acquisition boundary (map 1.3) encompasses approximately 4,527 acres along the Upper Delaware Bay and Salem River in Pennsville Township, New Jersey. The refuge boundaries are roughly defined by the Delaware Bay, Salem River, and Fort Mott Road. It is located with the Service's Northeast Region, also known as Region 5.

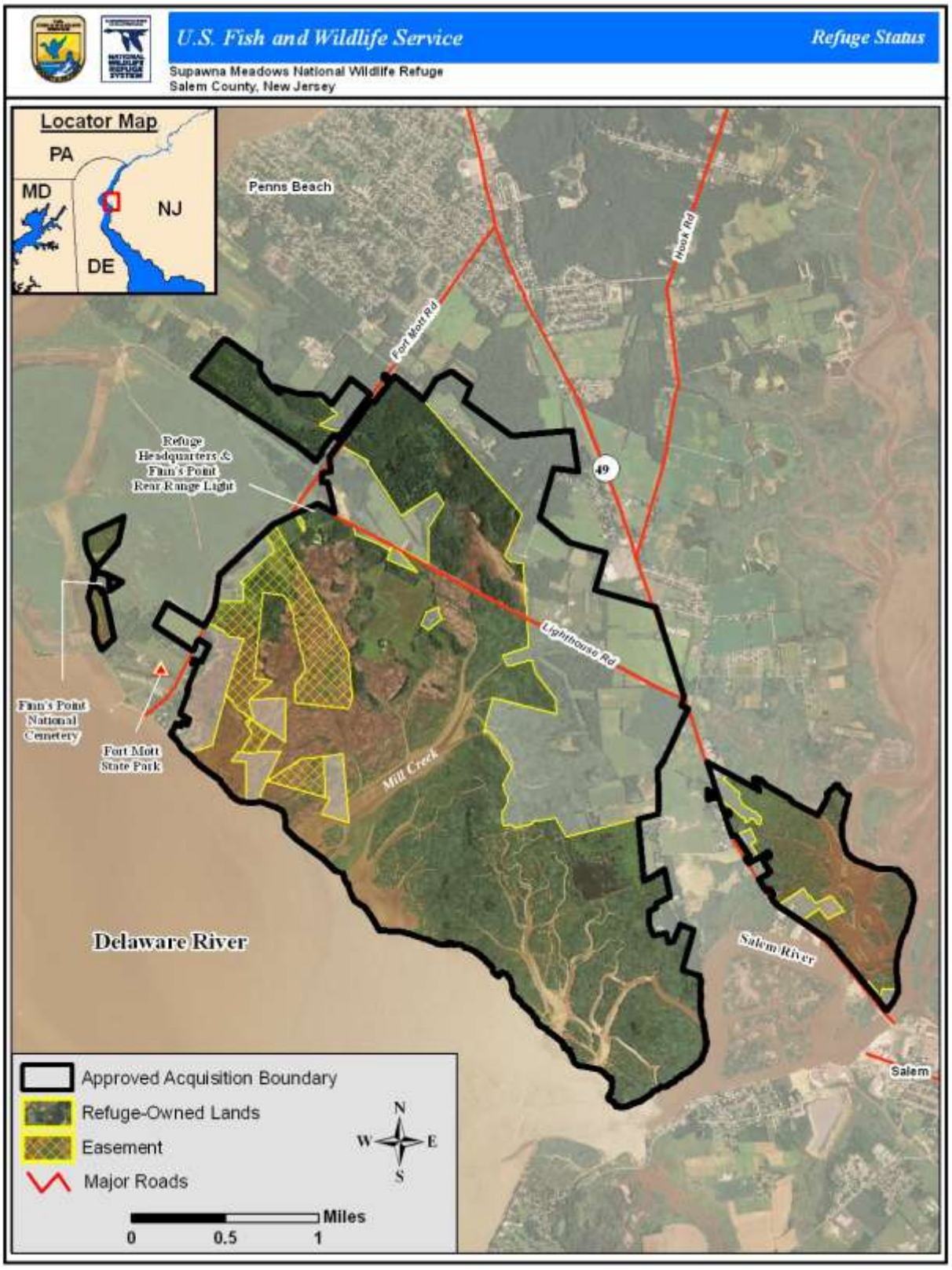
Supawna Meadows NWR was originally established in 1971 as the Goose Pond addition to the Killcohook Migratory Bird Refuge. Killcohook Migratory Bird Refuge (also referred to as the Killcohook Coordination Area) was established by Executive Order 6582 on February 3, 1934. The lands acquired as the Goose Pond addition were renamed Supawna Meadows National Wildlife Refuge and officially separated from Killcohook Migratory Bird Refuge on April 10, 1974. On October 30, 1998, the Service's jurisdiction over Killcohook Migratory Bird Refuge was revoked (Public Law 105-312, Sec. 203).

[1]The state of New Jersey retains ownership over open tidal waters below the mean high tide. In this document, when we refer to Service ownership, or describe refuge management actions in tidal waters, we mean tidal marsh areas and areas above mean high tide.



Map 1.1. Supawna Meadows National Wildlife Refuge regional location.

Map 1.2. Supawna Meadows National Wildlife Refuge location.



Map 1.3. Supawna Meadows National Wildlife Refuge current land status map.

The Service and the Refuge System Policies and Legal Mandates Guiding Planning

This section presents hierarchically, from the national level to the local level, highlights of Service policy, legal mandates, and existing regional, State, and local resource plans that directly influenced development of this CCP.

The U.S. Fish and Wildlife Service and Its Mission

The Service, part of the Department of the Interior, administers the National Wildlife Refuge System. The Service mission is:

> Working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people.

Congress entrusts the Service with the conservation and protection of national resources such as migratory birds and fish, federally listed endangered or threatened species, inter-jurisdictional fish, and certain marine mammals. The Service also manages national wildlife refuges (refuges) and national fish hatcheries, enforces Federal wildlife laws and international treaties on importing and exporting wildlife, assists with state fish and wildlife programs, and helps other countries develop wildlife conservation programs.

The Service manual contains the standing and continuing directives to implement its authorities, responsibilities, and activities. You can access it at http://www.fws.gov/policy/manuals/. Special Service directives affecting the rights of citizens or the authorities of other agencies are published separately in the Code of Federal Regulations (CFR), and are not duplicated in the Service manual.

The National Wildlife Refuge System and its Mission

The Refuge System is the world's largest collection of lands and waters set aside specifically for conserving wildlife and protecting ecosystems. Since its inception in 1903, the Refuge System has grown to over 550 refuges and other lands encompassing more than 150 million acres (USFWS 2009a). The Refuge System has interests in every state and several island territories. Each year, more than 34 million visitors hunt, fish, observe and photograph wildlife, or participate in environmental education or interpretation activities on refuges, generating almost $1.7 billion annually (Carver and Caudill 2007). More detailed information on the Refuge System can be found on the Service's Web site at http://www.fws.gov/refuges/.

In 1997, Congress passed the Refuge Improvement Act, which amended the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee). The Refuge Improvement Act established a unifying mission for the Refuge System, a new process for determining compatible public use activities on refuges, and required CCPs for all refuges. It states that, first and foremost, the Refuge System must focus on wildlife conservation. It further states that the Refuge System mission, coupled with the purpose(s) for which a refuge was established, will provide the principal management direction for that refuge.

The mission of the Refuge System is:

> To administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (Refuge Improvement Act; Public Law 105–57).

In addition, the Refuge Improvement Act requires that all existing or proposed public uses of a refuge must be compatible with refuge purpose(s). The refuge manager determines compatibility after evaluating an activity's potential impact on refuge resources, and ensuring that it does not materially interfere with, or detract from, refuge purpose(s). This act also stipulates six wildlife-dependent public uses that are to receive enhanced consideration in CCPs: hunting, fishing, wildlife observation and photography, and environmental education and interpretation. These are called the six priority public uses for refuges.

Fulfilling the Promise

During the late 1980s and throughout the 1990s, changes in the guiding mission and vision for the Refuge System, combined with growing concerns for the needs of fish, wildlife, and plants, underscored the need for the Service to articulate what the Refuge System would be over the next century. In 1997, the Service initiated a yearlong process involving four teams of Service employees who examined the Refuge System within the framework of Wildlife and Habitat, People, and Leadership. The teams completed a draft report that focused on these four key areas and was at the center of the first ever Refuge System Conference in Keystone, Colorado in October 1998. Every refuge manager in the country, other Service employees, and scores of conservation organizations attended the conference. The final report, "Fulfilling the Promise: The National Wildlife Refuge System, Visions for Wildlife, Habitat, People, and Leadership" (USFWS 1999), was completed in 1999. Many "Promises Teams" formed to develop strategies for implementing the 42 recommendations of the final report. Information from teams, such as Wildlife and Habitat, Goals and Objectives, Strategic Growth of the Refuge System, Invasive Species, and Inventory and Monitoring, helped guide the development of the goals, strategies, and actions in this CCP.

Refuge System Planning Policy

This policy establishes requirements and guidance for Refuge System planning, including CCPs and step-down management plans. It states that we will manage all refuges in accordance with an approved CCP, which, when implemented, will achieve refuge purposes; help fulfill the Refuge System mission; maintain and, where appropriate, restore the ecological integrity of each refuge and the Refuge System; help achieve the goals of the National Wilderness Preservation System; and meet other mandates. This policy helps to ensure that CCPs are founded on principles of sound fish and wildlife management and available science, and are consistent with legal mandates and our other policies, guidelines, and planning documents. Above all else, it helps ensure that wildlife comes first on refuges (602 FW 1, 2, 3).

Appropriate Refuge Uses Policy

This policy provides a national framework and procedure for refuge managers to follow in deciding whether uses are appropriate on a refuge. It also clarifies and expands on the compatibility policy (603 FW 2.10D), which describes when refuge managers should deny a proposed use without determining compatibility. When we find a use is appropriate, we must then determine if the use is compatible before we allow it on a refuge. This policy applies to all proposed and existing uses in the Refuge System only when we have jurisdiction over the use, and does not apply to refuge management activities or situations where reserved rights or legal mandates provide we must allow certain uses (603 FW 1). The appropriate use requirements of the Refuge Improvement Act were adopted in the Service's Final Appropriate Refuge Uses Policy, published June 26, 2006 (Federal Register, Vol. 71, No. 122, pp. 36408-36418). Appendix B further describes the Appropriate Refuge Uses Policy and describes its relationship to the CCP process.

Compatibility Policy

Federal law and Service policy provide the direction and planning framework to protect the Refuge System from incompatible or harmful human activities and ensure that Americans can enjoy its lands and waters. The Refuge Improvement Act is the key legislation regarding management of public uses and compatibility. This act requires that all existing or proposed public uses of a refuge must be compatible with refuge purpose(s). Specifically, for a use to be found compatible, it must not "materially interfere with or detract from the fulfillment of the mission of the Refuge System or the purposes of the refuge" (Refuge Improvement Act; Public Law 105–57). The refuge manager is responsible for determining if a public use is compatible.

The current compatibility requirements of the Refuge Improvement Act were adopted in the USFWS Final Compatibility Regulations and Final Compatibility Policy, published October 18, 2000 (Federal Register, Vol. 65, No. 202, pp. 62458-62496). The compatibility determinations for the Supawna Meadows NWR can be found in appendix B, along with additional information on the process. The policy and regulations can be viewed online at http://www.fws.gov/hanfordreach/documents/compatibility.pdf.

Maintaining Biological Integrity, Diversity, and Environmental Health Policy

This policy provides guidance on maintaining or restoring the biological integrity, diversity, and environmental health of the Refuge System, including the protection of a broad spectrum of fish, wildlife, and habitat resources found in refuge ecosystems. It provides refuge managers with a process for evaluating the best management direction to prevent the additional degradation of environmental conditions and to restore lost or severely degraded environmental components. It also provides guidelines for dealing with external threats to the biological integrity, diversity, and environmental health of a refuge and its ecosystem (601 FW 3).

Wildlife-dependent Recreation Policy

The Refuge Improvement Act establishes six wildlife-dependent priority public uses: hunting, fishing, wildlife observation and photography, and environmental education and interpretation. The Refuge Improvement Act further states that, if compatible, these six public uses are to receive enhanced consideration over other public uses in refuge planning and management. The Wildlife-Dependent Recreation Policy explains how we will provide visitors with opportunities for those priority public uses on units of the Refuge System and how we will facilitate the priority public uses (605 FW 1-7).

Other Legal and National Policy Mandates

Although Service and Refuge System policy and each refuge's purpose provide the foundation for management, the administration of refuges conforms to a variety of other Federal laws (e.g., Migratory Bird Treaty Act, Endangered Species Act, Wilderness Act, Archaeological Resources Protection Act, National Historic Protection Act), Executive Orders, treaties, interstate compacts, and regulations pertaining to the conservation and protection of natural and cultural resources. The "Digest of Federal Resource Laws of Interest to the USFWS" lists these and can be viewed online at http://www.fws.gov/laws/Lawsdigest.html.

Wild and Scenic River Review

There are no rivers or segments of rivers that qualify for review within the boundary of the refuge; therefore, a wild and scenic river review was not conducted for this CCP.

National and Regional Conservation Plans Guiding the Project

In late 2001, the U.S. Congress passed the Department of the Interior and Related Agencies Appropriations Act of 2002 (Appropriations Act; Public Law 107- 63) which created the State Wildlife Grants (SWG) program. State Wildlife Grants are available to state fish and wildlife agencies "for the development and implementation of programs for the benefit of wildlife and their habitat, including species that are not hunted or fished." To continue receiving SWG

New Jersey Wildlife Action Plan (revised 2008)

money, each state was required to develop a Wildlife Action Plan (WAP; officially known as a Comprehensive Wildlife Conservation Strategy) focusing on the species of greatest conservation need by October 1, 2005. To satisfy this Federal requirement, the New Jersey Division of Fish and Wildlife (NJDFW), in collaboration with the public; New Jersey conservation groups; and other stakeholders, developed the New Jersey WAP for the conservation of the State's species of greatest conservation need. Originally submitted in 2005, the most recent draft is dated January 23, 2008 (NJDFW 2008a).

To better assess conservation needs, goals, and priorities, the New Jersey WAP uses the landscape regions (or ecoregions) and 26 conservation zones already identified in the State's Landscape Project (NJDFW 2008b). It identifies nearly 200 species of greatest conservation need, as well as identifying habitat needs and priorities for each region and conservation zone. We discuss the Landscape Project in more detail below. The refuge's tidal marshes supply important resting, feeding, and over-wintering habitat for colonial-nesting wading birds, freshwater wetland birds, and many other special concern wildlife species identified by the State. We used this plan to help develop habitat management goals, objectives, and strategies, and in developing the list of species of conservation concern in appendix A.

North American Waterfowl Management Plan (updated 2004)

The North American Waterfowl Management Plan (NAWMP) is designed to promote partnership-based habitat conservation for waterfowl and other wetland birds. This plan was first developed in 1986 and has been revised twice, most recently in 2004 (USFWS 2004a). Another revision is planned for 2011/2012. The first NAWMP established "joint venture" partnerships across the country (USFWS 1986). Joint venture partnerships involving Federal, State and provincial governments, Tribal nations, local businesses, conservation organizations, and individual citizens are assembled for the purpose of protecting habitat and species. Currently, there are 18 habitat-focused joint ventures in the United States and three species-focused joint ventures. Supawna Meadows NWR falls within the Atlantic Coast Joint Venture (ACJV). The current mission of the ACJV is to "…provide a forum for Federal, State, regional and local partners to coordinate and improve effectiveness of bird conservation planning and implementation in the Atlantic Flyway region of the United States" (ACJV 2004).

The ACJV has developed several plans to help step-down the goals and objectives identified by NAWMP including the ACJV Waterfowl Implementation Plans (ACJV 1988, ACJV 2005) and the ACJV Strategic Plan (ACJV 2004). The most recent ACJV Waterfowl Implementation Plan (ACJV 2005) identifies several focus areas, i.e., habitat complexes that are priorities for waterfowl conservation. Seven focus areas have been identified in New Jersey. Portions of the Supawna Meadows NWR fall within one of these focus areas, called the Delaware Bayshores Marshes Focus Area.

North American Waterbird Conservation Plan (2002) and Mid-Atlantic/New England/Maritimes (MANEM) Waterbird Conservation Plan (Review Draft 2006)

The North American Waterbird Conservation Plan (Kushlan et al. 2002) represents a partnership among individuals and institutions with the interest in and responsibility for conserving waterbirds and their habitats. The partnership, known as Waterbird Conservation for the Americas, shares a vision that the distribution, diversity, and abundance of populations and habitats of breeding, migratory, and non-breeding waterbirds are sustained or restored throughout the lands and waters of North America, Central America, and the Caribbean (Kushlan et al. 2002). It provides a framework for conserving and managing waterbirds. The plan also facilitates continent-wide planning and monitoring, national, state, and provincial conservation, regional coordination, and local habitat protection and management.

Sixteen waterbird planning regions were identified to allow for planning at a scale that is practical yet provides a landscape-level perspective. Supawna Meadows NWR falls within the Mid-Atlantic/New England/Maritimes (MANEM) region. To facilitate waterbird conservation in the MANEM region of the United States and Canada, a partnership of organizations and individuals has drafted a regional waterbird conservation plan for 2006 – 2010. According to the MANEM Waterbird Conservation Plan, 74 waterbird species utilize habitats in the MANEM region for breeding, migrating and wintering (MANEM Waterbird Working Group 2006). Avian families that occur within the region include loons, grebes, shearwaters, storm-petrels, boobies, pelicans, cormorants, herons, ibises, rails, gulls, terns, skuas, jaegers, and alcids. Summarized information on waterbirds and their habitats from this plan provides a regional perspective for local conservation action. We used this plan to help develop objectives and strategies for goals 1 and 3.

U.S. Fish and Wildlife Service Birds of Conservation Concern (2008)

The Birds of Conservation Concern (BCC) is a report that identifies nongame migratory birds that, without strong conservation action, are likely to become candidates for listing under the Federal Endangered Species Act (ESA; USFWS 2008b). The BCC compiles the highest ranking species of conservation concern from these major nongame bird conservation plans: Partners in Flight North American Landbird Conservation Plan (Rich et al. 2004), the United States Shorebird Conservation Plan (Brown et al. 2001), and the North American Waterbird Conservation Plan (Kushlan et al. 2002). We used the BCC list in compiling appendix A and to help focus on which species might warrant special management attention.

U.S. Shorebird Conservation Plan (2001, 2nd Edition) and North Atlantic Regional Shorebird Plan (2000)

Concerns about shorebirds led to the creation of the U.S. Shorebird Conservation Plan (Brown et al. 2001). Developed as a partnership with individuals and organizations throughout the United States, the plan presents conservation goals for each United States region, identifies important habitat conservation and research needs, and proposes education and outreach programs to increase public awareness of shorebirds and of threats to them.

In the Northeast, the North Atlantic Regional Shorebird Plan (USFWS 2004b) was drafted to step-down the goals of the continental plan to smaller scales to identify priority species, species goals, habitats, and prioritize implementation projects. We used both plans in developing our objectives and strategies for goals 1 and 3.

Partners-in-Flight Bird Conservation Plan: Physiographic Area 44, Mid-Atlantic Coastal Plain (1999)

Partners in Flight (PIF) began in 1990 as a voluntary, international coalition of government agencies, conservation organizations, academic institutions, private industries, and citizens, dedicated to reversing the population declines of bird species. The mission of PIF is to help species at risk, keep common birds common, and encourage voluntary partnerships for birds, habitats, and people (PIF 2009). The foundation of PIF's long-term strategy is a series of scientifically based bird conservation plans using physiographic areas as planning units. The plan for each physiographic area ranks bird species according to their conservation priority, describes their desired habitat conditions, develops biological objectives, and recommends conservation measures. The priority ranking factors include habitat loss, population trends, and the vulnerability of a species and its habitats to regional and local threats.

Supawna Meadows NWR lies in Physiographic Area 44, the Mid-Atlantic Coastal Plain. The PIF plan for this region was completed in 1999 (Watts 1999). We used this plan in compiling appendix A and to help develop our habitat goals, objectives, and management strategies for the refuge.

Mid-Atlantic/ Southern New England Bird Conservation Region (BCR 30) Final Implementation Plan (2008)

Bird Conservation Regions (BCRs) originated from the North American Bird Conservation Initiative (NABCI). NABCI is a coalition of many governmental agencies, private organizations, academic organizations, and private industry leaders in Canada, the United States, and Mexico (NABCI 2009). It was formed to address the need for coordinated bird conservation that will benefit all birds in all habitats. NABCI's approach to bird conservation is regionally based, biologically driven, and landscape-oriented. It fills in knowledge gaps, implements conservation actions through dynamic partnerships, and draws together the major bird conservation plans already in existence for waterbirds, shorebirds, waterfowl, and landbirds. NABCI members developed BCRs to facilitate regional planning efforts. The primary purposes of BCRs are to facilitate communication among the bird conservation initiatives; facilitate a regional approach to bird conservation; promote new, expanded, or restructured partnerships; and identify overlapping or conflicting conservation priorities. BCRs are ecologically distinct regions in North America with similar bird communities, habitats, and resource management issues. There are 67 BCRs across the United States, Canada, and Mexico.

Supawna Meadows NWR lies within BCR 30, which includes portions of 10 states and covers approximately 24.4 million acres. Members of the ACJV have developed the Mid-Atlantic/Southern New England Bird Conservation Region (BCR 30) Final Implementation Plan to guide conservation priorities in the region (ACJV 2008). The purpose of this plan is to bring the common goals of many other regional plans (e.g., State Wildlife Action Plans, Partners in Flight Bird Conservation Plan for the Mid-Atlantic Coastal Plain [Physiographic Area 44], U.S. Shorebird Conservation Plan) together into one format that can be used by state agencies, non-governmental organizations, and other bird conservation interests to implement bird conservation activities. The plan identifies the bird species and habitats in greatest need of conservation action in the region, activities thought to be most useful to address those needs, and geographic areas believed to be the most important places for work to occur. It identifies Supawna Meadows NWR as part of a focus area (i.e., important bird area) important to a broad range of shorebirds, waterfowl, and landbirds within BCR 30. We used this plan to help develop objectives and strategies for goals 1 and 2, and to help create appendix A.

The Pea Patch Island Heronry Region: Special Area Management Plan (1998)

Pea Patch Island is a small island located in the mid-channel of the Delaware River near its entrance into Delaware Bay. It is a low, marshy island currently owned by the State of Delaware as Fort Delaware State Park (see map 1.2). Pea Patch Island is home to the largest wading bird colony on the Atlantic Coast of the United States. The Delaware River, wetlands, and uplands that surround the island support the foraging habits of these birds. The birds nest on the island from March to September and depend on the region's natural resources during this time. The Pea Patch Island Heronry Region Special Area Management Plan (SAMP) was published in July 1998 (Delaware Department of Natural Resources and Environmental Control 1998). The purpose of the SAMP was to outline a broad, ecosystem-based approach to protecting and improving the resources that support the Pea Patch Island Heronry, to build knowledge about the heronry, and to ensure the commitments necessary for its long-term protection. The development of the SAMP was a consensus-based effort involving representatives from Federal, State and local government agencies, nonprofit organizations, and industry. The SAMP identifies several issues that may positively or negatively affect the health of the heronry population and surrounding area, and uses these issues to guide the development and ranking of 28 management strategies. Birds breeding on Pea Patch Island frequently use the refuge to rest and forage. We used this plan to help develop our habitat goals, objectives, and management strategies for the refuge.

National - State Agency Herpetological Conservation Report (Draft 2004)

The National State Agency Herpetological Conservation Report (NHCR) is a summary report sponsored by Partners in Amphibian and Reptile Conservation (PARC 2004). Partners in Amphibian and Reptile Conservation (PARC) was created in response to the increasing national declines in amphibian and reptile populations. PARC members come from state and Federal agencies, conservation organizations, museums, the pet trade industry, nature centers, zoos, the power industry, universities, herpetological organizations, research laboratories, forest industries, and environmental consultants. Its five geographic regions - Northeast, Southeast, Midwest, Southwest, and Northwest - focus on national and regional herpetofaunal conservation challenges. Regional working groups allow for region-specific communication.

The NHCR provides a general overview of each state wildlife agency's support for reptile and amphibian conservation and research, and includes lists of the amphibian and reptile species of concern for each state. Its purpose is to facilitate communication among state agencies and partner organizations throughout the PARC network to identify and address regional and national priorities for reptiles and amphibians. PARC intends to expand the scope of the NHCR to include other states, provinces, and territories. It would also include other state agencies that are supporting conservation and research on amphibians and reptiles, such as transportation departments, park departments, and forest agencies. We used the latest draft NHCR plan in developing objectives and strategies for goals 1 through 3, and in developing appendix A.

U.S. Fish and Wildlife Service Fisheries Program Northeast Region Strategic Plan (2009)

The Service's Fisheries Program maintains healthy populations of coastal and anadromous fish, fish species that cross state or national boundaries, and endangered aquatic animals and their habitats. In 2002, working with its many partners in aquatic conservation through the Sport Fishing and Boating Partnership Council's Fisheries Steering Committee, the Service completed its Strategic Vision (Vision) document, "Conserving America's Fisheries, U.S. Fish and Wildlife Service Fisheries Program Vision for the Future" (USFWS 2002a). The document includes goals, objectives, and action items on a national programmatic scale.

The Service's original Northeast Region Strategic Plan (USFWS 2004c) is an extension of our Fisheries Program Strategic Vision document (USFWS 2002a), describing more specifically how the Northeast Region will fulfill the goals and objectives identified in this document over 5 years (2004 through 2008). This plan, developed in cooperation with over 40 partners and stakeholders, addresses the decline of fish populations and other aquatic resources, and the economic impact of those declines. The plan is implemented with partners through annual project work plans.

Recently, the Service updated the plan (USFWS 2009b) to address the years 2009 to 2013. The updated plan uses a more transparent process to show partners and other members of the public how we arrived at various priorities. We have consulted with the Northeast Region's Fisheries Program staff and used this plan in developing aquatic objectives and strategies under goals 1 and 2, and in creating appendix A.

Regional Wetlands Concept Plan - Emergency Wetlands Resources Act (USFWS 1990)

In 1986, Congress enacted the Emergency Wetlands Resources Act to promote the conservation of our nation's wetlands. This act directed the Department of the Interior to develop a National Wetlands Priority Conservation Plan identifying the location and types of wetlands that should receive priority attention for acquisition by Federal and state agencies.

In 1990, the Service's Northeast Region completed a Regional Wetlands Concept Plan to provide more specific information about wetlands resources in the Northeast. It identifies nearly 850 wetland sites that warrant consideration for acquisition to conserve wetland values in this region. A portion of one of these sites, Mannington Meadow, is included within the refuge boundary. We used this plan to help guide management strategies for this and other wetlands within the refuge.

U.S. Fish and Wildlife Service Indiana Bat Draft Recovery Plan: First Revision (2007)

In 1967, the Federal Government listed the Indiana bat (Myotis sodalis) as endangered because of declines in their numbers documented at seven major hibernacula in the Midwest. At the time of their listing, Indiana bats numbered around 883,300. Surveys in 2005 numbered the population at 458,332. Although population numbers are down, surveys in most states' hibernation sites indicated that populations increased or at least remained stable in 2004 and 2005.

In 2006, the first evidence of a new illness affecting cave-dwelling bats was detected (USFWS 2009c). While the causative agent of this illness is still in question, it is called white-nose syndrome because affected bats usually have a white fungus on their muzzles and other parts of their bodies. Bats with white-nose syndrome frequently lack adequate body fat to survive until spring and exhibit uncharacteristic behavior, such as flying during the day or flying when they would normally be hibernating. Smaller bats, such as Indiana bats, appear to be more susceptible to white-nose syndrome than larger bats.

Since the initial detection in 2006, white-nose syndrome has been detected from Vermont to Virginia. In some affected hibernacula, 90 to 100 percent of the bats are dying. Preliminary estimates of the Northeast Region's Indiana bat population indicate that the population has declined approximately 30 percent between 2007 and 2009 (USFWS 2009c).

Long-term effects of this illness on bat species are unknown, but it is possible that entire bat species, including the Indiana bat, may become extinct. Supawna Meadows NWR is home to a maternity colony of about 1,500 bats that use a barn on the refuge. We conducted surveys of the maternity colony in 2004, 2007, and 2008. Using mist nets and harp traps, approximately 250 bats were captured and identified. The majority of bats were little brown bats (Myotis lucifugus), a small number were big brown bats (Eptesicus fuscus). We have not confirmed that any of the bats from the Supawna Meadows NWR site have white-nose syndrome and the colony is not showing signs observed at maternity colonies in affected areas. Signs of white-nose syndrome observed at other maternity colonies include malformed pups, large numbers of dead pups, and little to no reproduction (Scherer 2009 personal communication).

While no Indiana bats have been documented at the Supawna Meadows NWR, the refuge's forested and upland habitats have a potential for supporting wintering, foraging, and roosting habitats for Indiana bats. The Service would implement recovery plan tasks (USFWS 2007a) for this species, as appropriate, if the Indiana bat was documented within the refuge boundary.

National Marine Fisheries Service Final Recovery Plan for the Shortnose Sturgeon (1998)

Shortnose sturgeon (Acipenser brevirostrum) was listed as endangered in 1967 under the Endangered Species Preservation Act (32 FR 4001). The original listing did not specify reasons for the decline, but subsequent documents cite water pollution and overfishing, including bycatch in the shad fishery, as principal reasons for the species' decline (NMFS 1998). The National Marine Fisheries Service (NMFS) currently recognizes 19 distinct population segments, including one population in the Delaware River (NMFS 1998). While the Delaware River is not included within the refuge boundary, the river and several

tributaries form part of the refuge's border. Therefore, activities occurring on the refuge could have minimal effects on the shortnose sturgeon habitat. We used this plan to help guide management strategies for refuge habitat to ensure potential effects on adjacent sturgeon habitat are neutral or wholly beneficial.

The Landscape Project, New Jersey Endangered and Nongame Species Program, New Jersey Department of Environmental Protection (2002)

In 1994, the New Jersey Division of Fish, Game, and Wildlife's Endangered and Nongame Species Program (ENSP) adopted a landscape-level approach to rare species protection. The goal is to protect New Jersey's biological diversity by maintaining and enhancing rare wildlife populations within healthy, functioning ecosystems. Five landscape regions have been identified. Supawna Meadows NWR lies within the Piedmont Plains Region. Using an extensive database that combines rare species location information with land cover data, the ENSP has identified and mapped areas of critical habitat for rare species (i.e., State-listed and federally listed threatened or endangered species) within each landscape region. Critical areas are ranked by priority. A geographic information system (GIS) database provides baseline information to conservation partners for help in prioritizing habitat protection, open space acquisition, and land management planning. This information was utilized in our land protection planning.

Comprehensive Conservation and Management Plan for the Delaware Estuary (1996)

The Delaware Estuary is faced with continuing threats from toxic substances, habitat loss and fragmentation, and human development. To help address these threats, the Delaware Estuary Program worked with many partners to develop the Comprehensive Conservation and Management Plan (CCMP) for the Delaware Estuary (Delaware Estuary Program 1996). The CCMP is a comprehensive document describing the existing conditions of the Delaware Estuary and providing seven action plans (land management, water use management, habitat and living resources, toxics, education and involvement, and monitoring) and an implementation plan. While the Delaware Estuary Program has since merged with the Partnership for the Delaware Estuary, this reorganized entity is still active and is now responsible for addressing the various actions identified in the CCMP. We used this plan as a reference in developing habitat management and land protection planning objectives.

Establishing Authority and Refuge Purposes

Refuges can be established by Congress through special legislation, by the President through Executive Order, or administratively by the Secretary of the Interior (delegated to the Director of the Service), who is authorized by Congress through legislation. Refuge System lands may be acquired under a variety of legislative and administrative authorities.

Supawna Meadows NWR Establishing Authority

Supawna Meadows NWR was originally established as an addition to the Killcohook Migratory Bird Refuge. Killcohook Migratory Bird Refuge was established by Executive Order 6582 on February 3, 1934. In 1971, the Service purchased 653 acres from the Philadelphia Conservationists (now known as the Natural Lands Trust). These acres were called the Goose Pond addition to the Killcohook Migratory Bird Refuge. On April 10, 1974, the Service renamed these 653 acres as the Supawna Meadows National Wildlife Refuge and officially separated this land from Killcohook Migratory Bird Refuge. On October 30, 1998, the Service's jurisdiction over Killcohook Migratory Bird Refuge was revoked. The Service has acquired interests in over 2,300 additional acres for this refuge since 1971. Killcohook Migratory Bird Refuge is now called the Killcohook Coordination Area, and is used by the U.S. Army Corps of Engineers (ACE) to deposit dredged soil.

Supawna Meadows NWR Purposes

Refuge purposes are specified in or derived from the laws, proclamations, executive orders, agreements, public land orders, donation documents, or administrative memoranda, that establish, authorize, or expand a refuge, refuge unit, or refuge subunit.

Supawna Meadows NWR was established for the following purposes:

- as property with particular value in carrying out the national migratory bird management program (The Transfer of Certain Real Property for Wildlife Conservation Purposes Act, as amended [16 U.S.C. §667b-667d; 62 Stat. 240]);
- for use as an inviolate sanctuary, or for any other management purpose, for migratory birds (The Migratory Bird Conservation Act [16 U.S.C. §715D]); and
- as a refuge suitable for (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species (Refuge Recreation Act, as amended [16 U.S.C. 460k-1]).

Refuge Vision Statement

Our team developed the following vision statement to provide a guiding philosophy and sense of purpose for our planning effort:

> Supawna Meadows National Wildlife Refuge will continue to provide essential tidal marsh habitat to feed and shelter migrating waterfowl and to feed nearby colonial-nesting wading birds, thereby maintaining its significant role as part of the Delaware Bayshore system of wetlands and upland buffers that is one of the most important migratory bird habitats in the nation.
>
> The refuge will continue to serve as an oasis of native biotic communities within sight of the burgeoning industrial, transportation, and residential developments of the lower Delaware River Basin and South Jersey by providing an array of wetland and upland habitats that support a diverse community of breeding and migrating birds, native mammals, and other species.
>
> Refuge visitors will be able to hunt and fish, observe and photograph wildlife, and learn of the ecological importance and diversity of wildlife at Supawna National Wildlife Refuge. They will understand the refuge as part of a larger network of protected lands within the National Wildlife Refuge System, set aside specifically for wildlife.

Refuge Goals

Our planning team developed the following goals for the refuge after a review of legal and policy guidelines, the Service mission, regional plans, refuge purposes, our vision for the refuge, and public comments. All of these goals fully conform with and support national and regional mandates and policies.

Goal 1: Protect, enhance, and restore biological integrity, diversity, and environmental health of tidally influenced habitats to support native wildlife and plant communities including species of conservation concern.

Goal 2: Protect, enhance, and restore biological integrity, diversity and environmental health of upland habitats to support native wildlife and plant communities with emphasis on migrating and wintering birds and other species of concern.

Goal 3: Protect, enhance, and restore biological integrity, diversity, and environmental health of non-tidal wetland habitats to support native wildlife and plant communities with emphasis on breeding, migrating, and overwintering birds and other species of conservation concern.

Goal 4: Provide opportunities for compatible high-quality, wildlife-dependent public uses.

Goal 5: Protect cultural resources on the refuge.

Goal 6: Enhance refuge management through partnerships, friends, volunteers, and community outreach.