U.S. Fish and Wildlife Service

Cape May National Wildlife Refuge

Hunting and Fishing Plan

August 2021

Shorebirds on the Delaware Bay – Laurel Wilkerson/USFWS

Cape May National Wildlife Refuge
Hunting and Fishing Plan

August 2021

U.S. Fish and Wildlife Service

Cape May National Wildlife Refuge
24 Kimbles Beach Road
Cape May Court House, NJ 08210

Submitted By:
Project Leader

BRIAN BRAUDIS Digitally signed by BRIAN BRAUDIS
Date: 2021.08.13 12:31:08 -04'00'

Signature Date

Concurrence:
Refuge Supervisor

GRAHAM TAYLOR Digitally signed by GRAHAM TAYLOR
Date: 2021.08.13 16:49:41 -04'00'

Signature Date

Approved:
Regional Chief
National Wildlife Refuge System

SCOTT KAHAN Digitally signed by SCOTT KAHAN
Date: 2021.08.20 15:09:57 -04'00'

Signature Date

Table of Contents

Appendices

CAPE MAY NATIONAL WILDLIFE REFUGE
HUNTING AND FISHING PLAN

I. Introduction

National wildlife refuges are guided by the mission and goals of the National Wildlife Refuge System (Refuge System), the purposes of an individual refuge, U.S. Fish and Wildlife Service (Service) policy, and laws and international treaties. Relevant guidance includes the National Wildlife Refuge System Administration Act of 1966 (NWRSAA), as amended by the Refuge System Improvement Act of 1997, Refuge Recreation Act of 1962, and selected portions of the Code of Federal Regulations and Fish and Wildlife Service Manual.

Cape May National Wildlife Refuge (NWR, refuge) was established on January 20, 1989, under the authority of the Fish and Wildlife Act of 1956 (16 U.S.C. 74a-742j; stat 1119), as amended. Additional lands have been added under authorities of the Migratory Bird Conservation Act (16 U.S.C. §715d), the Emergency Wetlands Resources Act of 1986 (16 U.S.C. §3901(b), 100 Stat. 3583), and the Transfer of Certain Real Property for Wildlife Conservation Purposes Act, 1972, as amended (16 U.S.C. §667b 667d; 62 Stat. 240).

The primary purposes of Cape May NWR are 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);

- "...the development, advancement, management, conservation, and protection of fish and wildlife resources...." The Fish and Wildlife Act of 1956 (16 U.S.C. §742f(a)(4);

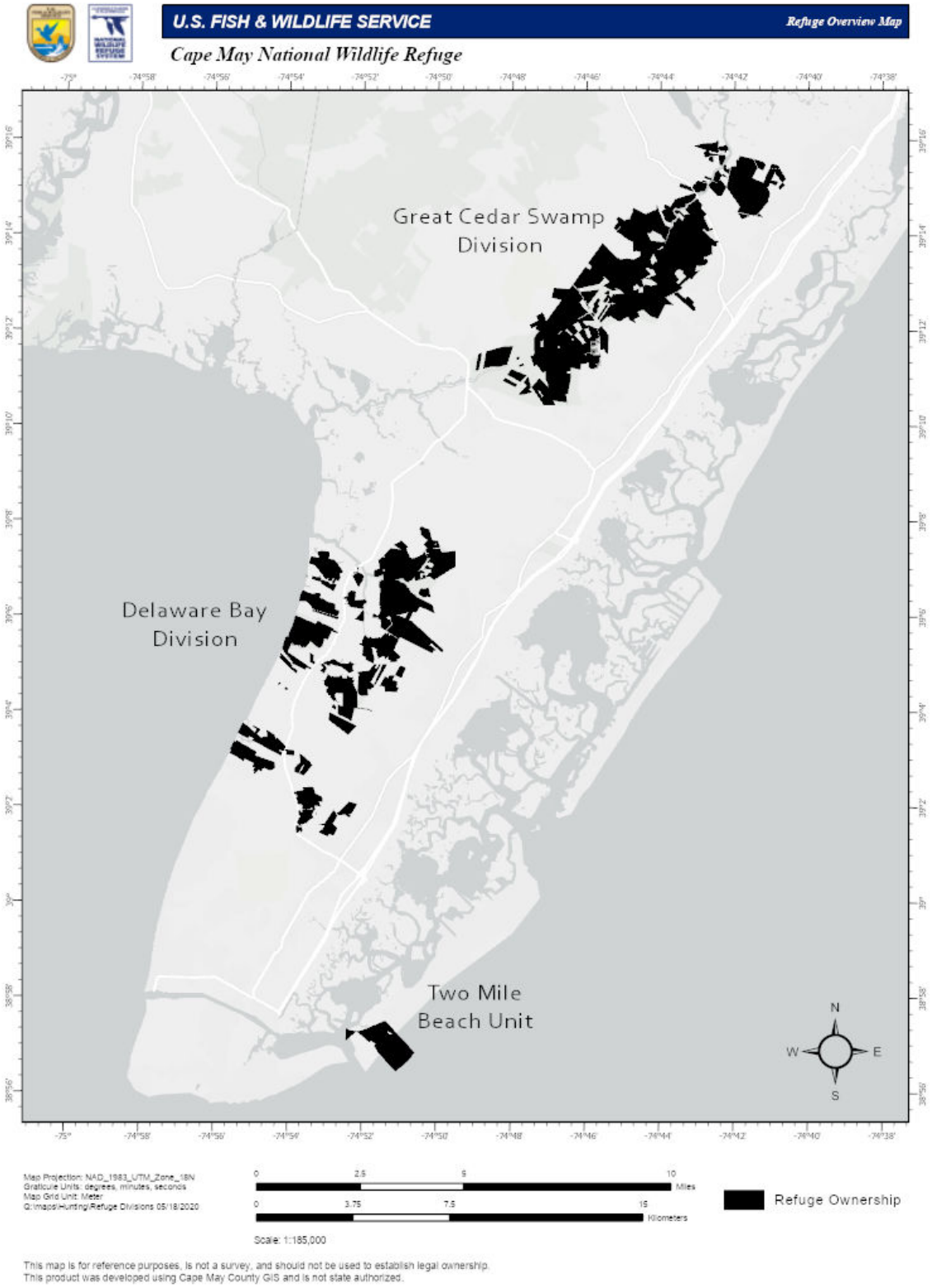
- "...the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations (regarding migratory birds)... "Emergency Wetlands Resources Act of 1986 (16 U.S.C. §3901(b), 100 Stat. 3583).

The purpose of Cape May NWR's Two Mile Beach Unit is:

> "...particular value in carrying out the national migratory bird management program" The Transfer of Certain Real Property for Wildlife Conservation Purposes Act, 1972, as amended (16 U.S.C. §667b-667d; 62 Stat. 240).

Cape May Refuge is located in Cape May County, New Jersey and includes three primary areas: the Delaware Bay Division, Great Cedar Swamp Division, and Two Mile Beach Unit (Figure 1). The refuge acquisition area is within the New Jersey Coastal Area Facilities Review Act (CAFRA) Zone and within the Service's Twin Capes Project area (Cape May, NJ and Cape Charles, VA). It is partially within the Pinelands National Reserve, Great Egg Harbor National Scenic and Recreational River, and Cape May Migratory Bird Stopover Project. Delaware Bay wetlands within the refuge are designated as Wetlands of International Importance under the Ramsar Convention. Delaware Bay is also a Western Hemisphere Shorebird Reserve Network site.

Figure 1: Refuge ownership map.



The Service proposes to open and expand big game, upland game, and migratory game bird hunting, and maintain opportunities for recreational fishing at Cape May NWR. The proposed uses would better align the refuge with State programs and would provide quality wildlife-dependent recreational uses to the public.

The mission of the Refuge System, as outlined by the NWRSAA and amended by the Refuge System Improvement Act (16 U.S.C. 668dd et seq.), 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."*

The NWRSAA mandates the Secretary of the Interior in administering the Refuge System to (16 U.S.C. 668dd(a)(4):

- Provide for the conservation of fish, wildlife, and plants, and their habitats within the Refuge System;

- Ensure that the biological integrity, diversity, and environmental health of the Refuge System are maintained for the benefit of present and future generations of Americans;

- Ensure that the mission of the Refuge System described at 16 U.S.C. 668dd(a)(2) and the purposes of each refuge are carried out;

- Ensure effective coordination, interaction, and cooperation with owners of land adjoining refuges and the fish and wildlife agency of the States in which the units of the Refuge System are located;

- Assist in the maintenance of adequate water quantity and water quality to fulfill the mission of the Refuge System and the purposes of each refuge;

- Recognize compatible wildlife-dependent recreational uses as the priority general public uses of the Refuge System through which the American public can develop an appreciation for fish and wildlife;

- Ensure that opportunities are provided within the Refuge System for compatible wildlife-dependent recreational uses; and

- Monitor the status and trends of fish, wildlife, and plants in each refuge.

Therefore, it is a priority of the Service to provide for wildlife-dependent recreation opportunities, including hunting and fishing, when those opportunities are compatible with the purposes for which the refuge was established and the mission of the Refuge System.

The Service proposes to expand hunting and fishing opportunities at Cape May NWR to better align with New Jersey's State programs. We propose the following changes to the existing hunting plan:

Species changes:

- Propose opening hunting to coyote, fox, groundhog (referred to as woodchuck by State regulations), grouse (when a State grouse season is permitted), pheasant, and crow.
- Hunting for upland game species will begin with the start of the State early woodcock south zone season and will continue through the duration of the State season for each species. Groundhog hunting will close at the end of the State groundhog Bow or Shotgun season (approximately February 15).

Huntable Acreage:

Table 1. Current Huntable Acreage and Species

	Current Huntable Acreage (2020)	Proposed Huntable Acreage (2021)
Deer	11,264	12,020
Turkey	4,565	4,569
Migratory game birds	5,858	6,020
Rabbit	5,858	12,020
Squirrel	5,858	12,020
Pheasant	0	12,020
Coyote/fox	0	12,020
Woodchuck	0	12,020

Method of take changes:

- Propose aligning the method of take consistent with New Jersey regulations.
- Propose allowing hunting with dogs.
- Propose only Federally approved, non-toxic shot to be used in compliance with existing refuge regulations for all additional upland game hunting (excluding turkey hunting).

Hunter orange: Currently in alignment

Fishing changes: Propose the use of lead fishing tackle to be prohibited on the refuge beginning September 2026.

Permit Fees: None

II. Statement of Objectives

The objectives of a hunting and fishing program on Cape May NWR are to:

- Provide the public with a high-quality recreational experience on refuge lands and increase opportunities and access for hunters and anglers;
- Design a hunting and fishing program that is administratively efficient and manageable with existing staffing levels;
- Implement a hunting and fishing program that is safe for all refuge users; and
- Design a hunting and fishing program that aligns with refuge habitat management objectives.

Hunting and fishing are consistent with the refuge's Comprehensive Conservation Plan's (CCP 2004) goal to provide opportunities for compatible quality wildlife-dependent public uses.

III. Description of Hunting and Fishing Programs

A. Areas to be Opened to Hunting and Fishing

Cape May NWR totals 12,652 acres (Figure 1), of which 12,020 acres of the refuge would be open for hunting. Specific units open to hunting would be east of Highway 47 (3,842 acres), west of Highway 47 (1,451 acres) (Figure 2), north of Highway 550 (4,569 acres), and south of Highway 550 (2,158 acres) (Figure 3). The Two Mile Beach Unit (520 acres) would remain closed to hunting. Fishing would be permitted in the Two Mile Beach Unit. Designated fishing areas within the unit would include the coastal waters and the area along the Cold Spring Inlet (Figure 4). Hunting and fishing on the refuge will be conducted in accordance with all relevant Federal and State regulations, and supplemented by refuge-specific regulations (50 CFR 32.49).

B. Species to be Taken, Hunting/Fishing Periods, Access

White-tailed deer – Deer may be hunted in all areas open to hunting on the refuge. The refuge is open for all six State Deer Management Zone 34 seasons including fall bow, permit bow, winter bow, 6-day firearm, permit shotgun, and permit muzzleloader, as well as youth deer hunt days.

Turkey – Turkey may only be hunted in the area north of Highway 550 during the fall State season. New Jersey Division of Fish and Wildlife (NJDFW) classifies turkey with small game.

Migratory Game Birds – Migratory game birds may be hunted in the areas north of Highway 550 and west of Highway 47. Species that may be hunted include light and dark goose, duck, sea duck, gallinule, coot, rail, snipe, crow, and woodcock. With the exception of

crow and snipe, hunting will be conducted during the State seasons. Crow and snipe hunting will begin with the start of the State early woodcock south zone season (usually early November), and will continue through the duration of the State season for each species.

Upland Game – Upland game species that may be hunted on the refuge include coyote, fox, groundhog (referred to as "woodchuck" by NJDFW), rabbit, squirrel, pheasant, and grouse. Grouse is currently not an open State season, though grouse hunting on the refuge will open if/when the State opens this season. These species may be hunted on all areas of the refuge open to public hunting. Hunting for upland game species will begin with the start of the State early woodcock south zone season and will continue through the duration of the State season for each species. Groundhog will close at the end of the State groundhog Bow or Shotgun season (approximately February 15). Night hunting will be prohibited. Only federally approved, non-toxic shot would be permitted for upland game hunting, in alignment with existing refuge regulations.

Hunting Access – The refuge will provide hunters access to all portions of the hunt areas. Hunting access is primarily by foot. The intention is to provide safe, quality hunting opportunities that consider the welfare of the refuge wildlife resources. All access points including hunter parking lots will be delineated on refuge hunt maps and included in the hunt brochures.

Fishing Access – The refuge provides shore access for fishing at the Cold Spring Inlet beach portion and the Atlantic Ocean portion of the Two Mile Beach Unit. The refuge does not permit shell fishing or crabbing. Both fishing areas are easily accessed by public roads. Fishing access is provided from 1-hour before sunrise until 1-hour after sunset. The Atlantic Ocean portion is open for fishing from October 1 to March 31 each year, and the Cold Spring Inlet beach portion of the Two Mile Beach Unit will be open for fishing year-round. The beach closure at the Atlantic Ocean portion from April 1 to September 30 is essential to protect beach-nesting birds such as American oystercatcher, black skimmer, least tern, and piping plover. It is also important to provide a disturbance-free environment for shorebirds that migrate thousands of miles such as red knot, ruddy turnstone, and sanderling. Unlike most coastal areas that are owned by the State of New Jersey and subject to State riparian rights, the Service owns those portions of the Two Mile Beach Unit that extend into the Atlantic Ocean and Cold Spring Inlet. Fish commonly found in the tidal areas include weakfish, summer flounder, bluefish, and black sea bass. Fishing on the refuge would be permitted in accordance with all relevant State regulations. The use of lead fishing tackle would be restricted on the refuge beginning September 2026. The lead restriction for fishing tackle on Cape May NWR will be implemented over a 5-year phase-in period with a complete ban beginning September 2026, allowing anglers time to adapt to the new regulations without diminishing fishing opportunities. The refuge will conduct education programs and provide information during this transition period explaining the benefits to fish and wildlife.

Figure 2: Delaware Bay Division hunting map

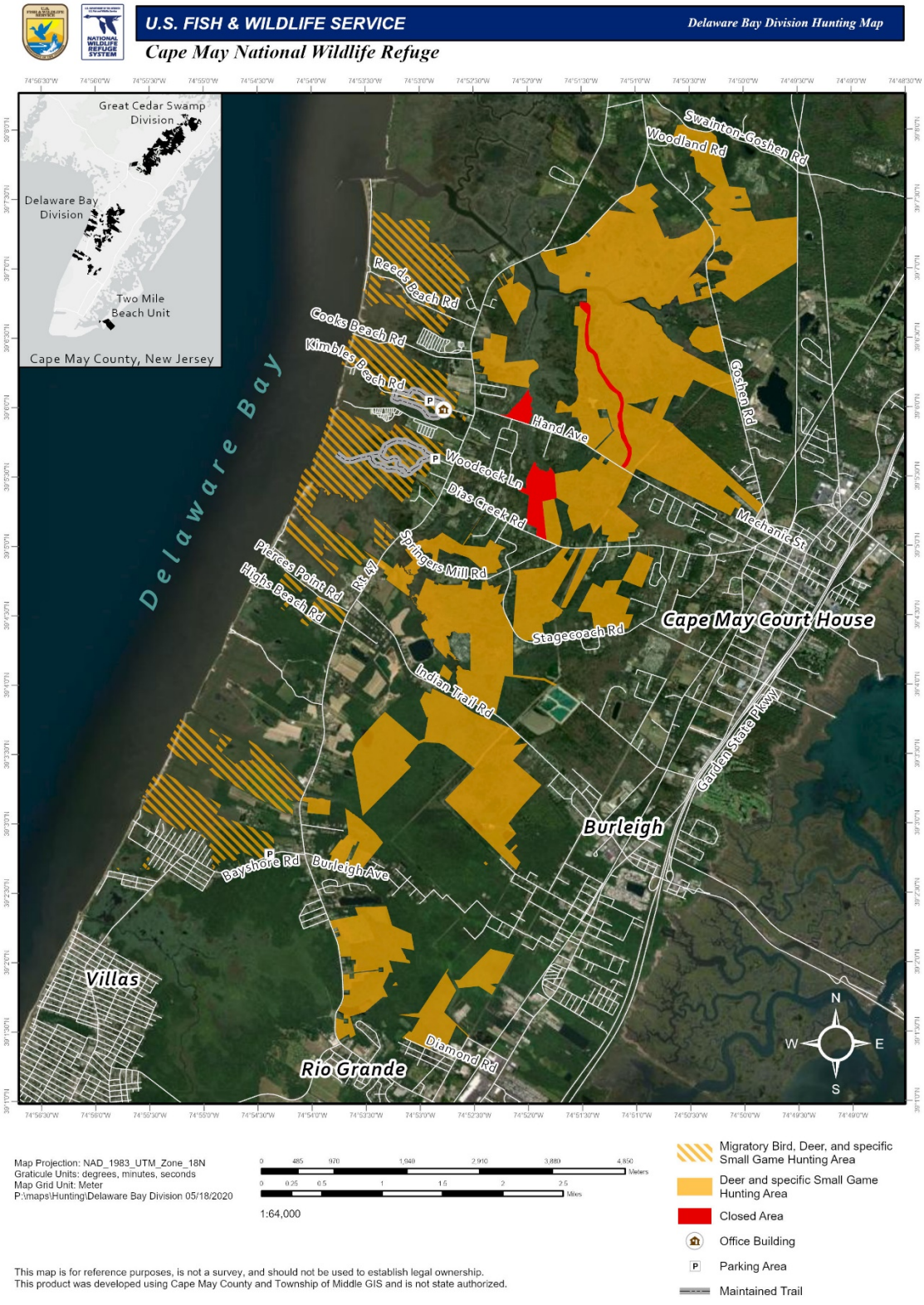


Figure 3. Great Cedar Swamp Division hunting map

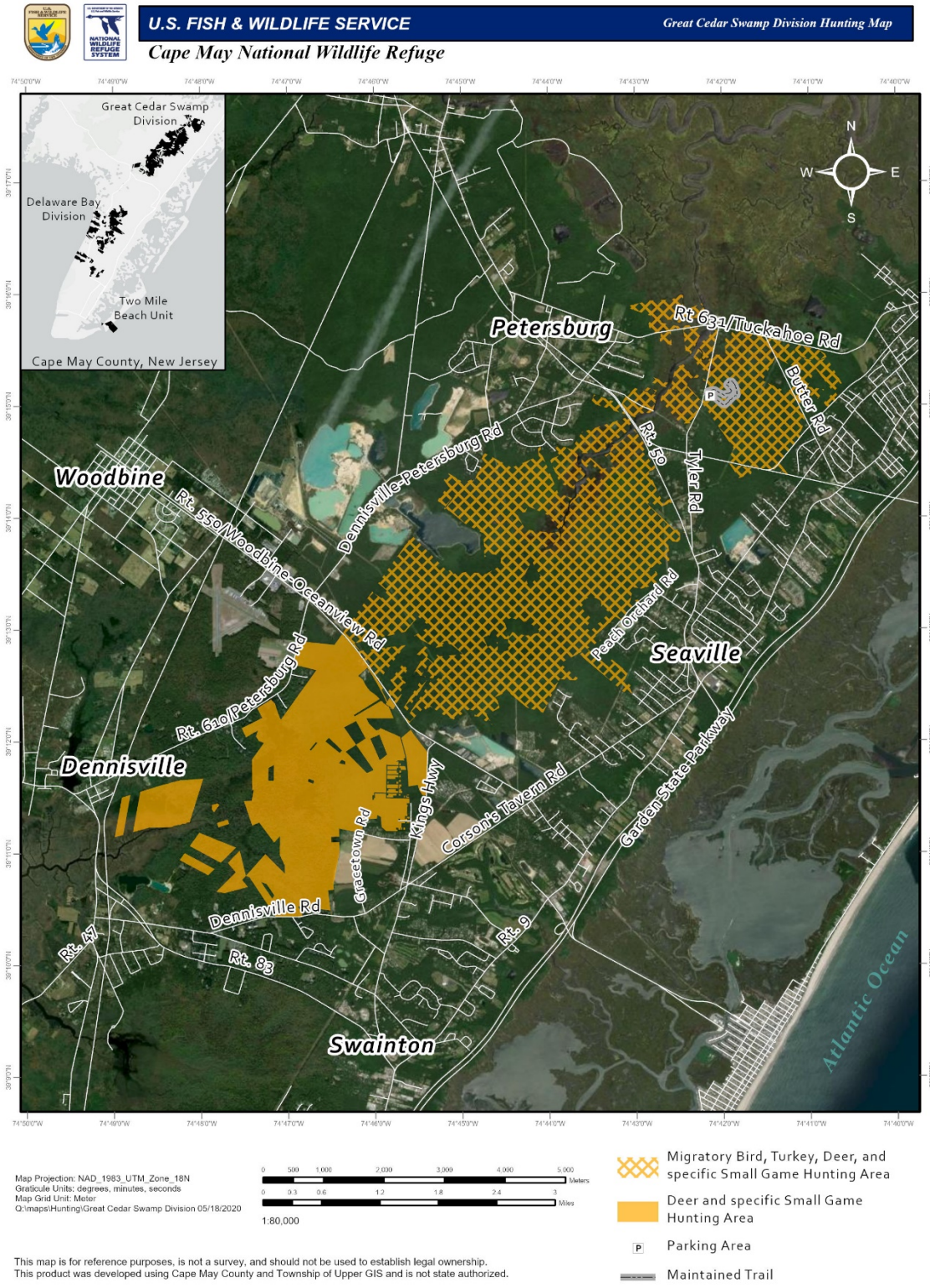


Figure 4: Two Mile Beach Unit fishing map

C. Permit Requirements

Hunters will be required to possess a State hunting license and all applicable stamps. Anglers are required to register with the State's saltwater registry program. There is no refuge-specific permit for hunting or fishing.

D. Consultation and Coordination with the State

National wildlife refuges, including Cape May NWR, conduct their hunting and fishing programs within the framework of State and Federal regulations. The refuge developed this hunting and fishing plan based on coordination with NJDFW. In developing this plan, the refuge reviewed the operations and regulations for neighboring State wildlife management areas to find consistency where possible. Refuge leadership consulted with the NJDFW Director David Golden in August 2020 to discuss proposed changes to the refuge's hunting and fishing plans. In October 2020, NJDFW provided a letter with formal comments to the proposed changes and these comments were considered while drafting the hunt and fish plan expansions.

Refuge staff will continue to consult and coordinate with NJDFW to maintain consistent regulations and programs, monitor populations of proposed hunt species, and set harvest goals. We will also work together to ensure safe and enjoyable recreational hunting and fishing opportunities, with law enforcement officers from both agencies cooperating to conduct patrols, safeguard hunters and visitors, and protect both game and nongame species.

E. Law Enforcement

Refuge law enforcement officers work closely with State Conservation Officers (COs), as well as other State and local police departments. Federal Wildlife Officers patrol the refuge during hunting and fishing seasons. Refuge and hunt area boundaries are clearly mapped and will be clearly posted as resources allow. The refuge will answer questions from hunters and listen to feedback on the hunt program.

F. Funding and Staffing Requirements

The Refuge Recreation Act requires that funds be available for the development, operation, and maintenance of hunting and fishing programs. Annual hunting and fishing administration costs for Cape May NWR including salary, equipment, law enforcement, brochures, collection of hunt and fish data and analysis of biological information, maintenance of sites/parking, communication with the public, etc. totals approximately $48,000. Refuge staff are funded from the refuge's operational budget to support the hunting and fishing programs. Costs associated with updating signage and maintaining access are funded by the operational budget as well (through maintenance funds, as appropriate). The operating cost is expected to be approximately $48,000. A breakdown of estimated expenses follows:

Table 2. Funding and Staffing Requirements for Refuge Hunting and Fishing Programs

Identifier	Cost
Staff (Biologist, Maintenance Worker, and Refuge Manager)	$15,000
Maintain roads, parking lots, trails*	$3,500
Materials and handouts	$1,500
Signs and boundary posting	$6,000
Law Enforcement	$22,000
Total Annual Cost	**$48,000**

**Refuge trails and roads are maintained for a variety of activities. Costs shown are a percentage of total costs for trail/road maintenance on the refuge and are reflective of the percentage of trail/road use for hunting and fishing. Volunteers account for some maintenance hours and help to reduce overall cost of the program.*

It is anticipated that funding within the regular Operations and Maintenance budget of Cape May NWR to conduct annual hunting and fishing programs at the refuge would continue to be sufficient in the future.

IV. Conduct of the Hunting and Fishing Program

A. Permit Application, Selection, and/or Registration Procedures

No refuge-specific permit or fees will be required to hunt or fish on Cape May NWR. All required State permits must be in the hunter's possession while hunting on the refuge. Check stations will not be established on the refuge, although hunters will be required to take their harvest to designated "check-in stations" as specified by NJDFW regulations. Anglers are required to register with the State's saltwater registry program.

B. Refuge-Specific Hunting and Fishing Regulations

To ensure compatibility with refuge purposes and the mission of the Refuge System, hunting and fishing must be conducted in accordance with State and Federal regulations, supplemented by refuge-specific regulations detailed in the Code of Federal Regulations (50 CFR 32.49) and information sheets/brochures. The use of non-toxic ammunition is proposed for upland game hunting opportunities and will be required upon implementation of this plan in 2021. Furthermore, to move towards the reduction and future elimination of the threat from lead on the refuge, we will be implementing a lead tackle ban with fishing over a 5-year period to educate and work with anglers on non-toxic alternatives. The complete ban will begin in September 2026. The refuge staff will provide information to assist in a valuable transition period that benefits fish, wildlife, and people. We will continue to encourage use of non-toxic ammunition for other hunts and will educate hunters and anglers about lead and its impacts. Stipulations to ensure compatibility are further detailed in the Hunting and Fishing Compatibility Determinations (Appendix A and B). The following procedures apply at Cape May NWR:

- Permanent stands and blinds are prohibited. Hunters must remove all hunting stands, boats, blinds, hunting materials, and decoys at the end of the hunting day, except deer hunting stands which must be removed at the end of the deer hunting season.

- Access hours for hunting on the refuge are from 1 hour before sunrise until 1 hour after sunset. Night fishing and hunting is prohibited.

- Dog training is prohibited at all times.

- Falconry is prohibited.

- Shell fishing and crabbing is prohibited.

- Fishing on the Atlantic Ocean portion of the Two Mile Beach Unit is prohibited from April 1 to September 30 each year.

- The use of lead fishing tackle will be prohibited on the refuge beginning September 2026. The lead restriction for fishing tackle will be implemented over a 5-year phase-in period.

- Only federally approved, non-toxic shot would be permitted for upland game hunting, in alignment with existing refuge regulations.

C. Relevant State Regulations

The refuge conducts its hunting program within the framework of State and Federal regulations. Hunting and fishing on the refuge are at least as restrictive as the State of New Jersey and in some cases more restrictive. Additionally, the refuge coordinates with the State as needed to maintain regulations and programs that are consistent with the State's management programs.

D. Other Refuge Rules and Regulations for Hunting and Fishing

- Sunday hunting is prohibited.

V. Public Engagement

A. Outreach for Announcing and Publicizing the Hunting and Fishing Programs

The refuge maintains a mailing list of local newspapers, radio, and websites for news release purposes. Special announcements and articles may be released in conjunction with hunting and fishing seasons. In addition, information about the hunting and fishing programs will be available at Cape May NWR headquarters or on the refuge website.

The plan has been thoroughly coordinated with all interested and/or affected parties, including NJDFW staff. On April 14, 2021, we distributed a press release to news organizations and alerted the public about the availability of the draft Hunting and Fishing Plan, with the Compatibility Determinations (CD) and Environmental Assessment (EA). No public meetings were held due to restrictions on public gatherings due to COVID-19. The public comment period ended on July 6, 2021, a total of 83 days. We informed the public

through local venues, the refuge website, and social media.

B. Anticipated Public Reaction to the Hunting and Fishing Programs

Based on comments received during the CCP process in 2004, little negative public reaction is expected. Some conflicts between consumptive and non-consumptive users are likely, especially due to the strong wildlife observation connection and draw for bird migration in Cape May; however, as hunting and fishing are existing uses on the refuge, the public reaction is anticipated to be minimal. Hunting is an important economic and recreational use of New Jersey's natural resources and has been conducted on the refuge for years. Fishing is a popular recreational and commercial activity in New Jersey and has been conducted on the refuge for years. A total of seven comment letters were submitted that offered input to the refuge on the draft Hunting and Fishing Plan, CDs and EA. Any comments and our responses can be found in the Finding of No Significant Impact (Appendix E).

C. How Hunters and Anglers Will Be Informed of Relevant Rules and Regulations

General information regarding hunting, fishing, and other wildlife-dependent public uses can be obtained at Cape May NWR headquarters at:

24 Kimbles Beach Road
Cape May Court House, NJ 08210

or by calling (609) 463-0994. Dates, maps, and requirements about hunting and fishing will be available on the station website at: *https://www.fws.gov/refuge/Cape_May/* and at the Refuge Headquarters.

VI. Compatibility Determination

Hunting, fishing, and all associated program activities proposed in this plan are compatible with the purposes of the refuge. See the attached Hunting Compatibility Determination (Appendix A) and Fishing Compatibility Determination (Appendix B).

COMPATIBILITY DETERMINATION

USE: Hunting

REFUGE NAME: Cape May National Wildlife Refuge

DATE ESTABLISHED: January 20, 1989

ESTABLISHING and ACQUISITION AUTHORITY:

Cape May National Wildlife Refuge (NWR, refuge) was originally established under the authority of the Fish and Wildlife Act of 1956 (16 U.S.C. 74a-742j; stat 1119), as amended. Additional lands have been added under authorities of the Migratory Bird Conservation Act (16 U.S.C. §715d), the Emergency Wetlands Resources Act of 1986 (16 U.S.C. §3901(b), 100 Stat. 3583), and the Transfer of Certain Real Property for Wildlife Conservation Purposes Act, 1972, as amended (16 U.S.C. §667b 667d; 62 Stat. 240).

REFUGE PURPOSE(S):

Cape May NWR was established for the following purposes:

> "...use as an inviolate sanctuary, or for any other management purpose, for migratory birds...." Migratory Bird Conservation Act (16 U.S.C. §715d);
>
> "...the development, advancement, management, conservation, and protection of fish and wildlife resources...." Fish and Wildlife Act of 1956 (16 U.S.C. §742f(a)(4);
>
> "...the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations (regarding migratory birds)... "Emergency Wetlands Resources Act of 1986 (16 U.S.C. §3901(b), 100 Stat. 3583).

The purpose of Cape May NWR's Two Mile Beach Unit is:

> "...particular value in carrying out the national migratory bird management program" Transfer of Certain Real Property for Wildlife Conservation Purposes Act, 1972, as amended (16 U.S.C. §667b-667d; 62 Stat. 240).

NATIONAL WILDLIFE REFUGE SYSTEM MISSION:

The mission of the National Wildlife Refuge System (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 System Improvement Act of 1997, Public Law 105-57).

DESCRIPTION OF USE:

(a) What is the use? Is the use a priority public use?
The use is public hunting of big game, upland game, and migratory game birds on Cape May NWR. Hunting was identified as one of six priority public uses of the Refuge System by the Refuge System Administration Act of 1966, as amended by the Refuge System Improvement Act of 1997 (Public Law 105-57), when found to be compatible.

(b) Where would the use be conducted?
Cape May NWR totals 12,652 acres (Figure 1 of the Hunting and Fishing Plan), with an updated hunting area of 12,020 acres. Areas open to hunting include the units east of Highway 47 (3,842 acres), west of Highway 47 (1,451 acres), north of Highway 550 (4,569 acres), and south of Highway 550 (2,158 acres). The Two Mile Beach Unit (520 acres) will continue to be closed to hunting.

(c) When would the use be conducted?
Hunting access hours are from 1 hour before sunrise until 1 hour after sunset. Night hunting will be prohibited.

Big Game
The refuge is open for all six State Deer Management Zone 34 seasons including fall bow, permit bow, winter bow, 6-day firearm, permit shotgun, and permit muzzleloader, as well as youth deer hunt days. Wild turkey hunting would be permitted during the fall State season. (New Jersey Division of Fish and Wildlife (NJDFW) classifies turkey with small game).

Upland Game
Upland game species that may be hunted on the refuge include coyote, fox, groundhog (referred to as woodchuck by NJDFW), rabbit, squirrel, pheasant, and grouse. These species may be hunted on all areas of the refuge open to public hunting. Hunting for upland game species will begin with the start of the State early woodcock south zone season, and will continue through the duration of the State season for each species. Groundhog will close at the end of the State groundhog Bow or Shotgun season (approximately February 15).

Migratory Game Birds
Species that may be hunted include light and dark goose, duck, sea duck, gallinule, coot, rail, snipe, crow and woodcock. Apart from crow and snipe, hunting will be conducted during the State seasons. Crow and snipe hunting will begin with the start of the State early woodcock south zone season (usually early November), and will continue through the duration of the State season for each species.

(d) How would the use be conducted?
We would continue to conduct the hunting program according to State and Federal Regulations, as well as refuge-specific regulations detailed in the Code of Federal Regulations (50 CFR 32.49). However, the refuge manager may, upon annual review of the hunting program, take the necessary steps to impose further restrictions, recommend that the refuge be closed to hunting, or further liberalize hunting regulations up to the limits of State regulations. We would restrict

hunting if it becomes inconsistent with other priority refuge programs or endangers refuge resources or public safety.

No refuge-specific permit or fees will be required to hunt on Cape May NWR. All required State permits must be in possession of the hunter while hunting on the refuge. Check stations will not be established on the refuge, although hunters will be required to take their harvest to designated "check-in stations," as specified by NJDFW regulations.

We propose to prohibit the use of lead ammunition for upland game hunting on the refuge. It is well-known that lead is a potent neurotoxin for wildlife. Prohibiting the use of lead ammunition at Cape May NWR is consistent with the lead shot ban for waterfowl that inhabit the same pond, marsh and open water habitats where hunting may occur. This action is intended to reduce the unintentional introduction of a known neurotoxin into habitats, diving ducks, loons, eagles, and other wildlife species sensitive to the effects of lead. The requirement for use of non-toxic ammunition will apply to all upland game hunting opportunities. We will continue to encourage use of non-toxic ammunition for other hunts and will educate hunters and anglers about lead and potential impacts

(e) Why is the use being proposed?
Hunting is one of the priority public uses outlined in the Refuge Improvement Act. The Service supports and encourages priority uses when they are appropriate and compatible on refuge lands. Hunting is a healthy, traditional, recreational use of renewable natural resources that is deeply rooted in America's heritage. Hunting is also an important wildlife management tool.

The Department of the Interior's Secretarial Order 3356 directs the Service to enhance and expand public access to lands and waters on national wildlife refuges for hunting, fishing, recreational shooting, and other forms of outdoor recreation. Hunting can promote stewardship of our natural resources and increase the public's appreciation and support for the refuge.

Hunting and fishing are consistent with the refuges' Comprehensive Conservation Plan's (CCP 2004) goal to provide opportunities for compatible high-quality wildlife-dependent public uses.

AVAILABILITY OF RESOURCES:

The Refuge Recreation Act requires that funds be available for the development, operation, and maintenance of hunting programs. Annual hunting administration costs, including salary, law enforcement, brochures, collection of hunt data and analysis of biological information, maintenance of sites/parking, communication with the public, totals approximately $41,000. Refuge staff are funded from the refuge's operational budget to support the hunting program, and costs associated with updating signage and access are funded by the operational budget as well. The operating cost is expected to be approximately $41,000 annually:

Table A-1. Funding and Staffing Requirements for the Refuge Hunting Program

Identifier	Cost
Staff (Biologist, Maintenance Worker and Refuge Manager) Hunt Program	$12,000
Maintain roads, parking lots, trails*	$3,000
Materials and handouts	$1,000
Signs and boundary posting	$5,000
Law Enforcement	$20,000
Total Annual Cost	**$41,000**

**Refuge trails and roads are maintained for a variety of activities. Costs shown are a percentage of total costs for trail/road maintenance on the refuge and are reflective of the percentage of trail/road use for hunting. Volunteers account for some maintenance hours and help to reduce overall cost of the program.*

ANTICIPATED IMPACTS OF THE USE:

Vegetation and Soil

Negative impacts of recreational hunting could include the temporary trampling of vegetation and light soil erosion. Most hunting activities occur during the fall and winter, when plants become dormant and the ground is frozen and/or covered in snow. Hunters would have minimal impacts on plants during this period. Additionally, hunter use during all seasons will be dispersed throughout the refuge, minimizing the impact to any one area. Off-road vehicles are prohibited on the refuge, including for hunting. The refuge is accessible from the public road system.

Positive effects on vegetation will likely result from any reduction in the white-tailed deer population. The impacts of dense deer populations on forest regeneration and the composition and diversity of the herbaceous understory have been well documented (Tierson et al. 1966, Behrend et al. 1970, Tilghman 1989, Cote et al. 2004, White 2012). Deer will forage on swamp pink (*Helonias bullata*), a federally threatened plant species located in small pockets in swamps throughout the refuge. Reducing the deer herd and correlated deer browsing levels could cause minor benefits to the swamp pink. In addition, an overabundance of deer can suppress native vegetation, facilitating the success of invasive species in forested habitats (Knight et al. 2009). Lessening the impact of excessive deer herbivory is a key forest management strategy (White 2012, Nuttle et al. 2013) and will likely become even more important as the climate warms (Galatowitsch et al. 2009). For these reasons, hunting is expected to have minimal adverse impacts on vegetation and soil.

Hydrology (Water Resources and Wetlands)

Hydrology impacts from hunting would be minimal and would primarily result from foot traffic both on- and off-trail. Unsurfaced trails are susceptible to a variety of impacts including vegetation loss and compositional changes, soil compaction, erosion and muddiness, exposure of plant roots, trail widening, and the proliferation of visitor created side trails (Marion and Leung 2001). Migratory game bird hunters are permitted to place a temporary blind on the marsh (daily, but must be removed at the end of the day), and permanent blinds are prohibited, which allows the tidal marsh daily recovery time. Some terrestrial wooded wetlands would be traversed to access hunting areas as well. Some impacts could occur if hunters use the same paths for access on a regular basis. However, hunting is expected to have minimal adverse effects as hunters are

generally dispersed, which reduces repeated erosive actions on soils.

Non-target Species

Hunting can impact both target and non-target species. These impacts may include: direct mortality of individuals, changes in wildlife behavior, changes in wildlife population structure, dynamics, and distribution patterns, and disturbance from noise and hunters walking on- and off-trail (Cole and Knight 1990, Cole 1990, Bell and Austin 1985). In many cases, hunting removes a portion of the wildlife population that will otherwise naturally succumb to predation, disease, or competition (Bartmann et al. 1992). Typical changes in deer behavior in response to hunting include avoidance of certain areas, becoming warier, staying closer to cover, and shifting feeding times (e.g., feeding more at night) (King and Workman 1986). For waterfowl species, hunting may also make them more skittish and prone to disturbance, reduce the amount of time they spend foraging and resting, alter their habitat usage patterns, and disrupt their pair and family bonds (Raveling 1979, Owen 1973, White-Robinson 1982, Madsen 1985, and Bartelt 1987). In general, refuge visitors engaged in hunting will be walking off-trail in designated areas open to hunting. General disturbance from recreational activities, including hunting, vary with the wildlife species involved and the activity's type, level, frequency, duration, and the time of year it occurs. The responses of wildlife to human activities, such as hunting, include avoidance or departure from the site (Owen 1973, Burger 1981, Kaiser and Fritzell 1984, Korschen et al. 1985, Kahl 1991, Klein 1993, Whittaker and Knight 1998), the use of suboptimal habitat (Erwin 1980, Williams and Forbes 1980), altered behavior or habituation to human disturbance (Burger 1981, Korschen et al. 1985, Morton et al. 1989, Ward and Stehn 1989, Havera et al. 1992, Klein 1993, Whittaker and Knight 1998), attraction (Whittaker and Knight 1998), and an increase in energy expenditure (Morton et al. 1989, Belanger and Bedard 1990). The amount of disturbance tends to increase with decreased distance between visitors and birds (Burger 1986). Some bird species flee from human disturbance, which can lower their nesting productivity and cause disease and death (Knight and Cole 1991). Miller et al. (1998) found bird abundance and nesting activities (including nest success) increased as distance from a recreational trail increased in both grassland and forested habitats. Bird communities in this study were apparently affected by the presence of recreational trails, where common species (i.e., American robins) were found near trails and more specialized species (i.e., grasshopper sparrows) were found farther from trails (Miller et al. 1998). Hunters tend not to disperse very far from parking areas and roads, which leaves large areas of refuge land undisturbed. Falconry may disrupt wildlife as an introduced predatory bird would cause additional disturbances to wildlife, and therefore, will be prohibited.

While some disturbance to non-target wildlife is expected, we anticipate that to be minimal, as the proposed hunting is regulated by the refuge and most of it occurs outside the breeding season. While many hunters hunt migratory game birds from boats, some hunters that hunt on refuge marshlands would disturb wintering birds like sparrows and small mammals that inhabit the areas. These impacts would be considered short-term and minor. Hunters engaging in all hunting types could disturb resident wildlife, which includes invertebrates, reptiles, amphibians, and non-hunted mammals. However, under the anticipated levels of use these impacts are expected to be minimal.

To prevent additional impacts to wildlife species, the refuge would impose limitations on hunting seasons and units to disperse hunting pressure. Increased hunting visitation may result in

additional short-term disturbance to wildlife, especially in areas previously closed to hunting. This includes temporary displacement of resident wildlife from foot traffic moving through the area and increased disturbance. While resident and non-game wildlife in areas newly opened to hunting may be negatively impacted by disturbance, that degree of the impact is not expected to be different from what may already occur (including temporary displacement of songbirds, raptors, and resident wildlife from foot traffic moving through the area). Generally, deer and waterfowl hunting areas are in separate locations, primarily due to suitable habitat of the target species, which would result in no negative impacts between hunting types. The use of dogs while hunting will temporarily disturb wildlife and other hunters.

The taking of non-target hunt species will not be permitted during any hunting seasons. Non-toxic shot is required for all waterfowl hunting, which reduces negative impacts to wildlife using waterways and marshes. The refuge will continue to require non-toxic shot for upland game. For big game, hunters will be encouraged to utilize non-toxic ammunition to reduce unintended negative impacts to wildlife.

Big Game

White-tailed deer

The State's white-tailed deer population is estimated to be over 125,000 individuals. Hunting could result in direct mortality of individuals, changes in wildlife behavior, and changes in distribution patterns. With little additional acres opening for deer hunting, the annual take of approximately 603 deer from Zone 34 is not expected to change significantly. Maintaining deer hunting opportunities at the refuge is not expected to have any measurable adverse impacts to local or regional deer populations. Hunting, in the context of an over-abundant species like white-tailed deer is an important population management tool that can reduce habitat degradation and competition, yielding healthier populations in the long-term.

Wild turkey

The State's turkey population is estimated to be approximately 23,000 individuals. Hunting could result in direct mortality of individuals, changes in wildlife behavior, and changes in distribution patterns. With little additional acres opening for turkey hunting, the annual take of approximately 200 birds in Turkey Hunting Area 22 is not expected to change. Disturbance to turkeys in hunting areas will occur during the hunting season, but the disturbance is considered negligible, as flocks are prone to move regularly over large areas. Maintaining turkey hunting opportunities at the refuge is not expected to have any significant impacts to local or regional turkey populations.

Upland Game

Coyote and Fox

Coyotes have been documented in all 21 counties of New Jersey. The coyote population appears to be increasing and is estimated at around 3,000 individuals. Red and gray fox are also a common and abundant species in New Jersey and are documented throughout the state. Hunting could result in direct mortality of individuals, changes in wildlife behavior, and changes in distribution patterns. However, since coyotes and foxes are at their most active at night when hunting is prohibited on the refuge, impacts will be limited. NJDFW estimates that approximately 11,207 foxes and 88 coyote were hunted during the 2017/2018 hunting season

across New Jersey. Although the refuge hunting program is anticipated to result in the direct mortality of approximately 10 foxes/coyotes, this will not result in any long-term or significant negative impacts to the local or regional populations.

Grouse and Pheasant
As of June 2019, the New Jersey ruffed grouse population was deemed insufficient to support regulated hunting. NJDFW will continue to monitor the population and will adjusting hunting opportunities accordingly. A grouse season would be permitted on the refuge if the NJDFW opens a grouse season. Although stocking does not occur on the refuge, NJDFW stocks approximately 50,000 pheasants on Wildlife Management Areas Statewide. However, grouse and pheasant are very uncommon species on the refuge; therefore, disturbance to these species is unlikely. Considering the State's careful management of these species, any realized hunting opportunities on the refuge will not have long-term negative impacts to local or regional grouse or pheasant populations.

Small Game
Squirrels, rabbits, and groundhogs are common and abundant in New Jersey. Hunting could result in direct morality of individuals, changes in wildlife behavior, or changes in distribution patterns. However, due to the relatively low demand for small game hunting on the refuge and the abundance of these species, impacts are expected to be limited. The proposed hunt will not result in any significant long-term impacts to local or regional small game populations.

Migratory Game Birds
Migratory birds are managed on a flyway basis and hunting regulations are established in each state based on flyway data. Federal and State regulations would apply in the refuge waterfowl hunt. Hunting migratory game birds on the refuge would reduce the total numbers of birds in the Atlantic Flyway, but harvest would be within allowable limits as determined by the Service annually. Migratory game bird hunting on the refuge would make birds more skittish and prone to disturbance, reduce the amount of time they spend foraging and resting, and alter their habitat usage patterns (Raveling 1979, Owen 1973, White-Robinson 1982, Madsen 1985, Bartelt 1987). Disturbance to non-target birds and resident wildlife would likely occur from hunting and associated hunter activity but would be short-term and temporary. Overall, the effects on migratory birds are expected to be minimal.

Threatened and Endangered Species
An Intra-Service Section 7 analysis under the Endangered Species Act of 1973, as amended was conducted in cooperation with the Service's New Jersey Field Office (see Appendix D). Potential species include Northern long-eared bat, red knot, piping plover, Eastern black rail, bog turtle, American chaffseed, Knieskern's beaked-rush, seabeach amaranth, and swamp pink.

Hunting will not have significant environmental impacts to federally listed animal species. There may be some avoidance of the hunting area by these federally listed threatened animal species as a result of increased noise, boat traffic, and human activity; however, these impacts are expected to be minimal, temporary in nature, and unlikely to adversely affect these species.

The federally threatened Northern long-eared bat uses mines and caves in the winter to hibernate and uses upland forests to forage and roost throughout the rest of the year. Northern long-eared bats may occur in some areas in the current hunting areas. Northern long-eared bats may be disturbed if hunters walk through an area or use their roost trees for stand placement, but bats are typically inactive during hunting seasons and not currently known to occur in the hunting areas.

Bog turtles (threatened) usually inhabit open-canopy emergent and scrub/shrub wetlands, such as shallow spring-fed fens, sphagnum bogs, swamps, marshy meadows, and wet pastures, bordered by wooded areas. They depend upon micro-habitats of interspersed wet and dry pockets, with soft muddy bottoms, vegetation dominated by low grasses and sedges, and a low volume of standing or slow-moving water (USFWS 2016b). Bog turtles have not been observed on the refuge. If they were to occur, the turtles would be inactive and hibernating during the hunting season.

Piping plovers are not known to occur in the hunting areas. They occur at the Two Mile Beach Unit, which is closed to hunting. Red knots use beach habitats and marsh mudflats and could be disturbed by hunters using the Delaware Bay beach, tidal creeks or marsh habitats during the winter season. These disturbances are expected to be minimal and unlikely to adversely affect knots as the birds are able to fly away from the disturbance.

Eastern black rail can typically be found in salt and brackish marshes with dense cover but can also be found in upland areas of these marshes including impounded and unimpounded salt and brackish marshes. Hunters may disturb rails during their activities; however, these disturbances are expected to be minimal and unlikely to adversely affect them as they are able to fly away from the disturbance.

The threatened plant, Seabeach amaranth, is not known to occur in the hunting areas. Seabeach amaranth grows along the dune edge of the Two Mile Beach Unit, which is closed to hunting. Swamp pink currently occurs in some areas in the hunting areas. There is a low risk of swamp pink being trampled by hunters in areas where they occur. The risk to plant damage is low, as the plants are dormant during hunting season (October to January). No adverse impacts are expected for American chaffseed, which occurs in fire-maintained longleaf pine flatwoods and savannas or Knieskern's beaked-rush, which occurs in early successional wetland habitats, as those species are not currently known to occur in the hunting areas. If they were to occur, the risk to plant damage is low, as the plants are dormant during most of the hunting season.

As indicated in the Section 7 analysis, plants could be trampled. Because the populations of swamp pink are small and disparate, we do not expect much impact from hunters. Sites are rather difficult to locate and it is unlikely hunters will come across blooming plants. The expansion of deer hunting on the refuge would potentially improve swamp pink survival, as deer are a major depredator of the plant. The small expansion of hunting acreage would limit the disturbance caused by hunters. No additional impacts are expected from the addition of coyote, fox, grouse, pheasant, crow, and groundhog hunting, as hunting has occurred on refuge lands for years.

Other Visitor Use and Experience
Cape May NWR is open to all six priority wildlife-dependent recreational uses. Considering the high volume of wildlife-dependent recreational users, some disturbance to other visitors is

anticipated. With addition of new hunt areas, a slight increase in the number of conflicts among user groups can be expected. Hunting could be particularly disruptive to non-consumptive users, as hunting may cause wildlife to temporarily avoid the areas adjacent to hunting units. Public outreach, zoning, and restrictions in some locations have been proposed to reduce conflicts among the different user groups. If conflicts arise among user groups, mitigation efforts can be implemented to ensure that the proposed use will not have significant impacts to other user groups. Impacts to other users will be limited to the hunting season and are minimized by time and space zoning that lessens the interactions between hunters and other wildlife dependent users. However, some short-term impacts are expected.

Other Impacts
Hunting seasons have been set largely outside of the breeding seasons of resident and migratory wildlife. Individual refuge hunt programs have the ability to adopt refuge-specific hunting regulations to changing local conditions. The refuge hunt program is designed to be sustainable, given relatively stable conditions, particularly because of close coordination with NJDFW. The proportion of the refuge's harvest of these species is negligible when compared to local, regional, and statewide populations and harvest. With these factors, we anticipate no significant impacts from hunting on resident wildlife, migratory birds and non-hunted wildlife on the refuge.

PUBLIC REVIEW AND COMMENT:

This Compatibility Determination (CD) is part of the Cape May NWR Hunting and Fishing Plan and the accompanying EA. On April 14, 2021, we distributed a press release to news organizations and alerted the public about the availability of the draft documents. No public meetings were held due to restrictions on public gatherings due to COVID-19. The public comment period ended on July 6, 2021, a total of 83 days. A total of seven comment letters were submitted that offered input to the refuge on the draft documents. Any comments and our responses can be found in the Finding of No Significant Impact (Appendix E). No significant changes were made.

DETERMINATION (CHECK ONE BELOW):

_____ Use is not compatible

___X__ Use is compatible, with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

To ensure compatibility with refuge purpose(s) and Refuge System mission, hunting can occur at Cape May NWR in accordance with State and Federal regulations, and special refuge-specific restrictions (50 CFR 32.49) to ensure wildlife and habitat management goals are achieved, and the program is providing a safe, quality hunting experience for participants. This hunting program will be monitored and potentially modified or eliminated if any of the program's components are found not compatible. The following stipulations are necessary to ensure compatibility:

- Permanent stands and blinds are prohibited. Hunters must remove all hunting stands,

blinds, hunting materials, and decoys at the end of the hunting day, except deer hunting stands, which must be removed at the end of the deer hunting season.

- Access hours for hunting on the refuge are from 1 hour before sunrise until 1 hour after sunset. Night hunting is prohibited. Sunday hunting is prohibited.

- Dog training is prohibited at all times.

- Falconry is prohibited.

- Motorized and non-motorized vehicles are prohibited on refuge lands. This includes but is not limited to vehicles, all-terrain vehicles, dirt bikes, motorcycles, and bicycles. This does not pertain to public roads.

- Only federally approved, non-toxic ammunition will be permitted while hunting for upland game in compliance with existing refuge regulations (except turkey).

JUSTIFICATION:

Hunting is a priority wildlife-dependent use for the Refuge System through which the public can develop an appreciation for fish and wildlife. Service policy is to provide expanded opportunities for wildlife-dependent uses when compatible and consistent with sound fish and wildlife management and ensure that they receive enhanced attention during planning and management.

Hunting satisfies a recreational need, but hunting on national wildlife refuges is also an important, proactive management action that can prevent overpopulation and the deterioration of habitat. Disturbance to other species will occur, but this disturbance is generally short-term. Suitable habitat exists on refuge lands to support hunting as proposed.

This activity will not conflict with any of the other priority public uses or adversely impact biological resources. Therefore, through this compatibility determination process, we have determined that hunting on the refuge, in accordance with the stipulations provided above, is a compatible use that will not materially interfere with, or detract from, the fulfillment of the Refuge System mission or the purpose(s) of the refuge.

SIGNATURE:
Refuge Manager

BRIAN BRAUDIS
Digitally signed by BRIAN BRAUDIS
Date: 2021.08.20 15:51:51 -04'00'

(Signature) (Date)

CONCURRENCE:
Regional Chief

SCOTT KAHAN
Digitally signed by SCOTT KAHAN
Date: 2021.08.20 15:10:44 -04'00'

(Signature) (Date)

MANDATORY 15 YEAR RE-EVALUATION DATE: _____

(Date)

LITERATURE REVIEWED:

Arcese, P. 1987. Age, intrusion pressure and defense against floaters by territorial male Song Sparrows. Animal Behavior, 35, 773-784.

Augustine, D.J. and P.A. Jordan. 1998. Predictors of white-tailed deer grazing intensity in fragmented deciduous forests. Journal of Wildlife Management 62:1076-1085.

Bartelt, G.A. 1987. Effects of disturbance and hunting on the behavior of Canada geese family groups in East Central Wisconsin. Journal of Wildlife Management, 51, 517-522.

Bartmann, R.M., White, G.C., and Carpenter, L.H. 1992. Compensatory mortality in a Colorado mule deer population. Wildlife Monographs, 121, 1-39.

Behrend, D.F., Mattfield, G.F., Tierson, W.C., and Wiley, J.E. 1970. Deer density control for comprehensive forest management. Journal of Forestry, 68, 695-700.

Belanger, L. and Bedard, J. 1990. Energetic cost of man-induced disturbance to staging snow geese. Journal of Wildlife Management, 54, 36-41.

Bell, D.V. and Austin, L.W. 1985. The game-fishing season and its effects on overwintering wildfowl. Biological Conservation, 33, 65-80.

Burger, J. 1981. Effect of human activity on birds at a coastal bay. Biological Conservation 21, 231-241.

Burger, J. 1986. The effect of human activity on shorebirds in two coastal bays in northeastern United States. Biological Conservation, 13, 123-130.

Cole, D.N. 1990. Ecological impacts of wilderness recreation and their management. In J. C. Hendee, G.H. Stankey, and R.C. Lucas (Eds.), Wilderness Management (pp. 425-466). Golden, CO: North American Press.

Cole, D.N. and Knight, R.L. 1990. Impacts of recreation on biodiversity in wilderness. Natural Resources and Environmental Issues, 0, 33-40. Cote, S.D., T.P. Rooney, J-P Tremblay.

Dussault, C. and D.M. Waller. 2004. Ecological Impacts of Deer Overabundance. Annual Review of Ecology and Systematics 35:113-147.

Erwin, R.M. 1980. Breeding habitat by colonially nesting water birds in two Mid-Atlantic U.S. regions under different regimes of human disturbance. Biological Conservation, 18, 39-51.

Ewald, P.W. and Carpenter, F.L. 1978. Territorial responses to energy manipulations in the Anna hummingbird. Oecologia, 31, 277-292.

Galatowitsch, S., L. Frelich, and L. Phillips-Mao. 2009. Regional climate change adaptation strategies for biodiversity conservation in a mid-continental region of North America. Biological Conservation 142:2012-2022.

Havera, S.P., Boens, L.R., Georgi, M.M., and Shealy, R.T. (1992). Human disturbance of waterfowl on Keokuk Pool, Mississippi River. Wildlife Society Bulletin, 20, 290-298.

Kahl, R. 1991. Boating disturbance of canvasbacks during migration at Lake Poygan, Wisconsin. Wildlife Society Bulletin, 19, 242-248.

Kaiser, M.S. and Fritzell, E.K. 1984. Effects of river recreationists on green-backed heron behavior. Journal of Wildlife Management, 48, 561-567.

King, M.M. and Workman, G.W. 1986. Response of desert bighorn sheep to human harassment: management implications. Transactions 51st North American Wildlife and Natural Resource Conference.

Klein, M.L. 1993. Waterbird behavioral responses to human disturbance. Wildlife Society Bulletin, 21, 31-39.

Knight, R.L. and Cole, D.N. 1991. Effects of recreational activity on wildlife in wildlands. Transactions of the 56th North American Wildlife and Natural Resources Conference, 238-247.

Knight, T.M., J.L. Dunn, L.A. Smith, J. Davis, and S. Kalisz. 2009. Deer facilitate invasive plant success in a Pennsylvania forest understory. Natural Areas Journal 29(2):110-116.

Korschen, C.E., George, L.S., and Green, W.L. 1985. Disturbance of diving ducks by boaters on a migrational staging area. Wildlife Society Bulletin, 13, 290-296.

Madsen, J. 1985. Impact of disturbance on field utilization of pink-footed geese in West Jutland, Denmark. Biological Conservation, 33, 53-63.

Miller S.G., Knight, R.L, and Miller, C.K. 1998. Influence of Recreational Trails on breeding bird communities. Ecological Society of America, 8(1), 162-169.

Morton, J. M., Fowler, A. C., and Kirkpatrick, R. L. 1989. Time and energy budgets of American black ducks in winter. Journal of Wildlife Management, 53, 401-410 (also see corrigendum in Journal of Wildlife Management, 54, 683.

Nuttle, T., A.A. Royo, M.B. Adams, and W.P. Carson. 2013. Historic disturbance regimes promote tree diversity only under low browsing regimes in eastern deciduous forest. Ecological Monographs 83(1):3-17.

Owen, M. 1973. The management of grassland areas for wintering geese. Wildfowl, 24,123-130.

Raveling, D.G. 1979. Traditional use of migration and winter roost sites by Canada geese. Journal of Wildlife Management, 43, 229-235.

Tierson, W.C., Patric, E.F., and Behrend, D.F. (1966). Influence of white-tailed deer on the logged northern hardwood forest. Journal of Forestry, 64, 804-805.

Tilghman, N.G. 1989. Impacts of white-tailed deer on forest regeneration in northwestern Pennsylvania. Journal of Wildlife Management, 53, 524-532.

U.S. Fish and Wildlife Service [USFWS]. 2004. Edwin B. Forsythe National Wildlife Refuge Comprehensive Conservation Plan. June 2004.USFWS, Division of Planning, Hadley, MA. 200pp.

U.S. Fish and Wildlife Service [USFWS]. 2013. Banking on Nature, The economic benefits to local communities of national wildlife refuge visitation. USFWS, Division of Economics, Washington, DC. 365pp.

US Places.com. 2017. http://www.us-places.com/New-Jersey/population-by-County.htm. Accessed October 22, 2017.

Ward, D.H. and Stehn, R.A. 1989. Response of brant and other geese to aircraft disturbance at Izembek Lagoon, Alaska. Anchorage, AK: U.S. Fish and Wildlife Service, Alaska Fish and Wildlife Research Center. Final report to the Minerals Management Service.

White, M.A. 2012. Long-term effects of deer browsing: composition, structure and productivity in a northeastern Minnesota old-growth forest. Forest Ecology and Management 269: 222-228.

White-Robinson, R. 1982. Inland and saltmarsh feeding of wintering brent geese in Essex. Wildfowl, 33, 113-118.

Whittaker, D. and Knight, R. 1998. Understanding wildlife responses to humans. Wildlife Society Bulletin, 26(3), 312-317.

Williams, G.J. and Forbes, E. 1980. The habitat and dietary preferences of dark-bellied brant geese and widgeon in relation to agricultural management. Wildfowl, 31, 151-157.

COMPATIBILITY DETERMINATION

USE: Fishing

REFUGE NAME: Cape May National Wildlife Refuge

DATE ESTABLISHED: January 20, 1989

ESTABLISHING and ACQUISITION AUTHORITY:

Cape May National Wildlife Refuge (NWR, refuge) was originally established under the authority of the Fish and Wildlife Act of 1956 (16 U.S.C. 74a-742j; stat 1119), as amended. Additional lands have been added under authorities of the Migratory Bird Conservation Act (16 U.S.C. §715d), the Emergency Wetlands Resources Act of 1986 (16 U.S.C. §3901(b), 100 Stat. 3583), and the Transfer of Certain Real Property for Wildlife Conservation Purposes Act, 1972, as amended (16 U.S.C. §667b 667d; 62 Stat. 240).

REFUGE PURPOSE(S):

Cape May NWR was established for the following purposes:

> "...use as an inviolate sanctuary, or for any other management purpose, for migratory birds...." Migratory Bird Conservation Act (16 U.S.C. §715d);
>
> "...the development, advancement, management, conservation, and protection of fish and wildlife resources...." Fish and Wildlife Act of 1956 (16 U.S.C. §742f(a)(4);
>
> "...the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations (regarding migratory birds)... "Emergency Wetlands Resources Act of 1986 (16 U.S.C. §3901(b), 100 Stat. 3583).

The purpose of Cape May NWR's Two Mile Beach Unit is:

> "...particular value in carrying out the national migratory bird management program" Transfer of Certain Real Property for Wildlife Conservation Purposes Act, 1972, as amended (16 U.S.C. §667b-667d; 62 Stat. 240).

NATIONAL WILDLIFE REFUGE SYSTEM MISSION:.

The mission of the National Wildlife Refuge System (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 System Improvement Act of 1997, Public Law 105-57).

DESCRIPTION OF USE:

(a) What is the use? Is the use a priority public use?
The use is recreational fishing at Cape May NWR. Fishing was identified as one of six priority public uses of the Refuge System by the Refuge System Administration Act of 1966, as amended by the Refuge System Improvement Act of 1997 (Public Law 105-57), when found to be compatible.

(b) Where would the use be conducted?
Fishing would be permitted in the Two Mile Beach Unit (see Figure 4 of the Hunting and Fishing Plan). Fishing areas in the unit would include the Atlantic Ocean portion and the portion along the Cold Spring Inlet.

(c) When would the use be conducted?
The Cold Spring Inlet beach portion of the Two Mile Beach Unit would be open for fishing year-round. The Atlantic Ocean beach portion of the Two Mile Beach Unit would be open to fishing between October 1 and March 31 each year. Fishing access would be provided from 1 hour before sunrise until 1 hour after sunset.

(d) How would the use be conducted?
Fishing on the refuge would be conducted according to New Jersey Division of Fish and Wildlife (NJDFW) regulations, with some additional refuge-specific conditions to protect fish, wildlife, and habitat. Anglers are required to register with the State's saltwater registry program. No additional refuge permit is required. Fishing access is primarily by foot and both fishing areas are easily accessible by public roads. Shell fishing and crabbing is not permitted on the refuge.

No fish of any species may be introduced onto the refuge without appropriate State and refuge permits, including baitfish and eggs. Unauthorized introductions of both non-native and native fish can disrupt aquatic ecosystems and destroy natural fisheries. Fishing for commercial purposes is prohibited.

Nationwide, there is concern about the bioavailability of spent lead ammunition (bullets) and sinkers on the environment, endangered and threatened species, birds (especially raptors), mammals, and other fish and wildlife susceptible to biomagnification. We propose to eliminate the use of lead fishing tackle on the refuge. It is well known that lead is a potent neurotoxin for wildlife. Prohibiting use of lead tackle at Cape May NWR is consistent with the lead ammunition restriction for waterfowl and upland game hunting on the refuge. This action is intended to reduce the unintentional introduction of a known neurotoxin into habitats used by wildlife species sensitive to the effects of lead. The complete lead restriction will begin September 2026, implemented over a 5-year phase-in period allowing anglers time to adapt to the new regulations without diminishing fishing opportunities. The refuge will conduct education programs and provide information to the public that may assist during this transition period, detailing the benefits to fish and wildlife.

(e) Why is the use being proposed?
Fishing is one of the priority public uses outlined in the Refuge Improvement Act. The Service

supports and encourages priority uses when they are appropriate and compatible on refuge lands and waters. Fishing is a healthy, popular, recreational use of renewable natural resources that is deeply rooted in America's heritage.

Department of the Interior's Secretarial Order 3356 directs the Service to enhance and expand public access to lands and waters on national wildlife refuges for hunting, fishing, recreational shooting, and other forms of outdoor recreation. Fishing can promote stewardship of our natural resources and increase the public's appreciation and support for the refuge.

Cape May NWR identified providing additional wildlife dependent recreational activities as a priority objective in its 2004 Comprehensive Conservation Plan (CCP). Providing access for recreational fishing on the Two Mile Beach Unit was identified as a specific goal in the CCP. This use has been permitted since 2005, and would continue to fulfill the need for wildlife dependent recreation on the refuge.

AVAILABILITY OF RESOURCES:

The Refuge Recreation Act requires that funds be available for the development, operation, and maintenance of fishing programs. Annual fishing administration costs, for Cape May NWR, including salary, equipment, law enforcement, brochures, collection of fishing data and analysis of biological information, maintenance of sites/parking, communication with the public, etc. totals approximately $7,000. Refuge staff are funded from the refuge's operational budget to support the fishing program. Costs associated with updating signage and maintaining access are funded by the operational budget as well (through maintenance funds, as appropriate). The operating cost is expected to be approximately $7,000 annually.

Table B-1. Funding and Staffing Requirements for the Refuge Fishing Program

Identifier	Cost
Staff (Biologist, Maintenance Worker and Refuge Manager)	$3,000
Maintain roads, parking lots, trails*	$500
Materials and handouts	$500
Signs and boundary posting	$1,000
Law Enforcement	$2,000
Total Annual Cost	**$7,000**

**Refuge trails and roads are maintained for a variety of activities. Costs shown are a percentage of total costs for trail/road maintenance on the refuge and are reflective of the percentage of trail/road use for hunting and fishing. Volunteers account for some maintenance hours and help to reduce overall cost of the program.*

It is anticipated that funding within the regular Operations and Maintenance budget of Cape May NWR to conduct an annual fishing program would continue to be sufficient in the future.

ANTICIPATED IMPACTS OF THE USE:

The refuge provides shore access for fishing at the Cold Spring Inlet beach portion and the Atlantic Ocean portion of the Two Mile Beach Unit. Both fishing areas are easily accessed by public roads. Fishing access is provided from 1 hour before sunrise until 1 hour after sunset. The

beach closure at the Atlantic Ocean portion is essential to protect beach-nesting birds such as American oystercatcher, black skimmer, least tern, and piping plover. It is also important to provide a disturbance-free environment for shorebirds that migrate thousands of miles such as red knot, ruddy turnstone, and sanderling.

Hydrology (Water Resources and Wetlands)
Paths used by anglers can affect the hydrology of an area by altering drainage patterns. Some anglers may walk off-trail to access a fishing area, thereby creating new trails and affecting drainage. We will discourage such actions via new signage.

Vegetation and Soil
Negative impacts of recreational fishing may include the temporary trampling of vegetation and light soil erosion. Anglers travelling to and from fishing areas by foot and boat may create paths that could result in damage to vegetation, soil compaction, and erosion. Fishing is expected to have minimal impacts on vegetation and soil on the refuge, and these impacts would be limited to the fishing season.

Fish
Recreational fishing could potentially cause negative impacts to fish populations if it occurs at unsustainably high levels or is not managed properly. Potential impacts include direct mortality from harvest, catch and release injury, changes in age and size class distribution, changes in reproductive capacity and success, loss of genetic diversity, altered behavior, and changes in ecosystems and food webs (Lewin et al. 2006, Cline et al. 2007). Fishing generally removes individuals from a population at high levels and can lead to reduced population sizes and loss of genetic diversity. The loss of genetic diversity can ultimately reduce a population's fitness, resilience, and ability to adapt to environmental changes and stressors. The higher the fishing mortality, the greater these types of impacts will be (Lewin et al. 2006).

Nationwide, there is concern about the bioavailability of spent lead ammunition (bullets) and sinkers on the environment, endangered and threatened species, birds (especially raptors), mammals, and other fish and wildlife susceptible to biomagnification. The negative impacts of lead on wildlife are documented and clear (Golden et al. 2016 and Grade et al. 2019). To move towards reduction and future elimination of this threat on the refuge, we will be implementing a lead tackle restriction over a 5-year period. The complete lead restriction will begin September 2026, allowing anglers time to adapt to the new regulations without diminishing fishing opportunities. The refuge will conduct education programs and provide information to anglers and the public on non-toxic alternatives, which may assist during the transition period in detailing benefits to fish and wildlife.

Baitfish or other species introduced to the water may become invasive and displace native fish. Because fishing programs are conducted in alignment with regulations set by the State, fishing on the refuge is not expected to have significant negative impacts on fish populations on or around the refuge.

While fishing removes individuals from the population, we do not anticipate that projected fishing pressure will affect the coastal fish population as a whole. NJDFW strives to ensure maintenance

of healthy and diverse fish species populations. Anglers must abide by the State's seasons, catch limits, and regulations to protect the State's fish populations. Fishing on the refuge is saltwater, which is regulated and managed by the State of New Jersey and the Atlantic States Marine Fisheries Commission. The refuge fishing program is designed to be sustainable through time, given relatively stable conditions, particularly because of close coordination with NJDFW.

Wildlife

Shore fishing (surf fishing) at Cape May NWR could affect nesting or migratory birds; however, the refuge has limited the fishing season on the Atlantic Ocean portion of the Two Mile Beach Unit to lessen this impact. Human activity, including walking trails and boat use, has potential to affect the behavior, distribution, and abundance of waterbirds due to disturbance. Several studies have examined the effects of recreation on birds using habitats adjacent to trails and roads through wildlife refuges and coastal habitats in the eastern United States. Overall, the existing research demonstrates that disturbance from recreational activities has at least temporary effects on the behavior and movement of birds and other animals within a habitat or localized area. Findings reported in some studies are summarized regarding visitor activity and response to disturbance:

Presence: Birds avoided places where people were present and when visitor activity was high (Burger 1981, Klein et al. 1995, Burger and Gochfeld 1998). Birds developed more slowly during periods of increased public use (Remacha et al. 2016). Mammalian use of trails in eastern forests was not impacted by hikers (Kays et al. 2017).

Trail Density: Bird nesting density decreased with increased trail density within a forested patch (Thompson 2015).

Approach Angle: Visitors directly approaching birds on foot caused more disturbance than visitors driving by in vehicles, stopping vehicles near birds, and stopping vehicles and getting out without approaching birds (Klein 1993). Direct approaches may also cause greater disturbance than tangential approaches to birds (such as along trails) (Burger and Gochfeld 1981, Knight and Cole 1991, Rodgers and Smith 1995, Rodgers and Smith 1997, Smith-Castro and Rodewalk 2010).

Noise: Noise caused by visitors resulted in increased levels of disturbance (Burger 1986, Klein 1993, Burger and Gochfeld 1998), though noise was not correlated with visitor group size (Burger and Gochfeld 1998).

Threatened and Endangered Species

An Intra-Service Section 7 analysis under the Endangered Species Act (ESA) of 1973, as amended was conducted in cooperation with the Service's New Jersey Field Office (see Appendix D). Potential species include Northern long-eared bat, red knot, piping plover, Eastern black rail, bog turtle, American chaffseed, Knieskern's beaked-rush, seabeach amaranth, and swamp pink.

Fishing will not have significant environmental impacts to the federally listed threatened animal species. There may be some avoidance of the fishing area by species as a result of increased

noise, boat traffic, and human activity; however, these impacts are expected to be minimal, temporary in nature, and unlikely to adversely affect these species.

The federally threatened Northern long-eared bats are not known to occur in the fishing areas. They use mines and caves in the winter to hibernate and use upland forests to forage and roost throughout the rest of the year.

The fishing area does not contain habitat sufficient to support bog turtles (threatened). They usually inhabit open-canopy emergent and scrub/shrub wetlands, such as shallow spring-fed fens, sphagnum bogs, swamps, marshy meadows, and wet pastures, bordered by wooded areas. They depend upon micro-habitats of interspersed wet and dry pockets, with soft muddy bottoms, vegetation dominated by low grasses and sedges, and a low volume of standing or slow-moving water (USFWS 2016b). Bog turtles have not been observed on the refuge or in the fishing area.

Potential impacts to piping plovers includes disturbance from anglers prior to the April 1 closure as birds are arriving along the Atlantic Ocean beach. Once the beach closes, no effects on plovers would occur other than pedestrians that violate the law and walk along the beach. Piping plovers are not known to occur in the fishing area along the Cold Spring Inlet.

Red knots use beach habitats and marsh mudflats and could be disturbed by anglers using the beaches, tidal creeks or marsh habitats. These disturbances are expected to be minimal and unlikely to adversely affect knots, as the knots are able to fly away from the disturbance.

Eastern black rail can typically be found in salt and brackish marshes with dense cover but can also be found in upland areas of these marshes including impounded and unimpounded salt and brackish marshes. Anglers may disturb rails during their activities; however, these disturbances are expected to be minimal and unlikely to adversely affect them as they are able to fly away from the disturbance.

Seabeach amaranth grows along the Atlantic Ocean dune edge of the Two Mile Beach Unit and could be impacted by trampling by anglers after the beach opens in September. Refuge staff fence areas where plants are found which reduces the potential for negative impacts to the plants. Swamp pink does not occur in the fishing area. There is a low risk of swamp pink occurring since it is a freshwater plant. No adverse impacts are expected for American chaffseed, which occurs in fire-maintained longleaf pine flatwoods and savannas or Knieskern's beaked-rush, which occurs in early successional wetland habitats, as those species are not currently known to occur in fishing areas.

Recreation and Visitation

Cape May NWR is open to all six priority wildlife-dependent recreational uses. Considering the high volume of wildlife-dependent recreational users at Cape May NWR, some disturbance to other visitors is anticipated. Disturbance to other users could arise when anglers are travelling to or from fishing units. Fishing could be particularly disruptive to non-consumptive users, as fishing may cause wildlife to temporarily avoid areas adjacent to fishing units, such as shorebirds from using the beach or waterbirds from using the water.

According to the National Ocean and Atmospheric Administration (NOAA), there were approximately 506,843 marine anglers in New Jersey in 2016. In 2019, approximately 13,000 visits were made by anglers to Cape May NWR, but over 180,000 individuals visited the refuge for wildlife observation. While the refuge does implement time and space zoning to prevent conflicts between priority public users, some disturbance to other users is expected.

PUBLIC REVIEW AND COMMENT:

This Compatibility Determination (CD) is part of the Cape May NWR Hunting and Fishing Plan and the accompanying EA. On April 14, 2021, we distributed a press release to news organizations and alerted the public about the availability of the draft documents. No public meetings were held due to restrictions on public gatherings due to COVID-19. The public comment period ended on July 6, 2021, a total of 83 days. A total of seven comment letters were submitted that offered input to the refuge on the draft documents. Any comments and our responses can be found in the Finding of No Significant Impact (Appendix E). No significant changes were made.

DETERMINATION (CHECK ONE BELOW):

_____ Use is not compatible

___X__ Use is compatible, with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

To ensure compatibility with refuge purpose(s) and Refuge System mission, fishing can occur at Cape May NWR in accordance with State and Federal regulations, and special refuge-specific restrictions to ensure that wildlife and habitat management goals are achieved, and that the program is providing a safe, high-quality fishing experience for participants. This fishing program will be monitored and potentially modified or eliminated if any of the program's components are found not compatible. The following stipulations are necessary to ensure compatibility:

- Shell fishing and crabbing is prohibited.

- Fishing on the Atlantic Ocean portion of the Two Mile Beach Unit is prohibited from April 1 to September 30 each year.

- Access hours for fishing on the refuge are from 1 hour before sunrise until 1 hour after sunset. Night fishing is prohibited.

- The use of lead fishing tackle will be prohibited on the refuge beginning September 2026. The lead restriction for fishing tackle will be implemented over a 5-year phase-in period. Until then, we will encourage the use of non-toxic alternatives.

JUSTIFICATION:

The Refuge System Improvement Act of 1997 identifies fishing as a priority public use. Priority public uses are to receive enhanced consideration when developing goals and objectives for refuges if they are determined to be compatible. Providing fishing opportunities will promote public appreciation and support for the refuge. Recreational fishing will not materially interfere with or detract from the mission of the Refuge System or the purposes for which the refuge was established. We, therefore, find that public fishing conducted according to the State of New Jersey seasons and limits, and in accordance with the stipulations provided above, will be compatible with the principles of sound wildlife management and otherwise in the public interest (50 CFR § 32.1.)

SIGNATURE:
Refuge Manager

BRIAN BRAUDIS
Digitally signed by BRIAN BRAUDIS
Date: 2021.08.13 12:31:47 -04'00'

(Signature) (Date)

CONCURRENCE:
Regional Chief

SCOTT KAHAN
Digitally signed by SCOTT KAHAN
Date: 2021.08.20 15:12:15 -04'00'

(Signature) (Date)

MANDATORY 15 YEAR RE-EVALUATION DATE: _____

(Date)

LITERATURE CITED:

Burger, J. 1981. Effect of human activity on birds at a coastal bay. Biological Conservation. 21: 231-241.

Burger, J. 1986. The effect of human activity on shorebirds in two coastal bays in northeastern United States. Biological Conservation 13: 123-130.

Burger, J. and Gochfeld, M. (1998). Effects of ecotourists on bird behavior at Loxahatchee National Wildlife Refuge, FL. *Environmental Conservation, 25*, 13-21.

Caudill, J. and E. Carver. 2019. Banking on Nature 2017: The economic contributions of national wildlife refuge recreational visitation to local communities. USFWS, Falls Church, VA. 32pp.

Cline, R., Sexton, N., and Steward, S.C. (2007). *A human-dimensions review of human-wildlife disturbance: a literature review of impacts, frameworks, and management solutions*. For Collins, CO: U.S. Geological Survey, Open-File Report 2007-1111.

Golden, N.H., S.E. Werner and M.J. Coffey. 2016. A Review and Assessment of Spent Lead Ammunition and its Exposure and Effects to Scavenging Birds in the United States. P.de.Voogt (ed.), Reviews of Environmental Contamination and Toxicology 237:123-191.

Grade, T., P. Campbell, T. Cooley, M. Kneeland, E. Leslie, B. MacDonald, J. Melotti, J. Okoniewski, E.J. Parmley, C. Perry, H. Vogel and M. Pokras. 2019. Lead poisoning from ingestion of fishing gear: A review. Ambio 48:1023-1038.

Kays, R., Parsons, A.W., Baker, M.C., Kalies, E.L., Forrester, T., Costello, R., Rota, C.T., Millspaugh, J.J., and McShea, W.J. 2017. Does hunting or hiking affect wildlife communities in protected areas? J Appl Ecol, 54: 242-252.

Klein, M.L. (1993). Waterbird behavioral responses to human disturbance. *Wildlife Society Bulletin, 21*, 31-39.

Klein, M.L., Humphrey, S.R., and Percival, H.F. (1995). Effects of ecotourism on distribution of waterbirds in a wildlife refuge. *Conservation Biology, 9*, 1454-1465.

Knight, R.L. and Cole, D.N. (1991). Effects of recreational activity on wildlife in wildlands. *Transactions of the 56th North American Wildlife and Natural Resources Conference*, 238-247.

Lewin, W.C., Arlinghaus, R., and Mehner, T. (2006). Documented and potential biological impacts of recreational fishing: insights for management and conservation. *Reviews in Fisheries Science, 14*, 305-367.

Remacha, C., J.A. Delgado, M. Bulaic, and J. Pérez-Tris. 2016. Human disturbance during early life impairs nestling growth in birds inhabiting a nature recreation area. PLoS One, 11 http://dx.doi.org/10.1371/journal.pone.0166748

Rodgers, J.A. and Smith, H.T. (1995). Set-back distances to protect nesting bird colonies from human disturbance in Florida. *Conservation Biology, 9*, 89-99.

———. (1997). Buffer zone distances to protect foraging and loafing waterbirds from human disturbance in Florida. *Wildlife Society Bulletin, 25*, 139-145.

Smith-Castro, J.R. and A.D. Rodewald. 2010. Behavioral responses of nesting birds to human disturbance along recreational trails. Journal of Field Ornithology 81:130-138.

Thompson, B. 2015. Recreational trails reduce the density of ground-dwelling birds in protected area. Environmental Management 55:1181-1190.

US Places.com. 2019. https://us-places.com/New-Jersey/population-by-County.htm. Accessed March 21, 2019.

Environmental Assessment for Hunting and Fishing at Cape May National Wildlife Refuge

This Environmental Assessment (EA) is being prepared to evaluate the effects associated with this proposed action and to comply with the National Environmental Policy Act (NEPA) in accordance with Council on Environmental Quality regulations (40 CFR 1500-1509) and Department of the Interior (43 CFR 46; 516 DM 8) and U.S. Fish and Wildlife Service (Service) (550 FW 3) regulations and policies. NEPA requires examination of the effects of proposed actions on the natural and human environment. A list of laws and executive orders evaluated through this EA is included at the end of this document.

Proposed Action

The Service is proposing to maintain opportunities for recreational fishing and to open and expand opportunities for big game, upland game, and migratory game bird hunting on the 12,652-acre Cape May National Wildlife Refuge (NWR, refuge) in Cape May County, New Jersey, in accordance with the refuge's Comprehensive Conservation Plan (CCP).

This proposed action is often iterative and evolves over time during the process as the agency refines its proposal and learns more from the public, tribes, and other agencies. Therefore, the final proposed action may be different from the original. The final decision on the proposed action will be made at the conclusion of the public comment period for the EA.

Background

National wildlife refuges are guided by the mission and goals of the National Wildlife Refuge System (Refuge System), the purposes of an individual refuge, Service policy, and laws and international treaties. Relevant guidance includes the National Wildlife Refuge System Administration Act (NWRSAA) of 1966, as amended by the Refuge System Improvement Act of 1997, Refuge Recreation Act of 1962, and selected portions of the Code of Federal Regulations and Fish and Wildlife Service Manual.

The refuge was originally established under the authority of the Fish and Wildlife Act of 1956 (16 U.S.C. 74a-742j; stat 1119), as amended. Additional lands have been added under authorities of the Migratory Bird Conservation Act (16 U.S.C. §715d), the Emergency Wetlands Resources Act of 1986 (16 U.S.C. §3901(b), 100 Stat. 3583), and the Transfer of Certain Real Property for Wildlife Conservation Purposes Act, 1972, as amended (16 U.S.C. §667b 667d; 62 Stat. 240).
The primary purposes of Cape May NWR are for:

- "...use as an inviolate sanctuary, or for any other management purpose, for migratory birds...." Migratory Bird Conservation Act (16 U.S.C. §715d);

- "...the development, advancement, management, conservation, and protection of fish and wildlife resources...." Fish and Wildlife Act of 1956 (16 U.S.C. §742f(a)(4);

- "...the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations (regarding migratory birds)..." Emergency Wetlands Resources Act of 1986 (16 U.S.C. §3901(b), 100 Stat. 3583).

The purpose of Cape May NWR's Two Mile Beach Unit is the:

> *"...particular value in carrying out the national migratory bird management program."* The Transfer of Certain Real Property for Wildlife Conservation Purposes Act, 1972, as amended (16 U.S.C. §667b-667d; 62 Stat. 240).

The mission of the Refuge System, as outlined by the NWRSAA, 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."*

Additionally, the NWRSAA mandates the Secretary of the Interior in administering the Refuge System (16 U.S.C. 668dd(a)(4)) to:

- Provide for the conservation of fish, wildlife, and plants, and their habitats within the Refuge System;
- Ensure that the biological integrity, diversity, and environmental health of the Refuge System are maintained for the benefit of present and future generations of Americans;
- Ensure that the mission of the Refuge System described at 16 U.S.C. 668dd(a)(2) and the purposes of each refuge are carried out;
- Ensure effective coordination, interaction, and cooperation with owners of land adjoining refuges and the fish and wildlife agency of the states in which the units of the Refuge System are located;
- Assist in the maintenance of adequate water quantity and water quality to fulfill the mission of the Refuge System and the purposes of each refuge;
- Recognize compatible wildlife-dependent recreational uses as the priority general public uses of the Refuge System through which the American public can develop an appreciation for fish and wildlife;
- Ensure that opportunities are provided within the Refuge System for compatible wildlife-dependent recreational uses; and
- Monitor the status and trends of fish, wildlife, and plants in each refuge.

Purpose and Need for the Proposed Action

Hunting and fishing are healthy and traditional recreational uses of renewable natural resources deeply rooted in America's heritage, and it can be important wildlife management tools. The NWRSAA of 1966, the Refuge System Improvement Act of 1997, and Service policy permit hunting and fishing on a refuge as a priority wildlife-dependent recreational opportunity when it is compatible with the purposes for which the refuge was established and acquired.

National wildlife refuges, including Cape May NWR, conduct hunting and fishing programs within the framework of Federal, State, and refuge regulations. Hunters and anglers on the refuge are expected to be ethical and respectful of other users, wildlife species, and the environment while on refuge lands.

The purpose of the proposed action is to provide compatible wildlife-dependent recreational opportunities on Cape May NWR. Furthermore, the proposed action should bring the refuge more into compliance with current day management objectives noted in the refuge CCP to provide for and where possible, expand, opportunities for recreational fishing, big game hunting, small game hunting, and migratory game bird hunting.

Department of the Interior Secretarial Order 3356 further directs the Service to enhance and expand public access to lands and waters on national wildlife refuges for hunting, fishing, recreational shooting, and other forms of outdoor recreation. The proposed action would also promote two of the priority public uses of the Refuge System and stewardship of our natural resources, as well as increase public appreciation and support for the refuge by providing opportunities for visitors to hunt and fish. To address the needs stated above, the proposed action would bring the refuge into compliance with orders, policy, and Federal law to "recognize compatible wildlife-dependent recreational uses as the priority general uses of the Refuge System" and "ensure that opportunities are provided within the Refuge System for compatible wildlife-dependent recreational uses." 16 U.S.C. 668dd(a)(4)).

The EA serves as the NEPA document which analyzes the impacts on environmental, cultural, and historical resources of providing additional hunting and fishing opportunities on the refuge.

Alternatives

<u>Current Management – No Action Alternative</u>

The No Action Alternative would continue the refuge's current hunting and fishing programs. The refuge hunt program currently allows for white-tailed deer, turkey, rabbit, squirrel, waterfowl, coot, moorhen, rail, snipe, and woodcock hunting on designated areas of the refuge. Hunting is currently permitted on 11,268 acres of the refuge. The refuge fishing program currently allows for shore fishing on the Atlantic Ocean beach and Cold Spring Inlet beach portions of the Two Mile Beach Unit. Hunting and fishing are conducted in alignment with all relevant State regulations. Additional refuge-specific regulations also apply.

<u>Expanded Hunting and Fishing Opportunities – Proposed Action Alternative</u>

The refuge has prepared a multi-species Hunting and Fishing Plan, which is presented in this document as the Proposed Action Alternative. Under this alternative, the refuge would expand upon

the existing hunting program, and would open new hunting opportunities for coyote, fox, groundhog, grouse, pheasant, and crow. For migratory game bird hunting, with the exception of crow and snipe, hunting will be conducted during the State seasons. Crow, snipe, coyote, fox, squirrel, and rabbit hunting will begin with the start of the State early woodcock south zone season (usually early November), and will continue through the duration of the State season for each species. Groundhog hunting will begin with the start of the State early woodcock south zone season and will continue through the duration of the State season for rabbit hunting.

Hunting would be permitted on 12,020 acres of designated land on the refuge units east of Highway 47, west of Highway 47, north of Highway 550 and south of Highway 550 (see Figure 1 of the Hunting and Fishing Plan). The refuge would continue to require the use of non-toxic shot for all waterfowl hunting, per federal regulation, as well as upland game hunting (except turkey). We will continue to encourage use of non-toxic ammunition for big game hunting and will educate hunters about lead and it's impacts.

Recreational fishing would continue to be provided on the Atlantic Ocean beach (seasonally) and Cold Spring Inlet beach portions of the Two Mile Beach Unit. Nationwide, there is concern about the bioavailability of spent lead ammunition (bullets) and sinkers on the environment, endangered and threatened species, birds (especially raptors), mammals, and other fish and wildlife susceptible to biomagnification. We will prohibit the use of lead tackle on the refuge for fishing beginning September 2026, implemented over a 5-year phase-in period. This transition period will allow anglers time to adapt to the new regulations without diminishing fishing opportunities. Until the ban is fully enforced, we will encourage the voluntary use of non-toxic alternatives, and we will conduct education programs and provide information to anglers and the public about non-toxic alternatives and the benefits to fish, wildlife, and people.

Mitigation Measures to Avoid Conflicts

- The refuge would limit the hunting seasons to prevent impacts to nesting and migratory birds and other wildlife-dependent recreational users.

- The refuge would limit the fishing season on the Atlantic Ocean portion of the Two Mile Beach Unit to prevent impacts to nesting and migratory birds from April 1 to September 30.

- The refuge will prohibit the use of lead tackle on the refuge for fishing, implemented over a 5-year phase-in period to allow anglers time to adapt to the new regulations without diminishing fishing opportunities, for a complete restriction beginning September 2026.

- Only Federally approved, non-toxic ammunition will be permitted while hunting for upland game, per existing refuge regulations.

- The refuge would clearly post information on the hunting season at the refuge headquarters, on the website, and on signs throughout the refuge.

- The refuge would encourage all visitors to wear blaze orange during the hunting season to minimize potential safety issues.

Under the Proposed Action Alternative, the Two Mile Beach Unit (520 acres) and the rest of the closed area (112 acres) would not be open to hunting. Portions of the Cape May NWR were designated, acquired, reserved, or set apart as an inviolate sanctuary; therefore, hunting may only be allowed for migratory game birds on no more than 40 percent of the refuge. Hunting would not occur during summer season to minimize impacts to nesting birds and other wildlife-dependent recreational users. By expanding and/or maintaining hunting and fishing opportunities, but retaining mitigation measures to prevent conflicts, the refuge would promote a balance of wildlife-dependent recreational uses. This alternative offers increased opportunities for hunting and fishing and fulfills the Service's mandate under the Refuge System Improvement Act of 1997.

Alternative(s) Considered, But Dismissed From Further Consideration

In developing hunting plans for national wildlife refuges, we regularly receive comments and requests from some members of the public to eliminate hunting. An alternative that would close the refuge to all hunting was therefore considered but dismissed from detailed analysis. A "No Hunting Alternative" would not accomplish the purposes we seek to accomplish by the adoption of this hunting and fishing plan as described in the "purpose and need" section of this EA. Closing the refuge to hunting would conflict with the Refuge System Improvement Act, which provides that hunting is an appropriate and priority use of the Refuge System, shall receive priority consideration in refuge planning and management, mandates that hunting opportunities should be facilitated when feasible, and directs the Service to administer the Refuge System so as to "provide increased opportunities for families to experience compatible wildlife-dependent recreation, particularly opportunities for parents and their children to safely engage in traditional outdoor activities, such as fishing and hunting." Furthermore, Department of the Interior Secretarial Order 3356, signed in 2017, directs the Service to enhance and expand public access to lands and waters on refuges for hunting, fishing, recreational shooting, and other forms of outdoor recreation. An alternative that failed to provide any opportunity to participate in hunting activities where such activities are compatible with the purposes of the Refuge System would also fail to meet the goals of the Refuge System.

Refuge staff have worked closely with stakeholders and the New Jersey Division of Fish and Wildlife (NJDFW), a division of the New Jersey Department of Environmental Protection, to develop the current proposed hunting and fishing plan. There are no unresolved conflicts about the proposed action with respect to the alternative uses of available resources. Additionally, the proposed action builds on existing hunting and fishing programs and includes the addition of some areas that were acquired through development of the refuge's Comprehensive Conservation Plan (CCP). Therefore, the Service does not need to consider additional alternatives (43 CFR 46.310).

Affected Environment and Environmental Consequences

This section is organized by affected resource categories and for each affected resource discusses both (1) the existing environmental and socioeconomic baseline in the action area for each resource and (2) the effects and impacts of the proposed action and any alternatives on each resource. The effects and impacts of the proposed action considered here are changes to the human environment, whether adverse or beneficial, that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives. This EA focuses on the written analyses of the environmental consequences on a resource only when the impacts on that resource could be more than negligible and therefore considered an "affected resource." Resources that will not be more than

negligibly impacted by the action may be dismissed from further analyses (see Table C-1). We determine significance by considering the degree of effects to that environment, and connected actions are used to assist in determining significance.

Cape May NWR is located in Cape May County, NJ, and includes three primary areas: the Delaware Bay Division, Great Cedar Swamp Division, and Two Mile Beach Unit (see Figures 2, 3, and 4 of the Hunting and Fishing Plan). About half of the refuge land is wetland and about half is upland. Forests (combining upland and wetland types) represent the largest single habitat type on the refuge. Most of the wetlands in the refuge are dominated by woody vegetation (swamps). Salt marsh makes up about 15 percent of the refuge land, forested wetlands make up 30 percent, shrub/scrub wetlands and bogs make up about 4 percent, and open water makes up less than 1 percent. Most of the salt marshes were either impounded earlier in the century to create meadows for salt hay production or grid ditched for mosquito control. Most of the impounded areas have been reopened by tidal action or human intervention. Forested uplands make up about 42 percent of the Service-owned property at the refuge. Upland forests range from deciduous to coniferous dominated overstory composition, with tree species including pitch pine, oaks, black cherry, and sweet gum.

Fire played a prominent role in defining the composition and structure of upland plant communities, both historically and prehistorically (Little, 1998). There are still some nearby State lands in the Pine Barrens that receive regular fire treatment (both prescribed and wild), but fire on refuge lands has been suppressed for decades. Other upland habitats include shrub/scrub uplands that make up about 3 percent, and grassland/old fields uplands which make up about 3 percent. Beaches make up less than 1 percent of the Service-owned property. Unique to the peninsula and present on the refuge is the Cape May lowland swamp, a deciduous forest swamp with an unusually high species diversity and found in headwaters areas.

TABLE C-1. POTENTIAL FOR ADVERSE IMPACTS FROM PROPOSED ACTION AND ALTERNATIVES

Resources	**Not Applicable:** Resource does not exist in project area	**No/Negligible Impacts:** Exists but no or negligible impacts	**Greater than Negligible Impacts:** Impacts analyzed in this EA
Species to Be Hunted/Fished	☐	☐	☒
Non-Target Wildlife and Aquatic Species	☐	☐	☒
Threatened and Endangered Species and Other Special Status Species	☐	☐	☒
Habitat and Vegetation (including vegetation of special management concern)	☐	☐	☒
Geology and Soils	☐	☒	☐
Air Quality	☐	☒	☐

Resources	**Not Applicable:** Resource does not exist in project area	**No/Negligible Impacts:** Exists but no or negligible impacts	**Greater than Negligible Impacts:** Impacts analyzed in this EA
Water Quality	☒	☐	☐
Floodplains	☒	☐	☐
Wilderness	☒	☐	☐
Visitor Use and Experience	☐	☐	☒
Cultural Resources	☐	☒	☐
Refuge Management and Operations	☐	☒	☐
Socioeconomics and Environmental Justice	☐	☒	☐

Big Game

Affected Resource Description

White-tailed deer

Cape May NWR is located in New Jersey Deer Management Zone (DMZ) 34. During the 2018-2019 season, 603 deer were harvested in DMZ 34. 50,861 total deer were harvested Statewide during the 2018-2019 season.

The total deer population in New Jersey is over 125,000 individuals. The deer population has declined since it reached a peak at over 200,000 individuals in 1995 but has been increasing steadily since 2014. The population remains at a problematic and overpopulated level in many areas of the state. NJDFW will adjust seasons and limits to maintain healthy populations.

Wild turkey

In New Jersey, the Statewide turkey population is estimated at approximately 23,000 individuals. From 1985 to 2000, turkey populations in New Jersey steadily increased from approximately 6,200 birds to approximately 23,000 birds. The turkey population has remained stable at approximately 21,000 to 23,000 individuals since 2000.

The annual Statewide harvest is estimated at approximately 3,000 turkeys. Cape May NWR is located in New Jersey Turkey Hunting Area (THA) 22. During the 2019 spring season, 200 turkeys were harvested in THA 22. NJDFW will adjust seasons and limits to maintain healthy populations.

Anticipated Impacts

No Action

White-tailed deer and turkey hunting would continue to be permitted in designated areas of the refuge. It is estimated that during the 2019/2020 hunt season, 2,200 big game hunt visits were made to the refuge. Under the no action alternative, current levels of harvest would be expected, as no new

opportunities would be provided.

Proposed Action
Under the proposed action, 12,020 acres of the refuge would be opened for white-tailed deer hunting and 4,569 acres would be open for turkey hunting. Hunting could result in direct mortality of individuals, changes in wildlife behavior, and changes in distribution patterns. Although it is possible that the expanded hunting program could attract additional big game hunters, impacts to local or regional white-tailed deer and turkey populations are not expected to change significantly. With little additional acreage opening for deer hunting, an annual take of approximately 603 deer from Zone 34, and 200 birds in Turkey Hunting Area 22, is not expected to measurably increase.

Hunting, in the context of an over-abundant species like white-tailed deer is also an important population management tool that can reduce habitat degradation and competition, yielding healthier populations in the long-term.

Upland Game
Affected Resource Description
Coyote and Fox
Coyotes have been documented in all 21 counties of New Jersey. The coyote population appears to be increasing and is estimated at around 3,000 individuals. In 2009, 59 coyotes were harvested Statewide in New Jersey. NJDFW estimates that approximately 11,207 foxes and 88 coyote were harvested during the 2017/2018 hunting season across New Jersey. NJDFW will adjust seasons and limits to maintain healthy populations.

Grouse and Pheasant
As of June 2019, the New Jersey ruffed grouse population was deemed insufficient to support regulated hunting. NJDFW will continue to monitor the population and will adjusting hunting opportunities accordingly. If the State opens for grouse hunting seasons, the refuge will accordingly open to grouse hunting seasons. Although stocking does not occur on the refuge, NJDFW stocks approximately 50,000 pheasants on Wildlife Management Areas Statewide. NJDFW will adjust the stocking schedule, hunting seasons, and bag limits annually to maintain a huntable population. The NJDFW estimates that 62,948 pheasant and 233 grouse were harvested during the 2017/2018 hunting season across New Jersey.

Small Game
For squirrel, the current bag limit is 5 per day with no annual limit. For rabbit and hare, the current bag limit is 4 per day for cottontail and 1 per day for hare with no annual limit. There is no bag limit for groundhog. These species are common and abundant in the State of New Jersey with high reproductive success. NJDFW will adjust seasons and limits to maintain healthy populations. The NJDFW estimates that approximately 28,619 rabbits, 60,735 squirrels and 32,035 groundhog were harvested during the 2017/2018 hunting season across New Jersey.

Anticipated Impacts
No Action
Rabbit and squirrel hunting would continue to be permitted in designated areas of the refuge. It is estimated that during the 2019/2020 hunt season, 40 upland game hunt visits were made to the

refuge. Under the no action alternative, current levels of harvest would be expected as no new opportunities would be provided. Coyote, fox, grouse, pheasant, crow, and groundhog hunting would not be offered on the refuge. None of these species would be harvested on refuge property as no new hunting opportunities would be provided.

Proposed Action

Under the proposed action, new areas of the refuge will open to public hunting for six new upland game species, and most areas will overlap the refuge deer hunting area. Rabbit and squirrel hunting was not previously open on the unit south of Highway 550 (2,158 acres), east of Highway 47 (3,842 acres). This represents almost 6,000 additional acres for rabbit and squirrel hunting. Coyote, fox, groundhog, grouse and pheasant hunting was previously not open on the refuge. This represents 12,020 newly opened acres for hunting on the refuge. Coyote, fox, and groundhog are species abundant throughout the State and have high reproductive rates, which limits the potential impact of hunting. The refuge expects approximately 55 additional hunters annually. Even at the local level, the refuge only adds slightly to the accumulative impacts on resident wildlife, and a negligible amount to regional and Statewide populations. Under the proposed hunt, the refuge anticipates some additional impacts compared to the current levels of use. Impacts to resident wildlife could include direct mortality or injury of target species, accidental mortality or injury of non-target species, disturbance to non-target species, and some impacts to habitat and environment. The hunt program is anticipated to result in the direct mortality of individuals and may result in short-term disturbance, but impacts to local or regional populations are expected to be negligible.

Migratory Game Birds

Affected Resource Description

Annual waterfowl assessments are based upon the distribution, abundance, and flight corridors of migratory birds. An Annual Waterfowl Population Status Report is produced each year and includes the most current breeding population and production information available for waterfowl in North America (USFWS 2017). An Annual Adaptive Harvest Management Report (AHM) provides the most current data, analyses, and decision-making protocols (USFWS 2017b). These reports are intended to aid the development of waterfowl harvest regulations in the United States for each hunting season.

Waterfowl seasons and bag limits are set by states within a framework set by the Service and based on surveys, harvest data, and habitat data. Populations of these species have remained relatively stable. NJDFW estimates that approximately 31,300 dabbling ducks, 28,000 sea ducks, 5,200 brant, 26,600 Canada geese, and 1,500 light geese were harvested during the 2016/2017 hunting season across New Jersey. A fraction of that Statewide harvest occurred on and around Cape May NWR.

Anticipated Impacts

No Action

Migratory game bird hunting would continue to be permitted in designated areas of the refuge. It is estimated that during the 2019/2020 hunt season, 1,900 migratory game bird hunt visits were made to the refuge. Under the no action alternative, current levels of harvest would be expected as no new opportunities would be provided.

Proposed Action
Under the proposed action, 6,020 acres would be open for migratory game bird hunting. In addition to the expansion in acreage, the refuge would open to crow hunting for the first time. Hunting migratory game birds on the refuge would reduce the total numbers of birds in the flyway, but harvest would be within allowable limits as determined by the Service annually. Migratory game bird hunting on the refuge would make the birds more skittish and prone to disturbance, reduce the amount of time they spend foraging and resting, and alter their habitat usage patterns (Raveling 1979, Owen 1973, White-Robinson 1982, Madsen 1985, Bartelt 1987).

Shore fishing at Cape May NWR could potentially affect nesting or migratory birds; however, the refuge has limited the fishing season on the Atlantic Ocean portion of Two Mile Beach Unit to mitigate this impact. Human activity, including walking trails and boat use, has the potential to affect the behavior, distribution, and abundance of waterbirds due to disturbance. Several studies have examined the effects of recreation on birds using habitats adjacent to trails and roads through wildlife refuges and coastal habitats in the eastern United States. Overall, the existing research demonstrates that disturbance from recreational activities has at least temporary effects on the behavior and movement of birds and other animals within a habitat or localized area.

Disturbance to non-target birds and resident wildlife would likely occur from hunting and associated hunter and angler activity, but would be short-term and temporary. Overall, the effects on migratory birds are expected to be minimal.

Saltwater Finfish
Affected Resource Description
In accordance with the Atlantic States Marine Fisheries Commission's Fishery Management Plans (FMPs) (http://www.asmfc.org/fisheries-management/program-overview) for these species, the State of New Jersey is required to demonstrate that harvest of a given species under the current management regime is sustainable (i.e., will not diminish the potential future stock reproduction and recruitment). The State accomplishes this by conducting multiple fishery dependent and independent surveys throughout New Jersey marine waters. State regulations regarding recreational fishing, including minimum sizes, open seasons, and bag limits that apply to all marine waters in the State should prevent the recreational harvest of target species from negatively impacting target species abundance and have only minor collective impacts. The refuge can be more restrictive, but cannot be more liberal than the FMPs allow.

The refuge provides fishing in the coastal waters of the Two Mile Beach Unit and that portion of the Two Mile Beach Unit along the Cold Spring Inlet (adjacent to the Middle Thoroughfare Bridge). Unlike most coastal areas that are owned by the State of New Jersey and subject to State riparian rights, the Service owns those portions of Two Mile Beach Unit that extend into the Atlantic Ocean and Cold Spring Inlet. Fish commonly found in the tidal areas include mummichog, weakfish, summer flounder, bluefish, and black sea bass.

Anticipated Impacts
No Action
Under current management, minimal impacts to saltwater finfish are observed. It is estimated that during the 2019/2020 season, 13,000 fishing visits were made to the refuge. Fish may experience

distress, injury, and mortality from the saltwater fishing program. Impacts are not expected to be significant for the overall population of saltwater fish on and around the refuge.

Proposed Action

Recreational fishing could potentially cause negative impacts to fish populations if it occurs at unsustainably high levels or is not managed properly. Potential impacts include direct mortality from harvest, catch and release injury, changes in age and size class distribution, changes in reproductive capacity and success, loss of genetic diversity, altered behavior, and changes in ecosystems and food webs (Lewin et al. 2006, Cline et al. 2007). Fishing generally removes individuals from a population at high levels and can lead to reduced population sizes and loss of genetic diversity. The loss of genetic diversity can ultimately reduce a population's fitness, resilience, and ability to adapt to environmental changes and stressors. The higher the fishing mortality, the greater these types of impacts will be (Lewin et al. 2006).

The negative impacts of lead on people and wildlife is documented and clear (Golden et al., Grade et al.). A concern related to fishing is the use of lead sinkers and jigs for fishing. Because sinkers and jigs are generally much larger than shot pellets, a single lead sinker may induce acute lead poisoning. We will continue to encourage use of non-toxic ammunition and fishing tackle, and will educate hunters and anglers about lead and it's impacts. To move towards reduction and future elimination of this threat on the refuge, we will be implementing a lead tackle ban over a 5-year period in order to educate and work with anglers on non-toxic alternatives. The complete ban will begin in September 2026.

While fishing removes individuals from the population, we do not anticipate that projected fishing pressure will affect the coastal fish population as a whole. NJDFW strives to ensure maintenance of healthy and diverse fish species populations. Anglers must abide by the State's seasons, catch limits, and regulations to protect the State's fish populations. The refuge's fishing pressure is projected to be sustainable.

The areas currently open to saltwater fishing would remain open. Harvest would continue to be regulated by the State through surveys, and any changes in populations could result in changes to regulations, which would contribute to avoiding negative impacts to finfish species.

Non-Target Wildlife and Aquatic Species

Affected Resource Description

The refuge is home to many resident and migratory wildlife species. Common non-target migratory bird species include herring gull, sanderling, semipalmated sandpiper, turkey vulture, northern harrier, red-tailed hawk, osprey, brant, American black duck, northern flicker, hairy woodpecker, downy woodpecker, yellow rumped warbler, and purple martin.

Reptile species common in the area include the eastern box turtle, diamond back terrapins, eastern fence lizard, and common garter snake. Amphibian species common in the area include eastern newt, grey tree frog, and spring peeper. Fish occurring on the refuge would be grouped into two major types: estuarine and near-shore marine. Common fish species on and around the refuge include mummichog, summer flounder, bluefish, and black sea bass.

There is a concern about the bioavailability of spent lead ammunition and sinkers on the environment, endangered and threatened species, birds (especially raptors), mammals, and humans or other fish and wildlife susceptible to biomagnification. Lead shot and bullet fragments found in animal carcasses and gut piles are the most likely source of lead exposure (Kelly et al. 2011). Many hunters do not realize that the carcass or gut pile they leave in the field usually contains lead bullet fragments. Research continues on the effects of lead ammunition and the fragments it can deposit in killed game. Avian predators and scavengers can be susceptible to lead poisoning when they ingest lead fragments or pellets in the tissues of animals killed or wounded by lead ammunition. A concern related to fishing is the use of lead sinkers and jigs for fishing. Because sinkers and jigs are generally much larger than shot pellets, a single lead sinker may induce acute lead poisoning. Lead ammunition is permitted in New Jersey and on the refuge for all hunts except waterfowl and coots. We will continue to encourage use of non-toxic ammunition and fishing tackle, and will educate hunters and anglers about lead and it's impacts. To move towards reduction and future elimination of this threat on the refuge, we will be implementing a lead tackle ban over a 5-year period in order to educate and work with anglers on non-toxic alternatives. The complete ban will begin in September 2026.

Anticipated Impacts

No Action

Under this alternative, the current hunting and fishing programs would be maintained with a total of 11,268 acres of refuge lands open to hunting and two shoreline areas open to fishing. Approximately 4,140 hunting and 13,000 angling visits would be expected annually under this alternative. However, hunting pressure is spread out over the duration of the hunting season for multiple species, thereby minimizing the impacts. Impacts from recreational fishing are expected to be minimal, but may result in the direct mortality or injury of individuals and short-term disturbance to other wildlife species near the fishing areas. On the Atlantic Ocean portion of the Two Mile Beach Unit, fishing access is not provided from April 1 to September 30 to minimize impacts to nesting and migrating birds. This alternative currently results in some short-term, but negligible, negative impacts to small mammals, fish, birds, and other wildlife due to disturbance in areas where human access for hunting and fishing occurs.

Proposed Action

Under the proposed action, 12,020 total acres would be open for hunting and two shoreline areas open to fishing. On the Atlantic Ocean portion of the Two Mile Beach Unit, fishing access is not provided from April 1 to September 30 to minimize impacts to nesting and migrating birds. To prevent additional impacts to wildlife species, the refuge would impose limitations on hunting seasons and units to disperse hunting pressure. Increased hunting visitation may result in additional short-tern disturbance to wildlife, especially in areas previously closed to hunting. This includes temporary displacement of resident wildlife from foot traffic moving through the area and increased disturbance. While resident and non-game wildlife in areas newly opened to hunters and hunting may be negatively impacted by disturbance, that impact is expected to be negligible. The degree of the impact by the alternative is not expected to be different from what may already occur (including temporary displacement of songbirds, raptors, and resident wildlife from foot traffic moving through the area). Generally, deer and waterfowl hunting areas are in separate locations, primarily due to suitable habitat of the target species, which would result in no negative impacts between hunting types. The use of dogs while hunting will temporarily disturb wildlife and other hunters.

The taking of non-target hunt species will not be permitted during any hunting seasons. Non-toxic shot is required for all migratory game bird hunting as well as upland game hunting on the refuge, which reduces negative impacts to wildlife using waterways and marshes. The refuge is not requiring the use of non-toxic shot for other seasons, but will encourage hunters to utilize it to reduce unintended negative impacts to wildlife. Some scavenging of game shot on the ground or in carcasses left behind by hunters could occur, but the likelihood of poisoning of wildlife is low. Furthermore, to move towards reduction and future elimination of the threat from lead on the refuge, we will be implementing a lead tackle ban with fishing over a 5-year period to educate and work with anglers on non-toxic alternatives. The complete ban will begin in September 2026.

Threatened and Endangered Species

Affected Resource Description

An Intra-Service Section 7 analysis under the Endangered Species Act (ESA) of 1973, as amended was conducted in cooperation with the Service's New Jersey Field Office (see Appendix D). Potential species include Northern long-eared bat, red knot, piping plover, Eastern black rail, bog turtle, American chaffseed, Knieskern's beaked-rush, seabeach amaranth, and swamp pink.

Anticipated Impacts

No Action

Northern long-eared bats may occur in some areas in the current hunting areas. Northern long-eared bats may be disturbed if hunters use their roost trees for stand placement, but bats are inactive during hunting seasons and not known to occur in the fishing areas.

Bog turtles have not been observed on the refuge. If they were to occur, the turtles would be inactive and hibernating during the hunting season.

Potential impacts to piping plovers includes disturbance from anglers prior to the April 1 closure as birds are arriving. Once the beach closes, no effects on piping plovers would occur other than pedestrians that violate the law and walk along the beach. Piping plovers are not known to occur in the hunting areas. Red knots use beach habitats and marsh mudflats and could be disturbed by hunters and anglers using the beach, tidal creeks or marsh habitats. These disturbances are expected to be minimal and unlikely to adversely affect knots as the knots are able to fly away from the disturbance.

Eastern black rail can typically be found in salt and brackish marshes with dense cover but can also be found in upland areas of these marshes including impounded and unimpounded salt and brackish marshes. Hunters and anglers may disturb rails during their activities; however, these disturbances are expected to be minimal and unlikely to adversely affect them as they are able to fly away from the disturbance.

Seabeach amaranth grows along the dune edge of the Two Mile Beach Unit and could be impacted by trampling by anglers after the beach opens in September. Refuge staff fence areas where plants are found which reduces the potential for negative impacts to the plants. Swamp pink currently occurs in some areas in the hunting units. There is a low risk of swamp pink being trampled by hunters in areas where they occur. The risk to plant damage is low, as the plants are dormant during

hunting season (October to January) and not present in the fishing areas. No adverse impacts are expected for American chaffseed, which occurs in fire-maintained longleaf pine flatwoods and savannas or Knieskern's beaked-rush, which occurs in early successional wetland habitats, as those species are not known to occur in fishing or hunting areas. If they were to occur, the risk to plant damage is low, as the plants are dormant during most of the hunting season and not suited to occur in the fishing areas.

Proposed Action
Under this alternative, similar effects as the No Action Alternative are expected, since hunting and fishing activities would continue or slightly increase. For example, swamp pink plants could be trampled. Because the populations of swamp pink are small and disparate and known plants are fenced with wire, we do not expect much impact from hunters. The sites are rather difficult to locate and it is unlikely hunters will come across plants that are not fenced. The expansion of deer hunting on the refuge would potentially improve swamp pink survival, as deer are a major depredator of the plant. The small expansion of hunting acreage would limit the disturbance caused by hunters. No additional impacts are expected from the addition of coyote, fox, grouse, pheasant, crow, and groundhog hunting, as hunting has occurred on refuge lands for years.

Habitat and Vegetation
Affected Resource Description
Vegetation varies throughout the refuge, although hunt areas are generally upland and wetland habitat. Species common to these areas include red maple, sweetgum, American holly, red cedar, pitch pine, oaks, winged sumac, blueberry, saltmarsh cordgrass, phragmites, goldenrods, grasses and forbs. Impacts to vegetation would primarily impact plants including saltmarsh cordgrass, goldenrods, grasses and forbs.

Anticipated Impacts
No Action
Under current levels of use, some impacts to vegetation observed are likely due to trampling, walking off trail, creating footpaths, unauthorized use of tacks and other materials in trees, and the installation of waterfowl blinds in the marsh habitat. However, because the majority of hunting takes place when plants are entering dormancy/dormant, impacts from hunting are limited and short-term. Impacts from fishing occur year-round, but are minimal because anglers encounter minimal vegetation on the beaches where fishing is permitted.

Proposed Action
Negative impacts of recreational hunting and fishing could include the temporary trampling of vegetation and light soil erosion. Most hunting activities occur during the fall and winter, when plants become dormant and the ground is frozen and/or covered in snow. Hunters would have minimal impacts on plants during this period. Additionally, hunter use during all seasons will be dispersed throughout the refuge, minimizing the impact to any one area. Off-road vehicles are prohibited on the refuge, including for hunting. The refuge is accessible from the public road system.

Positive effects on vegetation will likely result from any reduction in the white-tailed deer population. The impacts of dense deer populations on forest regeneration and the composition and diversity of the herbaceous understory have been well documented (Tierson et al. 1966, Behrend et

al. 1970, Tilghman 1989, Cote et al. 2004, White 2012). Deer will forage on swamp pink (*Helonias bullata*), a federally threatened plant species located in small pockets in swamps throughout the refuge. Reducing the deer herd and correlated deer browsing levels could cause minor benefits to the swamp pink. In addition, an overabundance of deer can suppress native vegetation, facilitating the success of invasive species in forested habitats (Knight et al. 2009). Lessening the impact of excessive deer herbivory is a key forest management strategy (White 2012, Nuttle et al. 2013) and will likely become even more important as the climate warms (Galatowitsch et al. 2009). For these reasons, hunting is expected to have minimal adverse impacts on vegetation and soil.

The anticipated number of hunters and anglers would comprise a small fraction of the refuge's total visitation. With the opening of new hunt areas, trampling of vegetation may increase slightly, but the physical effects on refuge vegetation from hunting is expected to be minimal and short-term based on anticipated levels of use.

Wetlands and Water Resources

Affected Resource Description

Cape May NWR has both tidal and non-tidal surface waters. Non-tidal waters include marshes, bogs, ponds, creeks, and seasonally flooded forests. Tidal waters include ponds, salt and fresh marshes, creeks and old ditches, coves, bays, and inlets. These habitats are located throughout the hunt area.

Anticipated Impacts

No Action

Potential impacts from hunting and fishing include minor bank erosion, impacts to wetland vegetation from foot traffic, and impacts from the use of lead shot and/or sinkers adjacent to wetlands and water resources. However, under current levels of use, these impacts are minimal and are spread out across the refuge. The current hunting and fishing programs have minimal adverse impacts to wetlands or water resources.

Proposed Action

The proposed action is expected to have minor impacts on wetlands and water resources. In addition to the existing impacts, the proposed action could result in further impacts due to the use of lead shot in hunting areas adjacent to water resources. However, non-toxic shot is required for all waterfowl and upland game hunting, which reduces negative impacts to wildlife using waterways and marshes. The refuge will not require the use of non-toxic ammunition for other hunting seasons but will encourage hunters to utilize it to reduce unintended negative impacts to wildlife. Although lead sinkers are legal to use in New Jersey, negative impacts to fish, wildlife and habitats are of concern. Thus, we will move towards reduction and future elimination of this threat from lead on the refuge and will implement a lead tackle restriction over a 5-year phase-in period to educate and work with anglers on non-toxic alternatives. The full restriction will be implemented in September 2026.

Additionally, the expansion of hunting and fishing areas throughout the refuge could lead to impacts like bank erosion and damage to wetland vegetation over a greater geographic area. At the anticipated levels of use, hunting is expected to have minimal adverse impacts to wetlands and water resources on the refuge.

Visitor Use and Experiences

Affected Resource Description

Cape May NWR is open to all six priority public uses (hunting, fishing, wildlife observation, photography, environmental education, and interpretation). In 2019, the refuge received 180,000 total visits. Considering its position as an important stopover point for migratory birds, the refuge is an extremely popular site for wildlife observation and photography.

Hunting and fishing occur on public and private lands that are found adjacent to the refuge. Recent recreational use of lands adjacent to or near the refuge has included waterfowl hunting, deer hunting, fishing, trapping, wildlife observation, photography, horseback riding, and all-terrain vehicle/off-road vehicle use. All of these lands are in private ownership; general public access to these lands is rare.

Other national wildlife refuges in New Jersey that allow hunting include: Edwin B. Forsythe NWR, Supawna Meadows NWR, Great Swamp NWR, and Wallkill River NWR. Other refuges that allow fishing include: Edwin B. Forsythe NWR, Wallkill River NWR, and Supawna Meadows NWR.

Anticipated Impacts

No Action

In 2019, New Jersey issued 73,009 total hunting licenses. In the same year, approximately 4,140 visits were made to Cape May NWR by hunters. According to the National Ocean and Atmospheric Administration (NOAA), there were approximately 506,843 marine anglers in New Jersey in 2016. In the 2019, approximately 13,000 visits were made by anglers to Cape May NWR. However, the refuge is also an extremely popular destination for wildlife observation. In 2019, over 80,000 individuals visited the refuge for wildlife observation. While the refuge does implement time and space zoning to prevent conflicts between priority public users, some disturbance to other users is expected to continue.

Proposed Action

With expansion of the hunting program, approximately 55 additional hunters would use the refuge. Disturbance to other users could arise when hunters are travelling to or from hunting units or from the sounds during hunting hours. Hunting could be particularly disruptive to non-consumptive users, as hunting may cause wildlife to temporarily avoid the areas adjacent to hunting units. Public outreach, zoning, and restrictions in some locations have been proposed to reduce conflicts among the different user groups. If conflicts arise among user groups, mitigation efforts can be implemented to ensure that the proposed use will not have significant impacts to other user groups. Impacts to other users will primarily be limited to the hunting season and are minimized by time and space zoning that lessens the interactions between hunters and other wildlife-dependent users.

All conflicts between users are expected to be minor and short-term. The refuge does not expect a measurable influx of new anglers, as no new opportunities would be provided. Impacts to other visitors from recreational fishing are expected to remain minimal and stable.

Cultural Resources

Affected Resource Description

The varied and changing mix of upland and wetland habitat supported Native American populations

in the area during the prehistoric period. Several prehistoric sites were identified on the refuge. During the historic period, settlement on the refuge appears to have been limited. Most of the area was marshland, woodland, or farmland, with little recorded settlement on refuge property, and apparently few landing areas to provide opportunities for maritime sites. There are no standing historic structures on Cape May NWR; however, there is a family cemetery.

There are no Federal recognized Native American Tribes in the State of New Jersey. There are, however, three State-recognized Tribes: the Nanticoke Lenni-Lenape Tribal Nation, the Ramapough Lenape Nation and the Powhatan Renape Nation.

Anticipated Impacts
No Action
No adverse impacts would occur under this alternative.

Proposed Action
Section 106 of the National Historic Preservation Act of 1966, as amended, requires the Service to evaluate the effects of any of its actions on cultural resources (historic, architectural and archeological properties) that are listed or eligible for listing in the National Register of Historic Places (NRHP). It is believed the proposed action would not likely affect any cultural resources found on the refuge.

Hunting and fishing, regardless of method or target species, are consumptive activities that do not pose any direct threat to prehistoric or historic properties on and/or near the refuge. No impacts to cultural resources are anticipated above what may be caused by any refuge visitor. The access provided to hunters and anglers is not expected to increase vandalism or disturbance to cultural resources by individuals while they are hunting or fishing, nor is it likely that hunters or anglers will be more likely to engage in vandalism or disturbance than any other refuge visitor.

Refuge Management and Operations
Affected Resource Description
Cape May NWR currently has four full-time staff. The staff maintain trails, grounds, and signs, coordinate with the community, provide hunting and fishing information, and update the website. Refuge infrastructure includes the refuge headquarters office, a refuge house, a maintenance building, a Visitor Contact Station, and three outbuildings. Hunters and anglers on the refuge utilize six parking lots, refuge roads, and a network of trails.

Anticipated Impacts
No Action
Current levels of use of refuge infrastructure are short-term and have negligible impact. Approximately $31,800 of the Cape May NWR's budget is currently spent on the hunt program. Approximately $4,000 is currently spent on the fishing program. The Refuge Manager coordinates the budget each year to ensure funds are available. Assistance from State Conservation Officers and local police departments occurs. No permits are sold and no funds are collected from the public to hunt or fish on the refuge.

Proposed Action

While there may be increased hunters throughout the refuge, impacts to local public roads are expected to be negligible. The office building and Visitor Contact Station are open, and visitors may stop to gather hunting regulations or read informational kiosks. The refuge is crisscrossed with well-traveled roads owned by local municipalities and counties.

Estimated costs to implement this alternative are an additional $12,100. This is mainly due to the increased time to manage the land expansion as well as the expanded seasons of grouse, pheasant, coyote, fox, groundhog, and crow hunting. It will require approximately 20 percent of Federal Fish and Wildlife Officer's time to enforce hunting and fishing, as well as 15 percent of the refuge biologist's time for coordination of the hunt program and assessment of the impact of hunting and fishing on wildlife and habitat. The Refuge Manager will spend 5 to 10 percent of their time overseeing and implementing the program. Some visitor services manager (part time employee) and maintenance time will also be needed. This would adversely affect the administration of the refuge, as other priority actions and obligations would still be necessary in meeting the purpose of the refuge and the mission of the Refuge System, such as habitat restoration and management. The budget would be managed to support the program. Large projects will require funding from sources other than the annual operating budget.

Socioeconomics and Environmental Justice

Affected Resource Description

From an economic perspective, the refuge provides a variety of environmental and natural resource goods and services used by people either directly or indirectly. Spending in the local area of the refuge units generates and supports economic activity in Cape May County.

In 2004, the expenditures associated with wildlife-dependent recreation on Cape May NWR totaled $336,700. Of this total, $30,300 came from hunting visits (Banking on Nature 2004). Cape May County ranks second in the state in tourism direct spending. It is estimated that more than $2 billion dollars in income comes straight from rental and second homes. Visitors help to produce over $700 million dollars in local revenue through recreational activities.

Ecotourism is a $600 million industry in Cape May County, with more than half (68 percent) coming from birding and watchable wildlife activities (2017). More than 30 percent of all land in Cape May County is open space and used for nature-based activities and/or passive recreation.

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires all Federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities.

Anticipated Impacts

No Action

Under current management, the refuge sees approximately 4,140 visits for hunting and 13,000 visits for fishing. Although this sum is minimal compared to the annual output of tourism in Cape May County ($700 million dollars in 2017), it represents a negligible but positive impact.

Proposed Action

Under the proposed action, the refuge is expected to attract up to 55 additional hunters each year. There is not expected to be an increased annual output from fishing, as no new opportunities are being provided. While still minimal, this means the expanded hunting program would have a greater positive impact on the local economy, slightly advancing the overall economic value of the refuge for the tourist economy in Cape May County.

The Service has not identified any potential high and adverse environmental or human health impacts from this proposed action or any of the alternatives. Minority or low income communities would not be disproportionately affected by any impacts from this proposed action or any of the alternatives.

Monitoring

Many game species populations are monitored by NJDFW through field surveys and game harvest reports, which provide an additional means for monitoring populations. The State has determined that populations of game species are at levels acceptable to support hunting and these assessments are reviewed and adjusted periodically. The refuge will be adaptive towards harvest management under the hunt program to ensure species and habitat health. Refuge-specific hunting regulations may be altered to achieve species-specific harvest objectives in the future. The refuge conducts regular monitoring of target and non-target species, habitats, and environmental conditions.

Summary of Analysis

The purpose of this EA is to briefly provide sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

Alternative A – No Action Alternative

As described above, there would be no additional costs to the refuge under this alternative. There would be no change to the current public use and wildlife management programs on the refuge. There would not be an increase in economic impacts to local economies. New hunting and fishing opportunities would not be created under this alternative, including new access sites to refuge lands for other users. This alternative has the least short-term impacts to physical and biological resources; however, long-term impacts on habitat quality could be more adverse. In addition, this alternative would reduce our actions as mandated under the Refuge System Administration Act and Secretarial Order 3356.

Alternative B – Proposed Action Alternative

As described above, this alternative is the Service's proposed action because it offers the best opportunity for public hunting and fishing that would result in a minimal impact on physical and biological resources, while meeting the Service's mandates under the Refuge System Administration Act and Secretarial Order 3356. The Service believes that hunting and fishing on the refuge will not have a significant impact on local or regional wildlife populations because the percentage likely to be harvested on the refuge, though possibly additive to existing hunting takes, would be a tiny fraction of the estimated populations. Additional hunting would not add more than slightly to the accumulative impacts to wildlife from hunting at the local or regional levels, and would only result in minor, negative impacts to wildlife populations.

List of Sources, Agencies and Persons Consulted
David Golden, Lisa Barno, Ted Nichols, Joe Leskie, Andrew Burnett, Carole Stanko, Heather Corbett, Peter Clarke, Matthew Heyl – New Jersey Division of Fish and Wildlife
Graham Taylor – U.S. Fish and Wildlife Service, Regional Office

List of Preparers
Heidi Hanlon, Wildlife Biologist, Cape May NWR
Thomas Bonetti, Hunting and Fishing Coordinator, Regional Office
Stacey Lowe, Hunting and Fishing Chief, Regional Office
Laura Howard, Visitor Services Assistant, Regional Office
Joshua Baker, Park Ranger, Cape May NWR

State Coordination
Written correspondence was conducted between the Cape May NWR and NJ Division of Fish and Wildlife from August 2020 through January 2021, along with phone calls presenting the refuges proposals.

National wildlife refuges, including Cape May NWR, conduct their hunting and fishing programs within the framework of State and Federal regulations. The refuge developed this hunting and fishing plan based on coordination with NJDFW. In developing this plan, the refuge reviewed the operations and regulations for neighboring State wildlife management areas to find consistency where possible. Refuge leadership consulted with the NJDFW Director David Golden in August 2020 to discuss proposed changes to the refuge's hunting and fishing plans. In October 2020, NJDFW provided a letter with formal comments to the proposed changes and these comments were considered while drafting the hunt and fish plan expansions.

Refuge staff will continue to consult and coordinate with NJDFW to maintain consistent regulations and programs, monitor populations of proposed hunt species, and set harvest goals. We will also work together to ensure safe and enjoyable recreational hunting and fishing opportunities, with law enforcement officers from both agencies cooperating to conduct patrols, safeguard hunters and visitors, and protect both game and nongame species.

Tribal Consultation
There are no local tribes in the vicinity of the refuge and; therefore, tribal consultation was not conducted for this hunt plan.

Public Outreach
The public will be notified of the availability of the Cape May NWR Hunting and Fishing Plan, EA and CD for review and will include no less than a 30-day comment period. We will inform the public through local venues, the refuge website, and social media. Comments received from the public will be considered, and modifications may be incorporated into the final plan and decision documents.

The refuge maintains a mailing list, for news release purposes, to local newspapers, radio, and websites. Special announcements and articles may be released in conjunction with hunting and fishing seasons. In addition, information about hunting and fishing will be available at Cape May NWR headquarters or on the Cape May NWR website.

Determination
This section will be filled out upon completion of any public comment period and at the time of finalization of the Environmental Assessment.

☑ The Service's action will not result in a significant impact on the quality of the human environment. See the attached **"Finding of No Significant Impact".**

☐ The Service's action **may significantly affect** the quality of the human environment and the Service will prepare an Environmental Impact Statement.

Preparer Signature: _____ Date: 8/12/2021

Name/Title/Organization: Thomas Bonetti, Hunting and Fishing Coordinator

_____

References

Arcese, P. 1987. Age, intrusion pressure and defense against floaters by territorial male Song Sparrows. Animal Behavior, 35, 773-784.

Augustine, D.J. and P.A. Jordan. 1998. Predictors of white-tailed deer grazing intensity in fragmented deciduous forests. Journal of Wildlife Management 62:1076-1085.

Bartelt, G.A. 1987. Effects of disturbance and hunting on the behavior of Canada geese family groups in East Central Wisconsin. Journal of Wildlife Management, 51, 517-522.

Bartmann, R.M., White, G.C., and Carpenter, L.H. 1992. Compensatory mortality in a Colorado mule deer population. Wildlife Monographs, 121, 1-39.

Behrend, D.F., Mattfield, G.F., Tierson, W.C., and Wiley, J.E. 1970. Deer density control for comprehensive forest management. Journal of Forestry, 68, 695-700.

Belanger, L. and Bedard, J. 1990. Energetic cost of man-induced disturbance to staging snow geese. Journal of Wildlife Management, 54, 36-41.

Bell, D.V. and Austin, L.W. 1985. The game-fishing season and its effects on overwintering wildfowl. Biological Conservation, 33, 65-80.

Burger, J. 1981. Effect of human activity on birds at a coastal bay. Biological Conservation 21, 231-241.

Burger, J. 1986. The effect of human activity on shorebirds in two coastal bays in northeastern United States. Biological Conservation, 13, 123-130.

Burger, J. and Gochfeld, M. (1998). Effects of ecotourists on bird behavior at Loxahatchee National Wildlife Refuge, FL. Environmental Conservation, 25, 13-21.

Caudill, J. and E. Carver. 2019. Banking on Nature 2017: The economic contributions of national wildlife refuge recreational visitation to local communities. USFWS, Falls Church, VA. 32pp.

Cline, R., Sexton, N., and Steward, S.C. (2007). A human-dimensions review of human-wildlife disturbance: a literature review of impacts, frameworks, and management solutions. For Collins, CO: U.S. Geological Survey, Open-File Report 2007-1111.

Cole, D.N. 1990. Ecological impacts of wilderness recreation and their management. In J. C. Hendee, G.H. Stankey, and R.C. Lucas (Eds.), Wilderness Management (pp. 425–466). Golden, CO: North American Press.

Cole, D.N. and Knight, R.L. 1990. Impacts of recreation on biodiversity in wilderness. Natural Resources and Environmental Issues, 0, 33-40. Cote, S.D., T.P. Rooney, J-P Tremblay,

Dussault, C. and D.M. Waller. 2004. Ecological Impacts of Deer Overabundance. Annual Review of Ecology and Systematics 35:113-147.

Erwin, R.M. 1980. Breeding habitat by colonially nesting water birds in two Mid-Atlantic U.S. regions under different regimes of human disturbance. Biological Conservation, 18, 39-51.

Ewald, P.W. and Carpenter, F.L. 1978. Territorial responses to energy manipulations in the Anna hummingbird. Oecologia, 31, 277-292.

Galatowitsch, S., L. Frelich, and L. Phillips-Mao. 2009. Regional climate change adaptation strategies for biodiversity conservation in a mid-continental region of North America. Biological Conservation 142:2012-2022.

Havera, S.P., Boens, L.R., Georgi, M.M., and Shealy, R.T. (1992). Human disturbance of waterfowl on Keokuk Pool, Mississippi River. Wildlife Society Bulletin, 20, 290-298.

Hunt W.G., R.T. Watson, J.L. Oaks, C.N. Parish, K.K. Burnham, R.L. Tucker, Belthoff, and G. Hart. 2009. Lead Bullet Fragments in Venison from Rifle-Killed Deer: Potential for Human Dietary Exposure. PLoS ONE 4(4): e5330. doi:10.1371/journal.pone.000533.

Iqbal S., W. Blumenthal, C. Kennedy, F.Y. Yip, S. Pickard, W.D. Flanders, K Loringer, K. Kruger, K.L Caldwell, and M. Jean Brown. 2009. Hunting with lead: association between blood lead levels and wild game consumption. Environmental Research 109(8):952-9. doi: 10.1016/j.envres.2009.08.007.

Kahl, R. 1991. Boating disturbance of canvasbacks during migration at Lake Poygan, Wisconsin. Wildlife Society Bulletin, 19, 242-248.

Kaiser, M.S. and Fritzell, E.K. 1984. Effects of river recreationists on green-backed heron behavior. Journal of Wildlife Management, 48, 561-567.

Kays, R., Parsons, A.W., Baker, M.C., Kalies, E.L., Forrester, T., Costello, R., Rota, C.T., Millspaugh, J.J. and McShea, W.J. 2017. Does hunting or hiking affect wildlife communities in protected areas? J Appl Ecol, 54: 242-252.

Kelly, T.R., P.H. Bloom, S.G. Torres, Y.Z. Hernandez, R.H. Poppenga, W.M. Boyce, and C.K. Johnson. 2011. Impact of the California lead ammunition ban on reducing lead exposure in golden eagles and turkey vultures. PLoS ONE. 6(4): e17656. doi:10.1371/journal.pone.0017656.

Kendall, R.J., T.E. Lacher Jr., C. Bunck, B. Daniel, C. Driver, C.E. Grue, F. Leighton, W. Stansley, P.G. Watanabe, and M. Whitworth. 1996. An ecological risk assessment of lead shot exposure in non-waterfowl avian species: upland game birds and raptors. Environmental Toxicology and Chemistry 15:4–20.

King, M.M. and Workman, G.W. 1986. Response of desert bighorn sheep to human harassment: management implications. Transactions 51st North American Wildlife and Natural Resource Conference.

Klein, M.L. 1993. Waterbird behavioral responses to human disturbance. Wildlife Society Bulletin, 21, 31-39.

Knight, R.L. and Cole, D.N. 1991. Effects of recreational activity on wildlife in wildlands. Transactions of the 56th North American Wildlife and Natural Resources Conference, 238-247.

Knight, T.M., J.L. Dunn, L.A. Smith, J. Davis, and S. Kalisz. 2009. Deer facilitate invasive plant success in a Pennsylvania forest understory. Natural Areas Journal 29(2):110-116.

Korschen, C.E., George, L.S., and Green, W.L. 1985. Disturbance of diving ducks by boaters on a migrational staging area. Wildlife Society Bulletin, 13, 290-296.

Kramer, J.L. and P.T. Redig. 1997. Sixteen years of lead poisoning in eagles, 1980-95: An epizootiological view. Journal of Raptor Research. 31(4): 327-332.

Lewin, W.C., Arlinghaus, R., and Mehner, T. (2006). Documented and potential biological impacts of recreational fishing: insights for management and conservation. Reviews in Fisheries Science, 14, 305-367.

Madsen, J. 1985. Impact of disturbance on field utilization of pink-footed geese in West Jutland, Denmark. Biological Conservation, 33, 53-63.

Miller S.G., Knight, R.L, and Miller, C.K. 1998. Influence of Recreational Trails on breeding bird communities. Ecological Society of America, 8(1), 162-169.

Morton, J.M., Fowler, A.C., and Kirkpatrick, R.L. 1989. Time and energy budgets of American black ducks in winter. Journal of Wildlife Management, 53, 401-410 (also see corrigendum in Journal of Wildlife Management, 54, 683.

Nuttle, T., A.A. Royo, M.B. Adams, and W.P. Carson. 2013. Historic disturbance regimes promote tree diversity only under low browsing regimes in eastern deciduous forest. Ecological Monographs 83(1):3-17.

Owen, M. 1973. The management of grassland areas for wintering geese. Wildfowl, 24,123-130.

Raveling, D.G. 1979. Traditional use of migration and winter roost sites by Canada geese. Journal of Wildlife Management, 43, 229-235.

Remacha, C., J.A. Delgado, M. Bulaic, and J. Pérez-Tris. 2016. Human disturbance during early life impairs nestling growth in birds inhabiting a nature recreation area. PLoS One, 11 http://dx.doi.org/10.1371/journal.pone.0166748

Rodgers, J.A. and Smith, H.T. (1995). Set-back distances to protect nesting bird colonies from human disturbance in Florida. Conservation Biology, 9, 89-99.

———. (1997). Buffer zone distances to protect foraging and loafing waterbirds from human disturbance in Florida. Wildlife Society Bulletin, 25, 139-145.

Scheuhammer, A.M. and S.L. Norris. 1996. The ecotoxicology of lead shot and lead fishing weights. Ecotoxicology 5(5):279-95. doi: 10.1007/BF00119051

Stauber, E., N. Finch, P.A. Talcott, and J.M. Gay. 2010. Lead poisoning of bald (Haliaeetus leucocephalus) and golden (Aquila chrysaetos) eagles in the US inland Pacific Northwest- An 18-year retrospective study: 1991-2008. Journal of Avian Medicine and Surgery 24:279-287. doi: http://dx.doi.org/10.1647/2009-006.1.

Streater, S. 2009. Wild meat raises lead exposure. Environmental Health News. Available: https://www.scientificamerican.com/article/wild-game-deer-venison-condors-meat-lead-ammunition-ban/ (March 2017).

Tierson, W.C., Patric, E.F., and Behrend, D.F. (1966). Influence of white-tailed deer on the logged northern hardwood forest. Journal of Forestry, 64, 804-805.

Tilghman, N.G. 1989. Impacts of white-tailed deer on forest regeneration in northwestern Pennsylvania. Journal of Wildlife Management, 53, 524-532.

U.S. Fish and Wildlife Service [USFWS]. 2004. Edwin B. Forsythe National Wildlife Refuge Comprehensive Conservation Plan. June 2004.USFWS, Division of Planning, Hadley, MA. 200pp.

U.S. Fish and Wildlife Service [USFWS]. 2013. Banking on Nature, The economic benefits to local communities of national wildlife refuge visitation. USFWS, Division of Economics, Washington, DC. 365pp.

U.S. Fish and Wildlife Service. 2013. Issuance of Annual Regulations Permitting the Hunting of Migratory Birds: Final Supplemental Environmental Impact Statement. Available online at: https://www.fws.gov/migratorybirds/pdf/policies-and-regulations/FSEISIssuanceofAnnualRegulations.pdf.

U.S. Fish and Wildlife Service. 2016. Adaptive Harvest Management: 2017 Hunting Season. U.S. Department of the Interior, Washington, DC. Available online at http://www.fws.gov/birds/management/adaptive-harvest-management/publications-and-reports.php.

US Places.com. 2017. http://www.us-places.com/New-Jersey/population-by-County.htm. Accessed October 22, 2017.

Ward, D.H. and Stehn, R.A. 1989. Response of brant and other geese to aircraft disturbance at Izembek Lagoon, Alaska. Anchorage, AK: U.S. Fish and Wildlife Service, Alaska Fish and Wildlife Research Center. Final report to the Minerals Management Service.

White, M.A. 2012. Long-term effects of deer browsing: composition, structure and productivity in a northeastern Minnesota old-growth forest. Forest Ecology and Management 269: 222-228.

White-Robinson, R. 1982. Inland and saltmarsh feeding of wintering brent geese in Essex. Wildfowl, 33, 113-118.

Whittaker, D. and Knight, R. 1998. Understanding wildlife responses to humans. Wildlife Society Bulletin, 26(3), 312-317.

Williams, G.J. and Forbes, E. 1980. The habitat and dietary preferences of dark-bellied brant geese and widgeon in relation to agricultural management. Wildfowl, 31, 151-157.

OTHER APPLICABLE STATUTES, EXECUTIVE ORDERS AND REGULATIONS

Cultural Resources

- American Indian Religious Freedom Act, as amended, 42 U.S.C. 1996 – 1996a; 43 CFR Part 7.
- Antiquities Act of 1906, 16 U.S.C. 431-433; 43 CFR Part 3.
- Archaeological Resources Protection Act of 1979, 16 U.S.C. 470aa – 470mm; 18 CFR Part 1312; 32 CFR Part 229; 36 CFR Part 296; 43 CFR Part 7.
- National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470-470x-6; 36 CFR Parts 60, 63, 78, 79, 800, 801, and 810.
- Paleontological Resources Protection Act, 16 U.S.C. 470aaa – 470aaa-11.
- Native American Graves Protection and Repatriation Act, 25 U.S.C. 3001-3013; 43 CFR Part 10.
- Executive Order 11593 – Protection and Enhancement of the Cultural Environment, 36 Fed. Reg. 8921 (1971).

Fish and Wildlife

- Bald and Golden Eagle Protection Act, as amended, 16 U.S.C. 668-668c, 50 CFR 22.
- Endangered Species Act of 1973, as amended, 16 U.S.C. 1531-1544; 36 CFR Part 13; 50 CFR Parts 10, 17, 23, 81, 217, 222, 225, 402, and 450.
- Fish and Wildlife Act of 1956, 16 U.S.C. 742 a-m.
- Lacey Act, as amended, 16 U.S.C. 3371 et seq.; 15 CFR Parts 10, 11, 12, 14, 300, and 904.
- Migratory Bird Treaty Act, as amended, 16 U.S.C. 703-712; 50 CFR Parts 10, 12, 20, and 21.
- Executive Order 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds, 66 Fed. Reg. 3853 (2001).

Natural Resources

- Clean Air Act, as amended, 42 U.S.C. 7401-7671q; 40 CFR Parts 23, 50, 51, 52, 58, 60, 61, 82, and 93; 48 CFR Part 23.
- Wilderness Act, 16 U.S.C. 1131 et seq.

- Wild and Scenic Rivers Act, 16 U.S.C. 1271 et seq.
- Executive Order 13112 – Invasive Species, 64 Fed. Reg. 6183 (1999).

Water Resources

- Coastal Zone Management Act of 1972, 16 U.S.C.1451 et seq.; 15 CFR Parts 923, 930, 93.
- Federal Water Pollution Control Act of 1972 (commonly referred to as Clean Water Act), 33 U.S.C. 1251 et seq.; 33 CFR Parts 320-330; 40 CFR Parts 110, 112, 116, 117, 230-232, 323, and 328.
- Rivers and Harbors Act of 1899, as amended, 33 U.S.C. 401 et seq.; 33 CFR Parts 114, 115, 116, 321, 322, and 333.Safe Drinking Water Act of 1974, 42 U.S.C. 300f et seq.; 40 CFR Parts 141-148.
- Executive Order 11988 – Floodplain Management, 42 Fed. Reg. 26951 (1977).
- Executive Order 11990 – Protection of Wetlands, 42 Fed. Reg. 26961 (1977).

Intra-Service Section 7 Evaluation Form

Project Name:	Cape May NWR Hunting and Fishing Plan	**Originating Person:**	Heidi Hanlon
County:	Cape May County	**Email Address:**	heidi_hanlon@fws.gov
Date:	07/14/2021		

I. Region: 5

II. Service Activity (Program): NWRS, Cape May National Wildlife Refuge

III. Pertinent Species and Habitat:

A. Listed species and/or their critical habitat within the action area:

Northern long-eared bat *(Myotis septentrionalis)*
Eastern black rail (*Laterallus jamaicensis ssp. Jamaicensis*)
Piping plover (*Charadrius melodus*)
Red knot (*Calidris canutus rufa*)
Bog turtle (*Clemmys muhlenbergii)*
American chaffseed (*Schwalbea americana*)
Knieskern's beaked-rush (*Rhynchospora knieskernii*)
Seabeach amaranth (*Amaranthus pumilus*)
Sensitive joint-vetch (*Aeschynomene virginica*)
Swamp pink (*Helonias bullata*)

B. Proposed species and/or proposed critical habitat within the action area:

None

C. Candidate species within the action area:

Monarch (*Danaus plexippus*)

D. Include species/habitat occurrences on a map.

See attached maps. Cape May NWR uses IPaC to identify threatened and endangered species, including for purposes of this Biological Evaluation. This is done because the IPaC database is the better of the Service's databases for the refuge and may contain the best available information on species presence. Nevertheless, in order to ensure a thorough review, this Biological Evaluation considers all threatened and endangered species identified by both the IPaC and ECOS databases. Note, however, that these databases are updated regularly, approximately every 90 days, and, thus, it is possible that the specific threatened and endangered species identified as present on or near the refuge may change between the finalization of this Biological Evaluation and its publication and/or between finalization and your reading this document.

Staff present on the refuge and conducting this evaluation may have the best available information about the presence of fish and wildlife species. Thus, where species are identified by either database, but the refuge has information that the species is not actually present within the "action area," we have explained that as the basis for our determination that any hunting

and fishing activities will have no effect on the species.

IV. Description of proposed action (attach additional pages as needed):

Cape May NWR proposes to modify the current hunting and fishing plan. Currently the Refuge permits deer, migratory game bird, squirrel, rabbit and turkey hunting, and fishing in portions of the refuge. Hunting areas would expand to lands recently acquired and 12,020 of therefuge's 12,652 acres would be open to hunting. Squirrel and rabbit hunting would expand from 5,858 acres to 12,020 acres. Six additional species would be opened including coyote, fox, groundhog, grouse, pheasant, and crow. Hunting with dogs would be permitted.

Current hunting seasons (from the 2020/2021 Hunting Digest, subject to change each year) include the following time frames:

Deer: October 3 (Fall bow) to January 31 (Winter bow)
Ducks: October 17-24, November 14-January 14
Scaup: October 17-24, November 14-January 14
Brant: October 17-24, November 14-January 2
Canada Goose: September 1-30
Light Goose: October 16-February 15
Conservation Order: February 16-April 3
Woodcock: November 7-December 1, December 17-January 2
Rails and Gallinule: September 1-November 20
Snipe: November 7-January 14
Squirrel: December 14-February 20
Rabbit: December 14-February 20
Turkey: October 24-31
Coyote/Fox: November 7- March 15
Crow: November 7- March 20
Groundhog: November 7- February 15

The fishing areas would stay the same, located at the Two Mile Beach Unit. Fishing access to the Atlantic Ocean portion would be open from October 1 to March 31, providing a beach closureto protect migrating and nesting shorebirds from April 1 to September 30. Maps are attached.

V. Determination of effects:

A. Explanation of effects of the action on species and critical habitats in items III.A, B, and C (attach additional pages as needed):

Bog turtles usually inhabit open-canopy emergent and scrub/shrub wetlands, such as shallow spring-fed fens, sphagnum bogs, swamps, marshy meadows, and wet pastures, bordered by wooded areas. They depend upon microhabitats of interspersed wet and dry pockets, with soft muddy bottoms, vegetation dominated by low grasses and sedges, and a low volume of standing or slow-moving water (USFWS). Bog turtles have not been found to use the refuge. Fall and winter represent periods of low or no activity for bog turtles, minimizing the likelihood that they would be encountered by hunters. If they were to occur, bog turtles

would be hibernating during the hunting season, protecting them from disturbance. Bog turtles are most often found in boggy, open habitats where there is little cover for wild game and which are difficult for people to walk through. Thus, it is extremely unlikely that any hunters would venture into bog turtle habitat. The greatest threats to bog turtles are the loss, degradation, and fragmentation of its habitat from wetland alteration, development, pollution, invasive species, and natural vegetational succession. The few potential disturbances of hunting, such as foot traffic of hunters or gun noise, would be a temporary inconvenience and likely not rise to the level of take. It is unlikely that bog turtles would become exposed to lead because their habitat is not conducive to hunting, so contamination from gut piles would be unlikely. Because hunters would likely not hunt in their habitat and bog turtles are inactive during the hunting seasons, it is unlikely that lead ammunition would affect bog turtles. The small, semi-aquatic species consumes a varied diet including insects, snails, worms, seeds, and carrion. These eating behaviors likely preclude lead impacts, as the soils on the refuge do not have high concentrations of lead, and unlikely to have increases based on the amount of hunting allowed and the fact that all or most hunting is on other portions of the refuge. Because bog turtles hibernate during the hunting season and have not been found on the refuge, hunting or fishing activities would not have any impact on them.

Sensitive joint-vetch, an annual legume, grows in fresh to slightly brackish tidal river systems within the intertidal zone, where populations are subject to flooding twice daily. It typically occurs at the outer fringe of marshes in localities where plant diversity is high and annual species are prevalent. Establishment and growth of this species relies on habitat containing bare to sparsely vegetated substrates. There are only two documented populations of this species still in existence within southern New Jersey, one on the Wading River in Burlington County and one on the Manumuskin River in Cumberland County (USFWS 2012). If sensitive joint-vetch should occurs on the refuge, plants could potentially be impacted by boat landings in the tidal creeks, or crushed by foot traffic associated with hunting or fishing actions. However, the tidal habitat occupied by sensitive joint-vetch is generally very difficult to traverse and it unlikely to be disturbed by hunting and fishing activities.

No significant adverse impacts are expected for American chaffseed, which occurs in fire-maintained longleaf pine flatwoods and savannas or Knieskern's beaked-rush, which occurs in early successional wetland habitats, as those species are not currently known to occur on the refuge. If American chaffseed or Knieskern's beaked-rush are present on the refuge, plants could potentially be crushed by foot traffic associated with hunting actions. However, hunters will be dispersed over a large acreage of hunting area at Cape May NWR, making trampling of vegetation within American chaffseed or Knieskern's beaked-rush habitat unlikely.

Swamp pink is an obligate wetland species occurring in palustrine forested wetlands including swampy forested wetlands bordering meandering streamlets, headwater wetlands, sphagnous Atlantic white-cedar swamps, and spring seepage areas. Known populations of swamp pink at the refuge are fenced with wire and are unlikely to be disturbed by hunters. Unfenced plants could potentially be trampled, though it is unlikely hunters will come across plants that are not fenced. The small and targeted expansion of hunting acreage would limit the disturbance caused by hunters. Refuge staff have not documented any adverse effects on swamp pink from existing hunting and fishing. No additional impacts are expected from the addition of coyote,

fox, grouse, pheasant, crow, and groundhog hunting.

Seabeach amaranth grows along the Atlantic Ocean dune edge of the Two Mile Beach Unit, but it is not known to occur in the hunting areas. Although seabeach amaranth could potentially be impacted by trampling by anglers after the beach opens in September, refuge staff fence areas where plants are found which reduces the potential for negative impacts to the plants.

Negative impacts of recreational hunting and fishing could include the temporary trampling of vegetation and light soil erosion. Most hunting activities occur during the fall and winter, when plants become dormant and the ground is frozen and/or covered in snow. Hunters would have minimal impacts on plants during this period. Additionally, hunter use during all seasons will be dispersed throughout the refuge, minimizing the impact to any one area. Off-road vehicles are prohibited on the refuge.

Positive effects on vegetation will likely result from any reduction in the white-tailed deer population. The impacts of dense deer populations on forest regeneration and the composition and diversity of the herbaceous understory have been well documented. Reducing the deer herd and correlated deer browsing levels could cause minor benefits to listed plant species. In addition, an overabundance of deer can suppress native vegetation, facilitating the success of invasive species in forested habitats.

Red knots use beach habitats and marsh mudflats along Delaware Bay in spring, and use the Two Mile Beach Unit mainly in fall and winter. Delaware Bay is the single most important spring stopover area for this species, supporting an estimated 50 to 80 percent of all rufa red knots each May. The Two Mile Beach Unit is one of the northern-most documented wintering sites and supports important concentrations of fall migrants. Red knots rely on migration stopover habitats to rest and feed, rapidly gaining enough weight to undertake the next leg of their migratory journey.

Red knots could be disturbed by hunters or anglers using the beaches, tidal creeks, or marsh habitats. Noise and visual disturbance from humans, hunting dogs, motorized boats, and noise from firearms could flush the red knots from their preferred roosting or foraging habitats. Among shorebirds, red knots are particularly sensitive to disturbance (Hunt et al. 2018, Koch and Paton 2014, Burger and Niles 2013). Habitat selection by each red knot represents an adaptive weighing of trade-offs among several factors (e.g., tides, weather, prey distribution, predation pressure), many of which may not be obvious to human observers. In some cases, it may be possible for a red knot to relocate from one suitable habitat to another with a negligible impact to its energy budget. However, recurrent disturbances that displace red knots multiple times, or serious disturbances that cause red knots to seek alternate habitat far distances away are likely to result in non-negligible impacts to the energy budget of impacted red knots.

The highest concentration of red knots within the Cape May NWR is likely to be along the Delaware Bay beaches between May 1 and June 10 during the spring migration. None of the seasons for the proposed hunting activities overlap with these dates. Additionally, fishing occurs at the Two Mile Beach Unit, but beach access is closed for all activities, including fishing, between April 1 and September 30. Therefore, red knots will not be exposed to

disturbance from the proposed hunting activities during the critical spring migration window. Red knots may be present along the beaches and in the marshes during the waterfowl, crow, and migratory bird hunting seasons at the end of summer and into the fall. However, the Service believes that the potential for disturbance to red knots is both discountable and insignificant, based on several factors including:

- Hunters and anglers will be dispersed across a large acreage of hunting area within Cape May NWR, which decreases the probability that red knots in any one location within the marsh will be disturbed.
- The hunted species in the marsh typically select different habitat types from red knots, though red knots still may still be present in adjacent areas. Noise disturbance associated with discharge of firearms should largely be occurring outside of the immediate area occupied by red knots and isn't expected to cause a significant enough disturbance or occur at a high enough a frequency to pose a significant impact to the red knot's energy budget.
- Angler activities don't include significant visual or noise disturbance and would not be expected to preclude red knots use of habitat.

Red knots could also be accidentally injured or killed by hunters targeting snipe or even waterfowl. The Red Knot is a migrant and winter resident along the Atlantic and Gulf coasts during hunting seasons for rails, gallinule, and sandpiper species. Inexperienced hunters could possibly mistake red knots for rails or snipe in coastal bays and marshes. However, as described in the red knot listing (USFWS 2014), "Lowery (1974, p. 309) notes that the red knot's shape and bill make this species comparatively easy to distinguish from common snipe and other similarly sized shorebirds, even in winter plumage. Snipe also occupy different habitats (flooded, shallow emergent marsh) than red knots (exposed flats), and snipe are solitary while red knots tend to occur in flocks (C. Dwyer pers. comm. July 18, 2014)". The Service has no reports of red knot hunting mortality and we believe the probability of this occurring is discountable.

It is estimated that during the 2019/2020 hunt season, 1,900 migratory game bird hunt visits were made to the refuge. Under the proposed action, 6,020 acres would be open for migratory game bird hunting. In addition to the expansion in acreage, the refuge would open to crow hunting for the first time. Hunting migratory game birds on the refuge would reduce the total numbers of birds in the flyway, but harvest would be within allowable limits as determined by the Service annually. Migratory game bird hunting on the refuge would make the birds more skittish and prone to disturbance, reduce the amount of time they spend foraging and resting, and alter their habitat usage patterns (Raveling 1979, Owen 1973, White-Robinson 1982, Madsen 1985, Bartelt 1987).

Shore fishing at Cape May NWR could potentially affect nesting or migratory birds; however, the refuge has limited the fishing season on the Atlantic Ocean portion of Two Mile Beach Unit to mitigate this impact. Human activity, including walking trails and boat use, has the potential to affect the behavior, distribution, and abundance of waterbirds due to disturbance. Several studies have examined the effects of recreation on birds using habitats adjacent to trails and roads through wildlife refuges and coastal habitats in the eastern United States. Overall, the existing research demonstrates that disturbance from recreational activities has at least

temporary effects on the behavior and movement of birds and other animals within a habitat or localized area. Disturbance to non-target birds and resident wildlife would likely occur from hunting and associated hunter and angler activity, but would be short-term and temporary. Overall, the effects on migratory birds are expected to be minimal.

Currently, dogs are only permitted for migratory game bird hunting. Under the proposed action, dogs would be permitted for migratory game bird, squirrel, rabbit, turkey etc. hunting (any time the state permits the use of dogs). The use of dogs while hunting will temporarily disturb wildlife and other hunters. The taking of non-target hunt species will not be permitted during any hunting seasons.

Under the proposed action, 12,020 total acres would be open for hunting and two shoreline areas open to fishing. On the Atlantic Ocean portion of the Two Mile Beach Unit, fishing access is not provided from April 1 to September 30 to minimize impacts to nesting and migrating birds. To prevent additional impacts to wildlife species, the refuge would impose limitations on hunting seasons and units to disperse hunting pressure. Increased hunting visitation may result in additional short-tern disturbance to wildlife, especially in areas previously closed to hunting. This includes temporary displacement of resident wildlife from foot traffic moving through the area and increased disturbance. While resident and non-game wildlife in areas newly opened to hunters and hunting may be negatively impacted by disturbance, that impact is expected to be negligible. The degree of the impact by the alternative is not expected to be different from what may already occur (including temporary displacement of songbirds, raptors, and resident wildlife from foot traffic moving through the area). Generally, deer and waterfowl hunting areas are in separate locations, primarily due to suitable habitat of the target species, which would result in no negative impacts between hunting types.

Northern long-eared bats use mines and caves in the winter to hibernate and use upland forests to forage and roost throughout the rest of the year. Northern long-eared bats may occur in some areas in the hunting zones. Northern long-eared bats may be disturbed if hunters use their roost trees for stand placement, but these bats often roost in dead and dying trees that would not support a tree stand; therefore, disturbance to roosting bats would be highly unlikely. Potential disturbances from expanded hunting, such as an increase in gun noise or additional portable tree stands, could cause minor disturbance to bats but would likely not rise to the level of take. There is no hunting near any cave or mine where bats could hibernate (i.e., hibernaculum), and hunting programs would not result in any tree cutting or other habitat alteration. Northern long-eared bats could be present during fishing seasons; however, the open waters conducive to fishing are located in the open water marsh habitat or impoundments where trees are sparse. Northern long-eared bats are not known to occur in the fishing areas.

Eastern black rail can typically be found in salt and brackish marshes with dense cover, but can also be found in upland areas of these marshes, including impounded and unimpounded salt and brackish marshes. The hunting seasons largely do not overlap with the critical breeding (April 1-August 31) and molting (August 15-September 15) time periods for the eastern black rail, which minimizes the potential for disturbance to this species. Eastern black rails are a seldomly seen bird species that sticks to dense vegetation cover; therefore,

the probability of hunters accidentally injuring or killing this species while hunting other species in the marsh is discountable. Eastern black rails are not found on beach habitats, so angler activity on the beach would not disturb them.

Piping plovers are not known to occur in hunting areas. However, they occur at the Two Mile Beach Unit. Potential impacts to plovers could include disturbance from hunters and anglers traversing the beach, and the associated noise, from October through March. Once the beach closes, no effects on plovers would occur other than pedestrians that violate the law and walk along the beach. Piping plovers are not known to occur in the fishing area along Cold Spring Inlet. Potential disturbance would not result in take.

Lead can be used on the refuge for hunting and fishing as detailed in the Hunting and Fishing Plan. Lead will be phased out in the fishing program over 5 years, by 2026. The amount of lead introduced to the environment as a result of hunting and fishing activities will be negligible, given the restriction on lead ammunition for all upland and migratory game bird hunting, and a short hunting window of fall and winter. Lead shot and bullet fragments found in animal carcasses and gut piles are the most likely source of lead exposure. Many hunters do not realize that the carcass or gut pile they leave in the field usually contains lead bullet fragments. Research continues on the effects of lead ammunition and the fragments it can deposit in killed game. Avian predators and scavengers can be susceptible to lead poisoning when they ingest lead fragments or pellets in the tissues of animals killed or wounded by lead ammunition. Lead poison may weaken raptors and increase mortality rate by leaving them unable to hunt, or more susceptible to vehicles or power line accidents. The bioaccumulation of lead is a potential concern, but it does not present a significant issue for these activities on this refuge, as the refuge strongly encourages use of non-toxic alternatives and will educate hunters, anglers and the public to the potential adverse impacts of lead. Some hunters will choose non-lead methods of take such as archery. Moreover, the scarce amount of lead introduced on this refuge is not likely to adversely affect the Northern long-eared bat, piping plover, red knots or Eastern black rail because those species will not be present or active in the refuge hunting areas during the hunting seasons. Furthermore, these species are not scavengers and, therefore, will not be impacted by bioaccumulation of lead or lead fragments in gut piles left on the refuge after hunting seasons.

As the foraging ecology of the bats (i.e., eating flying insects) is known, the only way the species would be exposed to lead from hunting is through bioaccumulation from herbivorous insects. Such prey (and only some of their prey are herbivorous) could eat plants that have taken up lead from the soil, but it is unlikely because plants only uptake lead when it is in soil in highly concentrated levels and the proposed hunting expansions would not introduce enough lead for that possibility. Current and proposed levels of hunting and fishing, along with non-lead alternative education, would not result in lead levels toxic to any threatened or endangered species that occur on the refuge.

Monarchs use flowering plants like seaside goldenrod to nectar from spring through fall. Adult monarch butterflies are highly mobile and aren’t likely to be disturbed by hunter or angler activities.

Increased hunting and fishing visitation may result in additional short-tern disturbance to wildlife, especially in areas previously closed to hunting. This includes temporary displacement of resident wildlife from foot traffic moving through the area and increased disturbance. While resident and non-game wildlife in areas newly opened to hunters and hunting may be negatively impacted by disturbance, that impact is expected to be negligible. The degree of the impact by the alternative is not expected to be different from what may already occur (including temporary displacement of songbirds, raptors, and resident wildlife from foot traffic moving through the area).

B. Explanation of actions to be implemented to reduce adverse effects:

The refuge-specific regulations detailed in the Hunting and Fishing Plan are measures that will reduce or avoid conflicts. Federal Wildlife Officers and State law enforcement officers enforce hunting and fishing regulations. Providing hunting and fishing information through various forums will ensure the public is aware of applicable laws and policies. To minimize conflict, refuge-specific hunt regulations and hunt unit maps (brochures) will be made available to hunters at kiosks, refuge website, and at refuge office in Cape May Court House, NJ. To help reduce interaction between refuge hunters, other user groups on therefuge, and adjacent landowners, refuge boundaries and hunt areas will be clearly mapped. The use of dogs would limit the loss of wounded animals.

Hunters are encouraged to use non-toxic ammunition for all hunting. We will encourage the useof non-toxic ammunition and fishing gear and will educate hunters and anglers about lead and its impacts.

VI. Effect determination and response requested: [* = optional]

A. Listed species/designated critical habitat:

Determination	**Response requested**
no effect/no adverse modification (species:___bog turtle____)	_X__ Concurrence
may affect, but is not likely to adversely affect species/adversely modify critical habitat (species:_ sensitive joint-vetch, American chaffseed, Knieskern's beaked-rush, red knot, Northern long-eared bat, Eastern black rail, swamp pink, piping plover, seabeach amaranth)	_X__Concurrence
may affect, and is likely to adversely affect species/adversely modify critical habitat (species:_____)	___ Formal Consultation

B. Proposed species/proposed critical habitat:

no effect on proposed species/no adverse modification of proposed critical habitat (species:_____) ____ Concurrence

is likely to jeopardize proposed species/ adversely modify proposed critical habitat (species:_____) ____ Concurrence

C. Candidate species:

no effect (species:____monarch_____) _X__ Concurrence

is likely to jeopardize candidate species (species:_____) ____ Concurrence

BRIAN BRAUDIS Digitally signed by BRIAN BRAUDIS Date: 2021.08.13 08:15:53 -04'00'

_____ _____

Project Biologist/Supervisor (Requestor) Date

VII. Reviewing ESFO Evaluation:

A. Concurrence__X_____ Non-concurrence_____

B. Formal consultation required_____

C. Conference required_____

D. Informal conference required_____

E. Remarks (attach additional pages as needed):

ARIEL POIRIER Digitally signed by ARIEL POIRIER Date: 2021.08.13 09:33:30 -04'00'

_____ _____

Endangered Species Biologist (Reviewer), New Jersey Field Office Date

RONALD POPOWSKI Digitally signed by RONALD POPOWSKI Date: 2021.08.13 09:44:26 -04'00'

_____ _____

Assistant Supervisor, New Jersey Field Office Date

FINDING OF NO SIGNIFICANT IMPACT

ENVIRONMENTAL ASSESSMENT
for HUNTING and FISHING

Cape May National Wildlife Refuge

The U.S. Fish and Wildlife Service (Service) is proposing to maintain opportunities for recreational fishing, and to open and expand opportunities for big game, upland game, and migratory game bird hunting on the 12,652-acre Cape May National Wildlife Refuge (NWR, refuge), in accordance with the refuge's Comprehensive Conservation Plan (CCP) and the 2021 Hunting and Fishing Plan.

Selected Action

Proposed Action Alternative

Cape May NWR is located in Cape May County, New Jersey, and includes three primary areas: the Delaware Bay Division, Great Cedar Swamp Division, and Two Mile Beach Unit (see Figures 2, 3, and 4 of the Hunting and Fishing Plan). About half of the refuge land is wetland and about half is upland.

Under this alternative, the refuge would expand upon the existing hunting program, and would open new hunting opportunities for coyote, fox, groundhog, grouse, pheasant, and crow. For migratory game bird hunting, with the exception of crow and snipe, hunting will be conducted during the State seasons. Crow, snipe, coyote, fox, squirrel, and rabbit hunting will begin with the start of the State early woodcock south zone season (usually early November), and will continue through the duration of the State season for each species. Groundhog hunting will begin with the start of the State early woodcock south zone season and will continue through the end of the State Groundhog Bow or Shotgun season (approximately February 15).

Hunting would be permitted on 12,020 acres of designated land on the refuge units east of Highway 47, west of Highway 47, north of Highway 550 and south of Highway 550 (see Figure 1 of the Hunting and Fishing Plan). The refuge would continue to require the use of non-toxic shot for all waterfowl hunting, per Federal regulation, as well as upland game hunting (except turkey). We will continue to encourage use of non-toxic ammunition for big game hunting and will educate hunters about lead and its impacts.

Recreational fishing would continue to be provided on the Atlantic Ocean beach (seasonally) and Cold Spring Inlet beach portions of the Two Mile Beach Unit. Nationwide, there is concern about the bioavailability of spent lead ammunition (bullets) and sinkers on the environment, endangered and threatened species, birds (especially raptors), mammals, and other fish and wildlife susceptible to biomagnification. We will prohibit the use of lead tackle on the refuge for fishing beginning September 2026, implemented over a 5-year phase-in period. This transition period will allow anglers time to adapt to the new regulations without diminishing fishing opportunities. Until the ban is fully enforced, we will encourage the voluntary use of non-toxic

alternatives, and we will conduct education programs and provide information to anglers and the public about non-toxic alternatives and the benefits to fish, wildlife, and people.

We would continue to conduct hunting and fishing according to State and Federal regulations. Hunters would also have to comply with additional refuge-specific regulations, including but not limited to those contained in the Code of Federal Regulations (50 CFR §32.49), which are revised or updated annually as needed. However, the refuge manager may, upon annual review of the hunting and fishing programs, take the necessary steps to impose further restrictions, recommend that the refuge be closed to hunting or fishing, or further liberalize hunting or fishing regulations up to the limits of the State. We would restrict hunting if it became incompatible with other priority refuge programs or endangered refuge resources or public safety.

No refuge-specific permit or fees will be required to hunt or fish at Cape May NWR. Hunters will be required to possess a State hunting license and all applicable stamps. Anglers are required to register with the State's saltwater registry program.

Refuge staff have worked closely with stakeholders and State agency staff to develop this plan, and ensure safe and enjoyable recreational hunting opportunities. There are no unresolved conflicts about the proposed action with respect to alternative uses of available resources, because the changes proposed by this action are not expected to have harmful impacts to the ecological, aesthetic, historic, cultural, economic, social, or health aspects of the refuge and surrounding communities. Additionally, the proposed action builds on an existing program, and includes measures to better meet goals and objectives developed, in part, from the refuge's Comprehensive Conservation Plan (CCP). Therefore, the Service does not need to consider additional alternatives (43 CFR 46.310(b)).

This alternative was selected over other alternatives because: (1) it helps fulfill the statement of objectives detailed in the Hunting and Fishing Plan; (2) it would result in a minimal impact on physical and biological resources; and (3) it meets the Service's mandates under the National Wildlife Refuge System Administration Act (NWRSAA) of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997, and Department of the Interior Secretarial Order 3356. The Service believes that expanding hunting opportunities on Cape May NWR will not have a significant impact to wildlife, other uses, or refuge administration. This alternative will best meet the purpose and need, refuge objectives, and Service mandates.

Department of the Interior Secretarial Order 3347 – "Conservation Stewardship and Outdoor Recreation," signed March 2, 2017, and Secretarial Order 3356 – "Hunting, Fishing, Recreational Shooting, and Wildlife Conservation Opportunities and Coordination with States, Tribes, and Territories," signed September 15, 2017, includes direction to Department of the Interior agencies to "increase outdoor recreation opportunities for all Americans, including opportunities to hunt and fish; and improve the management of game species and their habitats for this generation and beyond." The selected alternative will also promote two of the priority public uses of the National Wildlife Refuge System (Refuge System), and providing opportunities for visitors to hunt and fish will promote stewardship of our natural resources and increase public appreciation and support for the refuges.

Other Alternatives Considered and Analyzed

No Action Alternative

The No Action Alternative would continue the refuge's current hunting and fishing programs. The refuge hunt program currently allows for white-tailed deer, turkey, rabbit, squirrel, waterfowl, coot, moorhen, rail, snipe, and woodcock hunting on designated areas of the refuge. Hunting is currently permitted on 11,268 acres of the refuge. The refuge fishing program currently allows for shore fishing on the Atlantic Ocean beach and Cold Spring Inlet beach portions of the Two Mile Beach Unit. Hunting and fishing are conducted in alignment with all relevant State regulations. Additional refuge-specific regulations also apply.

This alternative has the least short-term impacts to physical and biological resources; however, long-term impacts on habitat quality could be adverse with greater deer browsing. In addition, it would not fulfill the Service's mandate under the NWRSAA and Secretarial Order 3356 as well as the proposed action.

Summary of Effects of Selected Action

An Environmental Assessment (EA) was prepared in compliance with the National Environmental Policy Act of 1969, as amended (NEPA) to provide a decision-making framework that: (1) explored a reasonable range of alternatives to meet project objectives; (2) evaluated potential issues and impacts to the refuge, resources and values; and (3) identified mitigation measures to lessen the degree or extent of these impacts. The EA evaluated the effects associated with expansion of hunting opportunities at Cape May NWR, as well as the effects of a no-action alternative. It is incorporated as part of this finding.

Implementation of the agency's decision would be expected to result in the following environmental, social, and economic impacts:

Affected Environment	Potential Impacts of Selected Action
Big game	Minor, short-term adverse impacts. Hunting could result in direct mortality of individuals, changes in wildlife behavior, and changes in distribution patterns. Although it is possible that the expanded hunting program could attract additional big game hunters, impacts to local or regional white-tailed deer and turkey populations are not expected to change significantly. With little additional acreage opening for deer hunting, an annual take of approximately 603 deer from Zone 34, and 200 birds in Turkey Hunting Area 22, is not expected to measurably increase. Hunting, in the context of an over-abundant species like white-tailed deer is also an important population management tool that can reduce habitat degradation and competition, yielding healthier populations in the long-term.

Affected Environment	Potential Impacts of Selected Action
	Disturbance to individuals will be spread out across a wider area. With expanded hunt opportunity, we expect some positive impacts from managing the overabundant deer population, including decreased damage to vegetation and habitat, and less disease and competition within the deer population.
Upland game	Minor, short-term adverse impacts. Under the proposed action, new areas of the refuge will open to public hunting for six new upland game species, and most areas will overlap the refuge deer hunting area. The refuge expects approximately 55 additional hunters annually. Even at the local level, the refuge only adds slightly to the accumulative impacts on resident wildlife, and a negligible amount to regional and Statewide populations. Impacts to resident wildlife could include direct mortality or injury of target species, accidental mortality or injury of non-target species, disturbance to non-target species, and some impacts to habitat and environment. While a large number of acres will be open for these hunting seasons, high quality habitat is limited on the refuge, and since coyotes and foxes are at their most active at night when hunting is prohibited on the refuge, impacts will be limited.
Migratory game birds	Minor, short-term adverse impacts species. Estimated harvest would be within allowable limits as determined by the Service annually. Shore fishing at Cape May NWR could potentially affect nesting or migratory birds; however, the refuge has limited the fishing season on the Atlantic Ocean portion of Two Mile Beach Unit to mitigate this impact. Human activity, including walking trails and boat use, has the potential to affect the behavior, distribution, and abundance of waterbirds due to disturbance. Disturbance to non-target birds and resident wildlife would likely occur from hunting and associated hunter and angler activity, but would be short-term and temporary. Overall, the effects on migratory birds are expected to be minimal. The refuge also requires use of non-toxic ammunition when hunting migratory game birds to minimize risk of lead poisoning to waterfowl and other wildlife; therefore, there would likely be no adverse impacts.
Saltwater finfish	Minor, short-term adverse impacts species. While fishing removes individuals from the population, we do not anticipate that projected fishing pressure will affect the coastal fish population as a whole. NJDFW strives to ensure maintenance of

Affected Environment	Potential Impacts of Selected Action
	healthy and diverse fish species populations. Anglers must abide by the State's seasons, catch limits, and regulations to protect the State's fish populations. The refuge's fishing pressure is projected to be sustainable. The areas currently open to saltwater fishing would remain open. Harvest would continue to be regulated by the State through surveys, and any changes in populations could result in changes to regulations, which would contribute to avoiding negative impacts to finfish species. Nationwide, there is concern about the bioavailability of spent lead ammunition (bullets) and sinkers on the environment, endangered and threatened species, birds (especially raptors), mammals, and other fish and wildlife susceptible to biomagnification. To move towards reduction and future elimination of this threat on the refuge, we will be implementing a lead tackle restriction over a 5-year period. The complete lead restriction will begin September 2026, allowing anglers time to adapt to the new regulations without diminishing fishing opportunities. The refuge will conduct education programs and provide information to anglers and the public on non-toxic alternatives, which may assist during the transition period in detailing benefits to fish and wildlife.
Non-target species	Minor, short-term adverse impacts (disturbance) of non-target wildlife species may occur. The refuge would limit hunting seasons and provide "no hunting areas" that would disperse impacts. On the Atlantic Ocean portion of the Two Mile Beach Unit, fishing access is not provided from April 1 to September 30 to minimize impacts to nesting and migrating birds. Increased hunting visitation may result in additional short-term disturbance to wildlife, especially in areas previously closed to hunting. This includes temporary displacement of resident wildlife from foot traffic moving through the area and increased disturbance. The degree of the impact is not expected to be different from what may already occur (including temporary displacement of songbirds, raptors, and resident wildlife from foot traffic moving through the area). Generally, deer and waterfowl hunting areas are in separate locations, primarily due to suitable habitat of the target species, which would result in no negative impacts between hunting types. The taking of non-target hunt species will not be permitted

Affected Environment	Potential Impacts of Selected Action
	during any hunting seasons. Non-toxic shot is required for all migratory game bird hunting as well as upland game hunting on the refuge, which reduces negative impacts to wildlife using waterways and marshes. The refuge is not requiring the use of non-toxic shot for other seasons, but will encourage hunters to utilize it to reduce unintended negative impacts to wildlife.
Threatened and Endangered Species	For more detail, see the completed Intra-Service Section 7 Biological Evaluation (Appendix D). Fall and winter represent periods of low or no activity for bog turtles, minimizing the likelihood they would be encountered by hunters. Bog turtles are most often found in boggy, open habitats where there is little cover for wild game and which are difficult for people to walk through. Thus, it is likely that few hunters will venture into bog turtle habitat, and we determine no effect to the species. We detail in the Section 7 the rationale behind the "may affect, but not likely to adversely affect" determination for the following species: sensitive joint-vetch, American chaffseed, Knieskern's beaked-rush, red knot, Northern long-eared bat, Eastern black rail, swamp pink, piping plover, and seabeach amaranth.
Habitat and Vegetation	Negligible to minor, short-term impacts to vegetation. Negative impacts of recreational hunting and fishing include the temporary trampling of vegetation and soil erosion. Most hunting activities occur during the fall, but impacts will be minimal. Some hunt seasons extend into winter when plants are dormant, and the ground is frozen or covered in snow. Hunters will be dispersed throughout the refuge during all seasons, minimizing the impact to any one area. Vehicles, including off-road vehicles, are prohibited. The refuge is accessible from the public road system. For these reasons, hunting is expected to have minimal adverse impacts on vegetation. Positive, indirect effects on the vegetation will result from a reduction in the white-tailed deer population. Overall, only minor localized impacts are expected.
Wetlands and water resources	Negligible to minor, short-term impacts. With more hunters traversing the landscape, impacts including erosion, changes to drainage patterns, and wetland habitat damage may increase slightly. Only federally approved, non-toxic shot will be permitted while hunting for migratory game birds and upland game. Hunters are generally dispersed, which reduces the

Affected Environment	Potential Impacts of Selected Action
	likelihood of soil erosion. At the anticipated levels of use, hunting is expected to have minimal adverse impacts to wetlands and water resources on the refuge.
Visitor Use and Experiences	Minor, short-term adverse impacts to other public uses. With expansion of the hunting program, approximately 55 additional hunters would use the refuge. Conflicts may arise between hunters and anglers over space and disturbance or between consumptive and non-consumptive users over safety and disturbance, especially in commonly used areas like parking lots, roads and trails. Disturbance may increase during spring and fall migration when more bird watchers are in the area. Conflicts between users may arise but will primarily be confined to the hunting season. If deemed necessary, we would mitigate visitor use conflicts through additional time and space zoning, safety regulations, and clearly posted information on the hunting program.
Cultural Resources	No adverse impacts. Hunting and fishing, regardless of method or target, are consumptive activities that do not pose a threat to prehistoric or historic properties on or near the refuge. No impacts to cultural resources are anticipated above what may be caused by any refuge visitor.
Refuge Management and Operations	Minor, short-term and minor, long-term impacts to refuge management and operations. While there may be more hunters throughout the refuge, impacts to local public roads are expected to be negligible. The refuge is crisscrossed with well-traveled roads owned by local municipalities and counties. Impacts to local public roads and refuge infrastructure are expected to be negligible. Estimated costs to implement this alternative are an additional $12,100. This is largely due to the increased time to manage the expansion and to alter the fishing area.
Socioeconomics and Environmental Justice	Negligible, short-term and long-term benefits. While hunting visitation may increase due to increased opportunities, hunting accounts for a fraction of expenditures related to the refuge. The Service identified no minority or low-income communities within the impact area. Minority or low-income communities would not be disproportionately affected by any impacts from this proposed action.

While refuges, by their nature, are unique areas protected for conservation of fish, wildlife and habitat, the selected action will not have a significant impact on refuge resources and uses for several reasons:

1. In the context of local and State hunting programs, the selected action will only result in a tiny fraction of the estimated populations and harvest. The Service works closely with the States to ensure that additional species harvested on a refuge are within the limits set by each state to ensure healthy populations of the species for present and future generations of Americans.

2. The Refuge System uses an adaptive management approach to all wildlife management on refuges, monitoring and re-evaluating hunting opportunities on an annual basis to ensure that the program continues to contribute to the biodiversity and ecosystem health of the refuge, and that impacts from these opportunities do not add up to significant impacts in combination with the environmental trends and planned actions on and near the refuge.

3. The adverse effects of the selected action on air, water, soil, habitat, wildlife, aesthetic/visual resources, and wilderness values are expected to be non-existent, minor and/or short-term. The benefits to long-term ecosystem health from the selected action, in conjunction with other existing refuge programs, will far outweigh any of the short-term adverse impacts discussed in the EA and document. The action will result in beneficial impacts to the human environment, including the biodiversity and ecological integrity of the refuge, as well as the wildlife-dependent recreational opportunities and socioeconomics of the local economy, with only negligible adverse impacts to the human environment as discussed above.

4. The refuge-specific regulations detailed in 50 CFR are measures that will reduce or avoid impacts. Hunting and fishing regulations will be enforced by Federal and State law enforcement officers. Providing information through various forums will ensure the public is aware of applicable laws and policies.

5. The selected action, along with the proposed mitigation measures, will ensure that there is low danger to the health and safety of refuge staff, visitors, and hunters themselves.

6. The action is not in an ecologically sensitive area.

7. The action is not likely to adversely affect any threatened or endangered species; and will have no effect to federally designated critical habitat.

8. The action will not impact any cultural or historical resources.

9. The action will not impact any wilderness areas.

10. There is no scientific controversy over the impacts of this action, and the impacts of the proposed action are relatively certain.

11. The proposal is not expected to have any significant adverse effects on wetlands and floodplains, pursuant to Executive Orders 11990 and 11988 because hunters and anglers must use established access points that will not be located near sensitive habitats.

Additionally, the following stipulations are necessary to ensure compatibility:

- Permanent stands and blinds are prohibited. Hunters must remove all hunting stands, boats, blinds, hunting materials, and decoys at the end of the hunting day, except deer hunting stands which must be removed at the end of the deer hunting season.

- Access hours for hunting on the refuge are from 1 hour before sunrise until 1 hour after sunset. Night fishing and hunting is prohibited.

- Dog training is prohibited at all times.

- Falconry is prohibited.

- Shell fishing and crabbing is prohibited.

- Fishing on the Atlantic Ocean portion of the Two Mile Beach Unit is prohibited from April 1 to September 30 each year.

- The use of lead fishing tackle will be prohibited on the refuge beginning September 2026. The lead restriction for fishing tackle will be implemented over a 5-year phase-in period.

- Only federally approved, non-toxic ammunition will be permitted while hunting for upland game (except for turkey hunting).

- Motorized and non-motorized vehicles are prohibited on designated refuge lands. This includes but is not limited to vehicles, all-terrain vehicles, dirt bikes, motorcycles, and bicycles. This does not apply to designated public roads.

These measures to mitigate and/or minimize adverse impacts have been incorporated into the proposal. The proposal is compatible with the purpose of the refuge and the mission of the Refuge System (see the Compatibility Determinations, Appendix A and Appendix B, in the Hunting and Fishing Plan). Furthermore, the action is consistent with applicable laws and policies regarding the establishment of hunting on national wildlife refuges.

Public Review

The plan has been thoroughly coordinated with all interested and/or affected parties, including NJDFW staff. On April 14, 2021, we distributed a press release to news organizations and alerted the public about the availability of the draft Hunting and Fishing Plan, with the Compatibility Determinations (CD) and Environmental Assessment (EA). No public meetings were held due to restrictions on public gatherings due to COVID-19. The public comment period ended on July 6, 2021, a total of 83 days. A total of seven comment letters were submitted that

offered input to the refuge:

Commenters
1. Clay Sutton
2. David La Puma
3. Howard J. Schlegel
4. Aaron Clauser (Clauser Environmental, LLC)
5. John King
6. Fran Gallagher
7. Nick Diprimeo

We grouped similar substantive comments together, and organized them by subject in the discussion below.

Comment – Concerns with high potential for conflict (mainly with other refuge users and people abutting the refuge), and/or the plan does not address other refuge uses enough: 1, 2, 3

Response: The National Wildlife Refuge System Improvement Act of 1997 (Improvement Act) stipulates that hunting (along with fishing, wildlife observation, photography, environmental education, and interpretation), if found to be compatible, is a legitimate and priority general public use of a refuge and should be facilitated. The Service has adopted policies and regulations implementing the requirements of the Improvement Act that refuge managers comply with when considering hunting programs.

Refuge-specific hunting regulations can be more restrictive (but not more liberal) than State regulations and often are more restrictive in order to help meet specific refuge objectives. These objectives include resident and migratory wildlife population and habitat objectives, minimizing disturbance impacts to wildlife, maintaining high-quality opportunities for hunting and other wildlife-dependent recreation, eliminating or minimizing conflicts with other public uses and/or refuge management activities, and protecting public safety.

Congress envisioned that hunting, fishing, wildlife observation and photography, and environmental education and interpretation would all be treated as priority public uses of the Refuge System. Therefore, the Service facilitates all of these uses on refuges, as long as they are found compatible with the purposes of the specific refuge and the mission of the Refuge System. For this plan, we specifically analyzed the possible changes to the hunting programs. We appreciate the widespread interest in using the refuge for non-consumptive recreational uses. The refuge has a visitor services program that includes all six of the priority wildlife-dependent recreational use. Hunting is proposed from September through April each year, leaving over 5 months open for visitors to solely engage in wildlife observation, photography, and environmental education and interpretation activities. With expansion of the hunting program, approximately 55 additional hunters would use the refuge. Conflicts may arise between hunters and anglers over space and disturbance or between consumptive and non-consumptive users over

safety and disturbance, especially in commonly used areas like parking lots, roads and trails. Disturbance may increase during spring and fall migration when more bird watchers are in the area. Conflicts between users may arise but will primarily be confined to the hunting season. If deemed necessary, we would mitigate visitor use conflicts through additional time and space zoning, safety regulations, and clearly posted information on the hunting program.

By expanding and/or maintaining hunting and fishing opportunities, but retaining mitigation measures to prevent conflicts, the refuge would promote a balance of wildlife-dependent recreational uses. This alternative offers increased opportunities for hunting and fishing and fulfills the Service's mandate under the Refuge System Improvement Act of 1997. Therefore, facilitating hunting opportunities is an important aspect of the Service's roles and responsibilities as outlined in the legislation establishing the Refuge System, and the Service will continue to facilitate these opportunities where compatible with the purpose of the specific refuge.

Comment – Hunting expansion does not align with the refuge's specific purpose of protecting migratory birds and providing a stopover site. 1, 2, 3

Response: Migratory birds are managed on a flyway basis and hunting regulations are established in each State based on flyway data. Under the Proposed Action Alternative, the Two Mile Beach Unit (520 acres) and the rest of the closed area (112 acres) would not be open to hunting. Portions of the Cape May NWR were designated, acquired, reserved, or set apart as an inviolate sanctuary; therefore, hunting may only be allowed for migratory game birds on no more than 40 percent of the refuge. Hunting would not occur during summer season to minimize impacts to nesting birds and other wildlife-dependent recreational users. While we allow hunting opportunities from September through April each year, the vast majority of hunting occurs only between October and January. By expanding and/or maintaining hunting and fishing opportunities, but retaining mitigation measures to prevent conflicts, the refuge would promote a balance of wildlife-dependent recreational uses. The word "refuge" includes the idea of providing a haven of safety for wildlife, and as such, hunting might seem an inconsistent use of the Refuge System. However, the Improvement Act stipulates that hunting, if found compatible, is a legitimate and priority general public use of a refuge which should be facilitated.

Comment – Opposed to predator hunts, as they help control the deer population and provide wildlife viewing opportunities: 1

Response: Refuge managers consider predator hunt decisions on a case-by-case basis. As with all species, a refuge manager makes a decision about managing predator populations, which are included in the category of resident wildlife, including allowing predatory species to be hunted, only after careful examination to ensure the action would comply with relevant laws, policies, and directives. The Administration Act, as amended, directs the Service to manage refuges for "biological integrity, diversity, and environmental health." Predators play a critical role in the integrity, diversity, and overall

health of ecosystems, so before allowing predators to be hunted, a refuge manager must ensure that these actions do not threaten the integrity, diversity, or health of the refuge ecosystem. The manager must also determine that the action is compatible with refuge purposes and the mission of the Refuge System, and in keeping with the refuge's CCP and other step-down plans. In addition, we analyze the impacts of the actions on the environment through the NEPA process and Section 7 of the ESA. Therefore, we take many steps to ensure that any opportunity for hunting predators on a refuge meets the Service's applicable laws and policies.

Coyotes have been documented in all 21 counties of New Jersey. Coyote and fox are species abundant throughout the State and have high reproductive rates, which limits the potential impact of hunting. The refuge expects approximately 55 additional hunters annually. The coyote population appears to be increasing and is estimated at around 3,000 individuals. In 2009, 59 coyotes were harvested Statewide in New Jersey. NJDFW estimates that approximately 11,207 foxes and 88 coyotes were harvested during the 2017/2018 hunting season across New Jersey. NJDFW will adjust seasons and limits to maintain healthy populations.

Hunting of resident and migratory wildlife species on refuges generally occurs consistent with State regulations, including seasons and bag limits. Secretarial Order 3356 also directs "greater collaboration with state, tribes, and territorial partners" which encourages better alignment of refuge-specific regulations with State regulations.

Comment – Supports the prohibition of lead for upland game, and/or would support a complete lead ban: 2, 3

Response: Thank you for your comment and support. There is a concern about the bioavailability of spent lead ammunition and sinkers on the environment, endangered and threatened species, birds (especially raptors), mammals, and humans or other fish and wildlife susceptible to biomagnification. Lead shot and bullet fragments found in animal carcasses and gut piles are the most likely source of lead exposure (Kelly et al. 2011). Many hunters do not realize that the carcass or gut pile they leave in the field usually contains lead bullet fragments. Research continues regarding the effects of lead ammunition and the fragments it can deposit in killed game. Avian predators and scavengers can be susceptible to lead poisoning when they ingest lead fragments or pellets in the tissues of animals killed or wounded by lead ammunition. A concern related to fishing is the use of lead sinkers and jigs for fishing. Because sinkers and jigs are generally much larger than shot pellets, a single lead sinker may induce acute lead poisoning. We will continue to encourage use of non-toxic ammunition and fishing tackle, and will educate hunters and anglers about lead and its impacts. To move towards reduction and future elimination of this threat on the refuge, we will be implementing a lead tackle ban over a 5-year period in order to educate and work with anglers on non-toxic alternatives. The complete ban will begin in September 2026.

Comment – Secretarial Order 3356 is for identifying potential expansions and not actually expanding, but the refuge is proposing to expand refuge hunt acreage under SO 3356: 3

Response: Hunting and fishing on Service lands is a tradition that dates back to the early 1900s. In passing the Improvement Act, Congress reaffirmed that the Refuge System was created to conserve fish, wildlife, plants, and their habitats, and would facilitate opportunities for Americans to participate in compatible wildlife-dependent recreation, including hunting and fishing on Refuge System lands. We prioritize wildlife-dependent recreation, including hunting and fishing, when doing so is compatible with the purpose of the refuge and the mission of the Refuge System.

Secretarial Order 3356, signed September 15, 2017, reiterated this direction and Executive Order 13443, "Facilitation of Hunting Heritage and Wildlife Conservation." In the press release announcing the order, the Department affirms "… This means finding ways to expand hunting and fishing on public lands, improving access, and taking necessary actions to facilitate the enjoyment of these time-honored activities by any member of our society" (https://www.doi.gov/pressreleases/secretary-zinke-signs-secretarial-order-support-sportsmen-enhance-wildlife).

Furthermore, Secretarial Order 3356 directs "greater collaboration with state, tribes, and territorial partners" which encourages better alignment of refuge-specific regulations with State regulations. The Service must "work cooperatively with state, tribal, and territorial wildlife agencies to ensure that hunting and fishing regulations for Department lands and waters complement the regulations on the surrounding lands and waters to the extent legally practicable." Therefore, facilitating hunting opportunities is an important aspect of the Service's roles and responsibilities as outlined in the legislation establishing the Refuge System, and the Service will continue to facilitate these opportunities where compatible with the purpose of the specific refuge.

Hunting is one of the priority public uses of the Refuge System, consistent with the refuges' Comprehensive Conservation Plan's goal to provide opportunities for compatible high-quality wildlife-dependent public uses, and does not materially interfere with, or detract from, the fulfillment of the Refuge System mission or the purposes of the refuge.

Comment – Supports more hunting opportunities and acreage, which will let hunters spread out, improving the recreational experience: 4, 7

Response: Thank you for your comments and support. Hunting is a healthy, traditional, recreational use of renewable natural resources that is deeply rooted in America's heritage. Hunting is also an important wildlife management tool. We remain interested in providing a variety of hunting opportunities for the public.

Comment – Recommends aligning upland game seasons with State seasons rather than woodcock season: 4

Response: Upland game species that may be hunted on the refuge include coyote, fox, groundhog (referred to as "woodchuck" by NJDFW), rabbit, squirrel, pheasant, and

grouse. Grouse is currently not an open State season; though grouse hunting on the refuge will open if/when the State opens this season. These species may be hunted on all areas of the refuge open to public hunting. Hunting for upland game species, plus crow and snipe, will begin with the start of the State early woodcock south zone season (usually early November) and will continue through the duration of the State season for each species. The Service hopes to reduce hunter confusion by aligning the start of upland game seasons with the State early woodcock south zone season.

Comment – Opposed to fishing on Two Mile Beach ("I do not feel that fishing at Two Mile Beach should be allowed, in summer, winter or whenever. This beach was included in the creation of the Refuge solely as a safe harbor for birds…."): 5

Response: The Atlantic Ocean portion is only open for fishing from October 1 to March 31 each year, and the Cold Spring Inlet beach portion of the Two Mile Beach Unit will be open for fishing year-round. The beach closure, and fishing prohibition, at the Atlantic Ocean portion from April 1 to September 30 is essential to protect beach-nesting birds such as American oystercatcher, black skimmer, least tern, and piping plover. It is also important to provide a disturbance-free environment for shorebirds that migrate thousands of miles such as red knot, ruddy turnstone, and sanderling. Access hours for fishing on the refuge are from 1 hour before sunrise until 1 hour after sunset. Night fishing is prohibited.

Comment – Opposed to hounding on the refuge; unfair that hunters can have dogs unleashed while other refuge users must leash theirs: 3

Response: Allowing dogs on refuge lands throughout the year would represent a substantial and long-term adverse impact to a wide variety of wildlife including ground nesting and foraging birds. In comparison, hunting is undertaken during a shorter period of time by fewer individuals, mostly occurring outside of the key nesting periods for many wildlife species. Additionally, hunting dogs help hunters fulfill their ethical obligations to make every possible effort to locate downed game. Activities must be found to be appropriate and compatible before allowing the use - we have found that the wildlife-dependent use of hunting meets this standard.

Comment – Concerns that the environmental assessment falls short in providing objective science based analysis of the impacts: 3

Response: Cape May NWR is part of a national system; many decisions are made based on Refuge System mandates and practices. We want to reiterate that hunting is a priority public use of the Refuge System. When found to be compatible, hunting opportunities should be provided to the public on the refuge. Development of the Hunting and Fishing Plan was based on previous input from hunters and state partners. Species seasons that have been directly requested by hunters and state partners were primarily considered in this plan. In order to balance all priority public uses and refuge resources, some seasons are limited in time and/or geographical location to manage conflicts with other users and to minimize habitat disturbances.

As we developed the plan, we used the "sound professional judgment" of the refuge manager, biologists, and other staff in making inherently complex management decisions to ensure that each proposed action complies with Service mandates. We incorporated field experience, knowledge of refuge resources, considerations of the refuge's role within an ecosystem, applicable laws, and best available science in making our decisions. Service biologists and wildlife professionals, in consultation with the State, often determine the optimal number of each game animal that should reside in an ecosystem and then utilize hunt parameters (e.g., bag limits, sex ratios) based on those analyses. We carefully considered how the proposed hunt fits with the refuge goals, objectives, and strategies before allowing the hunt. As we monitor and evaluate the hunting program into the future, other species seasons may be considered.

In the EA, we analyze and predict the foreseeable impacts of implementing the hunting program in each of the alternatives. When detailed information may be deficient or unavailable, we base our comparisons on professional judgment and experience. We usually identify potential impacts within a long-range timeframe (i.e., 15 years); beyond that time-frame they become more speculative. Please keep in mind the relatively small total land mass of the hunting area of Cape May NWR in comparison with the entire Atlantic Flyway or the breeding ranges of the many birds and wildlife that use it. We recognize that the refuge is not isolated ecologically from the land around it; however, we may have overstated positive or negative impacts with our predictions in that larger geographic context. Nevertheless, the actions we propose conforms with the CCP and other regional landscape plans, and provide positive, incremental contributions to those larger landscape goals.

The commenter stated "… the proposed hunt plan increases the number of hunted species to forty, representing 841 hunt days, September through March. An increase of almost 300 percent the number of hunt days currently available for hunting on the refuge. That would allow a significant number of hunters to hunt a large number of species throughout the refuge for 7 months of the year." We disagree. In our evaluation, we take into account hunter demand, participation rates, and other factors that may limit or enhance hunter use of the refuge. For example, allowing hunting of squirrel and woodchuck from November to mid-February does not have the same importance and impact as allowing additional opportunities for deer or waterfowl. Often, we are allowing the take of certain species as incidental to a different hunt. Based on our best professional judgement, experience with other hunts, and in consultation with NJDFW staff, the refuge is expected to attract up to 55 additional hunters each year. We do not consider this increase in hunters to have any significant impact on species populations, habitat, or other users.

Migratory birds are managed on a flyway basis and hunting regulations are established in each State based on flyway data. Hunting of resident and migratory wildlife species on refuges generally occurs consistent with State regulations, including seasons and bag limits. Secretarial Order 3356 also directs "greater collaboration with state, tribes, and territorial partners" which encourages better alignment of refuge-specific regulations with State regulations.

Under our proposal, the Two Mile Beach Unit (520 acres) and the rest of the closed area (112 acres) would not be open to hunting. Portions of the Cape May NWR were designated, acquired, reserved, or set apart as an inviolate sanctuary; therefore, hunting may only be allowed for migratory game birds on no more than 40 percent of the refuge. Hunting would not occur during summer season to minimize impacts to nesting birds and other wildlife-dependent recreational users. By expanding and/or maintaining hunting and fishing opportunities, but retaining mitigation measures to prevent conflicts, the refuge would promote a balance of wildlife-dependent recreational uses.

Comment – "It is unclear whether the additional acreages being proposed for hunting are from new acquisitions of property to the Cape May NWR or are land parcels which have been closed to hunting and the public over past years.": 3

Response: The refuge worked diligently to identify lands within its ownership that could be opened to hunting and fishing. Parcels proposed for opening include both newly acquired since the last hunting and fishing plan, as well as previously closed lands.

Comment – Public meetings should have taken place for the development of the hunting plan: 3

Response: We work with a variety of partners, such as NJDFW, volunteers, sportsmen's groups, and wildlife-related organizations, to understand their concerns and issues. This coordination, in addition to input received during the public comment period, help to inform our final hunting and fishing package for the refuge. Service staff routinely interact with visitors that include bird watchers, nature photographers, hikers, and many more.

The refuge maintains a mailing list for news release purposes to local newspapers and websites. In addition, information about the plan was posted at refuge kiosks and on the refuge website. While we sent our press release to news organizations, they are under no obligation to print or report our information.

While public scoping meetings are not required for hunting and fishing management plans, traditional public meetings during pandemic conditions were not feasible. However, it is our common practice to allow 30 days for public review and comment of a NEPA document or compatibility determination. Our public comment period began on April 14 and ended on July 6, a total of 83 days.

Comment – The refuge is not equipped staff-wise to expand the hunt program this much, especially since the refuge doesn't have a designated law enforcement officer: 3

Response: Estimated costs to implement this alternative are $48,000. This is mainly due to the increased time to manage the land expansion as well as the expanded seasons of grouse, pheasant, coyote, fox, groundhog, and crow hunting. It will require approximately 20 percent of the detailing Federal Fish and Wildlife Officer's time to

enforce hunting and fishing, as well as 15 percent of the refuge biologist's time for coordination of the hunt program and assessment of the impact of hunting and fishing on wildlife and habitat. The Refuge Manager will spend 5 to 10 percent of their time overseeing and implementing the program. Some visitor services manager (part time employee) and maintenance time will also be needed.

We expect all of our visitors and user groups, including hunters and anglers, to adhere to set rules and regulations. We want to emphasize that ensuring the safety of refuge visitors and resources is a top priority. We will work to ensure safe and enjoyable recreational opportunities for all recreational users. Refuge staff will continue to work with law enforcement officers from partnering natural resource agencies. The Service and NJDFW work together to conduct patrols, safeguard hunters and visitors, and protect both game and nongame species. Refuge and hunt area boundaries will be clearly marked on refuge maps. Federal and partnering agency law enforcement staff will randomly check hunters and anglers for compliance with, Federal, State, and refuge regulations. It is anticipated that funding within the regular Operations and Maintenance budget of Cape May NWR to conduct annual hunting and fishing programs at the refuge would continue to be sufficient in the future.

Comment – Concern with adverse impacts to the ecosystem: 3, 6

Response: We allow hunting on refuge lands only if such activity has been determined compatible with the established purpose(s) of the refuge and the mission of the Refuge System as required by the Refuge Improvement Act. Hunting of resident and migratory wildlife species on refuges generally occurs consistent with State regulations, including seasons and bag limits. Secretarial Order 3356 also directs "greater collaboration with state, tribes, and territorial partners" which encourages better alignment of refuge-specific regulations with State regulations.

Service biologists and wildlife professionals, in consultation with the State, carefully consider how a proposed hunt fits with individual refuge goals, objectives, and strategies before allowing the hunt. None of the known, estimated, or projected harvests of migratory game birds, upland game, or big game species in the plan is expected to have significant adverse direct, indirect, or cumulative impacts to hunted populations, non-hunted wildlife, endangered or threatened species, plant or habitat resources, wildlife-dependent recreation, air, soil, water, cultural resources, refuge facilities, or socio-economics.

No significant changes have been made between the draft and final versions of the Hunting and Fishing Plan. Two minor changes have been made: (1) Access for hunting and fishing is provided from 1 hour before sunrise until 1 hour after sunset. In the draft documents, we erred in posting various times, ranging as low as 30 minutes; and (2) Groundhog hunting will close at the end of the State groundhog Bow or Shotgun season (approximately February 15). In the draft documents, we stated that for groundhog hunting would close at the end of the State rabbit season.

Determination

Based upon a review and evaluation of the information contained in the EA, as well as other documents and actions of record affiliated with this proposal, the Service has determined that the proposal to expand hunting opportunities at Cape May NWR does not constitute a major Federal action significantly affecting the quality of the human environment under the meaning of section 102(2)(c) of NEPA. As such, an environmental impact statement is not required. An EA has been prepared in support of this finding (Appendix C) and is available upon request to Cape May NWR.

The Service has decided to select the proposed action as described in the EA, and implement the Hunting Plan for Cape May NWR upon publication of the final 2021-2022 Station-Specific Hunting and Sport Fishing Regulations. This action is compatible with the purpose of the refuge and the mission of the Refuge System, and consistent with applicable laws and policies. See attached Compatibility Determinations (Appendix A and Appendix B).

SCOTT KAHAN Digitally signed by SCOTT KAHAN
Date: 2021.08.20 15:13:50 -04'00'

Regional Chief
National Wildlife Refuge System

Date