# Rachel Carson National Wildlife Refuge
# and
# Great Thicket National Wildlife Refuge Berwick-York Focus Area
# Hunting Package

**June 2023**

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

**Rachel Carson National Wildlife Refuge**
**321 Port Road**
**Wells, Maine, 04090**

Submitted By:
Project Leader

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Signature Date

Concurrence:
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**Rachel Carson National Wildlife Refuge and**
**Great Thicket National Wildlife Refuge (Berwick-York Focus)**
**Supplemental Environmental Assessment for Hunting Plan**

## Executive Summary

Introduction

The U.S. Fish and Wildlife Service (Service) prepared this Supplemental Environmental Assessment (EA) to evaluate the effects associated with the proposed action of requiring non-lead ammunition and tackle beginning September 1, 2026, and to comply with the National Environmental Policy Act (NEPA) in accordance with the Council on Environmental Quality regulations (40 CFR 1500-1509) and Department of the Interior (43 CFR 46; 516 DM 8) and Service (550 FW 3) regulations and policies. This document is a supplement to, and updates, a previous EA for the Rachel Carson National Wildlife Refuge (NWR, refuge) and Great Thicket NWR (Berwick-York Focus Area) Hunting Plan, prepared and approved by the Service in September 2022 (hereafter referred to as the 2022 EA). The Service issued a Finding of No Significant Impact (FONSI) for the proposed action and 2022 EA on September 2, 2022.

As part of the final rule "2022-2023 Station-Specific Hunting and Sport Fishing Regulations" (2022 Rule) published in the Federal Register on September 16, 2022 (87 FR 57108), the following passage is specified:

> *"As part of the 2023-2024 proposed rule, Blackwater, Chincoteague, Eastern Neck, Erie, Great Thicket, Patuxent Research Refuge, Rachel Carson, and Wallops Island NWRs will propose a non-lead requirement, which will take effect on September 1, 2026. In the June 9, 2022, proposed rule (87 FR 35136), the Service intended to phase out the use of lead on these eight refuges by allowing the use of lead ammunition and tackle for all new hunting and fishing opportunities—until fall 2026, which is when the Service plans to require non-lead ammunition and tackle for all activities on these refuges. (To clarify, if a refuge proposed to expand pre-existing opportunities that previously required non-lead ammunition or tackle, then non-lead ammunition and tackle would still be required for those activities.) Based on the breadth of comments received on the eight refuges' plan to require non-lead ammunition and tackle by fall 2026, the Service will propose these requirements next year and provide another opportunity to comment during the 2023-2024 rulemaking."*

The Service committed in the 2022 Rule to consider the future of lead use based on numerous public comments. The Service received over 48,000 comments on the proposed rule, with a large portion of those comments concerning lead ammunition and fishing tackle. Thus, this Supplemental EA includes additional information analyzing the potential impacts of lead under alternatives of requiring or not requiring non-lead ammunition beginning September 1, 2026, and utilizes the latest research and best available science where applicable. No fishing occurs on Great Thicket NWR, and lead tackle is already prohibited on Rachel Carson NWR; thus, only hunting is analyzed in the document.

Purpose and Need

The purpose of the proposed non-lead ammunition requirement is to expand compatible hunting opportunities on Rachel Carson NWR and Great Thicket NWR Berwick-York Focus Area. The stated objectives of a hunting program on Rachel Carson NWR and Great Thicket NWR Berwick-York Focus Area are to:

1. Provide the public with a quality recreational experience on refuge lands and waters and increase opportunities and access for consumptive and non-consumptive users of the refuge. The National Wildlife Refuge System Improvement Act of 1997 identified hunting, where compatible, as one of the six priority public uses on refuges;

2. Design a hunting program that is administratively efficient and manageable with existing staffing levels and in alignment with Maine Department of Inland Fisheries and Wildlife (MDIFW) regulations when possible;

3. Implement a hunting program that is safe for all refuge users; and

4. Design a hunting program that aligns with refuge habitat management objectives.

Hunting on these two refuges is conducted within the framework of Federal and State regulations. By maintaining hunting regulations that are as or more restrictive than the State of Maine's, individual refuges ensure that they are maintaining seasons which are supportive of management on a local and regional basis. Hunters on the refuges are expected to be ethical and respectful of other hunters, non-consumptive users, wildlife species, and the environment while on refuge lands.

Lead ammunition can present a risk of adverse impacts to wildlife health and the best available scientific evidence shows that lead use is currently impacting wildlife nationwide. Some species present on the refuge are especially susceptible to lead exposure from ammunition. Additionally, even though the current level of lead available in the environment on the refuges may not be causing adverse impacts, the continued use of lead for hunting could lead to accumulated lead levels that present a danger to wildlife health. Thus, the proposed requirement to use non-lead ammunition beginning September 1, 2026, may immediately benefit wildlife health and protects against the accumulation of lead on the refuges beyond 2026. This requirement is also needed because by addressing a potential threat to wildlife health it ensures that both the current hunting program and any future hunting openings and expansions can be compatible with our conservation mission and the purposes of the refuges.

The need for the proposed action is evidenced by the requirement to meet the Service's priorities and mandates as outlined by the National Wildlife Refuge System Administration Act (NWRSAA) of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997, 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)). Department of the Interior Secretarial Order 3356 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. The proposed action would also promote one of the priority public uses of the National Wildlife Refuge System (Refuge System). By providing opportunities for visitors to hunt, we can promote stewardship of our natural resources and increase public appreciation and support for the Refuge System.

The No Action Alternative (see below), in contrast, does not meet this need because the use of lead ammunition for hunting on the refuges beyond September 1, 2026, would likely not be a compatible recreational use. Nevertheless, we are analyzing it as the No Action Alternative as it is the baseline needed to evaluate the proposed action. If the current hunting program were to continue under the No Action Alternative, the Service would have to reevaluate the hunting opportunities expanded in the 2022 Rule that permitted the use of lead ammunition, since these expansions were previously analyzed and adopted with the expectation of implementing the planned non-lead ammunition requirement beginning September 1, 2026. This reevaluation would include revisiting the relevant Hunting Plan discussion, NEPA analysis, and ESA Section 7 analysis, in addition to evaluating the compatibility, so that we can determine whether those opportunities can remain open on these refuges.

Alternatives

For this Supplemental EA, two alternatives are analyzed: the No Action Alternative and the Proposed Action Alternative. The fishing program is identical under both alternatives, as non-lead tackle is already required for fishing on Rachel Carson NWR, so the analysis only considers the two alternatives for the hunting program The No Action Alternative (Alternative A) would continue the refuges' current hunting program. Under this alternative, use of lead ammunition would continue to be allowed for deer and turkey hunting and prohibited for all other species, including waterfowl.

Under the Proposed Action Alternative (Alternative B), we will eliminate use of lead ammunition for hunting of all species on September 1, 2026. Until then, the refuge staff would continue to encourage big game hunters to voluntarily use non-lead ammunition while hunting on either refuge. This 3-year transition period will allow hunters time to adapt to the new regulations without diminishing hunting opportunities on the two refuges. The refuge staff will provide information to assist in this transition that benefits wildlife.

Environmental Consequences

Potential effects from lead ammunition use in the three-year transition period and potential positive environmental impacts due to the non-lead requirement, as compared to allowing the continued use of lead, are considered in this Supplemental EA.

Due to the continued use of lead (prior to September 1, 2026) for deer and turkey hunting, there remains concern about the bioavailability of spent lead ammunition (bullets) on the environment, the health of fish and wildlife, and human health. The Service is aware of fish and wildlife species, including endangered and threatened species, that are susceptible to biomagnification of lead from their food sources. There is also evidence that some species are susceptible to direct

ingestion of lead ammunition or tackle due to their foraging behaviors.

Public Review

With the 2022 EA package, including the EA, Hunting Plan, and Compatibility Determinations, the public had the opportunity to review and comment on each of the draft documents from May 3 through August 8, 2022, a total of 97 days. We distributed a press release to news organizations and alerted visitors to the plan's availability on the refuge website. We also hosted a 3-hour Open House on July 25 to answer questions and provide information to the public. A total of nine comment letters were submitted from the public that offered input to the refuge on the 2022 EA. A summary of the comments and our responses can be found in Appendix E of the 2022 EA.

This Supplemental EA has been thoroughly coordinated with all interested and/or affected parties. Refuge staff coordinated with State agency staff in preparation of the Hunting Plan and incorporated their comments into the documents. The refuge will again reach out to all five of the federally recognized Tribal Nations in Maine (collectively, the Wabanaki) to invite the Tribal Nations representatives to review the draft hunt plan and engage with the refuge on the hunt plan going forward. The public will be notified of the availability of the Supplemental EA and associated documents for review and will include no less than a 60-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.

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# Supplemental Environmental Assessment

## Rachel Carson National Wildlife Refuge and Great Thicket National Wildlife Refuge Berwick-York Focus Area

This Supplemental Environmental Assessment (EA) is being prepared to evaluate the effects associated with the proposed action of requiring non-lead ammunition beginning September 1, 2026, and complies 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 (550 FW 3) regulations and policies. This document is a supplement to, and updates, a previous EA for the Rachel Carson National Wildlife Refuge (NWR, refuge) and Great Thicket NWR (Berwick-York Focus Area) Hunting Plan, prepared and approved by the Service in September 2022 (hereafter referred to as the 2022 EA). The Service issued a Finding of No Significant Impact (FONSI) for the proposed action and 2022 EA on September 2, 2022. 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 U.S. Fish and Wildlife Service (Service) proposes to eliminate use of lead ammunition for all hunting, including for white-tailed deer and turkey, on September 1, 2026, Rachel Carson National Wildlife Refuge (NWR, refuge) and Great Thicket NWR Berwick-York Focus Area in accordance with the refuge's 2007 Comprehensive Conservation Plan (CCP). Until then, we will encourage the use of non-lead ammunition for big game (white-tailed deer and turkey) hunts and will educate hunters about lead and its impacts. This Supplemental EA analyzes the environmental impacts associated with the proposed non-lead requirement. The proposed action will be finalized 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 Coastal Maine NWR was established on December 16, 1966, under the authority of the Migratory Bird Conservation Act for "use as an inviolate sanctuary, or for any other management purpose, for migratory birds" (16 U.S.C. 715d, Migratory Bird Conservation Act). In a formal dedication ceremony on June 27, 1970, the refuge was renamed in honor of scientist and author Rachel Carson, who spent much of her life along the coast of Maine. Rachel Carson NWR was established to preserve migratory bird habitat and waterfowl migration routes associated with southern Maine's coastal estuaries that were quickly succumbing to coastal development in the 1950s.

Great Thicket NWR was established in 2016 to help stem the decline of shrubland-dependent

wildlife species. The establishing authorities for Great Thicket NWR include the Endangered Species Act of 1973 (16 U.S.C. 1534), as amended and Fish and Wildlife Act of 1956 (16 U.S.C. 742a-742j), as amended. The primary purpose of Great Thicket NWR, located in York County, Maine, is to strategically acquire and improve habitat to help achieve overlapping habitat and population goals for declining shrubland wildlife species. The Service hopes to conserve 15,000 acres in 10 focus areas across 6 states through sales and donations of land from willing sellers or donors. There are two refuge acquisition focus areas in Maine, the Berwick-York focus area and the Cape Elizabeth-Scarborough focus area.

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

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.

As part of the final rule "2022-2023 Station-Specific Hunting and Sport Fishing Regulations"

(2022 Rule) published in the Federal Register on September 16, 2022 (87 FR 57108), the following passage is specified:

> *"As part of the 2023-2024 proposed rule, Blackwater, Chincoteague, Eastern Neck, Erie, Great Thicket, Patuxent Research Refuge, Rachel Carson, and Wallops Island NWRs will propose a non-lead requirement, which will take effect on September 1, 2026. In the June 9, 2022, proposed rule (87 FR 35136), the Service intended to phase out the use of lead on these eight refuges by allowing the use of lead ammunition and tackle for all new hunting and fishing opportunities—until fall 2026, which is when the Service plans to require non-lead ammunition and tackle for all activities on these refuges. (To clarify, if a refuge proposed to expand pre-existing opportunities that previously required non-lead ammunition or tackle, then non-lead ammunition and tackle would still be required for those activities.) Based on the breadth of comments received on the eight refuges' plan to require non-lead ammunition and tackle by fall 2026, the Service will propose these requirements next year and provide another opportunity to comment during the 2023-2024 rulemaking."*

The Service committed in the 2022 Rule to consider the future of lead use based on numerous public comments. The Service received over 48,000 comments on the proposed rule, with a large portion of those comments concerning lead ammunition and fishing tackle. No fishing is allowed at Great Thicket NWR, and Rachel Carson NWR already prohibits lead tackle for fishing. Thus, only hunting is analyzed in this document.

**Purpose and Need for the Action**

Hunting is identified as one of the priority public uses legislatively mandated by the NWRSAA of 1966, as amended by the Refuge System Improvement Act of 1997 (Public Law 105-57) and reinforced as a priority use by Department of the Interior Secretarial Order 3356 (September 15, 2017). The purpose of the proposed non-lead ammunition requirement is to provide compatible hunting opportunities on Rachel Carson NWR and Great Thicket NWR Berwick-York Focus Area. The stated objectives of a hunting program on Rachel Carson NWR and Great Thicket NWR Berwick-York Focus Area are to:

1. Provide the public with a quality recreational experience on refuge lands and waters and increase opportunities and access for consumptive and non-consumptive users of the refuge. The Refuge System Improvement Act of 1997 identified hunting, where compatible, as one of the six priority public uses on refuges;

2. Design a hunting program that is administratively efficient and manageable with existing staffing levels and in alignment with Maine Department of Inland Fisheries and Wildlife (MDIFW) regulations when possible;

3. Implement a hunting program that is safe for all refuge users; and

4. Design a hunting program that aligns with refuge habitat management objectives.

Hunting on these two refuges is conducted within the framework of Federal and State regulations. By maintaining hunting regulations that are as or more restrictive than the State of

Maine's, individual refuges ensure that they are maintaining seasons which are supportive of management on a local and regional basis. Hunters on the refuges are expected to be ethical and respectful of other hunters, non-consumptive users, wildlife species, and the environment while on refuge lands.

Lead ammunition and tackle can present a risk of adverse impacts to wildlife health and the best available scientific evidence shows that lead use is currently impacting wildlife nationwide. Some species present on the refuge are especially susceptible to lead exposure from ammunition and/or tackle. Additionally, even though the current level of lead available in the environment on the refuges may not be causing adverse impacts, the continued use of lead for deer or turkey hunting could lead to accumulated lead levels that present a danger to wildlife health. Thus, the requirement to use non-lead ammunition beginning September 1, 2026, may immediately benefit wildlife health and protects against the accumulation of lead on the refuges beyond 2026. This requirement is also needed because by addressing a potential threat to wildlife health it ensures that both the current hunting and fishing programs and any future hunting and fishing opening and expansions can be compatible with our conservation mission and the purposes of the refuges.

The need for the proposed action is evidenced by the requirement to meet the Service's priorities and mandates as outlined by the NWRSAA, as amended by the Refuge System Improvement Act of 1997, 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 proposed action would promote one of the priority public uses of the Refuge System. By providing opportunities for visitors to hunt, we can promote stewardship of our natural resources and increase public appreciation and support for the Refuge System.

The No Action Alternative (see below), in contrast, does not meet this need because the use of lead ammunition for hunting on the refuges beyond September 1, 2026, would likely not be a compatible recreational use. Nevertheless, we are analyzing it as the No Action Alternative as it is the baseline needed to evaluate the proposed action. If the current hunting program were to continue under the No Action Alternative, the Service would have to reevaluate the hunting opportunities expanded in the 2022 Rule that permitted the use of lead ammunition, since these expansions were previously analyzed and adopted with the expectation of implementing the planned non-lead ammunition requirement beginning September 1, 2026. This reevaluation would include revisiting the relevant Hunting Plan discussion, NEPA analysis, and ESA Section 7 analysis, in addition to evaluating the compatibility, so that we can determine whether those opportunities can remain open on these refuges.

This EA serves as the NEPA document that analyzes the impacts on environmental, cultural, and historical resources of the proposed action.

**Alternatives**

The fishing program is identical under both alternatives, as non-lead tackle is already required for fishing on Rachel Carson NWR, and fishing is not allowed at Great Thicket NWR. Thus, the analysis only considers the two alternatives for the hunting program.

**No Action Alternative – Alternative A - Current Management**

The No Action Alternative would continue the refuge's current hunting program, which allows for big game, ruffed grouse, and migratory bird hunting on designated areas of Rachel Carson NWR and Great Thicket NWR's Berwick-York Focus Area. Under this alternative, use of lead ammunition would continue to be allowed for deer and turkey hunting and prohibited for all other species, including waterfowl.

**Proposed Action Alternative – Alternative B**

Under Alternative B, we will eliminate use of lead ammunition for hunting of all species, including for white-tailed deer and turkey, starting on September 1, 2026.

To protect waterfowl and other migratory birds from potential lead poisoning, non-lead ammunition is required for firearms hunting of all species except deer and turkey. Until September 2026, we will continue to strongly encourage the use of non-lead ammunition for big game hunts and will educate hunters about lead and its impacts. This transition period will allow big game hunters time to adapt to the new regulations so that they can continue to engage in hunting opportunities on the refuge. The refuge staff will provide information to assist in this transition that benefits fish, wildlife, and people.

**Alternative(s) Considered, But Dismissed from Further Analysis**

In developing hunting plans for refuges, we often receive comments and requests from some members of the public to eliminate hunting. An alternative that would close the refuges to all hunting was therefore considered but dismissed from detailed analysis. A "No Hunting Alternative" would not accomplish the purposes we seek 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 and shall receive priority consideration in refuge planning and management. It mandates that hunting opportunities should be facilitated when feasible and directs the Service to administer the Refuge System 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.

There are no unresolved conflicts about the Proposed Action with respect to alternative uses of available resources. Additionally, the proposed action builds on an existing hunt program at Rachel Carson NWR, and is consistent with the refuge's 2007 Comprehensive Conservation Plan's (CCP) larger goal to "increase appreciation and stewardship of coastal Maine wildlife and their habitats by providing positive wildlife-dependent experiences for refuge visitors." This goal includes a specific objective (Goal 5, Objective 5.3) to "provide high quality hunting opportunities that minimize conflicts with neighbors and refuge programs and ensure that at least 90 percent of hunters have a positive experience." Therefore, the Service does not need to consider additional alternatives (43 CFR 46.310).

**Affected Environment and Environmental Consequences**
Rachel Carson NWR consists of approximately 5,690 acres across 11 refuge divisions in Maine's York and Cumberland Counties. Rachel Carson NWR consists of tidal, freshwater wetland, and upland habitats. Great Thicket NWR includes land in York County, Maine as well as other parcels throughout New England. In Maine, Great Thicket NWR primarily consists of forest and shrubland habitat near the coast known as the Great Thicket NWR Berwick-York Focus Area. For more information regarding the general characteristics of the Rachel Carson NWR's environment, please see Chapter 3 of the refuge's 2007 CCP. For more information on general characteristics of Great Thicket NWR's environment, please see Chapter 3 of the refuge's Land Protection Plan (LPP).

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 direct, indirect, and cumulative 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. Cumulative impacts are defined as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. 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 would not be more than negligibly impacted by the action may be dismissed from further analyses.

**Table 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, Vegetation and Soils | ☐ | ☐ | ☒ |
| Air Quality | ☐ | ☒ | ☐ |
| Floodplains | ☒ | ☐ | ☐ |
| Wilderness | ☒ | ☐ | ☐ |
| Visitor Use and Experiences | ☐ | ☐ | ☒ |
| Cultural Resources | ☐ | ☐ | ☒ |
| Refuge Management and Operations | ☐ | ☐ | ☒ |
| Socioeconomics and Environmental | ☐ | ☐ | ☒ |

| 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 |
|---|---|---|---|
| Justice | | | |

The following resources either (1) do not exist within the project area or (2) would either not be affected or only negligibly affected by the proposed action:

Air quality - The Service's hunting programs produce negligible impacts to air quality. Some hunting equipment can discharge gases and hunters using vehicles for transportation to and from recreational areas on the refuge produce emissions, but the amount of air pollution from these sources is negligible and the pollutants produced do not have substantial localized effects.

Floodplains - The Service's hunting programs do not affect water flows or other factors relevant to flooding and floodplain landscapes. Therefore, no effects to floodplains are expected as a result of proposed regulations changes and expanding access. No modifications will be made that will increase the floodplain elevation or negatively impact its function and value and thus there will be no impacts to E.O. 11988 – Floodplain Management. E.O. 11990 – Protection of Wetlands only applies if the refuge creates structures to support hunting and fishing in wetlands. This Executive Order will be evaluated on a project-by-project basis, e.g., if an accessible blind were to be built in the future to support hunting activities. As it stands now, there would be no impact to wetlands due to this proposed activity related to developing supporting infrastructure as no infrastructure projects are proposed specific to this action. Wetland impacts specific to vegetation and habitat are addressed in those respective sections. The proposed action complies with E.O. 11988 – Floodplain management – Fed. Reg. 26951 (1977) and E.O. 11990 - Protection of Wetlands.

Wilderness - The refuge does not have any designated wilderness areas per the Wilderness Act, 16 U.S.C. 1131 et seq. nor does the refuge have any waterways that fall under the Wild and Scenic Rivers Act, 16 U.S.C. 1271 et seq. Given this, no effect to wilderness or wild and scenic rivers are expected. The proposed action complies with the Wilderness Act, 16 U.S.C. 1131 et seq. and the Wild and Scenic Rivers Act, 16 U.S.C. 1271 et seq.

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 timeframe, they become more speculative.

Please keep in mind the relatively small total land mass of the hunting area of the refuge in comparison with the entire 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 lands around it; however,

we may have overstated positive or negative impacts in that larger geographic context. Nevertheless, many of the actions we propose conform to other regional landscape plans, and provide positive, incremental contributions to those larger landscape goals.

Potential effects from lead ammunition use during the 3-year transition period and potential positive environmental impacts due to the non-lead requirement, as compared to allowing the continued use of lead, are considered in this Supplemental EA.

Nationwide, there is concern about the bioavailability of spent lead ammunition (bullets) on the environment, endangered and threatened species, birds (especially raptors), mammals, and other fish and wildlife susceptible to biomagnification. Generally, in this analysis four types of potential lead impacts are addressed: lethal and sublethal impacts, for both target and non-target species.

Lead shot and bullet fragments found in animal carcasses and gut piles are the most prevalent 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. 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 (the result of lead's brittle quality causing fragmentation upon impact) or pellets in the tissues of animals killed or wounded by lead ammunition (Cade 2007; Church et al. 2006; Craig et al. 1990; Cruz-Martinez et al. 2015; Finkelstein et al. 2012; Herring et al. 2016; Hunt et al. 2006; Pattee et al. 1981; Pauli and Buskirk 2007; Platt 1976; Redig et al. 1980; Rideout et al. 2012; Stroud and Hunt 2009; Warner et al. 2014). Lead poisoning may weaken raptors by reducing their strength and coordination, increasing muscle and weight loss, reducing motor skill function and making them lethargic, which may make them more susceptible to disease, vehicle strikes or power line accidents and increases mortality rates by leaving them unable to hunt (Golden et al. 2016; Kelly and Kelly 2005; Kramer and Redig 1997; O'Halloran et al. 1989). Furthermore, nestlings of raptors have impaired survival and growth when parents bring food that is embedded with lead fragments (Hoffman 1985a, 1985b; Pattee 1984).

Recent modeling has even indicated that lead poisoning suppresses population growth in eagles (Slabe et al. 2022). The extent to which elevated levels of lead have been documented in raptors admitted for rehabilitation can be found in a study of bald eagles and golden eagles in the Raptor Rehabilitation Program at the College of Veterinary Medicine at Washington State University from 1991 to 2008, where 48 percent of bald eagles and 62 percent of golden eagles tested had blood lead levels considered toxic by current standards. Of the bald and golden eagles with toxic lead levels, 91 percent of bald eagles and 58 percent of golden eagles were admitted to the rehabilitation facility after the end of the general deer and elk hunting seasons in December (Stauber et al. 2010). Environmental lead exposure, even at low levels, could very well contribute to wildlife mortality by impairing organ functions, increasing susceptibility to trauma and disease, and hindering the complex mental processes and social behaviors required for reproductive success and survival (Grade et al. 2019).

The proposed requirement of non-lead ammunition on the refuges starting September 1, 2026, will help address concerns about the bioavailability of lead on the two refuges. Lead fishing

tackle can also present similar risks, but its use is already prohibited on the refuge.

## NATURAL RESOURCES

### Big Game (white-tailed deer, wild turkey, coyote, fox)

*Affected Resource Description*

White-tailed deer

In 2019, 28,323 total deer were harvested in the State of Maine. This figure represents a 12.7 percent decrease from the previous year when 32,451 deer were harvested in the State (MDIFW 2019, MDIFW 2020*a*). In 2021, the State estimated that there were approximately 290,000 deer in Maine. The deer population in Maine is trending upwards and, in some areas, deer are overpopulated. All divisions of Rachel Carson NWR and Great Thicket NWR Berwick-York Focus Area are within the MDIFW Wildlife Management District (WMD) 20 and 24.

Wild Turkey

The total turkey harvest in Maine was 8,592 birds in 2019 (MDIFW 2020*b*, MDIFW 2020*c*). Prior to the spring 2020 hunting season, the turkey population in Maine was estimated at 33,500 total birds. Maine's turkey population appears to be increasing, with higher population densities in the southern portion of the State. MDIFW annually evaluates hunter harvest data and biological data for these species to inform management decisions.

Coyote and Fox

Within Maine, 1,909 coyote and 706 foxes (red and gray) were reported to have been taken during the 2019-2020 seasons (MDIFW 2020). There are an estimated 12,000 coyotes living in Maine. In 1980, Maine's pre-harvest population of red foxes was estimated at 14,500 animals and was expected to increase. While there has not been a State population survey of red fox since, MDIFW considers the population healthy and stable. Gray fox population data is limited. There is no bag limit for red or gray fox hunting in Maine. The 2020-2021 season for both red and gray foxes is from October 19 to February 27.

*Anticipated Impacts*

**No Action Alternative**

Under this alternative, the current hunt program would be maintained.

The current hunting program on refuge lands and waters carries the potential for adverse health impacts to huntable big game wildlife species from discarded lead in the environment in addition to the inherent impacts of intentional harvest from hunting. Some wildlife species are susceptible to direct ingestion of lead fragments that may remain in gut piles discarded in the field, and/or bioaccumulation of lead from their food sources. Continued use of lead ammunition under this alternative and any future expansions to the current hunting program, without restrictions on the use of lead ammunition increases these potential adverse effects.

White-tailed deer

White-tailed deer hunting would continue to be permitted in designated areas of Rachel Carson NWR. We do not have refuge-specific harvest levels for deer, but harvest rates for the WMD that the refuge occupies represents 3.7 percent of the statewide deer harvest of more than 28,000 deer

(MDIFW 2019). The harvest on the refuge would have a negligible impact on the Maine deer population. Disturbance to deer in the area would occur during the hunting season, but the disturbance is considered negligible, as hunting pressure is likely low, and deer are prone to move regularly over large areas.

Wild turkey

Wild turkey hunting would continue to be permitted in designated areas of Rachel Carson NWR. We do not have refuge-specific harvest levels for wild turkey, but harvest rates for the WMD that the refuge occupies represents 4.5 percent of the Statewide fall harvest of more than 1,980 wild turkey (MDIFW 2020*c*). The harvest on the refuge would have a negligible impact on the Maine wild turkey population. Disturbance to wild turkey in the area would occur during the hunting season, but the disturbance is considered negligible, as hunting pressure is believed to be low. Under this alternative, a spring mentored wild turkey would not occur.

Coyote and Fox

We would continue to limit coyote and fox hunting during the State firearm deer season. We only allow hunting of fox and coyote with archery or shotgun as incidental take with a refuge big game permit. We do not anticipate that allowing the continuation of fox and coyote hunting on the refuge would have any effect on the statewide or regional populations of these species.

**Proposed Action Alternative**

Lead that could enter the environment from proposed hunting activities would include fragments from ammunition that has left the body of harvested animals or left behind in discarded gut piles in the field. Given the estimated numbers of hunters and amount of take estimated using lead ammunition, the lead that would enter the environment over the next three years is likely very small.

As non-lead requirements for ammunition take full effect after September 1, 2026, lethal and sublethal impacts to huntable wildlife species from discarded lead in the environment and the potential for exposure to lead that may result in adverse human health impacts decreases substantially and becomes negligible. Lead from previous hunting activities will still be present in the environment and may impact wild species, however, the impact is likely negligible given the likely low amount of lead currently present and availability in the environment from hunting activities and minor adverse risk of bioaccumulation. This residual lead from hunting activity will also degrade over time.

**Upland/Small Game (ruffed grouse, bobwhite quail, pheasant)**

*Affected Resource Description*

No surveys have been completed on Rachel Carson NWR or Great Thicket NWR Berwick-York Focus Area to document the populations of these upland and small game species. However, ruffed grouse have been observed on the refuge. Bobwhite quail and pheasant are not found on the refuge. Table 2 shows seasonal dates and limits of hunting these species.

**Table 2.** Season and Daily limit* (Ruffed Grouse, Fox, Coyote, Quail, Pheasant)

| Species | Season | Daily Limit | Possession |
|---|---|---|---|
| Ruffed Grouse | September 25 through December 31 | 4 | 8 |
| Bobwhite Quail | September 25 through December 31 | 4 | 8 |
| Pheasant | September 25 through December 31 | 2 | 4 |

**Based on 2022 seasonal dates/limits*

*Anticipated Impacts*

**No Action Alternative**

Under this alternative, the current hunting program on refuge lands and waters carries the small potential for adverse health impacts to huntable wildlife species from discarded lead in the environment. Animals can be poisoned by lead in a variety of ways, including ingestion of bullet fragments and shot pellets left in animal carcasses and spent ammunition left in the field (Haig et al. 2014).

Some wild game species are susceptible to direct ingestion of lead and/or bioaccumulation of lead from their food sources. These types of species that are susceptible to these circumstances are discussed in more detail in the non-target wildlife and aquatic species section, but are applicable to similar species that are hunted including predators and big game. Continued use of lead ammunition under this alternative and any future expansions to the current hunting program, without additional restrictions on the use of lead ammunition increases these potential adverse effects.

**Proposed Action Alternative**

Under this alternative, the potential for exposure to lead that may result in adverse impacts due to the inadvertent consumption of lead in individual animals would still exist during the next 3 years; however, it will likely be reduced as some hunters adopt early use of non-lead ammunition. As non-lead requirements for ammunition take full effect after September 1, 2026, lethal and sublethal impacts to huntable wildlife species from discarded lead in the environment and the potential for adverse human health impacts decreases substantially and becomes negligible. Lead from previous hunting activities will still be present in the environment and may impact wild species, though the impact is likely negligible given the likely low amount of lead currently present and availability in the environment from hunting activities and minor adverse risk of bioaccumulation.

**Migratory Game Birds (woodcock, snipe, duck, goose, coot)**

*Affected Resource Description*

MDIFW works with the Service to establish hunting seasons and bag limits for migratory game bird hunting. Season length and harvest limits are set annually by MDIFW. Season dates vary based on the location in Maine. During the 2018-2019 hunting season, hunters in Maine harvested 39,400 ducks, 11,400 Canada geese, and 10,700 sea ducks (MDIFW 2020). The waterfowl season length varies based on the location in Maine, but for the coastal region, the following hunting seasons apply:

- **Seaduck:** November 9 through January 16 *(*dates are revised annually).*
- **Duck:** October 1 through October 16 and November 6 through January 2.
- **Goose:** September 1 through September 25, October 1 through October 12, and October 27 through January 2.
- **Coot:** October 1 through October 16 and November 6 through January 2.
- **Woodcock:** October 1 through November 21.
- **Common snipe:** September 1 through December 16.

*Anticipated Impacts*

**No Action Alternative**

Under this alternative, migratory game bird hunting would continue as is on Rachel Carson NWR and Great Thicket NWR Berwick-York Focus Area. Federal and State regulations apply in the refuge waterfowl hunt. All migratory bird hunters must register through the Harvest Information Program (HIP) to provide harvest data for each species. Regulations are based on surveys and monitoring, data analyses, and rulemaking. Each year, the Service prescribes frameworks for migratory bird hunting dates and times, the allowable harvest, and the allowable number of birds in a hunter's possession. This framework: (1) allows for State selections of seasons and limits for recreation and sustenance, (2) aids Federal, State, and Tribal governments in the management of migratory birds, and (3) permits harvests at levels compatible with population status and habitat conditions.

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. found bird abundance and nesting activities (including nest success) increased as distance from a recreational trail increased in both grassland and forested habitats (1998). Bird communities in this study were apparently affected by the presence of recreational trails, where common species like American robins were found near trails and more specialized species like grasshopper sparrows were found farther from trails. Nest predation also was found to be greater near trails (Miller et al. 1998). Disturbance may affect the reproductive fitness of males by hampering territory defense, male attraction, and other reproductive functions of song (Arcese 1987). Disturbance, which leads to reduced singing activity, makes males rely more heavily on physical deterrents in defending territories, which are time and energy consuming (Ewald and Carpenter 1978). These potential negative impacts are anticipated to be minimal. Lead shot was completely banned for the hunting of waterfowl (i.e. ducks, geese, swans, brant and coot) throughout the United States beginning in 1991.

While there would be no lead use in hunting these species under Alternative A, lead use for deer hunting could potentially impact these species. For example, the accumulation of lead in the soil from continued lead use could impact the vegetation and herbivorous insect food sources of doves. Similarly, lead ammunition from deer hunting that ends up in or near water on the refuge, although this is unlikely to occur, could be ingested by waterfowl and result in negative impacts. In both cases, accumulation of lead in the environment over time increases the chances for negative impacts to occur.

**Proposed Action Alternative**
The refuge currently prohibits lead ammunition for hunting of these species, so the proposed lead use requirement would not change the impacts of these hunts. In addition, overall populations will continue to be monitored and future harvests will be adjusted as needed under the existing flyway and State regulatory processes. Several points support this conclusion: (1) the proportion of the national waterfowl harvest that occurs on refuges is only 6 percent (USFWS 2013); (2) there are no populations that exist wholly and exclusively on refuges; (3) annual hunting regulations within the United States are established at levels consistent with the current population status; (4) refuges cannot permit more liberal seasons than provided for in Federal frameworks; and (5) refuges purchased with funds derived from the Federal Duck Stamp must limit hunting to 40 percent of the available area. As a result, changes or additions to hunting on the refuge will have negligible impacts on wildlife species in Maine. We do not believe that this alternative would have any measurable adverse effect on the State or regional population of waterfowl and migratory birds. After the proposed non-lead requirement takes effect, there may also be a benefit to these species because no new lead will enter the environment.

## Non-Target Wildlife and Aquatic Species

*Affected Resource Description*
Rachel Carson NWR supports a diversity of wildlife species including game and non-game species, reptiles, amphibians, and invertebrates, which are important contributors to the overall biodiversity of the refuge. Diverse habitats around refuge estuarine communities support more than 120 passerine birds. Year-round residents, short-distance migrants, and neotropical migrants alike find nesting, feeding, and roosting habitat in the uplands close to refuge estuaries. The refuge has a limited amount of freshwater cattail marsh or pond habitat. However, within its uplands, the refuge protects an extensive network of rivers, uplands, and vernal pools, which provide important amphibian and reptile habitat. Invertebrates found in the intertidal habitat are consumed by shorebirds and waterfowl throughout the year.

The best available science indicates that lead (Pb) ammunition has negative impacts on wildlife. This broad potential for adverse impacts to non-target wildlife and aquatic species and the overall environment is not inherent to the activities of hunting but specifically to the use of lead ammunition. Those potentially adverse impacts can be prevented by requiring non-lead ammunition for hunting activities. Currently there are manufacturers that offer non-lead ammunition, and some states have either implemented restrictions on the use of lead or offer incentives to use non-lead ammunition (U.S. Fish and Wildlife Service 1999; Center for Biological Diversity 2007; Arizona Game and Fish Department 2018; Washington Department of Fish and Wildlife 2022). In areas where non-lead ammunition is used, there have been declines in adverse effects to wildlife (Anderson et al. 2000; Samuel and Bowers 2000; Sieg et al. 2009, Kelly et al. 2011; Lewis et al. 2021).

*Anticipated Impacts*
**No Action Alternative**
Lead has no known biological function in living things, but the bioavailability of spent lead ammunition may have adverse impacts on the environment, especially for mammals and birds, specifically waterfowl and raptors. For birds, this typically occurs through direct ingestion of

lead through soil, sediment or directly from food items (Rattner et al. 2008). Upland game birds and waterfowl may be exposed to lead when they ingest spent shot or ammunition fragments along with grit or pebbles, they need to fill their gizzards, a specialized organ involved in breaking down food (Kreager et al. 2008; Franson et al. 2009). Avian predators and scavengers can be susceptible to lead poisoning when they ingest lead fragments (the result of lead's brittle quality causing fragmentation upon impact) or pellets in the tissues of animals killed or wounded by lead ammunition (Platt 1976; Pattee et al 1981; Craig et al. 1990; Church et al. 2006; Hunt et al. 2006; Cade 2007; Pauli and Buskirk 2007; Stroud and Hunt 2009; Finkelstein et al. 2012; Rideout et al. 2012; Cruz-Martinez et al. 2015; Herring et al. 2016).

Lead poisoning affects the blood, nervous and immune systems of wildlife (Eisler 1988). According to Fallon et al. (2017) clinical signs may include "...ataxia, impaired mobility, lowered sensory abilities, vomiting, anemia, lethargy, gastrointestinal stasis, weakness and mortality." Exposure to high amounts of lead in a short amount of time typically causes severe impairment of these systems and results in rapid death (Gill and Langelier 1994; Kelly et al. 1998; Schulz et al. 2006). Exposure to smaller amounts of lead over longer time periods, however, can cause anemia, lethargy, neurological disorders, an impaired ability to fight off disease and other negative effects (Jacobsen et al. 1977; Wobester 1997; Friend and Franson 1999; Pattee and Pain 2003; Franson and Pain 2011; Pain et al. 2019). These effects can in turn lead to indirect negative effects of lead exposure, such as increased susceptibility to predation. Thus, even lead exposure that does not directly kill wildlife, sublethal lead poisoning can have substantial adverse effects on wildlife health, including on reproduction (Scheuhammer 1987; Kendall et al. 1996; Provencher et al 2016; Pain et al. 2019, SETAC 2021).

Overall, the Service anticipates no measurable negative impacts to resident non-hunted wildlife populations locally, regionally, or globally due to the activity of hunting, as the impact of the current program does not result in more than temporary flushing or relocation. However, continuing to permit the use of lead ammunition on refuge lands and waters could mean an increase of lead in the environment, even at small amounts as estimated, and continue to have negative impacts, especially potential cumulative impacts, to wildlife and aquatic species.

**Proposed Action Alternative**

The best available science indicates that lead ammunition may have negative impacts on wildlife and the environment (Golden et al. 2016; Hanley et al, 2022; Slabe et al, 2022). Animals can be poisoned by lead in a variety of ways including ingestion of bullet fragments and shot pellets left in animal carcasses and spent ammunition left in the field (Haig et al. 2014). Many hunters do not realize that the carcass or gut pile they leave in the field usually contains lead bullet fragments. 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 poisoning may weaken raptors by reducing their strength and coordination, leading to muscle and weight loss, reducing motor skill function, and making them lethargic, which may make them more susceptible to disease, vehicle strikes, or power line accidents and increases mortality rates by leaving them unable to hunt (Kramer and Redig 1997; O'Halloran et al. 1989; Kelly and Kelly 2005; Golden et al. 2016).

Under Alternative B, continuing to permit the use of lead ammunition on refuge lands and waters until September 1, 2026, could mean a short-term increase of lead in the environment even at

small amounts as estimated and continue to have potentially negative impacts to wildlife and aquatic species. To move towards reduction and future elimination of this threat on the refuge, the use of non-lead ammunition will initially be strongly encouraged and voluntary, and we would require non-lead ammunition for all activities starting September 1, 2026 (after a 3-year transition period). This transition period will ensure continuity of visitor opportunities as hunters understand the changes and become more familiar with the availability and use of non-lead alternatives. The continued use of lead ammunition in the short term (3 years) under Alternative B may cause additional lethal or sublethal impacts to non-target wildlife and aquatic species. However, after the transition period is complete, this impact will be greatly reduced, and will result in unlikely exposure of non-target species to lead ammunition from hunting activities on the refuges. This reduced risk should continually decrease over time following the non-lead requirement as any remnant sources of lead from hunting activities will degrade.

The bioaccumulation of lead is a potential concern, but it does not likely present a significant issue on this refuge as: (1) non-lead shot is currently required for hunting waterfowl; (2) the refuge, with MDIFW, strongly encourages use of non-lead alternatives for hunting big game for the next 3 years; (3) we would require the use of non-lead ammunition for all hunting on the refuge starting September 1, 2026; and (4) we will educate hunters and the public to the potential adverse impacts of lead. Some hunters will also choose non-lead methods of take such as archery.

**Threatened and Endangered Species, and Other Special Status Species**

*Affected Resource Description*
Federally designated endangered or threatened species at the refuge include the piping plover, roseate tern, red knot, and Northern long-eared bat. Additionally, monarch butterfly, small whorled pogonia, Atlantic salmon, leatherback sea turtle, and hawksbill sea turtle may exist. While no longer listed, the refuge does support multiple pairs of nesting bald eagles that are sensitive to disturbance during the nesting period (March to July).

The Northern long-eared bat is present during the spring and summer months and moves to hibernacula in early fall. They are also usually only active from dusk to dawn and are unlikely to be seen or impacted by hunters. Piping plovers, red knots, and roseate terns utilize the refuge but are not present during the hunting season.

In accordance with Section 7 of the Endangered Species Act (ESA), the refuge has completed an initial analysis of the effects of the proposed action. Given that the proposed action could change in light of the public comment period for the proposed rulemaking, the initial documentation is considered to be a draft and will not be finalized until the Service publishes a final rulemaking. Although the finalized ESA section 7 documentation will accompany the final rule and NEPA decision documentation, a summary of the initial section 7 analysis is reported here.

*Anticipated Impacts*
**No Action Alternative**
Under the No Action Alternative, lead ammunition would still be permitted on designated lands and waters into the future, which would mean a continued and increasing risk to listed species

and special status species from lead present in the environment over time. Although the Service has preliminarily determined that the impacts of lead ammunition from the proposed action are not likely to adversely affect such species, the Service continues to seriously consider the effects of the accumulation of lead in the environment on certain refuge lands from these activities over time. For example, the bald eagle may eat discarded gut piles from animals harvested with lead ammunition or fish that have consumed lead. Given that increasing the amount of lead introduced into the environment could lead to these effects over time, the Service concludes that the No Action Alternative would ultimately present a potential risk to these natural resources in the long run with continued use of lead ammunition.

**Proposed Action Alternative**

Sea turtles, small whorled pogonia and Atlantic salmon

Sea turtles, Atlantic salmon and small whorled pogonia are not present on refuge lands or within waters under refuge jurisdiction. There are no Atlantic salmon occurring within any of the streams or rivers within our divisions. Sea turtles also are largely marine species and may swim past refuge property, however they do not nest on the refuge and are not found on refuge lands or waters. Finally, small whorled pogonia is not known to occur on refuge lands or withing the refuge acquisition boundary. Because these species are not known to occur on the refuge and have no possible exposure to any of the proposed changes, the proposed action will have "no effect" on the listed sea turtles, Atlantic salmon, or small whorled pogonia.

Northern long-eared bat

Northern long-eared bat (NLEB) is present in low numbers at our York River Division and our Little River Division in Biddeford during the spring, summer and fall months. Our existing survey data is not inclusive of all lands, and it is possible additional locations exist. It is unknown where these bats winter as some studies at Acadia National Park found NLEB hibernating in cracks and crevices along rocky coastlines, yet other studies found bats move to mass hibernacula by early fall. There are no known hibernacula or maternity roost trees on the refuge; however, undoubtedly small numbers of NLEB are breeding on the refuge. Pregnant females migrate to summer areas where they roost in small colonies and give birth to a single pup. Most bats within a maternity colony give birth around the same time, which may occur from late May or early June to late July, depending on where the colony is located within the species' range.

Before the proposed non-lead ammunition requirement would take effect in 2026, the potential for impacts from lead to bats is discountable due to Northern long-eared bats' diet and foraging habits. Lead bullet fragments would have to break down in the soil in order to be taken up by plants near the area in which the fragments fall on or penetrate the soil surface. Typically, however, plants do not take heavy metals up until they have reached critical thresholds in the soil (Sharma and Dubey 2005). If lead is taken up by plants, it is mainly through the root system and partly, in minor amounts through the leaves. Inside the plants lead accumulates primarily in the root, but a part of it is translocated to the aerial portions. Larvae of certain herbivorous insect species could ingest some of the lead when they eat the exposed plants. Some of the insects could then be consumed by bats. Northern long-eared bats' diet is insects such as moths, flies, leafhoppers, caddisflies and beetles, only some of which are herbivorous. In addition, bats are transitory in nature and will not consume their entire diets on the refuge area. Considering the chain of events that are necessary for exposure and the small amount of lead that would

contribute to lead concentrations in refuge soils, it seems likely that bats that occur on refuges will not consume lead derived from ammunition fired by hunters on the refuge. Therefore, any potential lead added to the environment during this interim time period, before the non-lead requirement takes effect on September 1, 2026, is not likely to adversely affect this species. After the non-lead ammunition requirement takes effect in 2026, there may also be some beneficial impacts to the species because no new lead will enter the environment and the remaining lead ammunition will become less bioavailable over time, which will decrease the overall risk of adverse effects to this species. Therefore, proposed action to ultimately require non-lead ammunition is not likely to adversely affect this species.

Piping plover and roseate tern

Piping plover's nest on sandy beaches and dunes from April through July. Adults, chicks, and fledglings use refuge beaches and sandflats throughout the season, typically through late August. A small number of birds may stop over on refuge beaches and flats through the early fall, but most have left the area by mid-September. Roseate terns do not nest on the refuge but use refuge beaches, tidal streams and sand flats for roosting and staging during spring migration and post breeding season (July and August). They are exceedingly rare on the refuge in September when the early goose hunting season begins. The nesting and staging beaches are not open to hunting; neither the birds nor their habitat would be adversely impacted by hunting on the refuge. Therefore, any potential impacts from proposed hunting activities are expected to be discountable because they are extremely unlikely to occur.

Regarding the impacts of lead ammunition, and specifically for roseate tern and piping plover, neither the mentored spring turkey hunt nor the opening of 47 acres of Great Thicket NWR will occur within, or in close proximity to areas where those species occur. The voluntary use of non-lead ammunition will initially be encouraged, and will be required after a 3-year transition period is implemented, starting on September 1, 2026. Although it is extremely unlikely to occur, even if lead ammunition could leach out into the beach habitat these species use, the increase in lead from ammunition would be extremely minor and dispersed, and therefore considered discountable and insignificant. Given that the use of lead ammunition, until it is discontinued on September 1, 2026, is highly unlikely to overlap with piping plovers, red knots or roseate terns in time or space, any potential lead ammunition added to the environment during this interim time period, before the non-lead ammunition requirement takes effect, is not likely to adversely affect these species. After the non-lead ammunition requirement takes effect in 2026, there may also be some beneficial impacts to the species because no new lead ammunition will enter the environment and the remaining lead ammunition will become less bioavailable over time, which will decrease the overall risk of adverse effects to this species. Therefore, proposed action to ultimately require non-lead ammunition is not likely to adversely affect the piping plover or roseate tern.

Red knot

Although the majority of migratory stopovers for red knot occur south of Maine, regular stopover sites do occur within the State. Migrating red knots use marine habitats at Rachel Carson NWR including sandy beaches, salt marshes, and salty mud and sand flats which contain an abundance of invertebrate prey. Typically, they occur in small numbers in southern Maine, ranging from a few to groups as large as 40. Most observations from the refuge have occurred at

Biddeford Pool, however, we are lacking data from the interior salt marsh rivers and flats, where the species may be difficult to observe. Given the smaller numbers, there is no critical habitat designated on the refuge. Records from eBird indicate the species may be present from spring migration, fall migration and into early December. Staging beaches are not open to hunting and there would be limited to no hunting pressure on mudflats. The Division with the most records of red knot occurrence, the Biddeford Pool Division, is not open to hunting. The majority of the flats at Oxcart Lane are also closed to hunting in addition to the Moody Division. Given that the hunting activities on the refuge are not likely to overlap with the area where the small number of red knots known to occur on the refuge, any potential impacts from disturbance are expected to be discountable because they are extremely unlikely to occur.

As with the roseate tern and piping plover, mentioned above, the use of lead ammunition, until it is discontinued on September 1, 2026, is highly unlikely to overlap with red knots in time or space; thus, any potential lead ammunition added to the environment during this interim time period, before the non-lead ammunition requirement takes effect, is not likely to adversely affect this species. After the non-lead ammunition requirement takes effect in 2026, there may also be some beneficial impacts to the species because no new lead ammunition will enter the environment and the remaining lead ammunition will become less bioavailable over time, which will decrease the overall risk of adverse effects to this species. Therefore, proposed action to ultimately require non-lead ammunition is not likely to adversely affect the red knot.

Monarch butterfly

The refuge is used by monarch butterflies from spring throughout the fall. Monarchs are common in old field habitats during the breeding season and common during fall migration in salt marsh habitats (nectaring on seaside goldenrod). We have not completed a census of monarchs using the refuge.

Before the proposed non-lead requirement would take effect in 2026, we expect the effects from authorized lead use from ammunition in the interim to be discountable and insignificant due to the small amounts of lead that are expected to enter the environment and the specific circumstances that would need to occur for lead to have a measurable effect on the species. The potential for lead impacts to monarchs is discountable due to their diets. Adult monarch butterflies feed on nectar. Nectar typically carries less lead contaminants than other parts of the plant if lead is absorbed through the plant. Larvae consume the leaves and stems of milkweeds, where higher concentrations of lead could be present, if lead is absorbed through the plant. Lead absorption by plants typically occurs first through roots and only makes its way into other plant parts if concentrations are high enough. This means that, as with bats, bioaccumulation through the plant to the monarch butterfly or larvae could potentially occur. However, as with bats, it relies on the very unlikely occurrence that lead concentrations in the soil from hunting activities reach high enough levels for uptake by plants, and in this case, it would further require uptake by milkweed and the specific plants that monarchs rely on for nectar sources. Therefore, any potential lead added to the environment during this interim time period, before the non-lead requirement takes effect on September 1, 2026, is not likely to adversely affect this species.

After the non-lead ammunition requirement takes effect in 2026, there may also be some beneficial impacts to the species because no new lead will enter the environment and the

remaining lead will become less bioavailable over time, which will decrease the overall risk of adverse effects to this species. Therefore, proposed action to ultimately require non-lead ammunition is not likely to adversely affect this species.

All species

The best available science indicates that lead ammunition may have negative impacts on wildlife and the environment (Golden et al. 2016; Hanley et al, 2022; Slabe et al, 2022). Animals can be poisoned by lead in a variety of ways including ingestion of bullet fragments and shot pellets left in animal carcasses, and spent ammunition left in the field (Haig et al. 2014). The voluntary use of non-lead ammunition will initially be encouraged, and we would require non-lead ammunition for all hunting activities starting September 1, 2026 (after a 3-year transition period). This transition period will ensure continuity of visitor opportunities as hunters understand the changes and become more familiar with the availability and use of non-lead alternatives.

The bioaccumulation of lead is a potential concern, but it does not likely present a significant issue on this refuge as: (1) non-lead shot is currently required for hunting waterfowl; (2) the refuge, with MDIFW, strongly encourages use of non-lead alternatives for hunting big game for the next 3 years; (3) we would require the use of non-lead ammunition on the refuge for all hunting starting September 1, 2026; and (4) we will educate hunters and the public to the potential adverse impacts of lead. Some hunters will also choose non-lead methods of take such as archery.

## Habitat, Vegetation and Soils

*Affected Resource Description*

Refuge habitat is about 35 percent tidal, 10 percent freshwater wetlands, and 55 percent uplands. Tidal habitats include beach, dune, dune grassland, river, rocky shore, estuarine, bay and salt marsh. Freshwater wetlands include cattail marsh, bog, emergent scrub-shrub wetland, pocket swamp, red maple swamp and floodplain forest. Most of the upland forest consists of mixed oak and pine; however, hemlock, spruce, and pitch pine stands, as well as hickory and maple forests, also occur. Viburnums, winterberry, blueberry, serviceberry, Virginia rose, and maleberry comprise much of the shrub understory. Other upland habitats are composed of grassland and thicket. Habitats are quite diverse, containing elements of the more southerly oak-pine forests and the softwood forests of northern forests. Those two community types blend here, creating a wealth of biodiversity.

It is important to note that according to the U.S. Forest Service, Maine is the most heavily forested state in the country, with over 90 percent of Maine forested (17.6 million acres). In contrast to many other states in this region, this provides abundant opportunities for hunters to access land open to hunting, including over 3 million acres managed by North Maine Woods in the northern section of the State.

Rachel Carson NWR supports a variety of wetlands including forested wetlands, freshwater marsh, freshwater ponds, vernal pools, and tidal streams. These habitats are located throughout the refuge and specific details are provided in the refuge's CCP (USFWS 2007).

Great Thicket NWR Berwick-York Focus Area is made up of mixed northern hardwoods and the softwoods typical of northern forests. Freshwater emergent wetland habitat is also found on this property.

While the use of lead in the Service's current hunting programs does not affect the traditional quality or characteristics of wildlife habitats such as vegetation cover, the use of lead ammunition, and to a lesser extent lead tackle, can introduce small amounts of lead into the soils and aquatic environments on refuge lands causing negligible negative effects given lead is a toxic pollutant. One likely scenario is that lead ammunition from a gunshot that misses its target or lead ammunition fragments that exits the target becomes lodged in the ground, introducing lead fragments into the soil. Another scenario of lead being introduced to the soil is from gut piles left behind from harvested game. When this does occur, it could lead to metals and other components of the ammunition impacting the composition of soils. In the case of lead ammunition, loose lead fragments may enter the soil after impact, and if the amount of lead reaches high enough concentrations, these lead fragments, if small enough, could be taken up by plants. If taken up by plants, lead can adversely affect plant growth. The introduction of lead in this manner is highly localized and it is unlikely that lead introduced from the Service's hunting program would introduce sufficient lead to the soils of any area for plants to take it up. There is scientific evidence that lead in soil can adversely impact plants, including inhibiting their growth of roots and cell walls provided concentration of lead is in the correct form and high enough concentration for plant absorption (Balsberg-Pahlsson 1989; Eisler 1998; Tomar et al. 2000). However, the toxicity of lead from soil absorption to seed germination is very small (Balsberg-Pahlsson 1989) and the migration of lead from soil to roots and other parts of plants generally is considered to be minimal (Sorvari et al. 2006; Rattner et al. 2008). Additionally, uptake of lead varies by plant species (Eisler 1998; Finster et al. 2004, U.S. Department of Health and Human Services 2007).

*Anticipated Impacts*

**No Action Alternative**

Under this alternative, the amount of lead introduced, both annually and cumulatively to date, is unlikely to be enough in any particular area to negatively impact plants and habitats through soil contamination. In the long run, this increasing amount of lead could be taken up by plants, potentially causing direct negative impacts to vegetation and habitat on the refuge in areas with concentrated hunting activities. Although negative impacts from accumulated lead ammunition or tackle in soils remain a possibility in the future because continued use of lead ammunition would mean increasing lead levels over time, any potential impact is still likely a negligible impact to habitat and vegetation given the amount of lead annually introduced on the refuge from hunting.

**Proposed Action Alternative**

Both Sharma and Dubey (2005) and Johnson and Eaton (1980) find that lead is easily absorbed and accumulated in various plant parts. Lead in plants acts as a "protoplasmic poison, which is cumulative, slow acting and subtle" (Johnson and Eaton 1980). Excess lead in plants causes a variety of toxic symptoms including stunted growth, chlorosis, blackening of root systems, inhibited photosynthesis, disrupted mineral nutrition and water balance, and altered plant hormones (Sharma and Dubey 2005).

A literature review by Rattner et al. (2008) found that "migration of lead from soil to roots and other parts of plants generally is considered to be minimal (Sorvai et al. 2006), although some studies have documented elevated lead levels in plants in the vicinity of shooting ranges (as summarized in Rattner et al. 2008). Lead is strongly adsorbed onto soil particles and is not readily translocated to above-ground portions of plants, thus limiting exposure to grazing animals (McLaughlin 2002). In general, concentrations in below-ground plant tissues are approximately three times greater than in above-ground tissues" (Linder et al. 1999).

As discussed above, it is unlikely that further introduction of lead into the soils on refuge lands that could be taken up by plants would occur once the non-lead ammunition requirement takes effect on September 1, 2026. Until the regulation takes effect, it is estimated the additional lead entering the environment from these activities will not reach a level that will negatively impact vegetation or habitat on the refuge by fall 2026. As current lead levels from hunting activities are likely not sufficient to negatively impact plants or their habitats over the long term, the proposed action would prevent future lead levels in the soil from becoming high enough to potentially negatively impact plants or habitat reducing that future risk of impact or cumulative impacts even more.

## VISITOR USE AND EXPERIENCE

*Affected Resource Description*
Rachel Carson NWR is open to hunting, fishing, wildlife observation, photography, interpretation, environmental education, canoeing, and kayaking. On average, Rachel Carson NWR gets approximately 275,000 visitors each year; the refuge issues approximately 500 permits annually (USFWS 2019). Visitation data is not yet available for the Great Thicket NWR parcels in Maine.

The State of Maine issued 154,580 hunting licenses in 2020. This represents a decrease from the previous year when the State issued 162,065 licenses. Hunting at Rachel Carson and Great Thicket NWRs would represent a small fraction of the total number of hunters in Maine each year.

*Anticipated Impacts*
**No Action Alternative**
Currently Rachel Carson NWR is open to all six priority public uses. Rachel Carson NWR has taken steps to minimize potential conflicts between non-consumptive refuge visitors and hunters. Non-hunters may observe hunters entering and exiting the refuge on the same trails where hiking is allowed on the refuge. It is possible that non-hunting visitors may feel uncomfortable seeing hunters on the refuge trails. Information is posted on kiosks, at headquarters, and on refuge websites to alert non-hunters of hunting activity and to recommend wearing blaze orange while walking the trails during the hunting season.
As lead ammunition will continue to be used, there will be continued exposure to potential adverse risks to hunters' health by consuming harvested game. Studies have found that wildlife hunted with lead ammunition and consumed by humans can increase exposure to potential risks to human health due to the accidental ingestion of lead fragments (Fisher et al. 2006; Tsuji et al.

2008; Iqbal et al. 2009; Hunt et al. 2009; Cornatzer et al. 2009; Kosnett 2009; Verbugge et al. 2009; Johnson et al. 2013; ATSDR 2020). A study done in North Dakota found that those who ate wild game had significantly higher levels of lead in their blood than those who did not (Iqbal et al. 2009).

Other users will likely not face risks associated with exposure to lead from lead ammunition discarded on the refuge as the additional lead added is expected to stay under contaminated soil levels that would adversely impact human health. If continued, this could potentially negatively impact visitor health, although this impact is likely negligible.

**Proposed Action Alternative**
Under this alternative it is estimated that there would be no substantial change to visitor uses from hunting, and no change is expected to the experience of non-hunting refuge visitors from the non-lead requirement effective in 2026. Hunters would be required to use non-lead ammunition and although the activity of hunting would not change, hunters may have a harder time finding equipment that meets this new requirement, potentially reducing their quality of experience if they are not able to partake in the activity. However, quality of experience may increase over time as these resources become more available as demand for non-lead ammunition increases.

To prevent the loss of hunters from being able to participate in these activities, the transition approach over 3 years is proposed to allow hunters time to replace and find suitable ammunition alternatives. Hunters can purchase non-lead ammunition in most gun stores and sporting goods retailers. If the bullet size, caliber, or gauge is unavailable, most retail stores will special order ammunition or it can be ordered through the mail or online. If hunters are not able to find non-lead alternatives there may be a slight decrease in participation of these activities for a short time period after regulations take effect. However, non-lead ammunition is becoming more widely available for hunters to purchase, so it is likely hunting visits will not appreciably decline due to this regulation change. The transition approach also allows hunters to acclimate and prepare for participating in hunting activities in compliance with the new regulations.

Long-term, this action could produce positive human health benefits for all visitors to the refuge with a decreased risk of exposure to lead ammunition discarded on refuge land and waters in the future. Thus, the proposed action will have a potentially positive effect, if any effect, on visitor health.

In the 2022 EA, one commentor noted during the public comment period that the topic of lead ammunition tends to be polarizing within the hunting community, and that the proposed actions would likely complicate ongoing efforts related to lead use on all lands. We responded that of Maine's 22.6 million acres, 600,000 acres are public land, and nearly 10 million acres of private land allow hunting. Public hunting areas include 20 Wildlife Management Districts (WMD) and 2 deer management subunits. Rachel Carson NWR allows hunting on over 4,136 of their total acreage, which accounts for 0.04 percent of the hunting area in Maine, or 0.7 percent of the State's public hunting area. WMD 24, of which the refuge is part of, accounted for 3.7 percent of Maine's 2019 deer harvest. The Service has determined that the non-lead requirement is not an undue hardship on the hunting community. Non-lead ammunition and tackle are available as an

alternative for hunters and anglers. Any concern that a transition from lead ammunition on the refuges in 3 years could impact the State's hunters or reduce hunter participation is probably unwarranted, with substantial opportunities for hunting with lead ammunition readily available on nearby State-managed properties or other huntable lands.

## CULTURAL RESOURCES

*Affected Resource Description*
The refuges contain diverse ecosystems that have provided humans with wide ranges of flora and fauna for them to subsist upon. The landscape at Rachel Carson and Great Thicket NWR Berwick-York Focus Area has been dynamic as a result of changes in the environment during the end of the Pleistocene and throughout the Holocene. Humans have also caused anthropogenic changes upon the landscape throughout history by their choices about where and how to foster their livelihood. They have been active agents in species representation in the biosphere through choosing which flora and fauna they exploit, clearing land by fire to provide fresh, green forage for deer, and clearing large expanses of land for farming in historic times. Each generation has acted upon those landscapes differently than the previous, creating subtle or obvious changes which affect future environments. Because professional archaeologists have surveyed less than 1 percent of the refuge, only 49 archaeological sites have been recorded. Of those, 13 are eligible for inclusion in the National Register of Historic Places. One study identified several landforms that may contain archaeological resources dating as long ago as 11,500 years (Will et al. 1995).

The Service, as the lead Federal agency, has chosen to use the NEPA substitution process to fulfill obligations under the National Historic Preservation Act of 1966, as amended (NHPA). While obligations under NHPA and NEPA are independent, the regulations implementing NHPA allow for the use of NEPA review to substitute for various aspects of the NHPA section 106 (16 U.S.C. 470f) review to improve efficiency, promote transparency and accountability, and support a broadened discussion of potential effects that a project may have on the human environment (36 CFR 800.3 through 800.6). During preparation of the Supplemental EA, the Service will ensure that the NEPA substitution process will meet any NHPA obligations.

*Anticipated Impacts*
**No Action Alternative**
There are no known cultural resources sites on the 47.95 acres of Great Thicket NWR Berwick-York Focus Area, or at designated Rachel Carson NWR hunt units. The mentored spring turkey hunts on Rachel Carson and Great Thicket NWR Berwick-York Focus Area do not involve excavating material and therefore we do not anticipate any adverse impacts to cultural resources. Given our current knowledge about the cultural resources on refuge lands, we do not anticipate any adverse impacts would occur under this alternative.

**Proposed Action Alternative**

## REFUGE MANAGEMENT AND OPERATIONS

*Affected Resource Description*
The refuge headquarters is located on the Upper Wells Division in Wells, Maine. The

headquarters consists of the refuge headquarters building, maintenance and storage facilities, and seasonal residences.

Public use facilities include kiosks at trailheads, interpretive signs along some trails, a wildlife observation deck, and a wheelchair-accessible trail and fishing pier. Public restrooms are available near the visitor contact area. The current refuge staff consists of seven permanent full-time positions. During the summer months, the refuge hosts a Youth Conservation Corps crew and crew leader and contracts for seven to ten interns and seasonal staff.

*Anticipated Impacts*

**No Action Alternative**

Current levels of hunting are manageable within the refuge's infrastructure, staffing, and budget. The Refuge Manager coordinates the budget each year to ensure funds are available, and the estimated cost to run the current hunt program is $10,000. The refuges charges fees for hunting permits to help offset costs.

**Proposed Action Alternative**

We do not anticipate an increase in costs, or any measurable impacts, from the proposed non-lead requirement in September 2026. Education and outreach related to the transition to non-lead would likely increase, along with additional law enforcement to ensure compliance with new requirements.

## SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

*Affected Resource Description*

In 2019, the population in York County, Maine was estimated at 207,641 people. The median household income in York County was $65,538 in 2018. The largest industries in York County are health care and social services, retail trade, and manufacturing. In 2011, hunters in Maine spent $203 million on expenses related to hunting. These expenses primarily include equipment, lodging, transportation, and other trip-related expenses. While this amount is fractional within the economy in Maine, it does represent a small positive economic benefit of hunting.

From an economic perspective, Rachel Carson NWR provides a variety of environmental and natural resource goods and services used by people either directly or indirectly. Approximately 500 hunters obtain hunt permits to hunt at the refuge each year. We do not have any specific information on the number of hours in which hunters engage in hunting activities on the refuge.

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.

The demographic indicators provided in the EPA's Environmental Justice screening tool include People of Color Population, Low Income Population, Linguistically Isolated, Less than a High School Education, Under the Age of 5, and Over the Age of 64. In the area around Rachel

Carson NWR, the population of people of color is below the 25th percentile nationally. The indicators for low-income population, linguistically isolated people, people with less than a high school education and people under the age of 5 are all in between the 25th and 50th percentiles nationally. The population of people over the age of 64 is above the 75th percentile nationally.

In the area around Great Thicket NWR Berwick-York Focus Area in Maine, the population of people of color is below the 25th percentile nationally. The indicators for low-income population, linguistically isolated people, people with less than a high school education and people over the age of 64 are all in between the 25th and 50th percentiles nationally. The population of people below the age of 5 is above the 50th percentile nationally.

**No Action Alternative**
We do not anticipate that this action would have any significant effect on the socioeconomic resources in this region. We believe hunting on the refuge contributes modestly to the local economy. There is a possibility of human health impacts from the current hunting program allowing and continuing to allow the use of certain types of lead ammunition for the harvest of certain species. However, minority and/or low-income communities are not disproportionately at risk or impacted. The Service has found these impacts negligible for all opportunities in the current hunting programs.

**Proposed Action Alternative**
We do not anticipate that implementing this proposed action would result in a significant increase in either consumptive or non-consumptive use of the refuge.
This alternative would help reduce the risk of potential exposure to increased blood lead levels for hunters engaged in this activity on the refuge through reduced incidental consumption or handling of lead (Frank et al. 2019, Fisher et al. 2006, Tsuji et al. 2008, Iqbal et al. 2009, Grade et al. 2019, Sahmel et al. 2015). Under this alternative where use of lead ammunition will be banned after 3 years, hunters will experience decreased exposure and risk of elevated blood lead levels due to incidental consumption or handling of lead ammunition from the activities. The Service has found these impacts negligible for all opportunities in the current hunting and fishing programs, which makes the benefit negligible.

There is, however, some possibility of negative economic impacts for socioeconomically disadvantaged hunters who must comply with the requirements. Even though non-lead ammunition can cost the same, or up to 30 percent more expensive, as lead, the cost of several boxes per year is minor compared to the other expenses involved such as firearm cost. Deer and turkey hunting also require less ammunition than small game. The minor economic burden involved in transitioning between ammunition and/or tackle types could be more impactful to low-income hunters. Today, the cost of lead tackle is still much less than the lead-free alternatives potentially making the transition more difficult for low-income anglers (Marohn 2020).

In order to prevent the negative impacts of this switch, the refuge has begun and will continue specific outreach about the requirement to these groups and has put in place measures to mitigate the economic input beyond the transitional implementation, which already affords hunters time to gradually transition their supplies of ammunition. In order to mitigate economic impacts to

hunters who previously used lead ammunition, in addition to implementing the requirement in 2026, the Service will continue educating hunters on the use of non-lead ammunition during the transition period, provide links to resources on companies that produce non-lead ammunition for purchase, and work with partner organizations on non-lead ammunition issues. With these mitigation measures, minority and/or low-income communities are not disproportionately impacted from this alternative.

**Monitoring**
Many game species populations are monitored by MDIFW 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 acceptable levels to support hunting and these assessments are reviewed and adjusted periodically.

We will continue to base the annual level of harvest on the observed population size and habitat conditions. If the results of monitoring programs indicate that resident fish and wildlife populations are unable to withstand any of the proposed harvest management strategies, the regulations would be made more restrictive or seasons would be closed until the population can withstand the harvest pressure.

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.

**Summary of Analysis**
An objective of this Supplemental 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).

**No Action Alternative**
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. The refuge would not change its impact on the economy and would not provide new hunting and access opportunities.

Effects on wildlife and habitat would likely not be significant in the short term, although there may be some potential negative effects under this alternative due to lead being present and bioavailable for wildlife and aquatic species to ingest, and could have negative impacts if lead accumulates to high levels over time.. Given that increasing the amount of lead in the environment could lead to be negative effects over time, this alternative could ultimately have some negative impacts on certain endangered, threatened, and special status species over time with continued use of lead ammunition. The refuge would still be able to manage for species of concern and meet the refuge purpose to manage for migratory birds. Water quality and soil impacts are likely negligible from continued use of lead ammunition, as the addition of lead from these activities in a given hunting season are small. There will be no impacts to special designations of the refuge. There would be no effect to cultural resources and impacts to the socioeconomics of the area are negligible.

While this alternative provides wildlife-dependent recreation opportunities on the refuges, in line with the Service's priorities and mandates, it does not meet the purpose and needs of the Service as described above because it would allow for continued lead use in hunting activities, which would continue to pose a threat to human health and the environment. Nevertheless, we are analyzing it as the No Action Alternative as it is the baseline needed to evaluate the proposed action. The nature of discarded lead means that continuing to allow the use of lead ammunition on Service lands and waters would mean adding newly deposited lead to the current amount of lead already in the environment on Service lands and waters. This would mean the risk of adverse impacts from lead available in the environment would continue and even increase for natural resources and for human health under the No Action Alternative, as described throughout this document. If the current hunting program were to continue under the No Action Alternative, the Service would have to reevaluate the hunting opportunities expanded in the 2022 Rule that permitted the use of lead ammunition, since these expansions were previously analyzed and adopted with the expectation of implementing the planned non-lead ammunition requirement beginning September 1, 2026.

**Proposed Action Alternative**

This alternative is the Service's proposed action because it offers the best opportunity for public hunting and increased public access, would result in a minimal impact on physical and biological resources, and meets the Service's mandates under the NWRSAA and Secretarial Order 3356. The proposed requirement to use non-lead ammunition beginning September 1, 2026, will have a positive impact in reducing the potential for lead to affect wildlife health and preventing accumulation of lead at higher levels beyond 2026.

Economic impacts to hunters due to required use of non-lead ammunition will be mitigated by a transition approach and outreach programs. This alternative best meets the purpose and need stated earlier.

**List of Sources, Agencies and Persons Consulted**

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**State Coordination**
The refuges reviewed the operations and regulations for neighboring State wildlife management areas and other refuges in Maine to find consistency where possible. Refuge staff worked with the local State biologist and conservation officers early in the development of the plan and asked for review by the State Regional Office to help adjust the plan to align where possible with State management goals. The refuge met with senior leadership of MDIFW in August 2021 to discuss the Hunting Plan. MDIFW Advisory Council staff also attended the public open house for the 2022 EA to discuss the proposed changes. We have continued to consult and coordinate on specific aspects of the Hunting Plan, and MDIFW is in agreement with the refuges' plan as it will help meet State objectives.

Rachel Carson NWR and MDIFW will continue to work together to ensure safe and enjoyable recreational hunting opportunities. Hunter participation and harvest data are collected by the State, and refuge law enforcement officers and MDIFW work together to patrol.

**Tribal Consultation**
The refuge reached out to all five of the federally recognized Tribal Nations in Maine (collectively, the Wabanaki) in April 2022 to invite the Tribal Nations representatives to review the original draft hunt plan and engage with the refuge on the hunt plan going forward. The refuge did receive one question regarding the possibility of permitting a special hunt for tribal members on the refuge in the future. This year the refuge will reach out and engage with the federally recognized tribes in Maine once again to discuss the potential for a special hunt and any other issues that are of interest to the Tribes.

**Public Outreach**
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 will be available at refuge headquarters and on the refuge website.

With the 2022 EA package, including the EA, Hunting Plan, and Compatibility Determinations, the public had the opportunity to review and comment on each of the draft documents from May 3 through August 8, 2022, a total of 97 days. We distributed a press release to news organizations and alerted visitors to the plan's availability on the refuge website. We also hosted a 3-hour Open House on July 25, 2022, to answer questions and provide information to the public. A total of nine comment letters were submitted from the public that offered input to the refuge on the 2022 EA. A summary of the comments and our responses can be found in Appendix E of the 2022 EA.

This Supplemental EA is part of the Rachel Carson NWR and Great Thicket NWR's Berwick-York Focus Area. Hunting Plan, with accompanying CDs. The public will be notified of the availability of the draft Hunting Plan, EA, and CDs with no less than a 60-day review and comment period. We will inform the public through local venues, the refuge website, and social media.

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

_X_ 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:_____

Name/Title/Organization: _____

_____

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## OTHER APPLICABLE STATUTES, EXECUTIVE ORDERS AND REGULATIONS

### CULTURAL RESOURCES

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- 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).
- Executive Order 13007 – Indian Sacred Sites, 61 Fed. Reg. 26771 (1996).

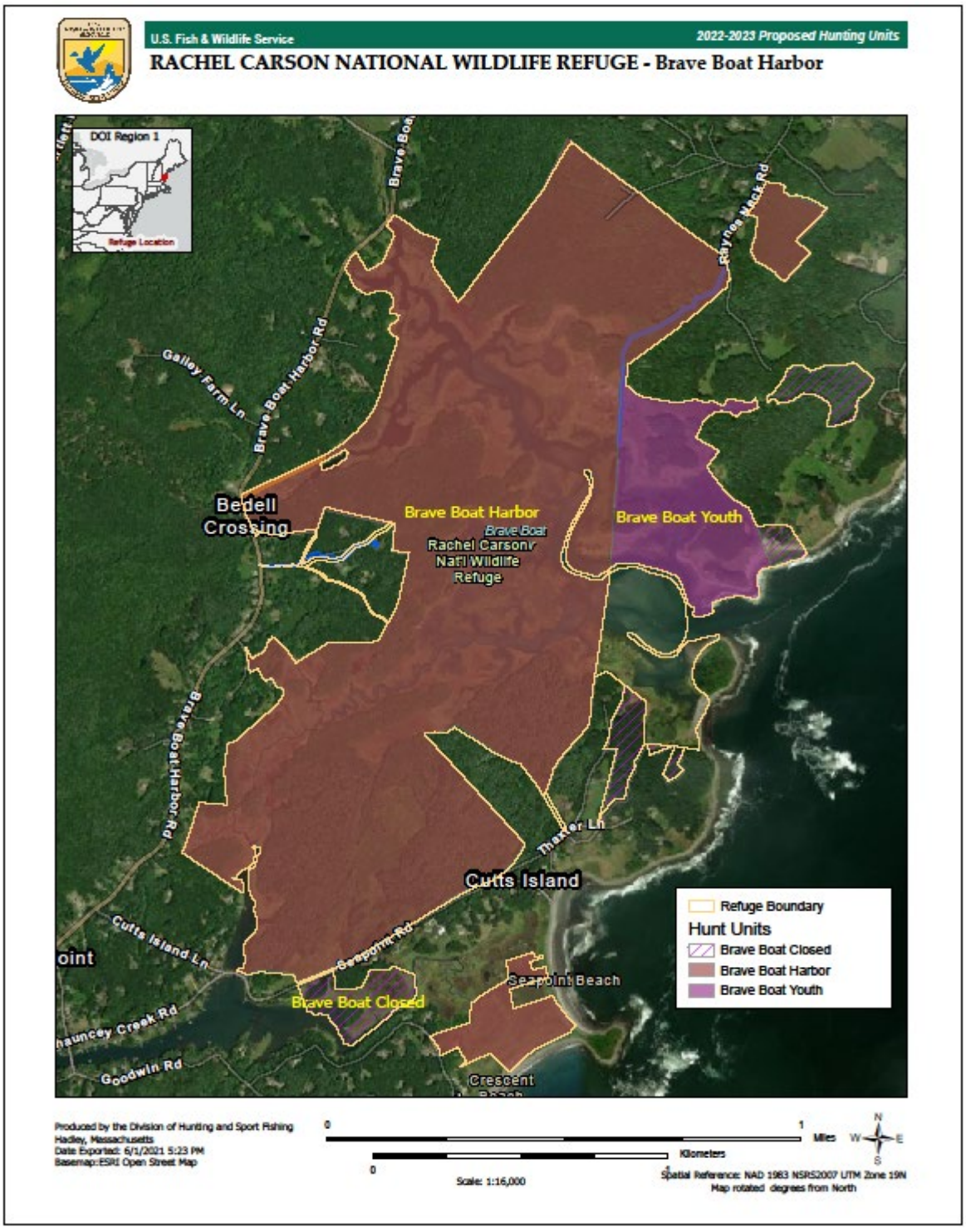
**FISH AND WILDLIFE**
- Bald and Golden Eagle Protection Act, as amended, 16 U.S.C. 668-668c, 50 CFR 22.
- Endangered Species Act of 1973, as amended, 16 U.S.C. 1531-1544; 36 CFR Part 13; 50 CFR Parts 10, 17, 23, 81, 217, 222, 225, 402, 450.
- Fish and Wildlife Act of 1956, 16 U.S.C. 742a-m.
- Lacey 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.
- 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).

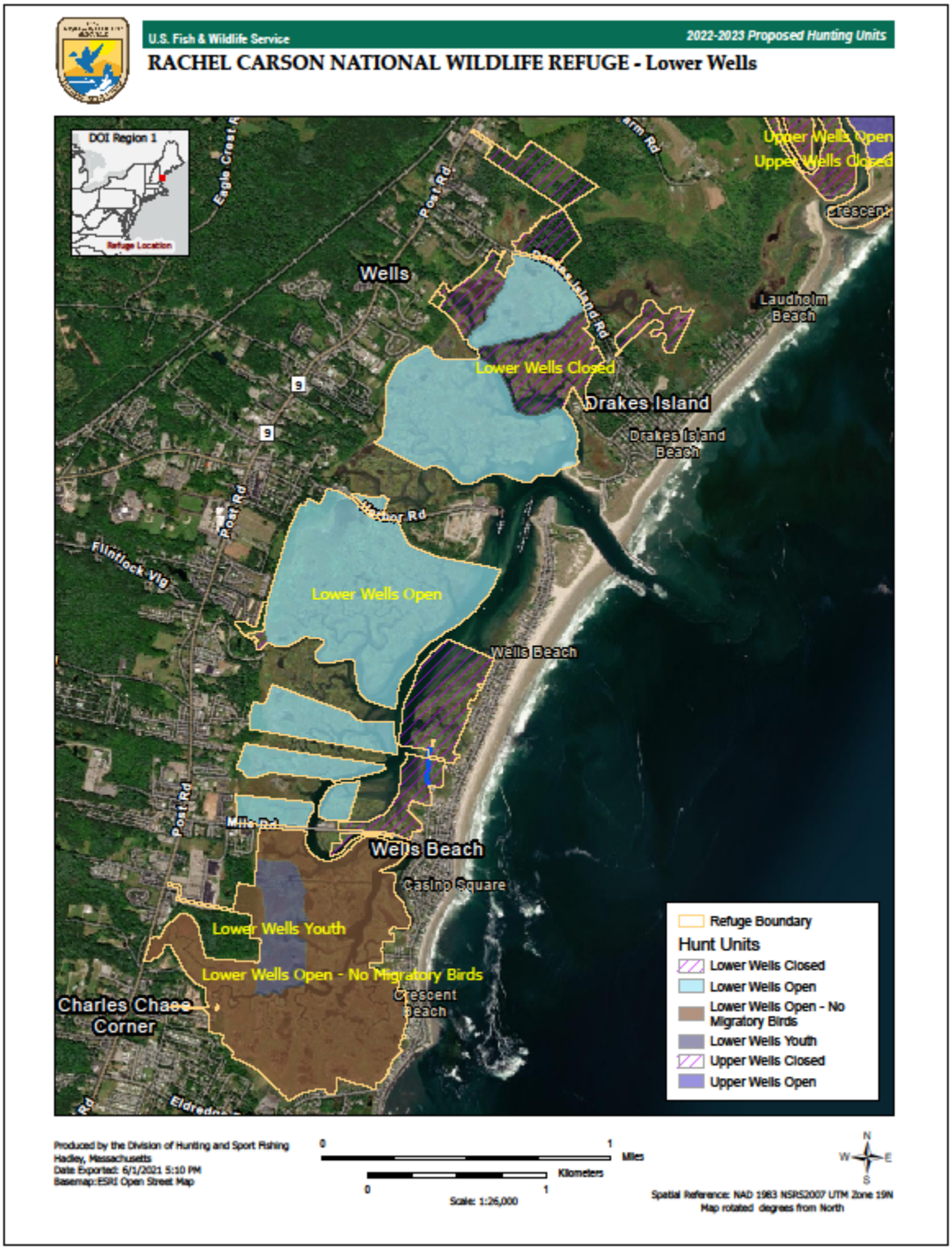
**Maps**

**Map A – York River Division**

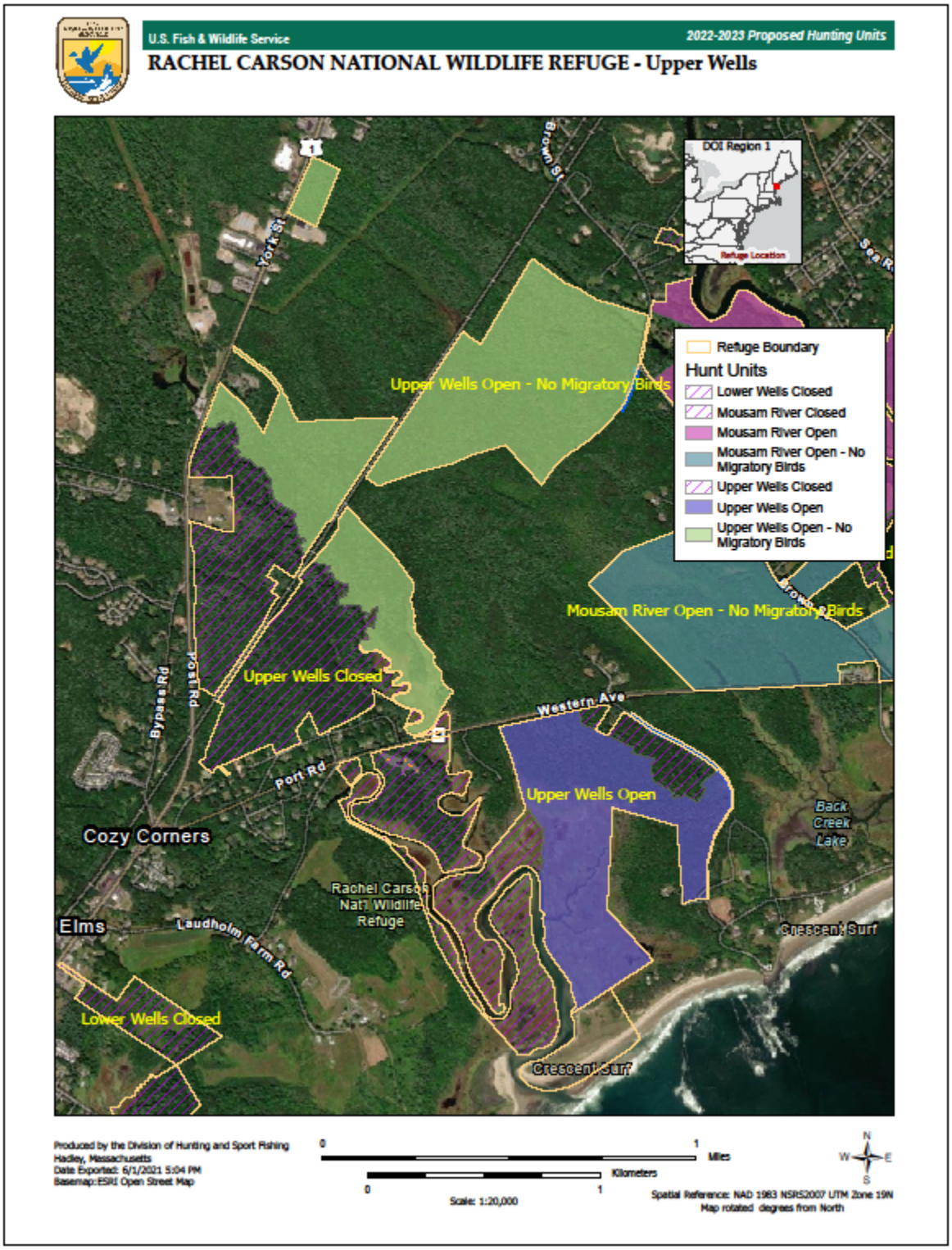
**MAP B – Brave Boat Harbor Division**



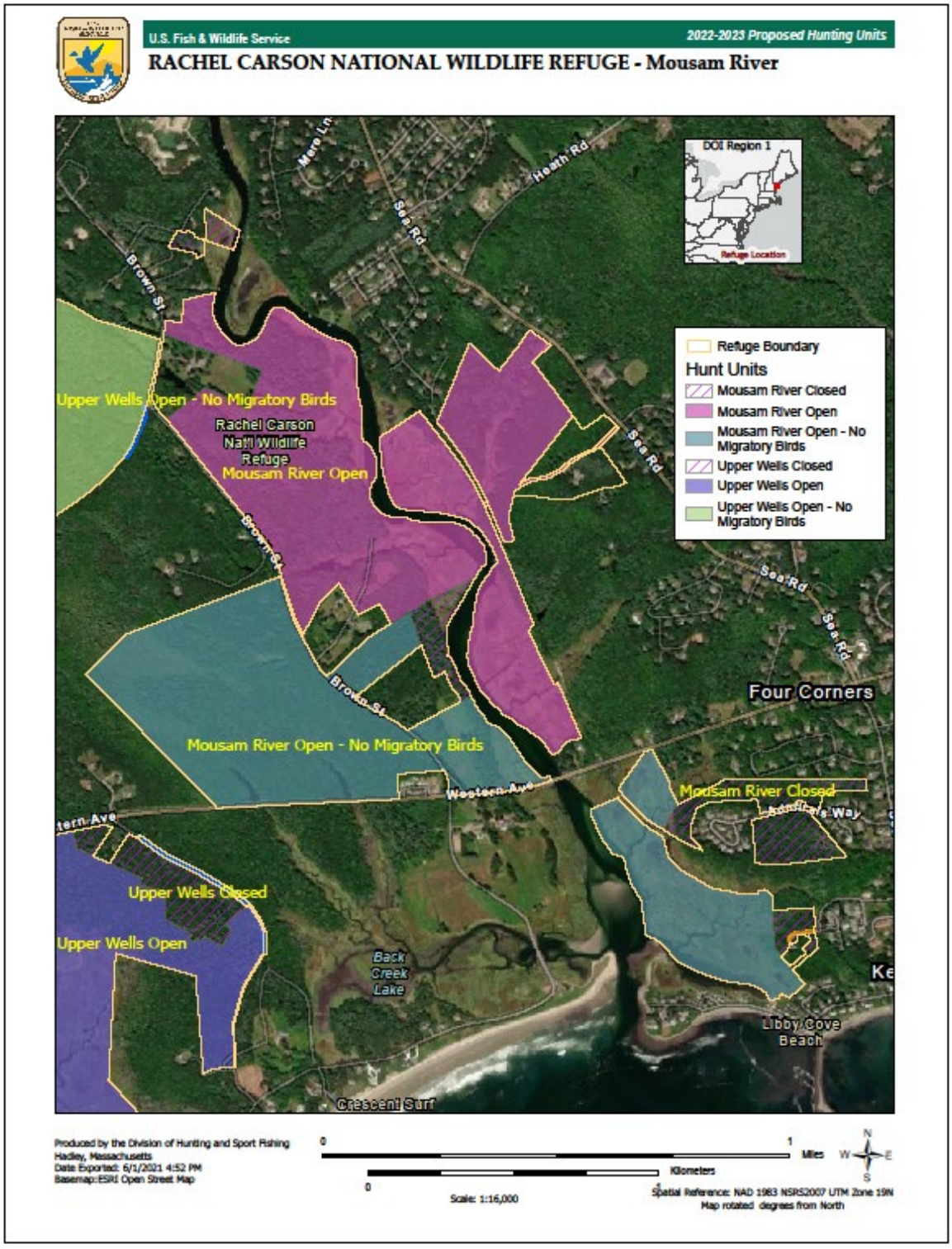
**Map C – Lower Wells Division**



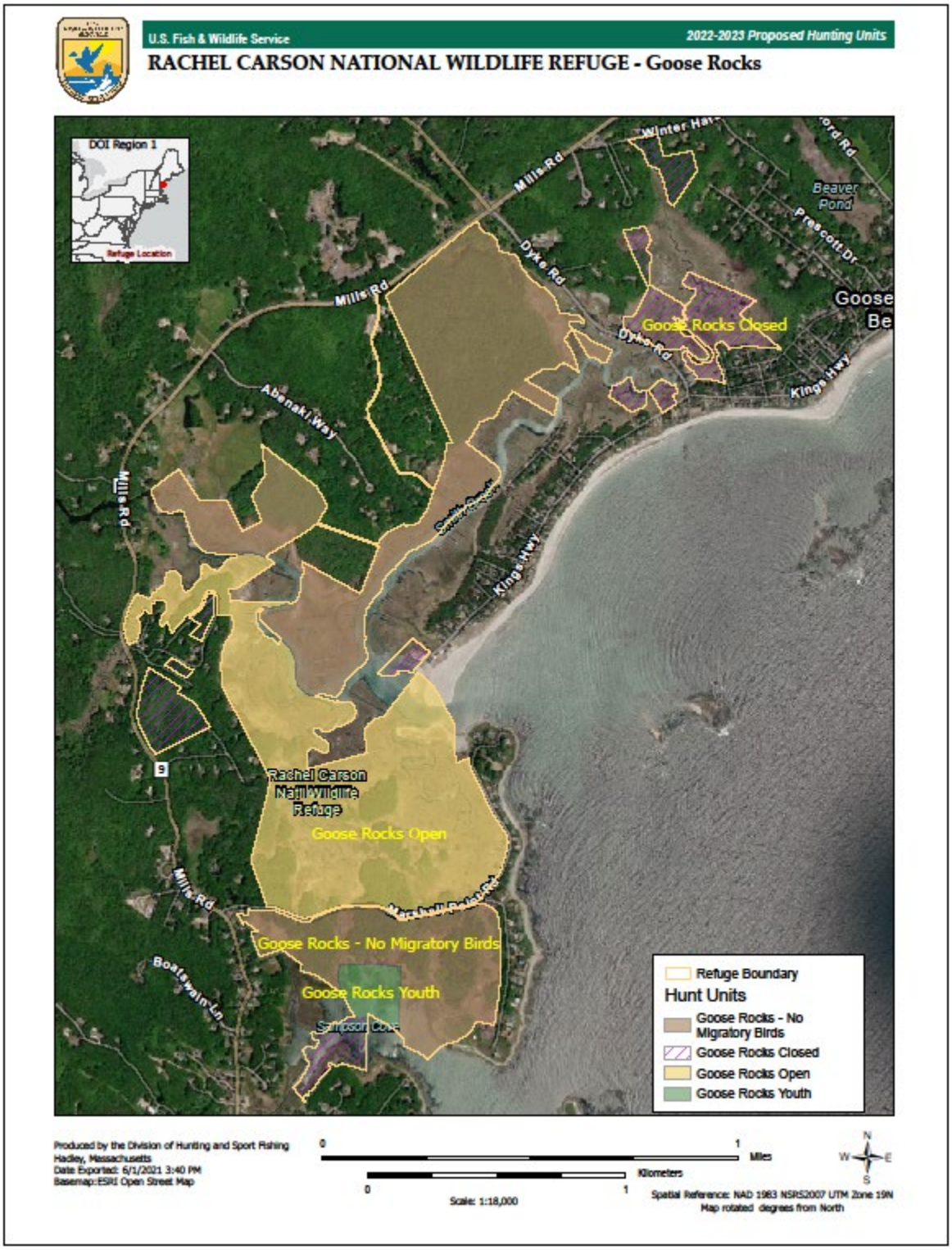
**Map D – Upper Wells Division**



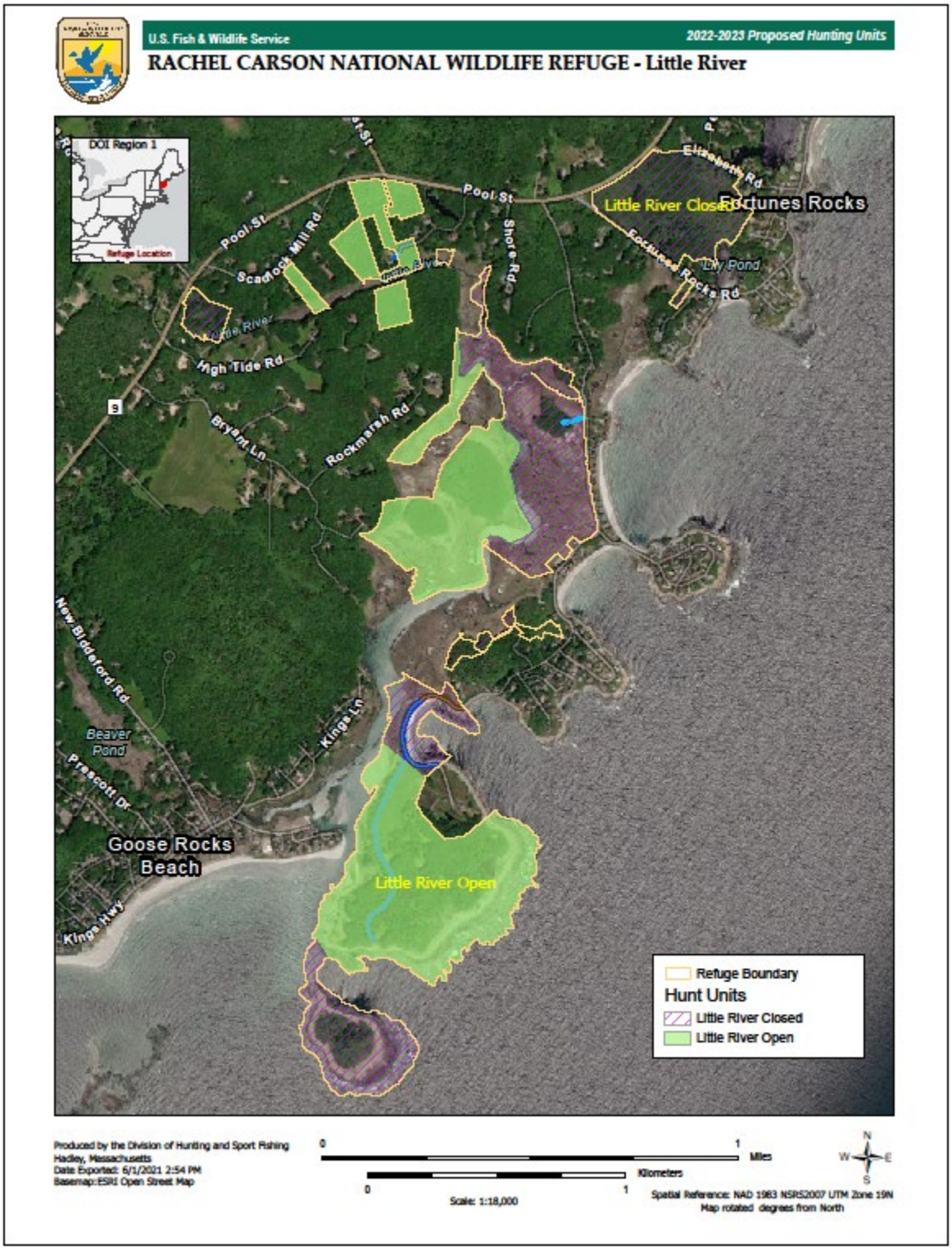
**Map E – Mousam River Division**



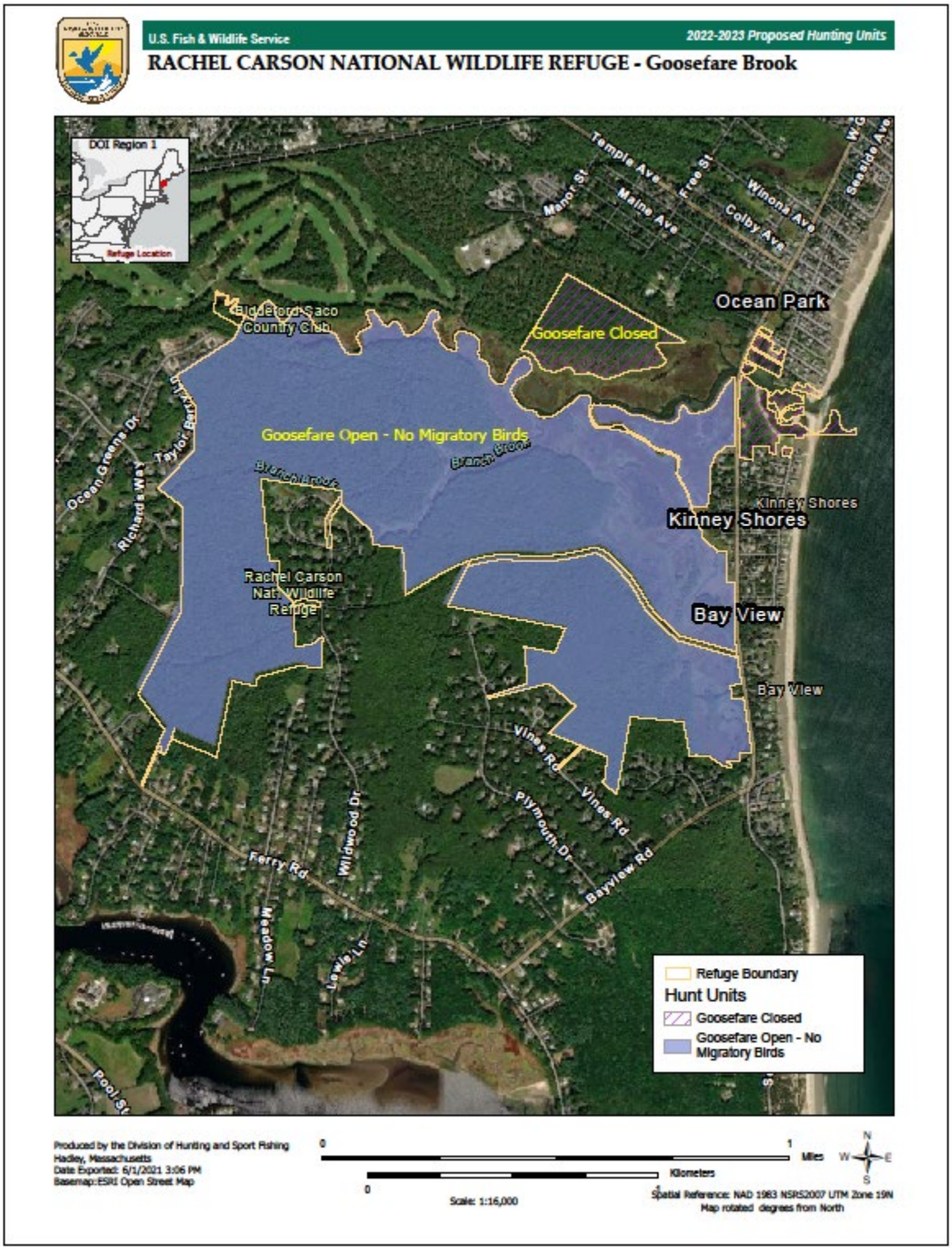
**Map F – Goose Rocks Division**



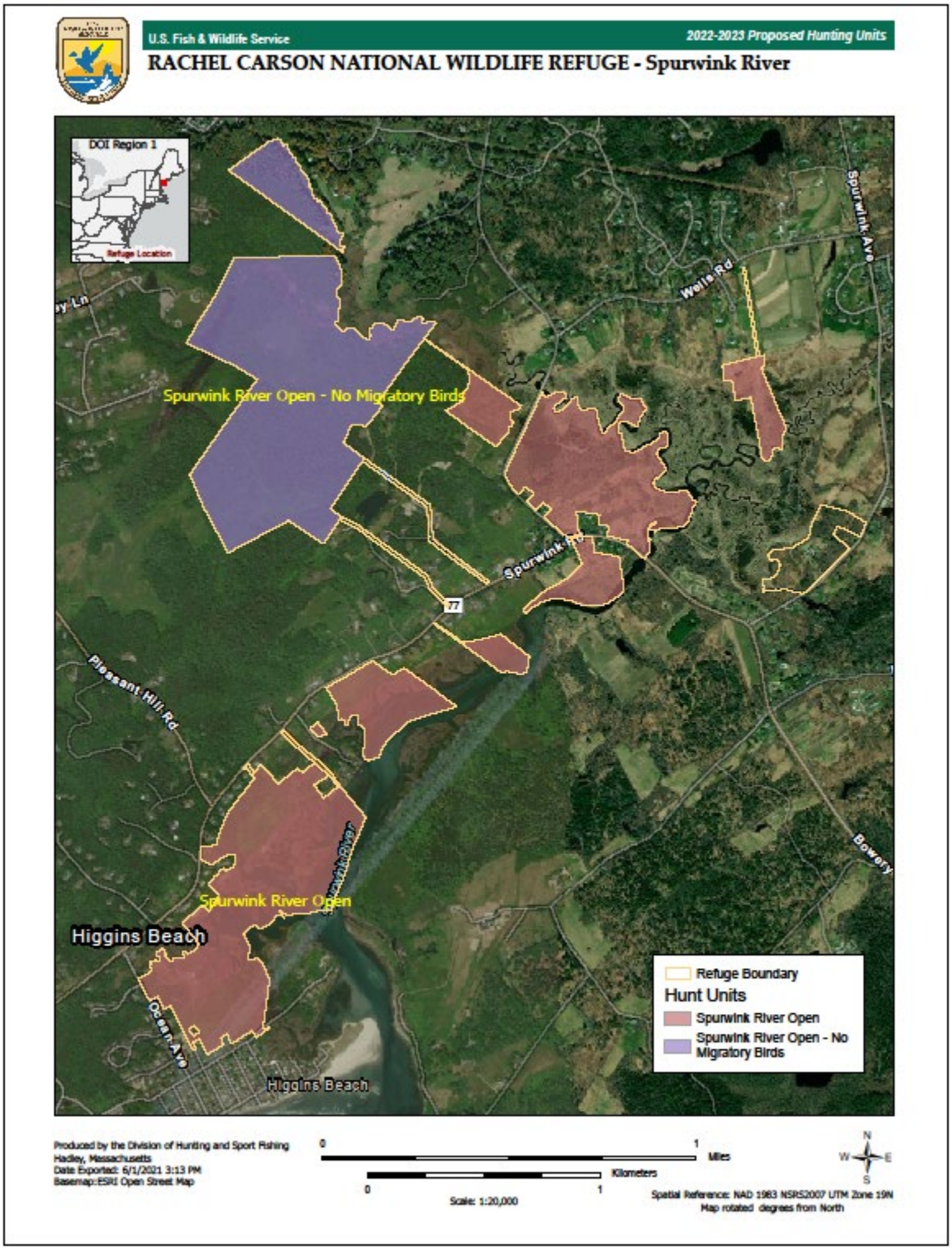
**Map G – Little River Division**



**Map H – Goosefare Brook Division**



**Map I – Spurwink River Division**



**Map J – Stone Lane Division**

# COMPATIBILITY DETERMINATION

Refuge Use Category

Hunting

Refuge Use Type(s)

Recreational hunting of big game (deer, turkey, coyote, and fox), upland game (ruffed grouse) and migratory game birds (duck, sea duck, dark geese, light geese, woodcock, and coot).

Refuge

Rachel Carson National Wildlife Refuge

Refuge Purpose(s) and Establishing and Acquisition Authority

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

"... (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ..." (Refuge Recreation Act (16 U.S.C. 460k-1)).

"... for the conservation of the wetlands of the Nation in order to maintain the public benefits they provide to help fulfill international obligations contained in various migratory bird treaties and conventions" (Emergency Wetlands Resources Act of 1986 (16 U.S.C. Section 3901(b) 100 Stat. 3583)).

"... for the development, advancement, management, conservation, and protection of fish and wildlife resources ...for the benefit of the United States Fish and Wildlife Service, in performing its activities and services" (Fish and Wildlife Act of 1956 (16 U.S.C. Section 742f (a)(1), (b)(1))).

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, 111 Stat 1252).

Description of Use

The use is public hunting of deer, wild turkey, fox, coyote, grouse, and migratory birds on Rachel Carson National Wildlife Refuge (NWR, refuge). Hunting was identified as one of six

priority public uses of the Refuge System by the National Wildlife Refuge System Administration Act (NWRSAA) of 1966, as amended by the Refuge System Improvement Act of 1997 (Public Law 105-57), when found to be compatible.

Is this an existing use?

Yes. This compatibility determination reviews and replaces the 2007 compatibility determination (CD) for hunting.

What is the use?

The use is hunting. It is a priority public use of the Refuge System under the NWRSAA of 1966 (16 U.S.C. 668dd-668ee) and the Refuge System Improvement Act of 1997 (Public Law 105–57).

Is the use a priority public use?

Yes

Where would the use be conducted?

The proposed use will allow for hunting on approximately 4,089 acres of the refuge. Big game hunting will be available in the following nine divisions: Brave Boat Harbor, York River, Lower Wells, Upper Wells, Mousam River, Goose Rocks, Little River, Goosefare Brook, and Spurwink River. Migratory game bird hunting will be available on the following seven divisions: Brave Boat Harbor, York River, Lower Wells, Upper Wells, Mousam River, Goose Rocks, and Spurwink River. Upland game bird hunting will be available on the following eight divisions: Brave Boat Harbor, York River, Lower Wells, Upper Wells, Mousam River, Goose Rocks, Goosefare Brook, and Spurwink River. Please see Maps A through J provided in Section VII of the Hunting Plan.

When would the use be conducted?

The refuge adopts the Maine Department of Inland Fisheries and Wildlife (MDIFW) regulations for hunting seasons. MDIFW determines hunting seasons annually with refuge-permitted species hunted between September and February. An organized mentored spring turkey hunt will take place during the State's spring turkey season annually. Legal shooting hours will be in accordance with State regulations for each species except coyote. We do not allow night hunting of coyote.

How would the use be conducted?

We will continue to conduct the hunting program according to State and Federal regulations. Federal regulations in 50 CFR pertaining to the Refuge System, as well as refuge-specific regulations will apply. However, the project leader 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. The refuge will restrict hunting if it becomes incompatible with other priority public uses or endangers refuge resources or public safety.

Hunters will be required to have a State license, refuge-specific permit for each species, and a Federal Duck Stamp if hunting migratory birds. Hunters are required to have a permit for the species they are hunting. Hunt packets are available on the refuge website and RecAccess. Permits can be purchased online through RecAccess at the cost of $10.00 for big game, $10.00 for migratory bird, $5.00 for upland game bird, and $5.00 for participating in hunting using falconry. Permits for youth and seniors cost 50 percent less.

To protect waterfowl and other migratory birds from potential lead poisoning, non-lead ammunition is required for firearms hunting of all species except deer and turkey. The refuge strongly encourages big game hunters to voluntarily use non-lead ammunition while hunting on the refuge. Non-lead ammunition for all species over the next 3 years and will become mandatory for use at the end of the 3-year period on September 1, 2026. This transition period will allow hunters time to adapt to the new regulations without diminishing hunting opportunities on the refuge. The refuge staff will provide information to assist in this transition that benefits wildlife.

Why is this use being proposed or re-evaluated?

This use is a priority public use and being reevaluated to meet the 15-year mandatory requirement for reevaluation. Hunting is one of the six priority public uses outlined in the Refuge System Improvement Act. The Service supports and encourages priority uses when they are compatible on refuge lands. Hunting provides connection to wildlife and conservation in a unique way. Hunting is a traditional activity and recreational use of renewable natural resources that is deeply rooted in America's heritage. On refuges designated as an inviolate sanctuary for migratory birds, hunting can be allowed. Land purchased through the Migratory Bird Conservation Fund cannot exceed 40 percent of the land base at any one time unless shown to be beneficial to the populations.

This use will further align the refuge with the Department of the Interior's Secretarial Order 3356, which 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 promotes the stewardship of our natural resources and increase the public's appreciation and support for the refuge. Hunting was also identified as an area of interest for the refuge in its 2007 Comprehensive Conservation Plan (CCP) (https://www.fws.gov/media/rachelcarsonnwrccpeajune2007pdf).

Availability of Resources

Annual hunt administration costs for Rachel Carson NWR and Great Thicket NWR Berwick-York Focus Area will total approximately $10,000. Rachel Carson NWR funds are used to conduct hunts for big game, migratory bird, and upland game bird seasons. This includes staff time for planning and annual program preparation, outreach and public relations, permit administration, boundary signs, enforcement, posting, roads and parking lot maintenance. Other

operating costs include signs, leaflets, equipment and vehicle fuel and maintenance. Funding for the hunt program is not specifically allocated but will be taken from station base funds on an annual basis. In the past, approximately $4,400 is generated annually from permit fees. It is anticipated that base funding for the refuge will continue to be sufficient to support the hunting program at Rachel Carson and Great Thicket NWR Berwick-York Focus Area in the future.

**Table A-1. Estimated Costs for Hunting at Rachel Carson NWR and Great Thicket NWR Berwick-York Focus Area.**

| Identifier | Costs |
|---|---|
| Hunt Program Staff | $7,000 |
| Hunt management, monitoring resource impacts | $1,500 |
| Parking area maintenance, signs, posts | $1,500 |
| **Total Annual Cost** | **$10,000** |

Anticipated Impacts of the Use

*Potential impacts of a proposed use on the refuge's purpose(s) and the Refuge System mission*

Impacts of hunting to refuge resources, whether adverse or beneficial, are those that are reasonably foreseeable and have a reasonably close causal relationship to the use. This CD includes 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." The overall impacts of this use are fully reviewed and discussed in the Rachel Carson NWR and Great Thicket Berwick-York Focus Area Hunting Environmental Assessment.

*Short-term impacts*

Potential impacts 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 (Bell and Austin 1985; Cole 1990; Cole and Knight 1990). 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 more wary, staying closer to cover, and shifting feeding times (like 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 (Bartelt 1987; Madsen 1985; Owen 1973; Raveling 1979; White-Robinson 1982).

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 (Burger 1981; Kahl 1991; Kaiser and Fritzell 1984; Klein 1993; Korschen et al. 1985; Owen 1973; Whittaker and Knight 1998), the use of suboptimal habitat (Erwin 1980; Williams and Forbes 1980), altered behavior or habituation to human disturbance (Burger 1981; Havera et al. 1992; Klein 1993; Korschen et al. 1985; Morton et al. 1989; Ward and Stehn 1989; Whittaker and Knight 1998), attraction Whittaker and Knight 1998), and an increase in energy expenditure (Belanger and Bedard 1990; Morton et al. 1989). The amount of disturbance tends to increase with decreased distance between visitors and birds (Burger 1986).

Hunting has occurred on refuge lands for many years with no discernible adverse impacts to resources or significant conflicts with other priority public uses. Hunting provides compatible wildlife-dependent recreational opportunities that can foster a better appreciation and more complete understanding of wildlife and habitat, which can translate into stronger support for wildlife conservation, the refuge, the Refuge System, and the Service.

**Migratory 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 will apply in the refuge waterfowl hunt. Hunting waterfowl 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. Hunting waterfowl 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). Injury and mortality are also anticipated effects of the hunting program. Disturbance to non-target birds and resident wildlife would likely occur from hunting and associated hunter activity but would be short-term and temporary. Lead shot was completely banned for the hunting of waterfowl (i.e., ducks, geese, swans, brant and coot) throughout the United States beginning in 1991.

The refuge mitigates these effects by carefully managing waterfowl hunting through controlled waterfowl hunt areas. Blinds must be temporary, portable, and removed each day. This reduces the days and duration of disturbance to each hunted wetland unit. In addition, 60 percent of the refuge is closed to migratory bird hunting as required by the Migratory Bird Conservation Act, which allows areas for waterfowl to rest and forage during migration without disturbance. Overall, the effects on migratory birds are expected to be minor.

**Big Game and Upland Game**

In 2020, the State of Maine estimated that the white-tailed deer population totaled approximately 290,000 individuals. In Maine Wildlife Management District (WMD) 24, the deer harvest in 2019 was 28,323. This represents a decrease from the previous year when the deer harvest totaled 32,451.

Big game and upland game hunting are managed on a statewide basis in accordance with approved State management plans. There is potential for conflicts between big game hunters and other recreational users at Rachel Carson NWR. However, big and small/upland game hunting in Maine are well-established and anticipated annual events and most non-hunting visitors recognize that and adjust their visits accordingly when hunting is in progress. Rachel Carson

NWR has provided these hunting opportunities for over 40 years and visitors have come to expect hunting activity on refuge lands. The refuge maintains areas closed to hunting for wildlife observation and other priority public uses. This provides non-hunters with opportunities to participate in other priority public uses during the hunting season without conflict. Trailheads are also marked during the hunting season.

Lead ammunition can be used on the refuge for big game hunting as detailed in the Hunting Plan. The best available science indicates that lead ammunition may have negative impacts on wildlife and the environment (Golden et al. 2016; Hanley et al, 2022; Slabe et al, 2022). Lead that could enter the environment from proposed hunting activities would include fragments from ammunition that has left the body of harvested animals or left behind in discarded gut piles in the field. Given the estimated numbers of hunters and amount of take estimated using lead ammunition, the lead that would enter the environment is likely very small.

As non-lead requirements for ammunition take full effect after September 1,2026, lethal and sublethal health impacts to huntable wildlife species from discarded lead in the environment and the potential for exposure to lead that may result in adverse human health impacts decreases substantially and becomes negligible. Lead from previous hunting activities will still be present in the environment and may impact wild species; however, the impact is likely negligible given the likely low amount of lead currently present and available in the environment from hunting activities and minor adverse risk of bioaccumulation.

A transition to non-lead ammunition for all big game hunting will minimize the inadvertent exposure and subsequent lethal or sub-lethal impacts to bald and golden eagles, as well as other scavenging species. Eagles and other 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. Recent modeling has even indicated that lead poisoning suppresses population growth in eagles (Slabe et al. 2022).

**Other Wildlife and non-target species**

Some disturbances to non-game bird species are expected since migrating and breeding activities occur from April to September. A limited mentored spring turkey hunt will overlap with this time period. In partnership with a third-party organization, a mentored spring turkey hunt for 10 to 20 participants will occur within the State's spring season to facilitate R3 opportunities. The mentored hunt locations will occur within select units opened to hunting at Rachel Carson NWR and the Berwick-York Focus Area of Great Thicket NWR but may vary from year to year to accommodate fluctuations in the population. Short-term disruptions to other species like bats, turtles, frogs, and some mammals are expected to be minor, due to periods of inactivity or hibernation.

As discussed above, lead shot and bullet fragments found in animal carcasses and gut piles are the most likely source of lead exposure for non-target species. Many hunters do not realize that the carcass or gut pile they leave in the field usually contains lead bullet fragments. 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 poisoning may weaken raptors by reducing their strength and coordination, leading to muscle and weight loss,

reducing motor skill function, and making them lethargic, which may make them more susceptible to disease, vehicle strikes, or power line accidents and increases mortality rates by leaving them unable to hunt (Kramer and Redig 1997, O'Halloran et al. 1989, Kelly and Kelly 2005, Golden et al. 2016). The bioaccumulation of lead is a potential concern, but it does not likely present a significant issue on this refuge, as: (1) non-lead shot is currently required for all hunting other than deer and turkey; (2) the refuge strongly encourages use of non-lead alternatives for hunting big game (deer and turkey) for the next 3 years; (3) we would require the use of non-lead ammunition for all species beginning September 1, 2026; and (4) we will educate hunters and the public to the potential adverse impacts of lead. Some hunters will also choose non-lead methods of take such as archery.

The best available science indicates that lead ammunition may have negative impacts on wildlife and the environment (Golden et al. 2016; Hanley et al, 2022; Slabe et al, 2022). To move towards reduction and future elimination of this threat on the refuge, we require non-lead ammunition starting September 1, 2026. We will initially encourage the voluntary use of non-lead ammunition for the next three years. The transition to non-lead ammunition for all big game hunting will minimize the inadvertent exposure and subsequent lethal or sub-lethal impacts to bald and golden eagles, as well as other scavenging species. Eagles and other 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.

Overall, the Service anticipates no measurable negative impacts to resident non-hunted wildlife populations locally, regionally, or globally due to the activity of hunting, as the impact of the current program does not result in more than temporary flushing or relocation. However, continuing to permit the use of lead ammunition on refuge lands and waters could mean an increase of lead in the environment, even at small amounts as estimated, and continue to have potentially negative impacts to wildlife and aquatic species.

**Habitat and Vegetation**

Dominant habitat types on the refuge include forested upland, barrier beach/dune, coastal meadows, tidal salt marsh, open fields, grasslands, freshwater wetlands, shrublands, and mixed hardwood forest.

Hunters traverse large areas of the refuge landscape and walk off-trail in areas not used by other visitors. This has the potential to result in impacts to refuge habitats and vegetation. Foot traffic can affect habitats by creating new pathways, trampling vegetation, and causing minor erosion. Only minor impacts to habitat and vegetation are anticipated.

The physical effects on refuge wetland and upland vegetation are expected to be minimal during most of the hunting season (September to mid-March). Hunter density is also controlled through the refuge permit requirements. No vehicles are permitted on the refuge. Only minor effects to vegetation from hunters and hunting dogs trampling are expected, since hunters are dispersed widely across the refuge, tree cutting is not allowed, and plants are senescing or dormant during this timeframe. Soil compaction should be minimal since no vehicles are allowed, and the ground may be partially or wholly frozen.

Hunting could indirectly create a positive effect on vegetation through controlling 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, Stromayer and Warren 1997, Côté et al. 2004, White 2012). Maintaining white-tailed deer hunting will help to maintain habitat in its current form, prevent habitat degradation due to overbrowsing, and promote successful natural regeneration and a more sustainable plant community.

**Threatened and Endangered Species**
Rachel Carson NWR uses ECOS and IPaC to identify threatened and endangered species, including for purposes of the Intra-Service Section 7 Biological Evaluation (Appendix D). The following species were identified:

| Species/Critical Habitat | Status |
|---|---|
| Northern long-eared bat | T |
| Roseate tern | E |
| Piping plover | T |
| Red knot | T |
| Monarch butterfly | C |
| Small whorled pogonia | T |
| Atlantic salmon | E |
| Leatherback sea turtle | E |
| Hawksville sea turtle | E |

*Status: E= Endangered, T=Threatened, T(s/a)=Threatened by Similarity of Appearance, PE=Proposed Endangered, PT= Proposed Threatened, CH= Critical Habitat, PCH= Proposed Critical Habitat, C=Candidate Species.

Sea turtles, small whorled pogonia and Atlantic salmon
Sea turtles, Atlantic salmon and small whorled pogonia are not present on refuge lands or within waters under refuge jurisdiction. There are no Atlantic salmon occurring within any of the streams or rivers within our divisions. Sea turtles also are largely marine species and may swim past refuge property, however they do not nest on the refuge and are not found on refuge lands or waters. Finally, small whorled pogonia is not known to occur on refuge lands or withing the refuge acquisition boundary. Because these species are not known to occur on the refuge and have no possible exposure to any of the proposed changes, the proposed hunting activities will have “no effect” on the listed sea turtles, Atlantic salmon, or small whorled pogonia.

Northern long-eared bat
Northern long-eared bat (NLEB) is present in low numbers at our York River Division and our Little River Division in Biddeford during the spring, summer and fall months. Given the small number of turkey hunt participants and the fact that proposed turkey hunt will occur in a location that is very unlikely to overlap with the presence of the bats, any potential disturbance effects from the mentored turkey hunt are extremely unlikely to occur and therefore considered discountable.

For the other hunting opportunities, noise from firearms could disturb roosting bats, but it is likely that the bats would remain in the tree during daylight hours. Such disturbances are temporary and last only for the duration of the noise, not fundamentally unlike other temporary disturbances that bats may naturally experience without long-term effects and, therefore, any potential effects are expected to be insignificant. Other possible disturbances include hunters climbing and placing portable tree stands on trees. However, hunters typically select live trees for safety reasons, while bats are most often in dead or dying trees with large slabs of peeling bark. Further, hunting activities would not result in any roost tree destruction as no tree cutting or other habitat alteration is permitted on the refuge. Overall, any disturbance to NLEB would be very low, since roosting, feeding, and pup rearing activities occur from April to August, outside of the primary refuge hunting seasons (September to mid-March).

The potential for lead impacts to bats through bioaccumulation is discountable due to NLEB diets and foraging habits. Considering the chain of events that are necessary for exposure and the small amount of lead that would contribute to lead concentrations in refuge soils, it seems likely that bats that occur on the refuge will not consume lead derived from ammunition fired by hunters on the refuge. Because the potential for overlap with bats during the spring turkey hunt is very unlikely to occur; because the potential for overlap with bats during the other hunting activities (September to mid-March) is unlikely to occur, and even if there is overlap, the potential effects would be insignificant; and because the potential for lead impacts are discountable, the proposed hunting activities are not likely to adversely affect the NLEB.

Piping plover and roseate tern

Piping plover's nest on sandy beaches and dunes from April through July. Adults, chicks, and fledglings use refuge beaches and sandflats throughout the season, typically through late August. The nesting and staging beaches are not open to hunting; neither the birds nor their habitat would be adversely impacted by hunting on the refuge. Therefore, any potential impacts from proposed hunting activities are expected to be discountable because they are extremely unlikely to occur. In the unlikely event that the species overlap with hunting activities, disturbance such as noise from firearms could disturb the shorebirds, but such disturbances are temporary and last only for the duration of the noise, not fundamentally unlike other temporary disturbances that shorebirds may naturally experience without long-term effects. Therefore, any potential disturbance is expected to be insignificant. Because hunting—including the use of lead ammunition until the non-lead requirement takes effect September 1, 2026—is highly unlikely to overlap with piping plovers or roseate terns in time or space, these species are not likely to be adversely affected by the proposed hunting activities.

Red knot

Although the majority of migratory stopovers for red knot occur south of Maine, regular stopover sites do occur within the State. Migrating red knots use marine habitats at Rachel Carson NWR including sandy beaches, salt marshes, and salty mud and sand flats which contain an abundance of invertebrate prey. Given that the hunting activities on the refuge are not likely to overlap with the area where the small number of red knots known to occur on the refuge, any potential impacts from disturbance are expected to be discountable because they are extremely unlikely to occur. Like the shorebirds mentioned above, in the unlikely event that the species overlap with hunting activities, disturbances such as noise from firearms could disturb the red

knot, but such disturbances are temporary and last only for the duration of the noise, not fundamentally unlike other temporary disturbances that red knots may naturally experience without long-term effects. Therefore, any potential disturbance would be considered insignificant.

Monarch butterfly

The refuge is used by monarch butterflies from spring throughout the fall. Monarchs are common in old field habitats during the breeding season and common during fall migration in salt marsh habitats (nectaring on seaside goldenrod). While hunters are walking through habitat used by monarchs, there could be some impacts including flushing while resting or feeding. Noise disturbance from discharging of a firearm while hunting may startle the species resulting in change in flight pattern or a startle response in caterpillars, but this impact will not result in long-term negative impacts and is considered discountable as this type of noise is not frequent enough to result in habituation to noise that could cause butterfly to not respond to natural threats like parasitism (Taylor and Yack, 2019).

The potential for lead impacts to monarchs is discountable due to their diets. Given that hunters are not likely to overlap with areas where monarch and their plants are known to occur; that any potential disturbance from noise is expected to be insignificant; and that bioaccumulation through plants into caterpillars or butterflies is discountable, the proposed activities are not likely to jeopardize the monarch butterfly.

All species

Animals can be poisoned by lead in a variety of ways including ingestion of bullet fragments and shot pellets left in animal carcasses and spent ammunition left in the field (Haig et al. 2014). The use of non-lead ammunition will initially be voluntary, and we would require non-lead ammunition for all activities starting September 1, 2026 (after a 3-year transition period). This transition period will ensure continuity of visitor opportunities as hunters understand the changes and become more familiar with the availability and use of non-lead alternatives. We will educate hunters about the impacts of lead and strongly encourage non-lead ammunition alternatives for the next 3 years.

A more detailed discussion of threatened and endangered species, and the potential impacts of the proposed hunting activities to those listed species, can be found in the Intra-Service Section 7 Biological Evaluation (Appendix D).

**Visitor Uses and Experiences**

The majority of visitation occurs on the Carson Trail in the Upper Wells Division. This area of the Division will remain closed to hunting. On average, Rachel Carson NWR gets approximately 275,000 visitors each year (although only approximately 500 permits are issued for hunting) (USFWS 2019).

There is some possibility of negative economic impacts for hunters who must comply with the non-lead requirements beginning September 1, 2026. While non-lead ammunition has become essentially equivalent in price to lead ammunition, certain types of non-lead ammunition can cost more than certain types of lead ammunition. However, the price of non-lead ammunition is the

same or less than that of premium lead ammunition. In order to prevent the negative impacts of this switch, the refuge has begun and will continue specific outreach about the requirement to these groups and has put in place measures to mitigate the economic input beyond the non-lead implementation effective in 2026, which already affords hunters time to gradually transition their supplies of ammunition. The Service will continue educating hunters on the use of non-lead ammunition during the transition period, provide links to resources on companies that produce non-lead ammunition for purchase, and work with partner organizations on non-lead ammunition issues.

*Long-term impacts*

Cumulative impacts on the environment result from incremental impacts of a proposed action when these are added to other past, present, and reasonably foreseeable future actions. While cumulative impacts may result from individually minor actions, they may, viewed as a whole, become substantial over time.

The potential for adverse impacts to human health due to the inadvertent consumption of lead in individual animals that are successfully harvested with lead ammunition would still exist during the next three years; however, it will likely be reduced as some hunters adopt early use of non-lead ammunition. As non-lead requirements for ammunition take full effect in 2026, lethal and sublethal impacts to huntable wildlife species from discarded lead in the environment and the potential for adverse human health impacts decreases substantially and becomes negligible. Lead from previous hunting activities will still be present in the environment and may impact wild species; however, the impact is likely negligible given the likely low amount of lead currently present and availability in the environment from hunting activities and minor adverse risk of bioaccumulation.

The Service believes that hunting on the refuge will not have a significant impact on local, regional, or Atlantic flyway migratory bird populations because the percentage likely to be taken on the refuges, though possibly additive to existing hunting takes, would be a tiny fraction of the estimated populations. In addition, overall populations will continue to be monitored and future harvests will be adjusted as needed under the existing flyway and State regulatory processes.

Economic impacts to hunters due to required use of non-lead ammunition will be mitigated by a transition approach and outreach programs. Additional hunting would not add more than slightly to the cumulative impacts stemming from hunting at the local, regional, or Atlantic flyway levels.

Public Review and Comment

This Compatibility Determination (CD) is part of the Rachel Carson NWR and Great Thicket NWR Berwick-York Focus Area Hunting Plan and the accompanying NEPA compliance. The plan was coordinated with all interested and/or affected parties, including State partners.

With the 2022 EA package, including the EA, Hunting Plan, and Compatibility Determinations, the public had the opportunity to review and comment on each of the draft documents from May

3 through August 8, 2022, a total of 97 days. We distributed a press release to news organizations and alerted visitors to the plan's availability on the refuge website. We also hosted a 3-hour Open House on July 25, 2022, to answer questions and provide information to the public. A total of nine comment letters were submitted from the public that offered input to the refuge on the 2022 EA. A summary of the comments and our responses can be found in Appendix E of the 2022 EA.

This year the refuge plans to again reach out and engage with all five of the federally recognized Tribal Nations in Maine (collectively, the Wabanaki) to discuss the potential for a special hunt and any other issues that are of interest to the Tribes.

The public will be notified of the availability of the draft Hunting Plan, EA, and CDs with no less than a 60-day review and comment period. We will inform the public through local venues, the refuge website, and social media.

Determination

Is the use compatible?
Yes

Stipulations Necessary to Ensure Compatibility

To ensure compatibility with refuge purpose(s) and Refuge System mission, hunting can occur at Rachel Carson 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 hunting experience for participants. This hunting program will be monitored and potentially modified or eliminated if any the program's components are found not compatible.

The following stipulations are necessary to ensure compatibility:

1. Hunters are encouraged to use non-lead ammunition for deer and turkey hunting, and required to use non-lead ammunition for all other hunting on the refuge. The refuge would require non-lead ammunition for all species beginning September 1, 2026 (after a 3-year transition period).

2. We allow hunting with shotgun and archery only. We prohibit rifles and muzzleloader firearms for hunting.

3. During the State firearm deer season, we only allow hunting of fox and coyote with archery or shotgun as incidental take with a refuge big game permit.

4. We only allow temporary blinds and stands, which must be removed at the end of each day's hunt. This will ensure equitable opportunities for all hunters due to the limited size of the refuge.

5. We allow take of migratory birds and grouse by falconry on the refuge during State seasons.

6. The hunter must retrieve all species harvested on the refuge.

7. Hunters are required to purchase a permit for each species they are hunting. The refuge employs a hunt permit system to avoid conflicts. Issuing permits to all hunters ensures that all hunters receive a copy of the current refuge regulations and maps of open areas. The maps and advice to hunters are especially valuable in avoiding conflicts with neighbors.

8. Access to the refuge for hunting any species will be permitted from 1 hour before legal hunting hours through 1 hour after legal hunting hours. We do not allow night hunting of coyote.

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 CD 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 of Determination
Refuge Manager Signature and Date

Signature of Concurrence
Assistant Regional Director Signature and Date

Mandatory Reevaluation Date
Delete this text and insert year for reevaluation

Literature Cited

This determination is based upon the science referenced in the environmental assessment

associated with the proposed action described in this analysis. Where there is not an overlap in literature cited, specific references have been included.

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# COMPATIBILITY DETERMINATION

Refuge Use Category

Hunting

Refuge Use Type(s)

Recreational hunting of big game (deer, turkey, coyote, and fox), upland game (ruffed grouse) and migratory game birds (duck, dark geese, light geese, woodcock, and coot).

Refuge

Great Thicket National Wildlife Refuge – Berwick-York Focus Areas

Refuge Purpose(s) and Establishing and Acquisition Authority

"... to strategically acquire and improve habitat to help achieve overlapping habitat and population goals for declining shrubland wildlife species" (Endangered Species Act of 1973 (16 U.S.C. 1534)).

"... for the development, advancement, management, conservation, and protection of fish and wildlife resources ...for the benefit of the United States Fish and Wildlife Service, in performing its activities and services" (Fish and Wildlife Act of 1956 (16 U.S.C. Section 742f (a)(1), (b)(1))).

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, 111 Stat 1252).

Description of Use

The use is public hunting of deer, wild turkey, fox, coyote, grouse, and migratory birds on the Berwick-York Focus Areas of Great Thicket NWR. Hunting was identified as one of six priority public uses of the Refuge System by the National Wildlife Refuge System Administration Act (NWRSAA) of 1966, as amended by the Refuge System Improvement Act of 1997 (Public Law 105-57), when found to be compatible.

Is this an existing use?

No. This compatibility determination opens the Berwick-York Focus Areas of Great Thicket NWR to public hunting for the first time.

What is the use?

The use is hunting. It is a priority public use of the Refuge System under the NWRSAA of 1966 (16 U.S.C. 668dd-668ee) and the Refuge System Improvement Act of 1997 (Public Law 105–57).

Is the use a priority public use?

Yes

Where would the use be conducted?

Hunting will be conducted at the Berwick-York focus area of Great Thicket NWR. Located in South Berwick, Maine, this tract would provide 47.95 acres of forested habitat for big game, migratory bird, and upland bird hunting (see attached map). All hunting will occur in the areas delineated on the refuge hunt maps (attached), which are updated annually. New parcels will be added to the refuge hunt maps for Great Thicket NWR as they are acquired.

When would the use be conducted?

The refuge adopts the Maine Department of Inland Fisheries and Wildlife (MDIFW) regulations for hunting seasons. MDIFW determines hunting seasons annually with refuge-permitted species hunted between September and February. An organized mentored spring turkey hunt will take place during the State's spring turkey season annually. Legal shooting hours will be in accordance with State regulations for each species, except coyote. We do not allow night hunting of coyote.

Hunting waterfowl in open hunting sections will conform to refuge-specific regulations. Hunting is not permitted on Sundays per State regulations. Access to the refuge for hunting any species will be permitted from 1 hour before legal hunting hours through 1 hour after legal hunting hours.

How would the use be conducted?

We will continue to conduct the hunting program according to State and Federal regulations. Federal regulations in 50 CFR pertaining to the Refuge System, as well as refuge-specific regulations will apply. However, the project leader 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. The refuge will restrict hunting if it becomes incompatible with other priority public uses or endangers refuge resources or public safety.

Hunters will be required to carry a State license, a signed refuge hunt information sheet, and a Federal Duck Stamp if hunting migratory birds. Hunt information sheets are available on the refuge website and RecAccess. A fee permit is not required to hunt on Great Thicket Berwick-

York Focus Area.

To protect waterfowl and other migratory birds from potential lead poisoning, non-lead ammunition is required for firearms hunting of all species except deer and turkey. The refuge strongly encourages big game hunters to voluntarily use non-lead ammunition while hunting on the refuge. The refuge would require non-lead ammunition for all species after a 3-year transition period, effective on September 1, 2026. This transition period will allow hunters time to adapt to the new regulations without diminishing hunting opportunities on the refuge. The refuge staff will provide information to assist in this transition that benefits wildlife.

Why is this use being proposed or re-evaluated?

This use is a priority public use, and one of the six priority public uses outlined in the Refuge System Improvement Act. The Service supports and encourages priority uses when they are compatible on refuge lands. Hunting provides connection to wildlife and conservation in a unique way. Hunting is a traditional activity and recreational use of renewable natural resources that is deeply rooted in America's heritage.

This use will further align the refuge with the Department of the Interior's Secretarial Order 3356, which 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 promotes the stewardship of our natural resources and increase the public's appreciation and support for the refuge.

Availability of Resources

Annual hunt administration costs for Rachel Carson NWR and Great Thicket NWR Berwick-York Focus Area will total approximately $10,000. This includes staff time for planning and annual program preparation, outreach and public relations, permit administration, boundary signs, enforcement, posting, roads and parking lot maintenance. Other operating costs include signs, leaflets, equipment and vehicle fuel and maintenance. Funding for the hunt program is not specifically allocated but will be taken from station base funds on an annual basis. It is anticipated that base funding for the refuge will continue to be sufficient to support the hunting program at Rachel Carson and Great Thicket NWR Berwick-York Focus Area in the future.

**Table B-1. Estimated Costs for Hunting at Rachel Carson NWR and Great Thicket NWR Berwick-York Focus Area.**

| Identifier | Costs |
|---|---|
| Hunt Program Staff | $7,000 |
| Hunt management, monitoring resource impacts | $1,500 |
| Parking area maintenance, signs, posts | $1,500 |
| **Total Annual Cost** | **$10,000** |

Anticipated Impacts of the Use

*Potential impacts of a proposed use on the refuge's purpose(s) and the Refuge System mission*

Impacts of hunting to refuge resources, whether adverse or beneficial, are those that are reasonably foreseeable and have a reasonably close causal relationship to the use. This CD includes 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." The overall impacts of this use are fully reviewed and discussed in the Rachel Carson NWR and Great Thicket Berwick-York Focus Area Hunting Environmental Assessment.

*Short-term impacts*

Potential impacts 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 (Bell and Austin 1985; Cole 1990; Cole and Knight 1990). 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 more wary, staying closer to cover, and shifting feeding times (like 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 (Bartelt 1987; Madsen 1985; Owen 1973; Raveling 1979; White-Robinson 1982).

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 (Burger 1981; Kahl 1991; Kaiser and Fritzell 1984; Klein 1993; Korschen et al. 1985; Owen 1973; Whittaker and Knight 1998), the use of suboptimal habitat (Erwin 1980; Williams and Forbes 1980), altered behavior or habituation to human disturbance (Burger 1981; Havera et al. 1992; Klein 1993; Korschen et al. 1985; Morton et al. 1989; Ward and Stehn 1989; Whittaker and Knight 1998), attraction Whittaker and Knight 1998), and an increase in energy expenditure (Belanger and Bedard 1990; Morton et al. 1989). The amount of disturbance tends to increase with decreased distance between visitors and birds (Burger 1986).

Hunting has occurred on refuge lands for many years with no discernible adverse impacts to resources or significant conflicts with other priority public uses. Hunting provides compatible wildlife-dependent recreational opportunities that can foster a better appreciation and more complete understanding of wildlife and habitat, which can translate into stronger support for wildlife conservation, the refuge, the Refuge System, and the Service.

**Migratory 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 will apply in the refuge waterfowl hunt. Hunting waterfowl 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. Hunting waterfowl 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). Injury and mortality are also anticipated effects of the hunting program. Disturbance to non-target birds and resident wildlife would likely occur from hunting and associated hunter activity but would be short-term and temporary. Lead shot was completely banned for the hunting of waterfowl (i.e., ducks, geese, swans, brant and coot) throughout the United States beginning in 1991.

The refuge mitigates these effects by carefully managing waterfowl hunting through controlled waterfowl hunt areas. Blinds must be temporary, portable, and removed each day. This reduces the days and duration of disturbance to each hunted wetland unit. Overall, the effects on migratory birds are expected to be minor.

**Big Game**

In 2019, 28,323 total deer were harvested in the State of Maine. This figure represents a 12.7 percent decrease from the previous year when 32,451 deer were harvested in the State (MDIFW 2019, MDIFW 2020). In 2021, the State estimated that there were approximately 290,000 deer in Maine. The deer population in Maine is trending upwards and, in some areas, deer are overpopulated. There are few predators of deer since the extirpation of the wolf (Canis sp.) and mountain lion (Cougar Puma concolor) and the reduction of bobcat (Lynx rufus) numbers. Hunting is the best source of population control (Clarke pers. comm. 2012) but occasional predation on fawns by fox and dogs is probable, and predation by coyote may be significant. Coyote packs have also been known to prey on adult deer. They were able to expand eastward from their historic range in the prairie regions of North America, in part because of the eradication or drastic reduction of gray (C. lupus) and red wolves (C. rufus) (their competitors) from the eastern states. Coyotes have been confirmed on the refuge.

Côté et al. report dramatic impacts on natural ecosystems as a result of deer foraging (2004). Selective foraging by deer affects the growth and survival of many herbaceous shrub and tree species. This, in turn, modifies patterns of relative abundance and vegetation dynamics. In forests, the effects of continued overbrowsing include reductions in species diversity and plant cover and a loss of understory in general with little regeneration of tree species since seedlings are eaten (Tilghman 1989). Small spring ephemeral and early summer forest herbs, which can lose all their leaves or flowers in a single bite and cannot regrow, are susceptible to deer browsing and have decreased numbers in overbrowsed forests (Augustine and McNaughton 1998, Augustine and DeCalesta 2003).

Plants deter browsing by arming themselves with morphological or physical weapons (e.g., thorns) and chemical weapons like phytochemicals that cause unpalatability to potential feeders. Many nonnatives, invasive plants have these defenses and therefore, are avoided by deer, thus increasing in size, abundance and area covered as other more palatable native plants are eaten. Additionally, certain native plants that are unpalatable are left unbrowsed and are proliferating, altering the composition of the habitats.

The total turkey harvest in Maine was 8,592 birds in 2019. Prior to the spring 2020 hunting season, the turkey population in Maine was estimated at 33,500 total birds. Maine's turkey population appears to be increasing, with higher population densities in the southern portion of the State. MDIFW annually evaluates hunter harvest data and biological data for these species to inform management decisions. In partnership with a third-party organization, a mentored spring turkey hunt for 10 to 20 participants will occur within the State's spring season to facilitate R3 opportunities. The mentored hunt locations will occur within select units opened to hunting at the Berwick-York Focus Area of Great Thicket NWR but may vary from year to year to accommodate fluctuations in the population. Given the low number of wild turkeys harvested in the State, we do not anticipate that opening hunting would have any significant effect on the population of wild turkey in this region of the State.

Lead ammunition can be used on the refuge for big game hunting as detailed in the Hunting Plan. The best available science indicates that lead ammunition may have negative impacts on wildlife and the environment (Golden et al. 2016; Hanley et al, 2022; Slabe et al, 2022). Lead that could enter the environment from proposed hunting activities would include fragments from ammunition that has left the body of harvested animals or left behind in discarded gut piles in the field. Given the estimated numbers of hunters and amount of take estimated using lead ammunition, the lead that would enter the environment is likely very small.

As non-lead requirements for ammunition take full effect after September 1,2026, lethal and sublethal health impacts to huntable wildlife species from discarded lead in the environment and the potential for exposure to lead that may result in adverse human health impacts decreases substantially and becomes negligible. Lead from previous hunting activities will still be present in the environment and may impact wild species; however, the impact is likely negligible given the likely low amount of lead currently present and available in the environment from hunting activities and minor adverse risk of bioaccumulation.

A transition to non-lead ammunition for all big game hunting will minimize the inadvertent exposure and subsequent lethal or sub-lethal impacts to bald and golden eagles, as well as other scavenging species. Eagles and other 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. Recent modeling has even indicated that lead poisoning suppresses population growth in eagles (Slabe et al. 2022).

**Other Wildlife and non-target species**

Hunting can affect both target and non-target species. These impacts include 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). Some disturbances to non-game bird species are expected since migrating and breeding activities occur from April to September. A limited mentored spring turkey hunt will overlap with this time period. In partnership with a third-party organization, a mentored spring turkey hunt for 10 to 20 participants will occur within the State's spring season to facilitate R3 opportunities. The mentored hunt locations will occur within select units opened to hunting at the Berwick-York Focus Area of Great Thicket NWR but may vary from year to year

to accommodate fluctuations in the population. Short-term disruptions to other species like bats, turtles, frogs, and some mammals are expected to be minor, due to periods of inactivity or hibernation.

As discussed above, lead shot and bullet fragments found in animal carcasses and gut piles are the most likely source of lead exposure for non-target species. Many hunters do not realize that the carcass or gut pile they leave in the field usually contains lead bullet fragments. 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 poisoning may weaken raptors by reducing their strength and coordination, leading to muscle and weight loss, reducing motor skill function, and making them lethargic, which may make them more susceptible to disease, vehicle strikes, or power line accidents and increases mortality rates by leaving them unable to hunt (Kramer and Redig 1997, O'Halloran et al. 1989, Kelly and Kelly 2005, Golden et al. 2016). The bioaccumulation of lead is a potential concern, but it does not likely present a significant issue on this refuge, as: (1) non-lead shot is currently required for all hunting other than deer and turkey; (2) the refuge strongly encourages use of non-lead alternatives for hunting big game (deer and turkey) for the next 3 years; (3) we would require the use of non-lead ammunition for all species beginning September 1, 2026; (4) we will educate hunters and the public to the potential adverse impacts of lead; and (5) the updated hunting activities are not likely to introduce substantially more lead into the environment over existing amounts with the current program. Some hunters will also choose non-lead methods of take such as archery.

The best available science indicates that lead ammunition may have negative impacts on wildlife and the environment (Golden et al. 2016; Hanley et al, 2022; Slabe et al, 2022). To move towards reduction and future elimination of this threat on the refuge, we require non-lead ammunition starting September 1, 2026. We will initially encourage the voluntary use of non-lead ammunition for the next three years. The transition to non-lead ammunition for all big game hunting will minimize the inadvertent exposure and subsequent lethal or sub-lethal impacts to bald and golden eagles, as well as other scavenging species. Eagles and other 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.

Overall, the Service anticipates no measurable negative impacts to resident non-hunted wildlife populations locally, regionally, or globally due to the activity of hunting, as the impact of the current program does not result in more than temporary flushing or relocation. However, continuing to permit the use of lead ammunition on refuge lands and waters could mean an increase of lead in the environment, even at small amounts as estimated, and continue to have potentially negative impacts to wildlife and aquatic species.

**Habitat and Vegetation**

Foot traffic can affect habitats by creating new pathways, trampling vegetation, and causing minor erosion. Only minor impacts to habitat and vegetation are anticipated. The physical effects on refuge wetland and upland vegetation are expected to be minimal during most of the hunting season (September to mid-March). Hunter density is also controlled through the refuge permit requirements. No vehicles are permitted on the refuge. Only minor effects to vegetation from

hunters and hunting dogs trampling are expected, since hunters are dispersed widely across the refuge, tree cutting is not allowed, and plants are senescing or dormant during this timeframe. Soil compaction should be minimal since no vehicles are allowed, and the ground may be partially or wholly frozen.

Hunting could indirectly create a positive effect on vegetation through controlling 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, Stromayer and Warren 1997, Côté et al. 2004, White 2012). Maintaining white-tailed deer hunting will help to maintain habitat in its current form, prevent habitat degradation due to overbrowsing, and promote successful natural regeneration and a more sustainable plant community.

**Threatened and Endangered Species**
Great Thicket NWR uses ECOS and IPaC to identify threatened and endangered species, including for purposes of the Intra-Service Section 7 Biological Evaluation (Appendix D). The following species were identified:

| Species/Critical Habitat | Status |
|---|---|
| Northern long-eared bat | T |
| Roseate tern | E |
| Piping plover | T |
| Red knot | T |
| Monarch butterfly | C |

*Status: E= Endangered, T=Threatened, T(s/a)=Threatened by Similarity of Appearance, PE=Proposed Endangered, PT= Proposed Threatened, CH= Critical Habitat, PCH= Proposed Critical Habitat, C=Candidate Species.

Northern long-eared bat
Given the small number of turkey hunt participants and the fact that proposed turkey hunt will occur in a location that is very unlikely to overlap with the presence of the bats, any potential disturbance effects from the mentored turkey hunt are extremely unlikely to occur and therefore considered discountable.

For the other hunting opportunities, noise from firearms could disturb roosting bats, but it is likely that the bats would remain in the tree during daylight hours. Such disturbances are temporary and last only for the duration of the noise, not fundamentally unlike other temporary disturbances that bats may naturally experience without long-term effects, and therefore any potential effects are expected to be insignificant. Other possible disturbances include hunters climbing and placing portable tree stands on trees. However, hunters typically select live trees for safety reasons, while bats are most often in dead or dying trees with large slabs of peeling bark. Further, hunting activities would not result in any roost tree destruction as no tree cutting or other habitat alteration is permitted on the refuge. Overall, any disturbance to NLEB would be very low, since roosting, feeding, and pup rearing activities occur from April to August, outside of the primary refuge hunting seasons (September to mid-March).

The potential for lead impacts to bats through bioaccumulation is discountable due to NLEB diets and foraging habits. Considering the chain of events that are necessary for exposure and the small amount of lead that would contribute to lead concentrations in refuge soils, it seems likely that bats that occur on the refuge will not consume lead derived from ammunition fired by hunters on the refuge. Because the potential for overlap with bats during the spring turkey hunt is very unlikely to occur; because the potential for overlap with bats during the other hunting activities (September to mid-March) is unlikely to occur, and even if there is overlap, the potential effects would be insignificant; and because the potential for lead impacts are discountable, the proposed hunting activities are not likely to adversely affect the NLEB.

Piping plover and roseate tern

Piping plover's nest on sandy beaches and dunes from April through July. Adults, chicks, and fledglings use refuge beaches and sandflats throughout the season, typically through late August. The nesting and staging beaches are not open to hunting; neither the birds nor their habitat would be adversely impacted by hunting on the refuge. Therefore, any potential impacts from proposed hunting activities are expected to be discountable because they are extremely unlikely to occur. In the unlikely event that the species overlap with hunting activities, disturbance such as noise from firearms could disturb the shorebirds, but such disturbances are temporary and last only for the duration of the noise, not fundamentally unlike other temporary disturbances that shorebirds may naturally experience without long-term effects. Therefore, any potential disturbance is expected to be insignificant. Because hunting—including the use of lead ammunition until the non-lead requirement takes effect September 1, 2026—is highly unlikely to overlap with piping plovers or roseate terns in time or space, these species are not likely to be adversely affected by the proposed hunting activities.

Red knot

Although the majority of migratory stopovers for red knot occur south of Maine, regular stopover sites do occur within the State. Given that the hunting activities on the refuge are not likely to overlap with the area where the small number of red knots known to occur on the refuge, any potential impacts from disturbance are expected to be discountable because they are extremely unlikely to occur. Like the shorebirds mentioned above, in the unlikely event that the species overlap with hunting activities, disturbances such as noise from firearms could disturb the red knot, but such disturbances are temporary and last only for the duration of the noise, not fundamentally unlike other temporary disturbances that red knots may naturally experience without long-term effects. Therefore, any potential disturbance would be considered insignificant.

Monarch butterfly

The refuge is used by monarch butterflies from spring throughout the fall. Monarchs are common in old field habitats during the breeding season and common during fall migration in salt marsh habitats (nectaring on seaside goldenrod). While hunters are walking through habitat used by monarchs, there could be some impacts including flushing while resting or feeding. Noise disturbance from discharging of a firearm while hunting may startle the species resulting in change in flight pattern or a startle response in caterpillars, but this impact will not result in long-term negative impacts and is considered discountable as this type of noise is not frequent

enough to result in habituation to noise that could cause butterfly to not respond to natural threats like parasitism (Taylor and Yack, 2019).

The potential for lead impacts to monarchs is discountable due to their diets. Given that hunters are not likely to overlap with areas where monarch and their plants are known to occur; that any potential disturbance from noise is expected to be insignificant; and that bioaccumulation through plants into caterpillars or butterflies is discountable, the proposed activities are not likely to jeopardize the monarch butterfly.

All species

Animals can be poisoned by lead in a variety of ways including ingestion of bullet fragments and shot pellets left in animal carcasses and spent ammunition left in the field (Haig et al. 2014). The use of non-lead ammunition will initially be voluntary, and we would require non-lead ammunition for all activities starting September 1, 2026 (after a 3-year transition period). This transition period will ensure continuity of visitor opportunities as hunters understand the changes and become more familiar with the availability and use of non-lead alternatives. We will educate hunters about the impacts of lead and strongly encourage non-lead ammunition alternatives for the next 3 years.

A more detailed discussion of threatened and endangered species, and the potential impacts of the proposed hunting activities to those listed species, can be found in the Intra-Service Section 7 Biological Evaluation (Appendix D).

**Visitor Uses and Experiences**

Hunting may result in conflicts between user groups on the refuge, especially in shared spaces like trails and parking areas. For the duration of the hunt period, trails and public use areas will be surrounded by safety zones to ensure visitor safety. Signage will go up at refuge kiosks and information will be placed on the refuge website to inform the public of the hunt. If unforeseen conflicts arise, the refuge manager may either further restrict hunting or limit other public uses during the hunting season to ensure public safety and provide a climate for productive coexistence of visitor uses.

There is some possibility of negative economic impacts for hunters who must comply with the proposed non-lead requirements beginning September 1, 2026. While non-lead ammunition has become essentially equivalent in price to lead ammunition, certain types of non-lead ammunition can cost more than certain types of lead ammunition. However, the price of nonlead ammunition is the same or less than that of premium lead ammunition. In order to prevent the negative impacts of this switch, the refuge has begun and will continue specific outreach about the requirement to these groups and has put in place measures to mitigate the economic input beyond non-lead implementation, effective in 2026, which affords hunters time to gradually transition their supplies of ammunition. The Service will continue educating hunters on the use of non-lead ammunition during the transition period, provide links to resources on companies that produce non-lead ammunition for purchase, and work with partner organizations on non-lead ammunition issues.

*Long-term impacts*

Cumulative impacts on the environment result from incremental impacts of a proposed action when these are added to other past, present, and reasonably foreseeable future actions. While cumulative impacts may result from individually minor actions, they may, viewed as a whole, become substantial over time.

The potential for adverse impacts to human health due to the inadvertent consumption of lead in individual animals that are successfully harvested with lead ammunition would still exist during the next 3 years; however, it will likely be reduced as some hunters adopt early use of non-lead ammunition. As non-lead requirements for ammunition take full effect on September 1, 2026, lethal and sublethal impacts to huntable wildlife species from discarded lead in the environment and the potential for adverse human health impacts decreases substantially and becomes negligible. Lead from previous hunting activities will still be present in the environment and may impact wild species; however, the impact is likely negligible given the likely low amount of lead currently present and availability in the environment from hunting activities and minor adverse risk of bioaccumulation.

The Service believes that hunting on the refuge will not have a significant impact on local, regional, or Atlantic flyway migratory bird populations because the percentage likely to be taken on the refuges, though possibly additive to existing hunting takes, would be a tiny fraction of the estimated populations. In addition, overall populations will continue to be monitored and future harvests will be adjusted as needed under the existing flyway and State regulatory processes.

Economic impacts to hunters due to required use of non-lead ammunition will be mitigated by a transition approach and outreach programs. Additional hunting would not add more than slightly to the cumulative impacts stemming from hunting at the local, regional, or Atlantic flyway levels.

Public Review and Comment

This Compatibility Determination (CD) is part of the Rachel Carson NWR and Great Thicket NWR Berwick-York Focus Area Hunting Plan and the accompanying NEPA compliance. The plan was coordinated with all interested and/or affected parties, including State partners.

With the 2022 EA package, including the EA, Hunting Plan, and Compatibility Determinations, the public had the opportunity to review and comment on each of the draft documents from May 3 through August 8, 2022, a total of 97 days. We distributed a press release to news organizations and alerted visitors to the plan's availability on the refuge website. We also hosted a 3-hour Open House on July 25, 2022, to answer questions and provide information to the public. A total of nine comment letters were submitted from the public that offered input to the refuge on the 2022 EA. A summary of the comments and our responses can be found in Appendix E of the 2022 EA.

This year the refuge plans to again reach out and engage with all five of the federally recognized Tribal Nations in Maine (collectively, the Wabanaki) to discuss the potential for a special hunt and any other issues that are of interest to the Tribes.

The public will be notified of the availability of the draft Hunting Plan, EA, and CDs with no less than a 60-day review and comment period. We will inform the public through local venues, the refuge website, and social media.

Determination

Is the use compatible?
Yes

Stipulations Necessary to Ensure Compatibility

To ensure compatibility with refuge purpose(s) and Refuge System mission, hunting can occur at Great Thicket NWR Berwick-York Focus Area 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 hunting experience for participants. This hunting program will be monitored and potentially modified or eliminated if any the program's components are found not compatible.

The following stipulations are necessary to ensure compatibility:

1. The hunter must retrieve all species harvested on the refuge.

2. Hunters are encouraged to use non-lead ammunition for deer and turkey hunting, and required to use non-lead ammunition for all other hunting on the refuge. The refuge would require non-lead ammunition for all species beginning September 1, 2026 (after a 3-year transition period).

3. We allow hunting with shotgun and archery only. We prohibit rifles and muzzleloader firearms for hunting.

4. During the State firearm deer season, we only allow hunting of fox and coyote with archery or shotgun as incidental take with a refuge big game permit.

5. We only allow temporary blinds and stands, which must be removed at the end of each day's hunt. This will ensure equitable opportunities for all hunters due to the limited size of the refuge.

6. We allow take of migratory birds and grouse by falconry on the refuge during State seasons.

7. Hunters must sign and carry the refuge hunt information sheet while hunting.

8. Access to the refuge for hunting any species will be permitted from 1 hour before legal hunting hours through 1 hour after legal hunting hours. We do not allow night hunting of coyote.

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 would not conflict with any of the other priority public uses or adversely affect biological resources. Therefore, through this planning process, we have determined that hunting on Great Thicket NWR Berwick-York Focus Area, 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 of Determination
Refuge Manager Signature and Date

Signature of Concurrence
Assistant Regional Director Signature and Date

Mandatory Reevaluation Date
Delete this text and insert year for reevaluation

Literature Cited

This determination is based upon the science referenced in the environmental assessment associated with the proposed action described in this analysis. Where there is not an overlap in literature cited, specific references have been included.


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**Table of Contents**

# Rachel Carson National Wildlife Refuge
# and
# Great Thicket National Wildlife Refuge (Berwick-York Focus Area)
# Hunting 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 (NWRSAA) of 1966, as amended by the Refuge System Improvement Act of 1997, Refuge Recreation Act of 1962, Endangered Species Act of 1973 (16 U.S.C. 1534) as amended, Fish and Wildlife Act of 1956 (16 U.S.C. 742a-742j) as amended, and selected portions of the Code of Federal Regulations and Fish and Wildlife Service Manual.

On December 16, 1966, Congress established the Coastal Maine National Wildlife Refuge under the authority of the Migratory Bird Conservation Act for *"*use as an inviolate sanctuary, or for any other management purpose, for migratory birds" (16 U.S.C. 715d, Migratory Bird Conservation Act). In a formal dedication ceremony on June 27, 1970, the refuge was renamed in honor of scientist and author Rachel Carson, who spent much of her life along the Maine Coast.

Rachel Carson National Wildlife Refuge (NWR, refuge) was established to preserve migratory bird habitat and waterfowl migration routes associated with southern Maine's coastal estuaries. In the mid-1800s, the estuarine habitats teemed with wildlife. The fishing industry supported many people, and commercial hunters made their living from the wildlife that frequented the marshes. Spurred by the arrival of the railroad in 1842, recreational use of the Maine coast increased in the 19th and 20th centuries. Thousands of visitors came by train, trolley, and later automobile. Seasonal and vacation homes built on the edge of the salt marsh quickly followed. By the 1950s and early 1960s, land was at a premium for prospective landowners, as well as by individuals and groups interested in protecting natural resources.

Great Thicket NWR was established in 2016 to help stem the decline of shrubland-dependent wildlife species. The establishing authorities for Great Thicket NWR include the Endangered Species Act of 1973 (16 U.S.C. 1534), as amended and Fish and Wildlife Act of 1956 (16 U.S.C. 742a-742j), as amended. The primary purpose of Great Thicket NWR, located in York County, Maine, is to strategically acquire and improve habitat to help achieve overlapping habitat and population goals for declining shrubland wildlife species. The Service hopes to conserve 15,000 acres in 10 focus areas across 6 states through sales and donations of land from willing sellers or donors. There are two refuge acquisition focus areas in Maine, the Berwick-York focus area and the Cape Elizabeth-Scarborough focus area.

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

*"... 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.

Rachel Carson NWR consists of 11 refuge divisions protecting approximately 5,690 acres of coastal wetlands and upland habitat. All divisions lie along 50 miles of the southern Maine coastline, encompassing the coastal communities of Kittery, York, Ogunquit, Wells, Kennebunk, Kennebunkport, Biddeford, Saco, Old Orchard Beach, Scarborough, and Cape Elizabeth, within York and Cumberland Counties.

The refuge has been open to big game, migratory bird, and upland game bird hunting since 1980. The most recent hunt plan was completed in 2012. We propose the following changes as part of an update to the existing hunting plan:

- Open a mentored spring turkey hunt on Rachel Carson NWR and Great Thicket NWR Berwick-York focus area.

- Open recently acquired parcels of Great Thicket NWR Berwick-York focus area to big game, migratory bird, and ruffed grouse hunting.

- Close bobwhite quail, snipe, and pheasant hunting on Rachel Carson NWR. These species do not occur on the refuge and are not likely to occur on the refuge in the future.

## II. Statement of Objectives

The objectives for the hunting program at Rachel Carson NWR and Great Thicket NWR Berwick-York Focus Area are to provide the public with high quality wildlife-dependent recreational opportunities that align with refuge purposes and management objectives. The Service has long recognized that hunting is an integral part of a comprehensive wildlife management program and that positive benefits can be attributed to a well-managed hunt. As such, hunting is considered one of the six priority public uses of the refuge system. Hunting is recognized as an acceptable, traditional form of wildlife-dependent recreation that can be and is sometimes used as a tool to manage wildlife populations.

The objectives of the hunting program on Rachel Carson NWR and Great Thicket NWR Berwick-York Focus Area are to:

1. Provide the public with a quality recreational experience on refuge lands and waters and increase opportunities and access for consumptive and non-consumptive users of the refuge. The Refuge System Improvement Act of 1997 identified hunting, where compatible, as one of the six priority public uses on refuges;

2. Design a hunting program that is administratively efficient and manageable with existing staffing levels and in alignment with Maine Department of Inland Fisheries and Wildlife (MDIFW) regulations when possible;

3. Implement a hunting program that is safe for all refuge users; and

4. Design a hunting program that aligns with refuge habitat management objectives.

Hunting is consistent with the refuges' 2007 Comprehensive Conservation Plan's (CCP) larger goal to "increase appreciation and stewardship of coastal Maine wildlife and their habitats by providing positive wildlife-dependent experiences for refuge visitors." This goal includes a specific objective (Goal 5, Objective 5.3) to "provide high quality hunting opportunities that minimize conflicts with neighbors and refuge programs and ensure that at least 90 percent of hunters have a positive experience."

## III. Description of Hunting Program

### A. Areas to be Opened to Hunting

*Big Game Hunting*
Big game hunting for white-tailed deer, turkey, fox, and coyote will be available in designated areas of Rachel Carson NWR totaling 4,089 acres of the following nine divisions: Brave Boat Harbor, York River, Lower Wells, Upper Wells, Mousam River, Goose Rocks, Little River, Goosefare Brook, Spurwink River. Big game hunting will also be open on Great Thicket NWR's Berwick-York totaling 47.95 acres with a target of 2,000 acres.

*Migratory Bird*
Migratory game bird hunting for duck, sea duck, dark geese, light geese, woodcock, and coot will be available at Rachel Carson NWR on the following seven divisions: Brave Boat Harbor, York River, Lower Wells, Upper Wells, Mousam River, Goose Rocks, and Spurwink River. Migratory bird hunting will also be open on Great Thicket NWR's Berwick-York Focus Area.

*Upland Game Bird*
Upland game bird hunting for grouse will be available in designated areas of Rachel Carson NWR totaling 4,089 acres of the following eight divisions: Brave Boat Harbor, York River, Lower Wells, Upper Wells, Mousam River, Goose Rocks, Goosefare Brook, and Spurwink River. Upland game hunting for grouse will also be open on Great Thicket NWR's Berwick-York Focus Area. Refer to Section VII – Maps to view the hunting areas.

### B. Species to be Taken, Hunting Periods, Hunting Access

*Big Game*
White-tailed deer and turkey hunting will be open on designated units of Rachel Carson and Great Thicket NWR Berwick-York Focus Area in accordance with State seasons and bag limits. Fox and coyote will be open concurrently with deer only and would be hunted incidentally while deer hunting. Spring turkey hunting will only be allowed as an organized mentored hunt. Legal shooting hours will be in accordance with State regulations for each species, except coyote. We do not allow night hunting of coyote. Spring turkey hunting opportunities on Rachel Carson NWR and Great Thicket NWR Berwick-York focus area will include a mentored quota hunt co-managed with a third party to facilitate "recruitment, retention, and reactivation" (R3) hunting opportunities. We anticipate that this opportunity will be allowed for 10 to 20 participants.

*Migratory Game Birds*
Migratory game bird species, including duck, sea duck, dark geese, light geese, coot, and woodcock will open for hunting on designated sections of Rachel Carson and Great Thicket NWR Berwick-York Focus Area in accordance with State seasons. Hunting waterfowl will conform to refuge-specific regulations, which include restrictions on hours of the day and days of the week. Sea ducks may only be hunted within the refuge when their open season coincides with the regular waterfowl season. Hunting hours will be in accordance with State

regulations for all species.

*Upland Game Bird*
Upland game bird hunting for grouse will be open for hunting on designated units of Rachel Carson and Great Thicket NWR Berwick-York Focus Area. Season dates and shooting hours will be in accordance with State regulations.

Access to the refuge will be permitted from 1 hour before legal hunting hours through 1 hour after legal hunting hours. Hunters may access the divisions from public pull-offs and roads across the refuge.

**C. Hunter Permit Requirements (if applicable)**

Hunters will be required to follow all State and Federal regulations for licenses and permits, including obtaining a refuge-specific permit and a Federal Duck Stamp if hunting migratory birds. See "Hunter Permit Application and/or Registration Procedures" below.

Hunters will be required to carry a State license, refuge-specific permit for each species, and a Federal Duck Stamp if hunting migratory birds. Hunt packets are available on the refuges' website and https://www.recaccess.com/. Permits can be purchased online through RecAccess at the cost of $10.00 for big game, $10.00 for migratory bird, $5.00 for upland game bird, and $5.00 for falconry. Permits for youth and seniors are available at a discount. Great Thicket Berwick-York Focus Area hunters are required to possess a State license, a signed information sheet, and a Federal Duck Stamp if hunting migratory birds. A separate permit is not required for the Focus Area.

**D. Consultation and Coordination with the State**

The refuges reviewed the operations and regulations for neighboring State wildlife management areas and other refuges in Maine to find consistency where possible. Refuge staff worked with the local State biologist and conservation officers early in the development of the original plan and asked for review by the State Regional Office to help adjust the plan to align where possible with State management goals. The refuge met with senior leadership of MDIFW in August 2021 to discuss the Hunting Plan. The refuge has continued to consult and coordinate on specific aspects of the Hunting Plan, and MDIFW is in agreement with the refuges' plan as it will help meet State objectives.

Rachel Carson NWR and MDIFW will continue to work together to ensure safe and enjoyable recreational hunting opportunities. Hunter participation and harvest data are collected by the State, and refuge law enforcement officers and MDIFW work together to patrol.

**E. Law Enforcement**

Enforcement of refuge violations normally associated with management of a national wildlife refuge is the responsibility of commissioned Federal Wildlife Officers. Other officers,

Special Agents, State game wardens, and the local Sheriff's Department may assist Rachel Carson NWR and the Great Thicket NWR Berwick-York Focus Area. The following methods will be used to control and enforce hunting regulations:

- The refuge will provide a packet including a map that delineates hunt areas on the refuge and hunters are required to carry a State license, refuge-specific permit, and a Federal Duck Stamp if hunting migratory birds. Great Thicket Berwick-York Focus Area hunters are required to possess a State license, a signed refuge hunt information sheet, and a Federal Duck Stamp if hunting migratory birds.

- Refuge law enforcement officers will randomly check hunters and anglers for compliance with Federal and State Laws, as well as refuge-specific regulations pertinent to hunting

- Information will be made available at the Rachel Carson NWR visitor center and website.

### F. Funding and Staffing Requirements

Annual hunt administration costs for Rachel Carson NWR total approximately $10,000. Refuge funds are used to conduct hunts for big game, upland game bird, and migratory bird seasons. This includes staff time for planning and annual program preparation, outreach and public relations, permit administration, enforcement, posting, roads, and parking lot maintenance. Other operating costs include signs, leaflets, equipment, and vehicle fuel and maintenance. Funding for the hunt programs is not specifically allocated but will be taken from station base funds on an annual basis. It is anticipated that funding would continue to be sufficient to continue the hunting program at Rachel Carson NWR and the Great Thicket NWR Berwick-York Focus Area in the future.

**Table 1. Estimated Costs for Hunting at Rachel Carson NWR and Great Thicket NWR Berwick-York Focus Area**

| Identifier | Costs |
|---|---|
| Hunt Program Staff | $7,000 |
| Hunt management, monitoring resource impacts | $1,500 |
| Parking area maintenance, signs, posts | $1,500 |
| **Total Annual Cost** | **$10,000** |

## IV. Conduct of the Hunting Program

### A. Hunter Permit Application, Selection, and/or Registration Procedures (if applicable)

*Big Game, Migratory Bird, Upland Game Bird*

All persons hunting big game, migratory bird, and upland game birds on Rachel Carson NWR refuge must hold a valid State hunting license and a refuge hunting permit for each species they are hunting. All persons hunting migratory birds on the refuge must also hold a valid Federal Migratory Bird Conservation Stamp. Hunters participating in the use of falconry for hunting waterfowl and grouse must follow additional State regulations and requirements.

Great Thicket Berwick-York Focus Area hunters are required to possess a State license, a signed refuge hunt information sheet, and a Federal Duck Stamp if hunting migratory birds.

*Mentored Spring Turkey Hunt*
In partnership with a third-party organization, a mentored spring turkey hunt for 10 to 20 participants will occur within the State's spring season to assist the State with hunter recruitment and retention efforts (commonly referred to as R3). The mentored hunt locations will occur within select units opened to hunting at Rachel Carson NWR and the Berwick-York Focus Area of Great Thicket NWR but may vary from year to year to accommodate fluctuations in the population.

**B. Refuge-Specific Hunting Regulations**

To ensure compatibility with refuge purposes and the mission of the Refuge System, hunting on Rachel Carson NWR and Great Thicket NWR Berwick-York Focus Area must be conducted in accordance with State and Federal regulations as supplemented by refuge-specific regulations (50 CFR 32.38) and information sheets/packets. Stipulations are detailed in the Compatibility Determinations (CD) (Appendix A, Appendix B). In summary, the following hunting procedures apply at Rachel Carson NWR and Great Thicket NWR Berwick-York Focus Area:

- We allow the use of dogs for hunting consistent with State regulations except for dog training.

- We only allow temporary blinds and stands, which you must remove at the end of each day's hunt. This will ensure equitable opportunities for all hunters due to the limited size of the refuge.

- We allow take of migratory birds and grouse by falconry on the refuge during State seasons.

- We allow hunting with shotgun and archery only. We prohibit rifles and muzzleloader firearms for hunting.

- During the State firearm deer season, we only allow hunting of fox and coyote with archery or shotgun as incidental take with a refuge big game permit.

- We allow access for hunting from 1 hour before legal hunting hours until 1 hour after legal hunting hours.

- To protect waterfowl and other migratory birds from potential lead poisoning, non-lead ammunition is required for firearms hunting of all species except deer and turkey. The refuge strongly encourages big game hunters to voluntarily use non-lead ammunition while hunting on the refuge. The refuge will require non-lead ammunition for all species starting September 1, 2026 (after a 3-year transition period).

- The hunter must retrieve all species harvested on the refuge.

The following hunt procedures apply specifically to Rachel Carson NWR only:

- Prior to entering designated refuge hunting areas, you must obtain a refuge permit (and sign and always carry the permit).

- We open designated youth hunting areas to hunters of age 15 and younger who possess and carry a refuge hunting permit. Youth hunters must be accompanied by an adult age 18 or older. The accompanying adult must possess and carry a refuge hunting permit and may also hunt.

- We allow only archery on those areas of the Little River division open to hunting.

The following hunt procedures apply specifically to Great Thicket NWR:

- Prior to entering designated refuge hunting areas, you must obtain a refuge hunt information sheet (and sign and always carry the information sheet).

- We will open designated youth hunting areas to hunters of age 15 and younger who possess and carry a signed refuge hunt information sheet. Youth hunters must be accompanied by an adult age 18 or older. The accompanying adult must possess and carry a signed refuge hunt information sheet and may also hunt.

**C. Relevant State Regulations**

The refuge conducts its hunting program within the framework of State and Federal regulations. Hunting regulations at the refuge are at least as restrictive as the State of Maine 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. Relevant refuge-specific regulations are annually listed in 50 CFR 32.38 and summarized above in Section IV, subsection B.

**D. Other Refuge Rules and Regulations for Hunting**

The refuge maintains other refuge-specific procedures for hunting which are discussed in the hunt packet/information sheet. Hunters obtain, read, and sign these packets prior to hunting at the refuge. Additional procedures or regulations pertaining to hunting on the refuge include:

- Only portable blinds are permitted. Blinds, boats, and decoys must be removed at the end of each day's hunt.

- Sea ducks may only be hunted within the refuge when their open season coincides with the regular waterfowl season.

- The refuge will be open on the special 1-day youth season as designated by the State to youths with valid refuge permits.

- The use of nails, wire, screws, or bolts to attach a stand to a tree or hunting from a tree into which a metal object has been driven to support a hunter is prohibited.

- Vegetation disturbance (including tree limbs) must be minimal.

## V. Public Engagement

### A. Outreach for Announcing and Publicizing the Hunting Program

The refuges maintain a mailing list for news release purposes, which includes local newspapers, radio, and websites. Special announcements and articles may be released in conjunction with hunting seasons. In addition, information about the hunt will be available at Rachel Carson NWR's visitor center and the refuge's website. The refuge will also address public comments received during a 60-day comment period and consider them for incorporation into the final Hunting Plan and Compatibility Determinations.

### B. Anticipated Public Reaction to the Hunting Program

With the 2022 EA package, including the EA, Hunting Plan, and Compatibility Determinations, the public had the opportunity to review and comment on each of the draft documents from May 3 through August 8, 2022, a total of 97 days. We distributed a press release to news organizations and alerted visitors to the plan's availability on the refuge website. We also hosted a 3-hour Open House on July 25 to answer questions and provide information to the public. A total of nine comment letters were submitted from the public that offered input to the refuge on the 2022 EA. A summary of the comments and our responses can be found in Appendix E of the 2022 EA.

Since hunting has already been occurring on Rachel Carson NWR for more than 40 years, little additional negative public reaction is expected. Over the years, the refuge has received comments and requests from adjacent landowners and members of the public to eliminate hunting. Hunting is an important economic and recreational use of Maine's natural resources.

The refuge anticipates some additional public concern about obtaining non-lead ammunition given the 3-year timeframe for phasing out of lead use on the refuge. It is for this reason that the requirement to use non-lead ammunition will not be put into place until September 1,

2026, providing hunters time to transition their supplies.

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

General hunting information, fact sheets, maps, application forms, and other information regarding hunting and other wildlife-dependent public uses can be obtained in person or by mail at the Rachel Carson NWR headquarters at 321 Port Road, Wells, Maine 04090 or by calling (207) 646-9226. Dates, forms, hunting unit directions, maps, applications, and permit requirements about the hunt will be available on the station website at: https://www.fws.gov/refuge/rachel_carson/ and at the refuge Visitor Center. Permits can be purchased online at: https://www.recaccess.com/.

## VI. Compatibility Determination

Hunting and all associated program activities proposed in this plan are compatible with the purposes of the refuge. See attached CDs.