Chincoteague National Wildlife Refuge and Wallops Island National Wildlife Refuge Hunting Package

June 2023

U.S. Fish and Wildlife Service

Chincoteague National Wildlife Refuge
8231 Beach Road
Chincoteague, VA 23336

Submitted By:
Project Leader

_____ _____
Signature Date

Concurrence:
Refuge Supervisor

_____ _____
Signature Date

Approved:
Regional Chief (Acting),
National Wildlife Refuge System

_____ _____
Signature Date

Chincoteague National Wildlife Refuge and Wallops Island National Wildlife Refuge Hunting Plan Supplemental Environmental Assessment

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 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 Chincoteague National Wildlife Refuge (NWR, refuge) and Wallops Island NWR 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.

Purpose and Need

The purpose of the proposed non-lead ammunition requirement is to provide compatible wildlife-dependent recreational hunting opportunities on Chincoteague and Wallops Island NWRs. The stated objectives of a hunting program on the refuges are to:

- provide the public with high quality wildlife-dependent recreational opportunities that align with refuge purposes and management objectives;
- design a program consistent with the refuges' 2015 Comprehensive Conservation Plan (CCP) to provide the opportunity for "people of all ages and abilities [to] develop a stewardship ethic while enjoying their refuge experience and increasing their knowledge of the Service, Refuge System, and the refuge;" and
- "increase level of opportunity (e.g., expansion of hunted species) in the hunt program, such as the fall/winter light goose hunt, through expansion of hunted species, trapping, and new hunting programs" (CCP Goal 6, Objective 6.1) to help provide safe and high-quality big game, small game, and waterfowl hunting opportunities for the public;

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 refuges are especially susceptible to lead exposure from ammunition. Additionally, even though the current level of lead available in the environment on the refuge 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 protect against the accumulation of lead ammunition 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

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 No Action Alternative (Alternative A) would continue the refuges' current hunting program. Hunting at Chincoteague and Wallops Island NWRs will be permitted from September 16 to March 14. Hunting hours and season dates within this time period will be in accordance with State regulations and may include additional refuge-specific limitations. No-hunting zones would include beach areas, the over wash zone on the Assateague Island Unit, the southwest portion of Wildcat Marsh, and a 100-foot buffer area around any building, road or trail. Areas that would require a buffer area include the bunkhouse, visitor center, maintenance buildings, the Wildlife loop trail, headquarters office, lighthouse, Service Road, and the Marsh, Swan Cove, and the Woodland trails. Lead ammunition could continue to be used under a No Action Alternative for hunting big game, upland game, woodcock, crow, and dove.

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 use of lead ammunition may only be used for hunting white-tailed deer, sika, upland game, and turkey in the designated Northern Hunt Zone (3,869 acres) during the appropriate season (usually November to January), or on Wallops Island NWR. Additionally, lead ammunition would be allowed for woodcock, crow, and dove in designated areas. For the next three years, we will strongly encourage the voluntary use of non-lead ammunition for hunting the species named above until the non-lead ammunition requirement begins on September 1, 2026. We think the three-year timeline is necessary to educate hunters and ease the transition to non-lead alternatives. This transition period will provide hunters time to gradually transition their supplies of ammunition to non-lead alternatives, lessening the impact of the change. The refuge staff will provide information to assist in a valuable transition period that benefits fish, wildlife, and people.

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 ammunition, are considered in this Supplemental EA.

Due to the continued use of lead over the next 3 years (prior to September 1, 2026) for deer, sika, turkey, upland game, woodcock, crow, and dove, 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 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. A total of 11 comment letters were

submitted from the public that offered input to the refuge for 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. Refuge staff will continue to coordinate with federally recognized Tribal governments in areas of mutual interest, including hunting opportunities. Seven tribes will be contacted once the draft hunting plan is complete and will include distribution of the draft for review and further coordination if needed. 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.

Table of Contents

Supplemental Environmental Assessment
Chincoteague and Wallops Island National Wildlife Refuges

This Supplemental Environmental Assessment (EA) evaluates 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 EA for the Chincoteague National Wildlife Refuge (NWR, refuge) and Wallops Island NWR 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 Service is proposing to eliminate use of lead ammunition for all hunting, including for white-tailed deer, sika and turkey, on September 1, 2026 in accordance with the refuges' 2015 Comprehensive Conservation Plan (CCP). Until then, the use of lead ammunition may only be used for hunting white-tailed deer, sika, upland game, and turkey in the designated Northern Hunt Zone (3,869 acres) during the appropriate season (usually November to January), or on Wallops Island NWR. Additionally, lead ammunition would be allowed for woodcock, crow, and dove in designated areas. For the next three years, we will strongly encourage the voluntary use of non-lead ammunition for hunting the species named above, and would be required after a 3-year transition period is implemented, starting September 1, 2026.

This Supplemental EA analyzes the environmental impacts associated with the proposed non-lead ammunition 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, U.S. Fish and Wildlife Service (FWS, 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 FWS Manual.

Chincoteague NWR was established pursuant to the Migratory Bird Conservation Act (16 U.S.C. § 715d), Refuge Recreation Act (16 U.S.C. § 460k-2, 16 U.S.C. § 460k-460k-4, as amended), Emergency Wetlands Resources Act of 1986 (16 U.S.C. § 3901(b)), Fish and Wildlife Act of 1956 (16 U.S.C. § 742f(b)(1)), and the Consolidated Farm and Rural Development Act (7 U.S.C. § 2002).

The primary purposes of Chincoteague NWR are:

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

- "... (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ..." 16 U.S.C. § 460k- "... the Secretary ... may accept and use ... real ... property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors ..." 16 U.S.C. § 460k-2 (Refuge Recreation Act (16 U.S.C. § 460k-460k-4), as amended);

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

- "... the development, advancement, management, conservation, and protection of fish and wildlife resources ..." 16 U.S.C. § 742f(a)(4) "... for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude ..." 16 U.S.C. § 742f(b)(1) (Fish and Wildlife Act of 1956); and

- "... conservation purposes ..." 7 U.S.C. § 2002 (Consolidated Farm and Rural Development Act).

Wallops Island NWR was created on July 10, 1975, when 373 acres of land were physically transferred to the FWS from the National Aeronautics and Space Administration (NASA) Wallops Flight Center.

Formally, Wallops Island NWR was established for:

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

- "... particular value in carrying out the national migratory bird management program" 16 U.S.C. § 667b (Fish and Wildlife Coordination Act).

The mission of the Refuge System, as outlined by the NWRSAA, as amended by the National Wildlife 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.

Purpose and Need for the Action

The purpose of the proposed non-lead ammunition requirement is to provide compatible wildlife-dependent recreational hunting opportunities on Chincoteague and Wallops Island NWRs. The stated objectives of a hunting program on the refuges are to:

- provide the public with high quality wildlife-dependent recreational opportunities that align with refuge purposes and management objectives;

- design a program consistent with the refuges' 2015 Comprehensive Conservation Plan (CCP) to provide the opportunity for "people of all ages and abilities [to] develop a stewardship ethic while enjoying their refuge experience and increasing their knowledge of the Service, Refuge System, and the refuge;" and

- "increase level of opportunity (e.g., expansion of hunted species) in the hunt program, such as the fall/winter light goose hunt, through expansion of hunted species, trapping, and new hunting programs" (CCP Goal 6, Objective 6.1) to help provide safe and high-quality big game, small game, and waterfowl hunting opportunities for the public.

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 effectively manage wildlife population levels.

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 ammunition for 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 protect against the accumulation of lead ammunition on the refuges beyond 2026. This requirement is also needed because, by addressing a potential threat to wildlife health, it ensures that 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. This Supplemental EA serves as the NEPA document which analyzes the impacts on environmental, cultural, and historical resources of the proposed action; thus, we address the potential impacts associated with lead ammunition from hunting activities, as described in the Hunting Plan and Hunting Compatibility Determinations. There are no proposed changes to the existing fishing program, so the fishing program is identical under both alternatives. Therefore, this Supplemental EA considers only the two alternatives for the hunting program. If we propose changes or expand fishing opportunities in the future, we will analyze any potential impacts associated with those proposed actions, including the effects of using lead tackle from fishing activities in a future EA, Fishing Plan, and Fishing Compatibility Determination.

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 compatibility, so that we can determine whether those opportunities can remain open on these refuges.

Alternatives, including the Proposed Action

Alternative A – No Action Alternative

The No Action Alternative would continue the current hunt programs on the refuges. Hunting at Chincoteague and Wallops Island NWRs will be permitted from September 16 to March 14. Hunting hours and season dates within this time period will be in accordance with State regulations and may include additional refuge-specific limitations. No-hunting zones would include beach areas, the over wash zone on the Assateague Island Unit, the southwest portion of Wildcat Marsh, and a 100-foot buffer area around any building, road or trail. Areas that would require a buffer area include the bunkhouse, visitor center, maintenance buildings, the Wildlife loop trail, headquarters office, lighthouse, Service Road, and the Marsh, Swan Cove, and the Woodland trails. Lead ammunition could continue to be used under a No Action Alternative for hunting big game, upland game, woodcock, crow, and dove.

Alternative B –Proposed Action Alternative

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 use of lead ammunition may only be used for hunting white-tailed deer, sika, upland game, and turkey in the designated Northern Hunt Zone (3,869 acres) during the appropriate season (usually November to January), or on Wallops Island NWR. Additionally, lead ammunition would be allowed for woodcock, crow, and dove in

designated areas. For the next three years, we will strongly encourage the voluntary use of non-lead ammunition for hunting the species named above until the non-lead requirement begins on September 1, 2026. We think the three-year timeline is necessary to educate hunters and ease the transition to non-lead alternatives. This transition period will provide hunters time to gradually transition their supplies of ammunition to non-lead alternatives, lessening the impact of the change. The refuge staff will provide information to assist in a valuable transition period that benefits fish, wildlife, and people.

Alternatives Considered, But Dismissed from Further Analysis

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

Refuge staff have worked closely with stakeholders and VDWR to develop the proposed action. 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 the refuges, and is consistent with the refuge's 2015 CCP. Therefore, the Service does not need to consider additional alternatives (43 CFR 46.310).

Affected Environment and Environmental Consequences

This section is organized by affected resource categories and for each affected resource discusses both (1) the existing environmental and socioeconomic baseline in the action area for each resource and (2) the 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 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." Any resources that would not be more than negligibly impacted by the action may be dismissed from

further analyses.

Chincoteague NWR encompasses approximately 14,032 acres. All but 418 of those acres are in Accomack County, Virginia. In addition to the Virginia portion of Assateague Island, Chincoteague NWR also includes all 427 acres of Morris Island (located between Chincoteague and Assateague Islands), 546 acres of the northern end of Chincoteague Island (known as Wildcat Marsh), all 1,434 acres of Assawoman Island, 174 acres of the northern end of Metompkin Island, and 2,012 acres of Cedar Island in both fee title and easements.

Wallops Island NWR is located on the mainland, east of Wattsville, Virginia in Accomack County. The refuge is immediately adjacent to Highway 175, which provides access to the Town of Chincoteague and to Chincoteague NWR. Wallops Island NWR (373 acres) is comprised mainly of salt marsh (195 acres) and forest/shrub (178 acres) and contains habitat for a variety of species, including upland and wetland dependent migratory birds.

For more information regarding the general characteristics of the refuge's environment, please see Chapter 3.2 of the refuge's CCP.

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	☐	☐	☒
Habitat, Vegetation and Soils	☐	☐	☒
Air Quality	☒	☐	☐
Water Quality	☐	☒	☐
Floodplains	☒	☐	☐
Wilderness	☒	☐	☐
Visitor Use and Experience	☐	☐	☒
Cultural Resources	☐	☐	☒
Refuge Management and Operations	☐	☐	☒
Socioeconomics and Environmental 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. Executive Order 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 Executive Order 11988 – Floodplain management – Fed. Reg. 26951 (1977) and Executive Order 11990-Protection of Wetlands.

- Wilderness - The refuges do not have any designated wilderness areas per the Wilderness Act, 16 U.S.C. 1131 et seq. nor does either 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.

As such, these resources are not further analyzed in this EA. As stated above, this section predicts the foreseeable impacts of implementing the hunting program in each of the alternatives. When detailed information may be deficient or unavailable, we base our comparisons on professional judgment and experience. We usually identify potential impacts within a long-range timeframe (i.e., 15 years); beyond that 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. Research on the effects of lead ammunition and the fragments it can deposit in killed game continues to be conducted. 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). However, lead is naturally present in all soils and generally occurs in the range of 15 to 40 parts lead per million parts of soil (ppm), or 15 to 40 milligrams lead per kilogram of soil (mg/kg). As explained earlier, given that there are no proposed changes to the fishing program, this Supplemental EA focuses on analyzing the effects lead ammunition under the hunting alternatives, and not the impacts of the existing fishing program which currently allows use of lead tackle for fishing activities under state regulations. Wallops Island NWR does not have fishing, and at Chincoteague NWR, fishing is limited to designated areas of Toms Cove and Swan Cove or from the beach. In the unlikely scenario that a lead sinker is lost in the water, it would most likely to sink to the bottom, where it is not likely to encounter wildlife. Moreover, anglers at the refuge primarily use sinkers at least 3 to 4 ounces in weight, which are less likely to be ingested by wildlife due to their larger size. Overall, the small amount of lead ammunition added to the environment over the next three years (before the non-lead ammunition requirement would take effect in 2026), when added to other past, present, and reasonably foreseeable future actions (including lead from fishing tackle), is still unlikely to measurably increase lead contamination of refuge lands and waters. The proposed requirement of non-lead ammunition on the refuge starting September 1, 2026 will also

help address concerns about the bioavailability of lead on the refuge.

BIG GAME (white-tailed deer, sika, turkey)

Affected Resource Description

White-tailed deer are the largest native land mammals on the refuges. They are abundant in wooded areas and upland meadows, but they are also attracted to sites where dead trees have been cleared and tender regenerating forest vegetation is plentiful. The refuge partners with the NPS, Assateague Island National Seashore on monitoring population size on Chincoteague NWR. Some white-tailed deer also use Cedar and Assawoman islands, as evidenced by tracks and scat.

There are an estimated 850,000 to 1,000,000 white-tailed deer in the State of Virginia. Deer densities used to be significantly higher in Virginia, but through regulated hunting and planning, statewide deer densities have become low to moderate. Deer herds are in fair to good physical condition and are below biological carrying capacity (VDWR 2021a). In the entire State in 2020-2021 season, 208,131 total deer were harvested with 3,356 harvested in Accomack County (VDWR 2021b). Approximately 14 percent of the total kills were with archery equipment, 24 percent were with muzzleloader, and 63 percent were with firearms (VDWR 2021b). In the 2020-2021 season, a total of 216 deer (19 white-tailed deer, and 197 sika) were harvested from Chincoteague NWR and 6 white-tailed deer were harvested on Wallops Island NWR.

A small number of sika elk (*Cervus nippon*), a species native to east Asia and Japan, were released on the northern end of Assateague (MD) in the 1920s when the island was privately owned (Flyger 1960). They increased in number and expanded their range to occupy the entire island, and sika were well established on the Virginia end of the island when Chincoteague NWR was established in 1943. By 1963, the sika population was estimated at 1,300, and a browse line was becoming evident on refuge vegetation, indicating an over-population (Refuge Narratives). Public hunting, started in 1964, has continued to the present with objectives of reducing an exotic animal, preventing habitat degradation, and providing a public recreational opportunity.

The population of sika on the Chincoteague NWR portion of Assateague Island was estimated at 1,000 animals in the mid-1990s using a model combined with spotlight surveys (Bicksler et al. 1995). The minimum population estimate for sika in the fall of 2007 and 2008 was 600 animals based on Chincoteague NWR harvest data and the Downing population reconstruction model (Davis et al. 2007). Each year harvest data and staff observations of habitat conditions are evaluated to determine season lengths, hunt areas, and bag limits needed to control the herd and keep deer and elk from causing resource damage. Sika do not occur on Wallops Island NWR.

The first wild turkeys on Assateague Island were sighted in March 2005 by a refuge law enforcement officer. Coincidentally, the NPS staff reported turkeys on the north end of Assateague Island around the same time. The wild turkey population on both refuges is unknown. However, anecdotal observations suggest a viable population exists, since flocks greater than 30 birds (adults and juveniles) are frequently observed. Turkeys are also frequently sighted on Wallops Island NWR.

There are an estimated 180,000 wild turkeys in Virginia. During the 2020-2021 fall turkey season,

2,092 turkeys were harvested with 11 harvested in Accomack County. Muzzleloader hunters took about 2.7 percent of the total take and firearms hunters took 78.1 percent. Archery and crossbow became a significantly more popular form of take during the last turkey season, making up 7.4 percent and 11.8 percent of the total take, respectively (VDWR 2021c).

Anticipated Impacts to Big Game (white-tailed deer, sika, turkey)

Alternative A

Under the No Action Alternative, the big game hunting program on the refuges would continue. Deer hunting (white-tailed and sika) on Chincoteague NWR has been occurring since 1964 and on Wallops Island (white-tailed only) since 2002. During the 2020-2021 hunting seasons, 216 deer were harvested on Chincoteague NWR. On Wallops Island NWR, 6 white-tailed deer were reported harvested during the season. Figure 1. Illustrates the deer harvest on Chincoteague NWR for the past 20 years. We anticipate a similar number of deer would continue to be harvested annually if hunt parameters do not change and this harvest would not meaningfully affect the current population of white-tailed deer.

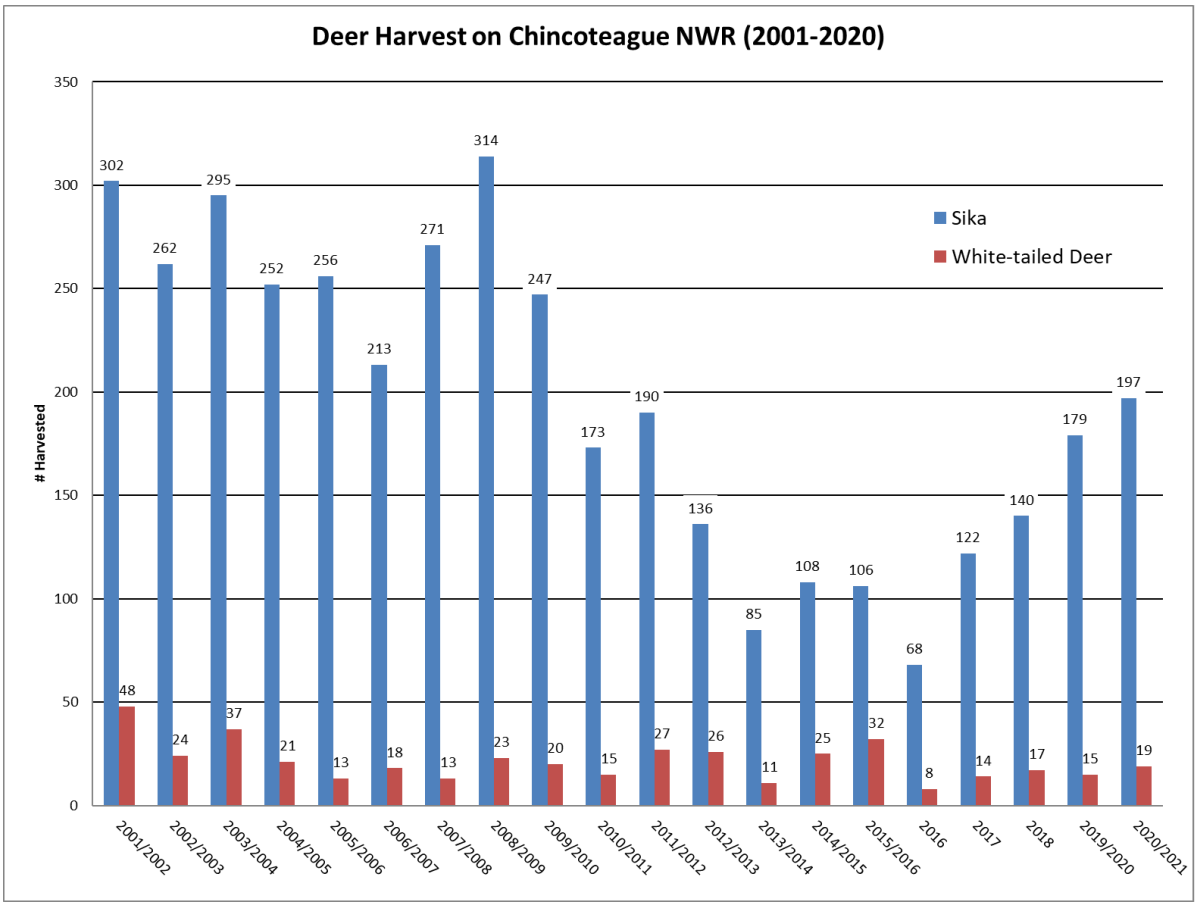

Figure 1. Deer Harvest on Chincoteague NWR (2001-2020)

In the 2020-21 season, hunters visited Chincoteague NWR 1,907 times, while Wallops Island NWR received 107 hunter visits within the hunt seasons. Deer may avoid hunting areas due to hunting pressure, but current level of pressure would remain similar to past years and would not lead to negative impacts to the white-tailed deer population. Sika populations are estimated using the

Downing Population Reconstruction and are managed through the State harvest regulations for the Deer Population Reduction Program (DPOP). Under this alternative, the sika population on the refuge would continue to be suppressed to minimize competition with white-tailed deer.

The current hunting program on refuge lands carries the potential for adverse 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.

Alternative B

Under the Proposed Action Alternative,
lead that could enter the environment from 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 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 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. This residual lead from hunting activity will also degrade over time.

MIGRATORY GAME BIRDS

Affected Resource Description

Waterfowl populations throughout the U.S. are managed through an administrative process known as flyways and the refuges are located in the Atlantic Flyway. In North America, the process for establishing waterfowl hunting regulations is conducted annually. In addition, public hearings are held, and the proposed regulations are published in the Federal Register to allow public comment.

Waterfowl populations have remained relatively stable along the Atlantic Flyway in Virginia (Roberts 2019). The total number of ducks and geese harvested in the Atlantic Flyway has also remained relatively stable in recent years (USFWS 2019). The proportion of the national waterfowl harvest that occurs on refuges is only 6 percent and there are no waterfowl populations that exist wholly and exclusively on refuges (USFWS 2013).

Liberal duck seasons (60 days, 6-bird bag limit) and resident goose seasons have resulted in high waterfowl harvests in Virginia during the past 10 years. Harvest has averaged approximately 133,300 ducks and 51,700 Canada geese from 2016 to 2019, compared to 114,770 ducks and 25,000 geese during the 1990's (VDWR 2020). Waterfowl hunter numbers in Virginia have been generally stable since the late 1990s. Since 1999, the Harvest Information Program (HIP) has been

used to estimate hunter effort and harvest. The average number of duck and goose hunters over the past 3 years, as measured by HIP, was 16,700 and 13,900 respectively (VDWR 2020).

Anticipated Impacts to Migratory Game Birds

Alternative A

Under the No Action Alternative, on Chincoteague NWR, migratory game bird hunting would continue to be permitted in the designated Migratory Bird Hunt Zones (see Figure 1). Access for migratory game bird hunting on Chincoteague NWR would be by boat only and hunting from refuge beaches would remain prohibited after March 15. Sunday hunting would be permitted, and the use of non-lead ammunition would continue to be required for all waterfowl species. Most of the marsh area on the eastern shore is owned by the State and is already open to migratory bird hunting. Continuing migratory game bird hunts on less than 40 percent of Chincoteague NWR would have some short-term disturbance to the migratory game birds resting and feeding in the area. There will be few long-term impacts to migratory game bird populations with harvest levels anticipated to remain similar to previous years.

Lead shot was banned for hunting waterfowl and coots in North America in 1991 and exposure for these birds from spent lead shot in wetlands has declined (Anderson et al. 2000; Lewis et al. 2021; Samuel et al. 1992; Samuel and Bowers 2000). However, exposure to lead has not broadly declined in this manner for game birds in uplands where lead shot and ammunition are still used (Fisher et al. 2006; Franson et al. 2009; Haig et al. 2014; Kendall et al. 1996; Larsen et al. 2007; Rattner et al. 2008). 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 (Anderson 1975; Bellrose 1959; Clark and Scheuhammer 2003; Franson et al. 2009; Kreager et al. 2008).

While there would be no lead use in hunting waterfowl under Alternative A, lead use for big and upland game 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 migratory birds. 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.

Alternative B

Under the Proposed Action Alternative, we will strongly encourage the voluntary use of non-lead ammunition for woodcock, crow, and dove, and will require non-lead ammunition for all species, including all migratory game bird species, on both refuges beginning September 1, 2026 (after the 3-year transition period).

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). However, it is unlikely that the amount of lead entering the environment from the proposed action of a non-lead ammunition requirement starting on September 1, 2026 would

cause additional adverse effects toward migratory bird species since use of lead ammunition will be banned after three years. After the proposed non-lead requirement takes effect, there may also be a benefit to these species because no new lead ammunition will enter the environment.

UPLAND GAME (raccoon, opossum, fox, coyote, rabbit, squirrel)

Affected Resource Description
Statewide trend data indicates coyote and red fox populations are rising while gray fox populations are falling (VDWR 2018). During the 2015-2016 season, an estimated 32,811 coyotes, 7,944 red foxes, and 8,289 gray foxes were harvested by hunters Statewide (Fies 2020, Pers. comm.).

Rabbit and squirrel are common and abundant species in Virginia. During the 2013-2014 season, an estimated 554,630 squirrels and 215,288 rabbits were harvested in the State (VDWR 2014). Raccoon and opossum are also common species. During the 2013-2014 season, an estimated 72,657 raccoons were harvested Statewide (VDWR 2014).

While population levels of upland game are not known, these species are also common and abundant in and around the refuges. Consequently, an active predator control program for raccoon, opossum, fox, and coyote is in place to minimize predation on priority management species, especially nesting migratory birds.

Anticipated Impacts to Upland Game (raccoon, opossum, fox, coyote, rabbit, squirrel)
Alternative A
Under the No Action Alternative, the current hunting program on refuge lands and waters carries the 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 ammunition 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.

Alternative B
Under the Proposed Action Alternative, the required use of non-lead ammunition would be implemented on both refuges beginning September 1, 2026.

The potential for exposure to lead that may result in adverse impacts due to the inadvertent consumption of lead ammunition 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.

NON-TARGET WILDLIFE AND AQUATIC SPECIES

Affected Resource Description

Habitat conservation and management is the highest priority of the refuges, consistent with the original establishment purposes for the protection of migratory birds. More than 320 species of birds are known to use the refuges regularly for nesting and brood rearing, feeding, resting and staging during migration, or wintering.

Thirty-four mammal species are recorded on the lower Delmarva Peninsula and 9 species of bats may be found on or around the refuges. Frogs and toads that can be found at Chincoteague NWR include the Northern spring peeper, Southern green frog, Southern leopard frog, Fowler's toad, and Eastern narrow-mouthed toad. The freshwater and estuarine turtles that inhabit the refuge include the Eastern painted turtle, spotted turtle, Eastern mud turtle, Northern red-bellied cooter, Eastern box turtle, Eastern snapping turtle, and the estuarine Northern diamond-backed terrapin. The red-backed salamander is also commonly found.

Finfish of primary importance found near the refuges include the black drum, red drum, bluefish, winter flounder, summer flounder, menhaden, spot, Atlantic croaker, grey trout, mullet, spotted seatrout, and striped bass.

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. 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. Research on the effects of lead ammunition and the fragments it can deposit in killed game continues to be conducted. Avian predators and scavengers can be susceptible to lead poisoning when they ingest lead fragments or pellets in the tissues of animals killed or wounded by lead ammunition. Lead poison may weaken raptors and increase mortality rates by leaving them unable to hunt or more susceptible to vehicles or power line accidents (Kramer and Redig 1997). In a study of bald eagles and golden eagles admitted to the Raptor Rehabilitation Program at the College of Veterinary Medicine of Washington State University from 1991 to 2008, it was found that 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).

The best available science indicates that lead ammunition has negative impacts on fish and 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 (Arizona Game and Fish Department 2018; Center for Biological Diversity 2007; U.S. Fish and Wildlife Service 1999; 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; Kelly et al. 2011; Lewis et al. 2021; Samuel and Bowers 2000; Sieg et al. 2009).

A more comprehensive discussion of the diversity of species found on the two refuges can be found in their respective CCPs.

Anticipated Impacts to Non-Target Wildlife and Aquatic Species

Alternative A

While this alternative likely results in negligible negative impacts to small mammals, birds, and other wildlife in areas where human access for hunting activities occur, no significant impacts of the current hunting programs on non-target and aquatic wildlife species have been documented on either refuge with continued use of lead ammunition. We do not anticipate the likelihood of significant impacts in the future with no changes to hunting.

Lead has no known biological function in living things, but the bioavailability of the 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 with lead ammunition; also 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, especially potential cumulative impacts, to wildlife and aquatic species.

Alternative B

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). Under Alternative B, continuing to permit the use of lead ammunition on refuge lands and waters until September 1, 2026 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.

To move towards reduction and future elimination of this threat on the refuge, the use of non-lead ammunition for hunting will initially be voluntary and would be required after a 3-year transition period. This transition period will allow hunters time to adapt to the new regulations without diminishing deer hunting opportunities on the refuges, and will minimize the inadvertent exposure and subsequent lethal or sub-lethal impacts to wildlife, including bald and golden eagles, as well as other scavenging species and provide hunters adequate time to transition to using 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 an issue on this refuge as: (1) non-lead shot is currently required for hunting waterfowl, coot, rail, snipe and gallinule; (2) the refuge strongly encourages use of non-lead alternatives for hunting all other species 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.

THREATENED AND ENDANGERED SPECIES, AND OTHER SPECIAL STATUS SPECIES

Affected Resource Description

Species that may be found on or nearby the refuge include seabeach amaranth, Northeastern beach tiger beetle, piping plover, red knot, roseate tern, black rail, Northern long-eared bat, Atlantic sturgeon, monarch butterfly, bald eagle, and five species of sea turtles. Piping plover, loggerhead sea turtle, red knot, and seabeach amaranth are the current federally threatened or endangered species managed on the refuges. These species grow on, nest on or use refuge beaches during summer and during spring and fall migration seasons. We analyzed the alternatives for impacts to

these four endemic focal species, which would exemplify the impacts for all other listed species that may be found on the refuge.

While not federally listed as a threatened or endangered species, bald eagles can be found nesting on or near the refuges and are protected by the Bald and Golden Eagle Protection Act.

Seabeach amaranth was federally listed as threatened in 1993 by the Service. Seabeach amaranth is an annual plant species that could occur on the upper beach and sparsely vegetated over wash fans and inter-dune areas. This species appears to require extensive areas of barrier island beaches and inlets functioning in a relatively natural and dynamic manner. In the absence of over wash and storms, other plants less tolerant of disturbance colonize the sparsely vegetated areas and ultimately outcompete amaranth. Threats include beach stabilization efforts (particularly the use of beach armoring, such as sea walls and riprap), intensive recreational use, and herbivory (grass eating) by white-tailed deer, sika, and Chincoteague ponies.

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 to Threatened and Endangered Species

Alternative A

Most hunting occurs from September through the end of January, with the most participation from October through early December, when eagles are not nesting. Current management adheres to guidelines set forth in previous recovery plans and biological opinions.

Under the No Action Alternative, use of lead ammunition for hunting some species would still be permitted on refuge 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. Given that increasing any amount of lead introduced into the environment could lead to these effects over time, the Service concludes that the No Action Alternative could ultimately present a potential risk to these natural resources in the long run with continued use of lead ammunition.

Alternative B

Piping plover

The piping plover, a Federal- and State-threatened species since January 1986, nests on sandy beaches and overwash areas. In order to protect this species, staff at Chincoteague NWR close certain critical nesting, foraging, and roosting areas on Assateague, Assawoman, and Metompkin islands to public entry from March 15 through September 15. This timing does not overlap when the

overwhelming majority of hunters visit the refuge. For example, deer, waterfowl, and upland game hunting are all conducted outside this date range. In addition, the refuge's hunt zones do not overlap with the plover's preferred habitat of intertidal zone beaches and mudflats.

Regarding the impacts of lead ammunition, specifically for the beach shorebirds (i.e., roseate tern, red knot and piping plover), the deer and sika hunt in the Northern Zone hunt unit is the primary hunting opportunity in which hunters may use lead ammunition (upland game may be hunted at the same time). This hunt only occurs from November to January, in the more forested habitat of the refuge. Thus, it will not occur within, or in close proximity to, areas where those species occur. Hunting for woodcock, crow, and dove is not as popular as deer or waterfowl hunting on the refuges, must occur by boat only, and the hunting seasons for the new species end each year by the end of January. The voluntary use of non-lead ammunition for new migratory game bird species 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 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 piping plover.

Red knot

Red knots use Chincoteague NWR beaches during spring and fall migration (April to September), with peak spring numbers occurring in the last half of May and peak fall numbers occurring in August (Smith et al. 2008), as confirmed by refuge data. Since the Chincoteague NWR closes certain critical piping plover nesting areas to public entry from March 15 through September 15, migrating red knots are also protected. As mentioned above, most of the hunting area is far away from the beach where red knots occur. Therefore, 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, and 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.

Roseate tern
Because roseate terns do not occur on the refuge, the proposed activities are not likely to adversely affect this species. If roseate terns arrive on their breeding grounds in late April or early May, they would begin nesting one month later. Migration begins in late summer. With no hunting allowed from March 15 to September 15, and no hunting on the beach, it is highly unlikely that hunting would overlap with roseate terns in time or space. As noted above, the main hunting area is far away from the beach where roseate terns would occur. Therefore, the use of lead ammunition, until it is discontinued on September 1, 2026, is highly unlikely to overlap with roseate terns in time or space, and any potential lead ammunition added to the environment during this interim time period, before the non-lead 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 roseate tern.

Eastern black rail
Because Eastern black rails do not occur on the refuge, the proposed activities are not likely to adversely affect this species. The habitat at these two refuges is getting worse for black rail with each passing year as sea levels rise. It is unlikely that black rails are present on the two refuges and if they are, the numbers are extremely low. The Eastern black rail is a small marsh bird that lives amongst the grasses of salt and freshwater marshes. They are very secretive and often walk or run through the grasses rather than fly. Hunting takes place September 15 through March 15, and would not overlap with breeding season for black rails during May. Any potential effects from disturbance are extremely unlikely to occur and considered discountable because the hunting area is far away from the marshes where Eastern black rail would occur.

Before the proposed non-lead ammunition requirement would take effect in 2026, the potential for lead impacts to black rails is discountable because of the bird's preferred habitat. Black rails likely eat mostly small invertebrates and seeds, but because they are rarely seen, little is known about their feeding habits. The potential for lead ammunition impacts to black rails is discountable because of the bird's preferred habitat. If black rails were present on the refuge, they would be located in the interior of marshes, where lead ammunition is highly unlikely to be found. Although it is extremely unlikely to occur, even if lead deposited in uplands could leach out into coastal or wetland habitats that black rails use, the increase in lead ammunition would be extremely minor and dispersed, and therefore considered discountable and insignificant. Given that there is already a federal ban on the use of lead ammunition for waterfowl hunting and that hunting with lead ammunition primarily occurs for deer hunting in upland areas, 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 this species.

Northeastern beach tiger beetle
Northeastern beach tiger beetle (*Habroscelimorpha* (formerly *Cicindela*) *dorsalis dorsalis*) is not likely to be adversely affected by the proposed changes because they do not occur on the refuge. Only a subspecies, *Cicindela dorsalis media*, which is not federally protected, is found on Chincoteague's beaches.

Atlantic sturgeon
Most hunting activities occur inland from the beach and not near the ocean, where Atlantic sturgeon occur. All waterfowl hunting currently requires non-lead ammunition. For the next 3 years, lead ammunition is allowed only in the Northern Hunt Zone and for limited new migratory game bird hunting by boat only in the designated Migratory Game Bird Zone. Atlantic sturgeon do not occur on the refuge, and the species is separated from the forested areas of the Northern Hunt Zone by Service Road on the west, and distanced by 200 to 300 feet of beach/dune/scrub habitats on the east. Given that the hunting area where lead ammunition may be used (until the non-lead ammunition requirement takes effect on September 1, 2026) is located far away from where these species would occur and that there is no potential for exposure, the proposed action to ultimately require non-lead ammunition will have no effect on this species.

Northern long-eared bats
Northern long-eared bats (NLEB) primarily use mines and caves in the winter to hibernate and use upland forests to forage and roost throughout the rest of the year. The species is most sensitive to disturbance during hibernation and when raising young, which are activities not known to occur on the refuge. Although the refuge has forested areas, there are no caves or mines found on refuge property. Though recordings and mist netting have been conducted in cooperation with USGS's Virginia Cooperative Fish and Wildlife Research Unit, there are no known occurrences of NLEB on the refuge.

Before the proposed non-lead ammunition requirement would take effect in 2026, the potential for impacts from lead ammunition 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 unlikely that bats that occur on refuges will consume lead derived from ammunition fired by hunters on the refuge. Therefore, any potential lead ammunition added to the environment during this interim time period, before the non-lead ammunition 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 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 this species.

Sea turtles: Loggerhead, Green, Hawksbill, Kemp's Ridley, Leatherback
Five species of federally listed sea turtles use Assateague Island's ocean and bay waters. The leatherback sea turtle, Kemp's Ridley sea turtle, and the hawksbill sea turtle are listed as endangered species under the ESA; the loggerhead sea turtle and green sea turtle are listed as threatened. In Virginia, the state status is the same as the Federal status for these species. Of the five sea turtles, only loggerheads are known to nest on the refuge, which is the northern extent of its breeding range. In recent years, crawl and nesting activity (one to three nests) occurs June through August. Because incubation takes longer (90 or more days) at this latitude, the hatch window is August through October. Hunting activities do not occur where loggerhead sea turtles nest. Refuge beaches on Assateague, Assawoman, and Metompkin Islands will remain closed to hunting during the sea turtle nesting seasons. All waterfowl, coot, snipe, rail, and gallinule hunting currently requires non-lead ammunition. Turtles present but not nesting, remain in the water, and thus, will not be impacted by hunting activities. Given that the hunting area where lead ammunition may be used (until the non-lead ammunition requirement takes effect on September 1, 2026) is distanced by 200 to 300 feet of beach/dune/scrub habitats on the east from where these species would occur, that turtles do not readily travel across land (unlike birds, for example), and that there is no potential for exposure, the proposed action to ultimately require non-lead ammunition is expected to have no effect on these species.

Monarch butterfly
Assateague Island is a critical stopover point for southbound migrating monarchs (a candidate for federal listing) that use the refuge's resources to rest, refuel, and roost. Monarch butterflies are observed on nectar plants within beach strand habitat and impoundment management units during their peak migration (last two weeks of September through the first two weeks of October). Monarch butterflies typically concentrate on seaside goldenrod located along the Beach Road corridor and the dunes from Swan Cove Trail south to Toms Cove, which is closed to hunting.

Before the proposed non-lead ammunition 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 ammunition 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 ammunition added to the environment during this interim time period, before the non-lead ammunition requirement takes effect on September 1, 2026, is not likely to jeopardize 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 jeopardize this species.

Seabeach amaranth
Seabeach amaranth was federally listed as threatened in 1993 by the Service. Seabeach amaranth is an annual plant species that occurs on the upper beach and sparsely vegetated over wash fans and inter-dune areas. This species appears to require extensive areas of barrier island beaches and inlets functioning in a relatively natural and dynamic manner. In the absence of over wash and storms, other plants less tolerant of disturbance colonize the sparsely vegetated areas and ultimately outcompete amaranth. Threats include beach stabilization efforts (particularly the use of beach armoring, such as sea walls and riprap), intensive recreational use, and herbivory (grass eating) by white-tailed deer, sika, and Chincoteague ponies.

Seabeach amaranth is native to Atlantic coast barrier island beaches from Massachusetts to South Carolina (USFWS 2008). Although seabeach amaranth generally grows in sparse to very sparse distribution, the existing population on the refuge is greatly dissipated. No known plants were observed in the 2021 census of the refuge.

Sharma and Dubey (2005) found that 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. Rattner et al. (2008) found that migration of lead from soil to roots and other parts of plants generally is considered to be minimal (Sorvari et al. 2006). Studies have documented elevated lead levels in plants in the vicinity of shooting ranges (Peterson et al. 1993, Mellor and McCartney 1994, Rooney et al. 1999, Hui 2002), but as proposed in this plan, hunters will not be concentrated or reach the numbers you would see at a shooting range. Impacts from lead on these species is highly unlikely since hunters would be dissipated throughout the refuge, there are no known occurrences of this species on the refuge, and the migration of lead from soil to roots and other parts of the plant is minimal.

This plant has been determined not to occur on the refuge, and any impacts from hunting or the associated use of lead ammunition would be extremely unlikely to occur. Therefore, the proposed activities are not likely to adversely affect seabeach amaranth.

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 use of non-lead ammunition

will initially be voluntary, and we would require non-lead ammunition for all hunting activities beginning 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.

The bioaccumulation of lead is a potential concern, but it does not likely present an issue on this refuge as: (1) non-lead shot is currently required for hunting waterfowl, coot, rail, snipe and gallinules; (2) the refuge strongly encourages use of non-lead alternatives for hunting 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.

HABITAT, VEGETATION AND SOILS

Affected Resource Description

Chincoteague NWR is a dynamic area with constant fluctuations in its shoreline boundaries and habitat acreage. Current vegetation cover is strongly associated with a certain habitat and is so described in this section. There are five major habitat types found on the refuge (which include three smaller divisions: Assawoman Island, Metompkin Island, and Cedar Island). They are Beach-Dune habitat (approximately 1,800 acres); Shrub-Early Successional habitat (approximately 2,900 acres); Forested Uplands habitat (approximately 1,800 acres); Impoundments and Freshwater Wetlands habitat (approximately 2,000 acres); and over 5,800 acres of salt marshes.

The most dominant vegetation on Assateague Island is the loblolly pine and loblolly pine/hardwoods maritime forest, encompassing much of the upland habitat, with salt marsh grasses encompassing much of the lowland habitats. Associated upland plant species include southern red oak, sweetgum, and sassafras. Understory associates include wild grape, Japanese honeysuckle, greenbriar, and American holly. The predominant vegetation in the open areas includes a variety of grasses, wax myrtle, and groundsel tree. Common fresh marsh vegetation consists of dwarf spike rush, smartweed, fleabane, swamp rose mallow, American three-square, umbrella-grass, saltgrass, beggartick, and eastern baccharis. Salt marsh vegetation consists mainly of salt marsh cord grass and salt meadow hay.

Salt marsh habitat covers approximately 95 percent (406 acres) of the Morris Island Unit and approximately 87 percent (485 acres) of the Wildcat Marsh Unit. Salt marsh cord grass, salt meadow cordgrass, and saltwort are the major vegetation species. Upland vegetation on Morris Island is limited to a few scattered sites (21 acres) of loblolly pine, wax myrtle, black cherry, and sassafras. Approximately 13 percent (73 acres) of the southern part of Wildcat Marsh is an upland forest consisting of loblolly pine, oak, and typical understory associates. Wax myrtle is scattered throughout the area.

Assawoman and Metompkin islands are barrier islands with habitat types consisting of beach, dunes, and extensive salt marshes to the west of the islands. The predominant species in the marsh include salt marsh cordgrass and salt meadow hay. On Metompkin, the marsh extends to the mainland, although it is intersected by numerous creeks and channels. The remainder of the island

is predominantly sparse grasslands with little woody growth. Assawoman Island also contains extensive salt marshes, particularly in the northern half of the island. A cobble-laden wash over area, located at the northern tip and formed by the sealing of Assawoman Inlet, provides good habitat for nesting birds. Pockets of woody shrubs occur in depressions between the beachfront and the westward marshes. Plants found here include wax myrtle, bayberry and groundsel bush.

Cedar Island is dominated by beach and dune habitats on the ocean side and a brackish marsh dominated by salt meadow cordgrass on the bay side. A small thicket dominated by eastern red cedar and poison ivy occurs on the north end of the island. It is adjacent to the beach and is eroding rapidly. The north end also supports most of the islands' other plant diversity. Dead shrubs and some low-growing vegetation are present in over wash areas. Other habitat types found on Cedar Island include a salt flat to the south and mudflats that are exposed at low tide. Wallops Island NWR is composed of 195 acres of salt marsh, 121 acres of forest, and 57 acres of old-field/early successional forests. Loblolly pine is the dominant species in the forest habitat and secondary components include tulip poplar, red maple, southern red oak, wild cherry, dogwood, sassafras, and sweet gum. Understory includes American holly, spicebush, Devil's walkingstick, and greenbrier. Transition zones between the marsh and woodland are dominated by groundsel tree and wax myrtle. The salt marsh is dominated by cordgrasses.

A Simoneaston Bay sea-level fen, named the Lucky Boy Fen, is found on Wallops Island NWR. Sea level fens are nutrient-poor, maritime seepage wetlands, confined to a few sites within the mid-Atlantic region that have an unusual combination of environmental conditions. The sea level fen is a globally significant (ranked as "G1" or critically imperiled) community type (Fleming and Patterson 2010); only four occur in Virginia, all of them in Accomack County (Fleming and Patterson 2021). Lucky Boy Fen is located just above highest tide levels, at the base of a slope where abundant groundwater discharges. It is less than ½-acre in size but supports six rare plant species.

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 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. 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). Lead can become more bioavailable in aquatic environments having potentially more impact in habitats like wetlands and bottomland swamps which are present on the refuge. Although, lead typically has low solubility in water, certain conditions, including high acidity (such as naturally acidic bogs or wetlands downstream of acidic mine drainage), or direct point sources of discharge can increase lead in water (IPCS 1995; Eisler 1998; U.S. Department of Health and Human Services 2007).

For more information regarding and the general characteristics of the refuge's environment, please see Chapter 3.3 of the refuge's CCP.

Anticipated Impacts to Habitat, Vegetation and Soils

Alternative A

Deer hunting would continue to occur in upland and, to a lesser extent, wetland habitats on the refuges. Reducing the exotic sika population on Chincoteague NWR would have a beneficial impact for vegetation, especially for the endangered seabeach amaranth, of which sika is a documented herbivore. The grazing habits of sika have led to overgrazing of certain habitat types on the refuge, mainly in the impoundments and forested areas. Continuation of sika harvest to reduce their numbers would help maintain positive increases in regeneration.

Heavily browsed forest understory and shrub vegetation leaves less food and cover for migratory birds, a resource that the refuge is focused on protecting. Maintaining current deer population levels will limit the browse effects on vegetation and enable the forest understory to grow and produce more food and cover for migrants (Horsley et al. 2003). This will also provide additional habitat for small mammals, reptiles, and invertebrates.

Direct impacts of hunters to wildlife habitat would continue to be minimal as most species impacted would have already undergone senescence (aging or dying process) or become dormant during the hunting seasons. Further impacts are minimized by not permitting hunters to cut vegetation for shooting lanes or camouflage, and by not permitting the use of permanent hunting structures attached by nails, wire, and other materials that could adversely affect vegetation. No significant impacts would result on the refuge from these visitor services, but current monitoring efforts would continue (USFWS 2007).

Waterfowl hunting would continue in tidal marshes on Chincoteague NWR. Marsh areas are prone to disturbance, and foot traffic to access hunting sites will result in trampling of sensitive marsh plants in frequently used areas (Lomnicky et al. 2019). However, limiting access to hunting areas to access by boat only minimizes trampling impacts. Furthermore, in upland areas, hunters tend to park in improved lots and along refuge roads and disperse across large areas in low density, resulting in minimal trampling of vegetation. As currently implemented, very little damage to habitat and vegetation by hunters occurs.

Although 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, under this alternative, there would be continued introduction of lead into the soils on refuge lands. 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 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 these activities.

Alternative B

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 over the next three years. 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 of a ban of lead ammunition for hunting 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

Chincoteague NWR is open to all six priority public uses of the Refuge System, which are wildlife observation, wildlife photography, hunting, fishing, environmental education and environmental interpretation. Wallops Island NWR is open to hunting.

In 2021, there were 1,408,451 total visitors to Chincoteague NWR, most of them (98 percent) being for non-consumptive uses. Hunting is a traditional outdoor pastime and remains a popular form of wildlife-dependent recreation on the refuge and a vital part of the cultural, social, and economic fabric of communities near the refuge. Hunting visits made up less than 1 percent (2,074) of the total visits on Chincoteague NWR. On Wallops Island NWR, 107 hunter visits occurred.

Anticipated Impacts to Visitor Use and Experience

Alternative A

Refuge lands open to hunting would continue to take place within the regulatory framework established by the FWS and the VDWR and would continue to allow the public to enjoy hunting at no or little cost in a region where private land is leased for hunting, often costing a person several hundred to several thousand dollars per year for membership. Hunting provides opportunities to experience a wildlife-dependent recreational activity and an increased awareness of the refuge and the Refuge System. Hunting instills an appreciation for and understanding of wildlife, the natural world and the environment, and promotes a land ethic and environmental awareness. Visitors interested in hunting would continue to find high quality opportunities to engage in their favored pastime.

The refuge would continue promoting a wildlife-oriented recreational opportunity that is compatible with the purpose for which the refuge was established. The hunting program would continue to provide an administratively simple program that balances other public use activities. The program supports Presidential Executive Order 13443: Facilitation of Hunting Heritage and

Wildlife Conservation, regional directives, and parallels State hunting regulations. In addition, it provides seasonal closures to avoid conflicts with other uses while continuing to offer disabled hunting opportunities.

On Chincoteague NWR, because most hunting takes place outside of the major public use areas and occurs after the high visitation summer season, there is little conflict with other refuge visitors. However, limited hunting will occur within the major public use area, at times, requiring the closing of some trails to the general public. In order to minimize conflicts, select hunting zones will be limited to archery only. To accommodate hunters confined to wheelchairs, certain areas may be closed to general public access during the firearm season. All closures within the major public use area will be signed and patrolled to alert non-hunters of the ongoing big game hunt.
As lead ammunition will continue to be used for some species, there will be continued exposure to potential adverse risks to hunters' health by consuming game harvested with lead ammunition. 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 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.

Alternative B
Under this alternative it is estimated that there would be no substantial change to visitor uses from the proposed action, and no change is expected to the experience of non-hunting refuge visitors from the non-lead requirement. Hunters would be required to use non-lead ammunition for all species beginning September 1, 2026, and although the activity of hunting would not change, some 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 three 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 as a result of 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's health.

The transition from lead ammunition beginning September 1, 2026 on the two refuges is not a systemwide ban, nor even statewide. Virginia has a steady hunting community, and of Virginia's 27.4 million acres, huntable private and public lands total over 2 million acres (or 7.4 percent) of the State. Chincoteague NWR allows hunting on 10,213 acres. This represents one-half of 1 percent of the hunting areas in Virginia. VDWR also maintains 46 management areas totaling more than 215,000 acres in the state, including 13,853 acres on the Eastern Shore. Furthermore, of the State's 8.66 million residents, 172,369 (2.0 percent) bought a hunting or combo (hunting and fishing) license in 2021. Chincoteague NWR averages 2,000 hunters annually, or 1.2 percent of the State's hunters, according to VDWR's 2021 annual report. Any concern that a ban of lead ammunition on the refuges in 3 years could adversely 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.

No additional impacts or conflicts with non-hunters on Wallops Island NWR are anticipated, as the refuge will remain closed to other public uses.

CULTURAL RESOURCES

Affected Resource Description

On Chincoteague NWR, a number of broad historical studies were produced around the time the Assateague Island National Seashore was established. Several studies of more limited scale have also been performed for individual projects on the refuge. A 1989 overview study of the refuge (Fehr et al. 1989) and a subsequent maritime-focused overview of the Seashore (Langley 2002) provide the most comprehensive summaries of current knowledge regarding cultural resources on Assateague Island. Other units of Chincoteague NWR to include Morris, Assawoman, Metompkin, and Cedar Islands as well as Wildcat Marsh on Chincoteague Island have not been studied as intently, mainly because of the dynamic changes to the shoreline and the natural process of island movement. Pre-Contact Period evidence is rare, possibly due to the dynamic nature of the island's geomorphology and the fact that the lower third of current day Assateague Island did not exist during this period. Historic Period resources include: two marked cemeteries, the remnants of the Assateague Village, multiple fish and hunt camps, numerous shipwrecks, the site of an 1848 lifesaving station, a U.S. Coast Guard Station (owned by the NPS and included in the National Register of Historic Places (NRHP), and the Assateague Lighthouse (also listed in the NRHP). The refuge is also the grazing range for the internationally known herd of Chincoteague Ponies owned by the Chincoteague Volunteer Fire Company.

The historical context of Wallops Island is best captured in the Historic Resources Survey and Eligibility Report for Wallops Flight Facility – Accomack County, Virginia completed by URS Group, Inc. and EG&G Technical Services, Inc., in 2004 for NASA. This document provides important historical context over the time period between 1607 and 2004 and identifies several historical items of interest within the 373-acre Wallops Island NWR. A family cemetery with three marked graves is located near the maintenance facilities and two former Navy waste disposal sites are of interest to the Department of Defense.

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 to Cultural Resources

Alternative A

Hunting, regardless of method or target, is a consumptive activity that does not pose any threat to prehistoric or historic properties on or near the refuges. No impacts to cultural resources are anticipated above what may be caused by any refuge visitor. Although hunters would be able to access parts of the refuges that are closed to other visitors, this access alone is not expected to increase vandalism or disturbance to cultural resources by individuals while they are hunting, nor is it likely that hunters would be more likely to engage in vandalism or disturbance than any other refuge visitor. At Wallops Island NWR, hunting would be the only available public use; however, no adverse impacts to cultural resources are expected.

Alternative B

No additional adverse impacts would occur under this alternative.

REFUGE MANAGEMENT AND OPERATIONS

Affected Resource Description

On Chincoteague NWR there are four unpaved trails (Lighthouse Trail, Marsh Trail, Bivalve Trail, and a Service Road trail), four accessible paved trails (Wildlife Loop, Woodland Trail, Black Duck Trail, and Swan Cove Trail), four different parking areas, a kayak launch and three wildlife observation platforms. The primary roads are Beach Road from the Town of Chincoteague to the recreational beach, the Wildlife Loop, and the 9-mile-long Service Road that extends north from the Wildlife Loop. Core infrastructure includes the Herbert H. Bateman Educational and Administration Center, a maintenance shop and compound, the Toms Cove Visitor Center next to the recreational beach, and the historic Assateague Lighthouse.

On Wallops Island NWR, three parking areas located on VA175 and an informational kiosk are available to hunters. No roads or trails are located on the refuge. Infrastructure is limited to a maintenance storage building and a fenced NPS maintenance compound authorized under a Memorandum of Understanding.

Currently, there are 16 permanent refuge employees that oversee the Chincoteague and Wallops Island NWRs. These personnel are stationed on Chincoteague NWR and include the refuge manager, deputy refuge manager, and administrative, biological, visitor services and maintenance staff, and Law Enforcement. Several other term and temporary employees are employed in any given year. The refuge also sometimes hires contractors and has numerous volunteers.

Anticipated Impacts to Refuge Management and Operations

Alternative A

Hunters currently use refuge infrastructure, such as public parking areas, hunter parking areas, and refuge roads and trails, to gain access to refuge lands. There are no adverse impacts to refuge facilities observed under this alternative.

Annual hunt administration costs for Chincoteague and Wallops Island NWRs including equipment, updating brochures, signs, collection of hunt data and analysis of biological information, etc. total approximately $24,000. Chincoteague NWR funds are used to conduct hunts on the Chincoteague and Wallops Island NWRs. Funding specifically for hunts has not been allocated, although funds are available through recreation fees.

Alternative B

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

Chincoteague and Wallops Island NWRs are located in Accomack County, Virginia near the town of Chincoteague. According to the U.S. Census Bureau, the population of Chincoteague grew 21 percent (from 3,572 to 4,317 individuals) between 1990 and 2000 but declined 32 percent (to 2,941 residents) between 2000 and 2010 (U.S. Census Bureau 2010). In comparison, Accomack County's population declined by 13.4 percent over the same time period.

The town of Chincoteague has several sources of economic activity, including tourism (both refuge-related and other outdoor-based recreation opportunities), commercial fishing and seafood processing, and impacts from the nearby NASA Wallops Island Flight Facility. The three largest employment sectors are accommodation and food services, retail trade, and health care and social assistance. The median household income of Accomack County, Virginia is $43,210 (Data USA 2019).

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

Anticipated Impacts to Socioeconomics and Environmental Justice

Alternative A

The current hunting program has a minor, long-term beneficial impact to the local economy. Combined, Chincoteague and Wallops Island NWRs average around 2,000 hunter visits a year, but each of those visits represents only a minor contribution to the local economy. Hunters spend money on gasoline, equipment, food, and lodging in the area surrounding the refuge. While

positive, the contributions to the local economy are negligible.

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.

Alternative B

The Proposed Action Alternative would have a positive, but negligible, effect on human health. It would reduce the risk of potential exposure to increased blood lead levels for hunters engaged in the activity on the refuges 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 eliminated 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 this activity. The Service has found these impacts negligible for all opportunities in the proposedhunting program.

There is, however, some possibility of negative economic impacts for socioeconomically disadvantaged hunters who must comply with the requirements. While non-lead ammunition has become essentially equivalent in price to lead ammunition, certain types 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. For some calibers and gauges even the difference between cheaper lead ammunition and nonlead ammunition can be less than $10 per box (State of California 2022). The minor economic burden involved in transitioning between ammunition could be more impactful to low-income hunters. The refuge has begun and will continue specific outreach about the proposed requirement to these groups and has put in place measures to mitigate the economic input beyond the non-lead implementation in 2026, 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 beginning Sptember 1, 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

Game species populations are monitored by Chincoteague NWR staff in cooperation with VDWR. Game harvest reports provide additional means for monitoring overall species populations. Refuge hunters are required to indicate they were hunting on Federal land per State game-check procedures. The State has determined that populations of game species are at levels acceptable to support hunting and these assessments are reviewed and adjusted periodically. In addition, deer hunters on Chincoteague NWR will be required to report their harvest following each hunt. 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

Alternative A – No Action Alternative

Under the 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 increase 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 ammunition 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 ammunition 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 refuge, 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 ammunition 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.

Alternative B –Proposed Action Alternative

As described above, this alternative is FWS's preferred action because it offers the best opportunity for public hunting that would reduce the potential impacts on physical and biological resources from lead entering the environment, while meeting the FWS's mandates under 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 ammunition 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 the transition approach and outreach programs. This alternative best meets the purpose and need stated earlier.

List of Sources, Agencies and Persons Consulted
USFWS – Ecological Services – Virginia Field Office, Gloucester, VA (Section 7 process)
Virginia Department of Wildlife Resources – State Office – Henrico, VA (1/2020 Meeting)
Virginia Department of Wildlife Resources – District Office – Charles City, VA (6/2021Meeting)
Virginia Department of Conservation and Recreation – Natural Heritage – Richmond, VA (Section 7 process)

List of Preparers
John Kasbohm, Project Leader, Chincoteague National Wildlife Refuge Complex
Robert Leffel, Deputy Project Leader, Chincoteague National Wildlife Refuge Complex
Kevin Holcomb, Supervisory Wildlife Biologist, Chincoteague National Wildlife Refuge
Michael Dixon, Supervisory Park Ranger, Chincoteague National Wildlife Refuge
Laura Howard, Visitor Services Assistant
Wilson Darbin, Visitor Services Assistant
Tom Bonetti, Regional Hunting and Fishing Coordinator
Stacey Lowe, Assistant Refuge Supervisor
Laura Kelly, Cover Graphics
John Saluke, Visitor Services Assistant
George Molnar, Contaminants Biologist

State Coordination
Refuges, including Chincoteague and Wallops Island NWRs, conduct hunting programs within the framework of State and Federal regulations. Virginia refuges met on January 14, 2020, with VDWR to discuss hunting on national wildlife refuges within the State of Virginia. A general overview of current opportunities and where other opportunities exist for the future. We worked with the local State biologist and conservation officers early in the development of the plan. The refuge reached out to VDWR on June 11, 2021, to discuss this Hunting Plan, and met again with the state biologist on February 1, 2022. We asked for review by the State regional office that covers our area to help adjust our plan to align, where possible, with State management goals. We have continued to consult and coordinate on specific aspects of the plan. The State is in agreement with the refuges' hunting program, as it will help meet State objectives. We continue to coordinate with the State to address changes to hunting programs on national wildlife refuges within Virginia. Chincoteague NWR and VDWR will continue to work together to ensure safe and enjoyable recreational hunting opportunities.

Tribal Consultation
Refuge staff will continue to coordinate with federally recognized Tribal governments in areas of mutual interest, including hunting opportunities. Seven tribes will be contacted once the draft hunting plan is complete and will include distribution of the draft for review and further coordination if needed.

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 seasons. In addition, information about the hunt will be available at the Chincoteague NWR Visitor Center, on the Chincoteague NWR and Wallops Island NWR websites, and/or posted on hunt information stations.

We released the 2022 draft plan and EA for public review and comment 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 websites. A total of 11 comment letters were submitted that offered input to the refuge.

The public will be notified of the availability of the Hunting Plan, EA, and accompanying 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.

__ 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: _____

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2020. Toxicological Profile for Lead. U.S. Department of Human Health and Human Services. Agency for Toxic Substances and Disease Registry. Washington D.C. 583 pp.

Anderson, W.L. 1975. Lead poisoning in waterfowl at Rice Lake, Illinois. The Journal of Wildlife Management 39(2): 264-270.

Anderson, W.L, S.P. Havera, and B.W. Zercher. 2000. Ingestion of lead and nontoxic shotgun pellets by ducks in the Mississippi flyway. The Journal of Wildlife Management 64(3): 848-857.

Arizona Game and Fish Department. 2018. Gearing up for the hunt? Don't forget the non-lead ammo. https://www.azgfd.com/gearing-up-for-a-hunt-dont-forget-the-non-lead-ammo/. Accessed: February 2, 2022.

Balsberg-Pahlsson, A. M. (1989). Toxicity of heavy metals (Zn, Cu, Cd, Pb) to vascular plants: a literature review. Water, Air, and Soil Pollution, 47, 287–319.

Bellinger, D. C; Bradman, A.; Burger, J.; Cade, T. J; Cory-Slechta, D. A; Doak, D., et al. (2013). Health Risks from Lead-Based Ammunition in the Environment – A Consensus Statement of Scientists. UC Santa Cruz: Microbiology and Environmental Toxicology. Retrieved from https://escholarship.org/uc/item/6dq3h64x

Bellrose, F.C. 1959. Lead poisoning as a mortality factor in waterfowl populations. Ill. Nat. Hist. Surv. Bull. 27 (3): 235-288.

Bicksler, B., C. Diggs, S. Kosman, M. Martell, J. Rebert, and S. Taylor. 1995. The sika study. Unpublished report to Chincoteague NWR by Mount St. Mary's College and National Science Foundation.

Cade, T.J. 2007. Exposure of California condors to lead from spent ammunition. Journal of Wildlife Management 71(1): 2125-2133. Doi:10.2193/2007-084.

Center for Biological Diversity. 2007. Schwarzenegger approves historic condor protection bill. https://www.biologicaldiversity.org/swcbd/PRESS/condor-lead-10-13-2007.html. Accessed: February 2, 2022.

Church, M.E., R. Gwiazda, R.W. Risebrough, K. Sorenson, C.P. Chamberlain, S. Farry, W. Heinrich, B.A. Rideout, and D.R. Smith. 2006. Ammunition is the primary source of lead accumulated by California condors re-introduced to the wild. Environmental Science and Technology 40: 6143-6150.

Clark, A.J. and A.M. Scheuhammer. 2003. Lead poisoning in upland-foraging birds of prey in Canada. Ecotoxicology 12: 23-30.

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

Cornatzer, W.F., E.F. Fogarty, and E.W. Cornatzer. 2009. Qualitative and quantitative detection of lead bullet fragments in random venison packages donated to the Community Action Food Centers of North Dakota, 2007. In: R.T Watson, M. Fuller. M. Pokras, W.G. Hunt (Eds.). Ingestion of Lead from Spent Ammunition: Implications for Wildlife and Humans. The Peregrine Fund, Boise, Idaho, USA, pp. 154-160. Doi: 10.4080/ilsa.2009.0111.

Craig, T.H., J.W. Connelly, E.H. Craig, and T.L. Parker. 1990. Lead concentrations in golden and bald eagles. Wilson Bulletin 102: 130-133.

Cruz-Martinez, Luis, Marrett D. Grund, and Patrick T Redig. 2015. Quantitative Assessment of Bullet Fragments in Viscera of Sheep Carcasses as surrogates for White-Tailed Deer. Human–Wildlife Interactions: Vol. 9: Iss. 2, Article 10. DOI: https://doi.org/10.26077/rxm7-x083 Available at: https://digitalcommons.usu.edu/hwi/vol9/iss2/10

Culbertson, K. A., M. S. Garland, R. K. Walton, L. Zemaitis, and V.M. Pocius. 2022. Long-term monitoring indicates shifting fall migration timing in monarch butterflies (Danaus plexippus). Global Change Biology, 28, 727–738. https://doi.org/10.1111/gcb.15957

Data USA. 2019. Accomack County, VA. Accessed in 2021. https://datausa.io/profile/geo/accomack-county-va.

Davis, M.L., J. Berkson, D. Steffen, and M.K. Tilton. 2007. Evaluation of accuracy and precision of Downing population reconstruction. Journal of Wildlife Management 71: 2297-2303.

Eisler, R. 1988. Lead hazards to fish, wildlife, and invertebrates: A synoptic review. Contaminant Hazard Reviews. U.S. Fish and Wildlife Service Biological Report 85(1.14).

Environmental Protection Agency (EPA). August 2020. Lead in Soil publication. Web resource accessed May 5, 2022. Available from https://www.epa.gov/sites/default/files/2020-10/documents/lead-insoil- aug2020.pdf.

Fallon, J.A., P.T. Redig, T.A. Miller, M. Lanzone, and T.E. Katzner. 2017. Guidelines for evaluation and treatment of lead poisoning of wild raptors. Wildlife Society Bulletin 41:205–211.

Fehr, April M., Leslie McFaden, Eva Jeanne Harris, and R. Christopher Goodwin. 1989. Archaeological Reconnaissance of the Chincoteague National Wildlife Refuge, Accomack County, Virginia and Worcester County, MD: Final Report. R. Christopher Goodwin & Associates, Inc., Frederick, MD, (for USFWS).

Fies. 2020. Personal communication in 2020 regarding fox harvests in the State of Virginia.

Finkelstein, M.E., D.F. Doak, D. George, J. Burnett, J. Brandt, M. Church, J. Grantham, and D.R. Smith. 2012. Lead poisoning and the deceptive recovery of the critically endangered California condor. Proceedings of the National Academy of Sciences 109(28): 11449-11454.

Finster, M.E., Gray K.A., and Binns H.J. 2004. Lead levels of edibles grown in contaminated residential soils: A field survey. Sci Total Environ 320:245-257.

Fisher, I.J., D.J. Pain, and V.G. Thomas. 2006. A review of lead poisoning from ammunition sources in terrestrial birds. Biological Conservation 131: 421-432.

Fleming, G.P. and K.D. Patterson. 2010. Natural Communities of Virginia: Ecological Groups and Community Types. Natural Heritage Technical Report 10-11. Virginia Department of Conservation and Recreation, Division of Natural Heritage, Richmond, VA.

Fleming, Gary P. and Karen D. Patterson 2021. Natural Communities of Virginia: Ecological Groups and Community Types: a listing with conservation status ranks. Natural Heritage Technical Report 21-15. Virginia Department of Conservation and Recreation, Division of Natural Heritage, Richmond, Virginia. 31 pages.

Flyger, V. 1960. Sika deer on islands in Maryland and Virginia. Journal of Mammalogy 41(1):140.

Frank, J.J., A.G. Poulakos, R. Tornero-Velez, and J. Xue. 2019. Systematic review and meta-analyses of lead (Pb) concentrations in environmental media (soil, dust, water, food, and air) reported in the United States from 1996 to 2016. Science of the Total Environment 694: 133489. Accessed April 14, 2022. Available from: https://www.sciencedirect.com/science/article/pii/S0048969719334096

Franson, J.C., S.P. Hansen, and J.H. Schulz. 2009 "Ingested shot and tissue lead concentrations in Mourning Doves." *Ingestion of Lead from Spent Ammunition: Implications for Wildlife and Humans. The Peregrine Fund, Boise, Idaho, USA.* DOI 10.4080/ilsa.2009.0202

Franson, J.C. and D.J. Pain. 2011. Lead in birds. In: W.N. Beyer and J.P. Meador (Eds). Environmental Contaminants.

Gill, C.E. and K.M. Langelier. 1994. Acute lead poisoning in a bald eagle secondary to bullet ingestion. The Canadian Veterinary Journal 35(5): 303.

Grade, T., P. Campbell, T. Cooley, M. Kneeland, E. Leslie, B. MacDonald, J. Melotti, J. Okoniewski, E. J. Parmley, C. Perry, H. Vogel, and M. Pokras. 2019. Lead poisoning from ingestion of fishing gear: A review. Ambio 48, 1023–1038. https://doi.org/10.1007/s13280-019-01179-w

Gross, John, B. Cohen, B. Collier, and M. Chamberlain. 2015. Influences of hunting on movements

of male wild turkeys during spring. Proceedings of the National Wild Turkey Symposium. 11. 259-268.

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

Haig, S.M., J. D'Elia, C. Eagles-Smith, J.M. Fair, J. Gervais, G. Herring, J.W. Rivers, and J.H. Schulz. August 1, 2014. The persistent problem of lead poisoning in birds from ammunition and fishing tackle, The Condor, Volume 116, Issue 3, Pages 408–428. Available from: https://doi.org/10.1650/CONDOR-14-36.1

Hanley, B.J., A.A. Dhondt, M.J. Forzan, E.M. Bunting, M.A. Pokras, K.P. Hynes E. Dominguez-Villegas, and K.L. Schuler. 2022. Environmental lead reduces the resilience of bald eagle populations. The Journal of Wildlife Management 1-18. https://doi.org/10.1002/jwmg.22177

Herring, G., C.A. Eagles-Smith, and M.T. Wagner. 2016. Ground Squirrel Shooting and Potential Lead Exposure in Breeding Avian Scavengers. PLOS ONE 11 (12): e0167926. https://doi.org/10.1371/journal.pone.0167926

Hoffman, D.J., J.C. Franson, O.H. Pattee, C.M. Bunck, and A. Allen. 1985a. Survival, growth, and accumulation of ingested lead in nestling American kestrels *(Falco sparverius)*. Archives of Environmental Contamination and Toxicology 14: 89-94.

Hoffman, D.J., J.C. Franson, O.H. Pattee, C.M. Bunck, and H.C. Murray. 1985b. Biochemical and hematological effects of lead ingestion in nestling American kestrels *(Falco sparverius)*. Comparative Biochemistry and Physiology – Part C 80: 431-439.

Horsley, S.B., S.L. Stout, and D.S. DeCalesta. 2003. White-tailed deer impact on the vegetation dynamics of a northern hardwood forest. Ecol. Appl. 13(1)98-118. https://www.fs.fed.us/ne/warren/aboutus/pdf/Horsley%20et%20al%20-%202003.pdf.

Hunt, W.G., W. Burnham, C.N. Parish, K.K. Burnham, B. Mutch, and J.L. Oaks. 2006. Bullet fragments in deer remains: Implications for lead exposure in avian scavengers. Wildlife Society Bulletin 34: 167-170.

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

IPCS (International Programme on Chemical Safety). 1995. Inorganic lead. Environmental Health Criteria 165. World Health Organization, International Programme on Chemical Safety (IPCS), Geneva, Switzerland.

Iqbal S., W. Blumenthal, C. Kennedy, F.Y. Yip, S. Pickard, W.D. Flanders, K. Loringer, K. Kruger, K.L. Caldwell, and M. Jean Brown. 2009. Hunting with lead: association between blood

lead levels and wild game consumption. Environmental Research 109(8):952-9. Doi: 10.1016/j.envres.2009.08.007.

Jacobsen, E., J.W. Carpenter, and M Novilla. 1977. Suspected lead toxicosis in a bald eagle. Journal of American Medical Association 171: 952-954.

Johnson, C.K., T.R. Kelly, and B.A. Rideout. 2013. Lead in ammunition: A persistent threat to health and conservation. EcoHealth 10: 455-464.

Kelly A. and S. Kelly. 2005. Are mute swans with elevated blood lead levels more likely to collide with overhead power lines? Waterbirds 28: 331-334.

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

Kendall, R. J., T. E. Lacher, Jr., C. Bunck, B. Daniel, C. Driver, C. E. Grue, F. Leighton, W. Stanley, P. G. Watanabe, and M. Whitworth. 1996. An ecological risk assessment of lead shot exposure in non-waterfowl avian species: upland game birds and raptors. Environmental Toxicology and Chemistry 15: 4– 20. https://setac.onlinelibrary.wiley.com/doi/abs/10.1002/etc.5620150103

Kosnett, M.J. 2009. Health effects of low dose lead exposure in adults and children, and preventable risk posed by the consumption of game meat harvested with lead ammunition. In: R.T. Watson, M. Fuller. M. Pokras, W.G. Hunt (Eds.). Ingestion of Lead from Spent Ammunition: Implications for Wildlife and Humans. The Peregrine Fund, Boise, Idaho, USA. Pp. 24-33. Doi: 10.4080/ilsa.2009.0103.

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

Kreager, N., B.C. Wainman, R.K. Jayasinghe, and L.J.S. Tsuji. 2008. Lead pellet ingestion and liver-lead concentrations in upland game birds from southern Ontario, Canada. Archives of Environmental Contamination and Toxicology 54: 331-336. Doi: 10.1007/s00244-007-9020-6.

Langley, Susan B.M., PhD. May 31, 2002. Draft Archaeological Overview and Assessment of Maritime Resources in Assateague National Seashore, Worcester County, Maryland and Accomack County, Virginia. Maryland Historical Trust (for NPS).

Larsen, R.T., J.T. Flinders, J.T. Mitchell, and E.R. Perkins, 2007. Grit size preference and confirmation of ingested lead pellets in chukars *(Alectoris chukar)*. Western North American Naturalist 67(1): 152-155.

Lewis, N.L., T.C. Nichols, C. Lilley, D.E. Roscoe, and J. Lovy. 2021. Blood lead declines in

wintering American black ducks in New Jersey following the lead shot ban. Journal of Fish and Wildlife Managements 12(1): 174-182.

Lomnicky, G.A, A.T. Herlihy, and P.R. Kaufmann. 2019. Quantifying the extent of human disturbance activities and anthropogenic stressors in wetlands across the conterminous United States: results from the National Wetland Condition Assessment. Environmental Monitoring and Assessment. https://link.springer.com/article/10.1007/s10661-019-7314-6.

O'Halloran, J., A.A. Myers, and P.F. Duggan. 1989. Some sub-lethal effects of lead on mute swan *(Cygnus olor)*. Journal of Zoology 218: 627-632.

Pain, D.J., R. Mateo, and R.E. Green. 2019. Effects of lead from ammunition on birds and other wildlife: A review and update. Ambio 48:935–953.

Pattee, Oliver H., Stanley N. Wiemeyer, Bernie M. Mulhern, Louis Sileo, and James W. Carpenter. 1981. Experimental Lead-Shot Poisoning in Bald Eagles. The Journal of Wildlife Management, 45(3), 806–810. https://doi.org/10.2307/3808728

Pattee, O.H. 1984. Eggshell thickness and reproduction in American kestrels exposed to chronic dietary lead. Archives of Environmental Contamination Toxicology 13, 29-34. https://link.springer.com/content/pdf/10.1007/BF01055643.pdf

Pattee, Oliver H., Stanley N. Wiemeyer, Bernie M. Mulhern, Louis Sileo, and James W. Carpenter. 1981. Experimental Lead-Shot Poisoning in Bald Eagles. The Journal of Wildlife Management, 45(3), 806–810. https://doi.org/10.2307/3808728

Pauli, Jonathan N., and Steven W. Buskirk. "Recreational Shooting of Prairie Dogs: A Portal for Lead Entering Wildlife Food Chains." *The Journal of Wildlife Management*, vol. 71, no. 1, 2007, pp. 103–08. *JSTOR*, http://www.jstor.org/stable/4495149. Accessed 15 Aug. 2022.

Platt, J.B. 1976. Bald eagles wintering in a Utah desert. American Birds 30: 783-788.

Provencher, J.F., M.R. Forbes, H.L. Hennin, O.P. Love, B.M Braune, M.L. Mallory, and H.G. Gilchrist. 2016. Implications of mercury and lead concentrations on breeding physiology and phenology in an Arctic bird. Environmental Pollution 219: 1014-1022.

Rattner, B.A., J.C. Franson, S.R. Sheffield, C.I. Goddard, N.J. Leonard, D. Stang, and P.J. Wingate. 2008. Sources and Implications of Lead-based Ammunition and Fishing Tackle to Natural Resources. Wildlife Society Technical Review. The Wildlife Society, Bethesda, Maryland, USA

Redig, P.T., C.M. Stowe, D.M. Barnes, and T.D. Arent. 1980. Lead toxicosis in raptors. Journ. Amer.Vet. Med. Assoc. 177:941.

Rideout, B.A., I. Stalis, R. Papendick, A. Pessier, B. Puschener, M.E. Finkelstein, D.R. Smith, M. Johnson, M. Mace, R. Stroud, J. Brandt, J. Burnett, C. Parish, J. Petterson, C. Witte, C.

Stringfield, K. Orr, J. Zuba, M. Wallace, and J. Grantham. 2012. Patterns off mortality in free-ranging California condors *(Gymnogyps californianus)*. Journal of Wildlife Diseases 48(1): 95-112.

Roberts, A.J. 2019. Atlantic Flyway harvest and population survey data book. U.S. Fish and Wildlife Service, Laurel, MD.

Sahmel, J., E.I. Hsu, H.J. Avens, E. Beckett, and K.D. Devlin. 2015. Estimation of hand-to-mouth transfer efficiency of lead. Annals of Work Exposures and Health 59: 210–220.

Samuel, M.D. and E.F. Bowers. 2000. Lead exposure in American black ducks after implementation of non-toxic shot. Journal of Wildlife Management 64: 947-953.

Samuel, M.D., E.F. Bowers, and J.C. Franson. 1992. Lead exposure and recovery rates of black ducks banded in Tennessee. Journal of Wildlife Diseases 28: 555-561.

Scheuhammer, A.M. 1987. The chronic toxicity of aluminum, cadmium, mercury, and lead in birds: A review. Environmental Pollution 46: 263-295.

Schulz, J.H., J.J. Millspaugh, A.J. Bermudez, X. Gao, T.W. Bonnot, L.G. Britt, and M. Paine. 2006. Journal of Wildlife Management 70(2): 413-421.

Sieg, R., K.A. Sullivan, and C.N. Parish. 2009. Voluntary lead reduction efforts with the northern Arizona range of the California condor. In: R.T Watson, M. Fuller. M. Pokras, W.G. Hunt (Eds.). Ingestion of Lead from Spent Ammunition: Implications for Wildlife and Humans. The Peregrine Fund, Boise, Idaho, USA, pp. 341-349.

Slabe, V.A., J.T. Anderson, B.A. Milsap, J.L. Cooper, A.L. Harmata. M. Resatni, R.H. Crandall, B. Bodenstein, P.H. Bloom, T. Booms, J. Buchweitz, R. Culver, K. Dickerson, R. Domenech, E. Dominguez-Villegas, D. Driscoll, B.W. Smith, M.L. Lockhart, D. McRuer, T.A. Miller, P.A. Ortiz, K. Rogers, M. Schwartz, N. Turley, B. Woodbridge, M.E. Finkelstein, C.A. Triana, C.R. DeSorbo, and T.E. Katner. 2022. Demographic implications of lead poisoning for eagles across North America. Science. 375: 779-782.

Society of Environmental Toxicology and Chemistry (SETAC). 2021. Science Brief: Lead Toxicity in Wildlife. Pensacola (FL): SETAC. 2pp.

Sorvari, J., R. Antikainen, and O. Pyy. 2006. Environmental contamination at Finnish shooting ranges–the scope of the problem and management options. Sci Total Environ 366(1):21-31

State of California. 2022. Nonlead Ammunition in California. Accessed April 14, 2022. Available from: https://wildlife.ca.gov/Hunting/Nonlead-Ammunition#250462358-ive-heard-nonlead-costs-twice-as-much-where-can-i-find-a-good-deal-on-ammo.

Stauber, Erik, Nickol Finch, Patricia A. Talcott, and John M. Gay. 2010. “Lead poisoning of bald (*Haliaeetus leucocephalus*) and golden (*Aquila chrysaetos*) eagles in the US inland Pacific

Northwest region—An 18-year retrospective study: 1991–2008." *Journal of Avian Medicine and Surgery* 24.4 (2010): 279-287.

Stroud, R.K. and W.G. Hunt. 2009. Gunshot wounds: A source of lead in the environments. In: R.T. Watson, M. Fuller. M. Pokras, W.G. Hunt (Eds.). Ingestion of Lead from Spent Ammunition: Implications for Wildlife and Humans. The Peregrine Fund, Boise, Idaho, USA. Pp. 119-125.

Tomar, M., Kaur, I., Bhatnagar, N., & Bhatnagar, A. K. (2000). Effect of enhanced lead in soil on growth and development of Vigna radiata (L) Wilczek. Indian Journal of Plant Physiology, 5, 13–18.

Tsuji, L.J., B.C. Wainman, I.D. Martin, C. Sutherland, J.P. Weber, P. Dumas, and E. Nieboer. 2008. The identification of lead ammunition as a source of lead exposure in First Nations: the use of lead isotope ratios. Science of the Total Environment. 393 (2–3), 291–298.

University of Massachusetts Amherst. 2022. Center for Agriculture, Food and the Environment. Soil and Plant Nutrient Testing Laboratory. Soil Lead Fact Sheet. Website accessed May 5, 2022. Available from: https://ag.umass.edu/soil-plant-nutrient-testing-laboratory/factsheets/soil-lead -factsheet#:~:text=Lead%20is%20naturally%20present%20in,levels%20to%20several%20thousand%20ppm.

U.S. Census Bureau. 2010 Demographic Profile Data, DP-1. Accessed at http://www.factfinder2.census.gov on March 20, 2021.

U.S. Department of Health and Human Services. 2007. Toxicological Profile of Lead. Agency for Toxic Substances and Disease Registry. Division of Toxicology and Environmental Medicine/Applied Toxicology Branch. 1600 Clifton Road NE Mailstop F-32 Atlanta, Georgia 30333.

U.S. EPA (Environmental Protection Agency) Lead fishing sinkers; response to citizens' petition and proposed ban; proposed rule, 40 CFR part 745. Federal Register. 1994;59:11122–11143.

U.S. Fish and Wildlife Service (USFWS). 1999. Establishing "lead free fishing area" and the prohibition of the use of certain fishing sinkers and jigs made with lead on specific units of the National Wildlife Refuge system. Federal Register 64:17992.

USFWS. 2007. Chincoteague National Wildlife Refuge Hunt Management Plan.

USFWS. 2015. Chincoteague and Wallops Island National Wildlife Refuges Comprehensive Conservation Plan.

USFWS. 2013. Issuance of Annual Regulations Permitting the Hunting of Migratory Birds: Final Supplemental Environmental Impact Statement. Accessed February 2022 at https://www.fws.gov/media/issuance-annual-regulations-permitting-hunting-migratory-

birds-final-supplemental.

USFWS. 2017. Banking on Nature: National Wildlife Refuge Data Visualizations (Chincoteague NWR). https://www.fws.gov/sites/default/files/documents/USFWS_Banking_on_Nature_2017.pdf.

Verbrugge, L.A. S.G. Wenzel, J.E.Berner, and A.G. Matz. 2009. Human exposure to lead from ammunition in the circumpolar north. In: R.T. Watson, M. Fuller. M. Pokras, W.G. Hunt (Eds.). Ingestion of Lead from Spent Ammunition: Implications for Wildlife and Humans. The Peregrine Fund, Boise, Idaho, USA. Pp. 126-136.

Virginia Department of Wildlife Resources. 2014. Results of the 2013-2014 Virginia Trapper Survey. https://dwr.virginia.gov/wp-content/uploads/2013-2014-Virginia-Trapper-Harvest-Report.pdf.

Virginia Department of Wildlife Resources. 2018. Results of the 2017-2018 Virginia Hunter Survey.

Virginia Department of Wildlife Resources. 2020. Fact Sheet – Waterfowl Hunters and Harvests – 2020. https://dwr.virginia.gov/wp-content/uploads/media/waterfowlfactsheets.pdf.

Virginia Department of Wildlife Resources. 2021a. Virginia Deer Management Program. https://dwr.virginia.gov/wildlife/deer/deer-management-program/.

Virginia Department of Wildlife Resources. 2021b. 2020-2021 Deer Kill Summary. https://dwr.virginia.gov/wildlife/deer/harvestsummary/.

Virginia Department of Wildlife Resources. 2021c. Virginia 2020-2021 Fall Wild Turkey harvest Summary. https://dwr.virginia.gov/wildlife/turkey/fallharvestsummary/.

Warner, S.E., E.E. Britton, D.N. Becker, and M.J. Coffey. 2014. Bald eagle lead exposure in the Upper Midwest. *Journal of Fish and Wildlife Management*, 5(2), 208-216.

Washington Department of Fish and Wildlife. 2022. Non-toxic shot requirements. https://wdfw.wa.gov/hunting/regulations/migratory-waterfowl-upland-game/non-toxic-shot. Accessed: February 2, 2022.

Wobester, G.A. 1997. Diseases of Wild Waterfowl (2nd ed.). New York. 324 pp.

OTHER APPLICABLE STATUTES, EXECUTIVE ORDERS AND REGULATIONS

Cultural Resources

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

Fish and Wildlife

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

Natural Resources

- Clean Air Act, as amended, 42 U.S.C. 7401-7671q; 40 CFR Parts 23, 50, 51, 52, 58, 60, 61, 82, and 93; 48 CFR Part 23.
- Wilderness Act, 16 U.S.C. 1131 et seq.
- Wild and Scenic Rivers Act, 16 U.S.C. 1271 et seq.
- Executive Order 13112 – Invasive Species, 64 Fed. Reg. 6183 (1999).

Water Resources

- Coastal Zone Management Act of 1972, 16 U.S.C.1451 et seq.; 15 CFR Parts 923, 930, 933.
- Federal Water Pollution Control Act of 1972 (commonly referred to as Clean Water Act), 33 U.S.C. 1251 et seq.; 33 CFR Parts 320-330; 40 CFR Parts 110, 112, 116, 117, 230-232, 323, and 328.
- Rivers and Harbors Act of 1899, as amended, 33 U.S.C. 401 et seq.; 33 CFR Parts 114, 115, 116, 321, 322, and 333.Safe Drinking Water Act of 1974, 42 U.S.C. 300f et seq.; 40 CFR Parts 141-148.c
- Executive Order 11988 – Floodplain Management, 42 Fed. Reg. 26951 (1977).
- Executive Order 11990 – Protection of Wetlands, 42 Fed. Reg. 26961 (1977).

COMPATIBILITY DETERMINATION

Refuge Use Category

Hunting

Refuge Use Type(s)

Recreational hunting of big game (white-tailed deer, sika, and turkey), upland game (racoon, opossum, fox, and coyote), and migratory game birds (rail, coot, snipe, gallinule, duck, goose, swan, woodcock, dove, and crow).

Refuge

Chincoteague National Wildlife Refuge

Refuge Purpose(s) and Establishing and Acquisition Authority

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

"... suitable for - (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ..." 16 U.S.C. § 460k-1 "... the Secretary ... may accept and use ... real ... property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors ..." 16 U.S.C. § 460k-2 (Refuge Recreation Act (16 U.S.C. § 460k-460k-4), as amended);

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

"... for the development, advancement, management, conservation, and protection of fish and wildlife resources ..." 16 U.S.C. § 742f(a)(4) "... for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude ..." 16 U.S.C. § 742f(b)(1) (Fish and Wildlife Act of 1956); and

"... for conservation purposes ..." 7 U.S.C. § 2002 (Consolidated Farm and Rural Development Act).

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System, otherwise known as the Refuge System, is to administer a national network of lands and waters for the conservation, management and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (Pub. L. 105-57; 111 Stat. 1252).

Description of Use

The use is public hunting of big game (white-tailed deer, sika, and turkey), upland game (racoon, opossum, fox, and coyote), and migratory game birds (rail, coot, snipe, gallinule, duck, goose, swan, woodcock, dove, and crow) at Chincoteague National Wildlife Refuge (NWR, refuge). Hunting is 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 2015 compatibility determinations (CD) for big game hunting, and migratory game bird hunting.

What is the use?

The use is hunting. It is a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee) and the National Wildlife 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 use would be conducted in designated management units of the refuge. Migratory game bird hunting is open on the Wildcat Marsh Unit, Morris Island Unit, Assawoman Island Unit, and Metompkin Island Unit. Wildcat Marsh Unit (546 acres) is located at the north end of Chincoteague Island, and Morris Island Unit (427 acres) is located between Chincoteague and Assateague Islands. Assawoman Island Unit contains 1,434 acres and encompasses the entire island, and the Metompkin Island Unit consists of 174 acres on the north end of the island. Thus, migratory game bird hunting would be conducted in designated areas of the refuge on a total of up to 2,581 acres over the 14,032-acre refuge, or approximately 18 percent of the refuge.

Big game and upland game hunting would be conducted in designated areas of the refuge on the Virginia portion of Assateague Island Unit. Assateague Island is a barrier beach island that extends over 30 miles along the Atlantic coast. The Assateague Island Unit includes the Northern Hunt Zone (3,869 acres) and the Archery Only Zone (3,268 acres).

No-hunting zones would include beach areas, the over wash zone on Assateague Island Unit, the southwest portion of Wildcat Marsh, and a 100-foot buffer area around any building, road or improved trail, including around refuge housing units, the bunkhouse, the headquarters office and Visitor Center, maintenance buildings, the lighthouse, the Service Road, the Wildlife Loop, the Marsh Trail, Swan Cove Trail, and the Woodland Trail. Please refer to Figure 1.

When would the use be conducted?

Hunting would be permitted from September 16 to March 14. Season dates, within this time period, will be in accordance with State regulations. The only exception is for spring turkey hunting, which would occur during the State spring season from mid-April though early May. Big game and migratory game bird hunting hours would occur in accordance with State regulations, and hunters may access the refuge 2 hours before sunrise until 2 hours after sunset. Upland game hunting would only occur in accordance with State regulations and only during regular refuge access hours for hunting from 2 hours before sunrise to 2 hours after sunset. Night hunting would not be allowed. Hunting on Sundays would be permitted for migratory bird hunting and prohibited for big game and upland game hunting.

How would the use be conducted?

Hunting would be permitted in designated areas of the refuge in accordance with State and refuge-specific regulations. Hunters will read and sign a hunt brochure prior to hunting on the refuge. Hunt brochures are available online on the refuge website, at the hunt check station, or at the Visitor Center. Hunters on the Assateague Island Unit of the refuge are required to sign-in/sign-out at the hunt check station daily.

We will continue to conduct the use according to State and Federal regulations. Federal regulations in 50 CFR pertaining to the NWRSAA, as well as existing refuge-specific regulations will apply. However, the refuge manager may, upon annual review of the hunting program, impose further restrictions on hunting, recommend that the refuge be closed to hunting, or further liberalize hunting regulations up to the limits of State regulations. We will restrict hunting if it becomes inconsistent with other higher priority refuge programs or endangers refuge resources or public safety.

Big Game
Big game hunting is permitted for white-tailed deer, sika, and wild turkey in accordance with State seasons and methods of take within respective zones. The Northern Hunt Zone is the firearms zone and includes all methods permitted by the State, and the Archery Zone is restricted to archery equipment only. Spring and fall turkey hunting would be administered via a mentored quota hunt and initially targeted to hunts for youth and apprentice hunters to assist the State with hunter recruitment and retention efforts (commonly referred to as R3). The quota turkey hunt would require the use of non-lead ammunition. Big game hunting will not be permitted on Sundays. Daily sign-in/sign-out procedures will be required for big game hunters to facilitate notification of hunters for current management activities which may impact the hunt zones, collection of harvest data, and to determine hunter participation data for planning of future hunt opportunities. The number of hunters will not be limited within each zone. Daily and seasonal bag limits will follow the State regulations. The sika harvest would be regulated in accordance with the State Deer Population Reduction Program (DPOP).

Upland Game
Upland game hunting for racoon, opossum, fox, and coyote would be allowed during regular refuge

hours only (no night hunting, access from sunrise to sunset) and would be concurrent with the deer season (approximately October through early January). Upland game hunting will not be permitted on Sundays.

Migratory Game Birds
Migratory game bird hunting would be permitted for rail, coot, snipe, gallinule, duck, goose, swan, woodcock, dove, and crow in the designated Migratory Bird Hunt Zones (see map). Hunting and access for migratory game bird hunting would be by boat only. Sunday hunting would be permitted for all migratory game birds. The use of dogs would be allowed according to State regulations. Hunters must obtain, sign, and have in their possession a signed hunt brochure.

Hunter Access
The refuge will make reasonable efforts to allow hunters access to each of the hunt units. The intention is to provide safe, quality hunting opportunities that consider the welfare of the refuge wildlife resources. If hunting conditions are deemed unsafe to hunters or refuge staff or negative impacts on resources are discovered, hunt program procedures and timing are subject to change. All access points and hunter parking areas will be delineated on refuge hunt maps and will be included in the hunt brochures. Hunters may be permitted to enter refuge lands prior to normal refuge operating hours in order to reach hunt units at the start of State hunting hours for big game and migratory game bird hunting.

Waterfowl hunters may access hunt units by boat via several private and public boat launches within the refuge vicinity. No boat launches exist on the refuge and the waterfowl hunt units are not accessible via land. State and municipal boat launches are within a short distance of refuge hunting areas and can be used for the launch and retrieval of boats.

Non-Lead Ammunition
Where not already required, we will encourage hunters to voluntarily use non-lead ammunition when hunting (deer, sika, upland game, turkey, woodcock, crow, and dove). Beginning September 1, 2026, we will eliminate use of all lead ammunition for hunting of any species on Chincoteague NWR. 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 a valuable transition period that benefits fish, wildlife, and people.

Why is this use being proposed or reevaluated?

This use is a priority public use and being reevaluated to meet the 15-year mandatory requirement for reevaluation. Hunting is one of the priority public uses defined by the NWRSAA of 1966, as amended by the Refuge System Improvement Act of 1997 (Public Law 105-57). Department of the Interior Secretarial Order 3356 (September 15, 2017) further emphasized identifying opportunities to increase outdoor recreation opportunities for all Americans, including opportunities to hunt and fish. This legitimate and appropriate use of a national wildlife refuge is generally considered compatible as long as it does not materially interfere with or detract from the fulfillment of the Refuge System mission or the purposes of the refuge.

Objectives for the hunting program at Chincoteague NWR include providing 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.

Hunting is consistent with the 2015 Comprehensive Conservation Plan's (CCP) larger goal that aims to have "people of all ages and abilities develop a stewardship ethic while enjoying their refuge experience and increasing their knowledge of the FWS, Refuge System, and the refuge." This goal includes a specific objective (Goal 6, Objective 6.1) to "increase level of opportunity (e.g., expansion of hunted species) in the hunt program, such as the fall/winter light goose hunt, through expansion of hunted species, trapping, and new hunting programs." This objective will help provide safe and high-quality big game, small game, and waterfowl hunting opportunities for the public.

Availability of Resources

Cost analysis for administration and management of the hunt is estimated to be approximately $24,000. Adequate Service resources currently exist and can be provided with existing personnel to properly develop, operate, and maintain the hunt and will not detract from refuge purposes or the Refuge System mission.

Resources involved in management and administration of the hunt include personnel to provide annual updates to the hunt brochure, website information, and hunt kiosk; personnel to maintain boundary markers in the field; staff and equipment to maintain roads and create designated parking and install signage in new units (see Table A-1).

Table A-1. Estimated Costs for Hunting at Chincoteague and Wallops Island NWRs Combined

Identifier	Cost
Staff and/or Contractors	$9,000
Maintain roads, parking lots, trails*	$13,000
News releases, fact sheets, permitting reports	$1,000
Maintain hunt/fish materials and supplies (signs, deer check station)	$1,000
Total Annual Cost	**$24,000**

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

Monitoring of regional populations to determine harvest regulations will be conducted by the State. In addition, we will request State resources to manage the mentored turkey hunts.

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 following are anticipated impacts for hunting on Chincoteague NWR. This section predicts foreseeable impacts of implementing the hunting program on refuge resources. When detailed information may be deficient or unavailable, we base our evaluation on professional judgment and experience. We usually identify potential impacts within a long-range timeframe (i.e., 15 years) and beyond that timeframe, they become more speculative. For more specific impacts related to all proposed changes detailed in the Hunting Plan, please refer to the Environmental Assessment (Appendix C).

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 been permitted on the refuge since 1964 with no discernible adverse impacts to resources. Hunting provides wildlife-dependent recreational opportunities and can foster a better appreciation and more complete understanding of the wildlife and habitats associated with the southern Delmarva Peninsula landscape. This could result in more widespread and stronger support for wildlife conservation, the refuge, the Refuge System, and the Service.

The refuge hunt program is designed to be sustainable through time, given relatively stable conditions, particularly because of close coordination with the Virginia Department of Wildlife Resources (VDWR). Overall, adverse impacts of hunting on big game (white-tailed deer, sika, and turkey), upland game (raccoon, opossum, fox, and coyote), and migratory game bird (rail, coot,

snipe, gallinule, duck, goose, swan, woodcock, dove, and crow) populations at the refuge would be negligible. The proportion of the refuge's harvest of these species would be negligible when compared to local, regional, and statewide populations and harvest.

Because of the regulatory process for harvest management in place within the Service, the ability of individual refuge hunt programs to adapt refuge-specific hunting regulations to changing local conditions, and the wide geographic separation of individual refuges, we anticipate no significant impacts on resident wildlife, migratory birds, and non-hunted wildlife as a result of hunting on Chincoteague NWR.

In comparison with the entire Atlantic Flyway, or the breeding ranges of the many birds and wildlife that use it, the hunting area of the refuge comprises a relatively small total land mass. The Service recognizes that the refuge is not isolated ecologically from the land around it; however, we may have overstated positive or negative impacts in that larger geographic context. Nevertheless, many of the actions we propose conform with the 2015 CCP and other regional landscape plans, and provide positive, incremental contributions to those larger landscape goals.

Big Game

Deer hunting (white-tailed and sika) on the refuge has been occurring since 1964 and annual harvest numbers on the refuge remain relatively high (in 2020/2021: 216 deer harvested; 2019/2020: 194 deer harvested). We anticipate a small increase in the number of deer harvested annually, but this would not meaningfully affect the current overpopulation of deer in the county. Deer may avoid hunting areas due to increased pressure, but this would not create negative impacts to the population. Sika populations are estimated using the Downing Population Reconstruction and are managed through the State harvest regulations for DPOP.

According to VDWR, the wild turkey population was estimated as 0.45 to 0.61 turkeys per square mile of suitable habitat for the northern Virginia region in the 2016-2017 season. The northern Virginia region population is considered stable to rising. Approximately 20,525 turkeys were harvested during the 2020 spring gobbler season, and 232 harvests were made in Accomack County.

Studies examining the direct effects of hunting on turkey behavior and movement are limited. One study conducted in Louisiana tracked the movements of wild turkey during the hunting season and found that distances traveled by wild turkeys were only 8 percent greater during hunting days than non-hunting days (Gross et al. 2015). Although hunting made it more likely for a turkey to change their movement patterns, a small-scale increase in range is not biologically significant.

The refuge would open a limited quota mentored turkey hunt during the spring and fall seasons. The remainder of the year would allow turkey to rest and recover. The refuge lacks current population estimates for turkeys on the refuge. However, based on staff observations of turkeys and anticipated hunter participation, the refuge estimates less than 10 turkeys will be harvested annually from Chincoteague NWR. Relative to State harvest numbers, refuge impacts on statewide populations are expected to be negligible.

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 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.

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.

Upland Game

We anticipate small harvest levels of these species and only minor impacts to their population levels. Most of the land use surrounding the refuge lands consists of agriculture and residential areas where populations of these species proliferate on the broader surrounding landscape. Any impacts will be short-term and minor and would mostly include changes in habitat use by individuals.

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 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.

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.

Migratory Game Birds

Opening less than 40 percent of the marshes to migratory game bird hunting would have some short-term disturbance to the waterbirds resting and feeding in the area. Marsh areas are prone to disturbance, and increased foot traffic to access hunting sites would result in trampling of sensitive marsh plants in frequently used areas (Lomnicky et al. 2019). There would be few long-term impacts to waterbird populations since most of the marsh area on the eastern shore is owned by the State and is already open to migratory bird hunting.

There could be disturbance related to increased human presence and noise associated with hunting. However, the Service maintains the ability to mitigate potential conflicts through limitations of no-hunting zones, days and seasons of hunting, no night hunting, migratory bird hunting on less than 40 percent of the refuge, and methods of take for many opportunities permitted.

Migratory game bird hunting would occur within State seasons from September 16 through March 14, although the State seasons for newly added species will end each year before February. Non-lead ammunition will be required for rail, gallinule, snipe, coot and waterfowl hunting. We will strongly encourage the voluntary use of non-lead ammunition for the newly added species (woodcock, crow, and dove), and will require non-lead ammunition for all migratory game bird species beginning September 1, 2026 (after the 3-year transition period).

The proposed expansion of migratory game bird hunting to include additional species on Chincoteague NWR is anticipated to result in only minimal take of newly hunted species and negligible increases in take for those species already hunted. In the designated Migratory Bird Hunt Zone, the majority of hunters primarily target ducks and geese.

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 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.

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.

Non-target Species

Chincoteague NWR hosts a wide diversity of both resident and migratory wildlife. The refuges are important stopover sites in the Atlantic Flyway and provide important habitat for resident species in an area with rising development trends. Many common bird species will be in areas adjacent to hunting, in both upland and wetland areas, and they may relocate to other areas of the refuge during hunting.

Thirty-four mammal species have been recorded on the lower Delmarva Peninsula and 9 bat species may be found on or around the refuge. Frogs and toads that can be found at Chincoteague NWR include the Northern spring peeper, Southern green frog, Southern leopard frog, Fowler's toad, and Eastern narrow-mouthed toad. The freshwater and estuarine turtles that inhabit the refuge include the Eastern painted turtle, spotted turtle, Eastern mud turtle, Northern red-bellied cooter, Eastern box turtle, Eastern snapping turtle, and the estuarine Northern diamond-backed terrapin. The red-backed salamander is also commonly found.

Finfish of primary importance found near the refuges include the black drum, red drum, bluefish, winter flounder, summer flounder, menhaden, spot, Atlantic croaker, grey trout, mullet, spotted seatrout, and striped bass.

Some disturbance to non-target wildlife species and impacts on vegetation may occur. While not

targeted for hunting or fishing, other wildlife may experience disturbance, avoidance of areas, habitat damage, or injury as a result of the use (Cole 1990). Hunting is not likely to adversely affect these species given the time of year the activities take place (September 16 through March 14) and where the uses occur on the refuge. In addition, hunting will not be permitted on Sunday for big and upland game and will not be permitted at night for any species.

Opening the Northern Hunt Zone and Archery Only Zone to fox, raccoon, opossum and coyote hunting may result in fewer predator species that have negative impacts on nesting migratory birds on the refuge. Populations of these species prey on eggs and disturb nesting birds resulting in reduced productivity. Allowing harvest of these species will likely result in desirable, positive outcomes of decreased predation on nesting migratory birds, and might reduce the need to conduct predator control.

As discussed above for big game, lead from previous hunting activities will still be present in the environment and may impact non-target 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. Lead ammunition can be used on the refuge for hunting until September 1, 2026, 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). To move towards reduction and future elimination of this threat on the refuge, we will be eliminating the use of lead ammunition over a 3-year period to educate and work with hunters on the use of non-lead alternatives. A transition to non-lead ammunition for all 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). It is unlikely that the amount of lead entering the environment from hunting activities would cause additional direct mortality of wildlife and non-target species.

Threatened and Endangered Species
Species that may be found on or nearby the refuge include seabeach amaranth, Northeastern beach tiger beetle, piping plover, red knot, roseate tern, black rail, Northern long-eared bat, Atlantic sturgeon, bald eagle, and five species of sea turtles. While not federally listed as a threatened or endangered species, bald eagles can be found nesting on or near the refuge and are protected by the Bald and Golden Eagle Protection Act.

Piping plover, red knot, roseate tern
In order to protect these shorebird species, staff at Chincoteague NWR close certain critical nesting, foraging, and roosting areas on Assateague, Assawoman, and Metompkin islands to public entry from March 15 through September 15. This timing does not overlap when the overwhelming majority of hunters visit the refuge. For example, deer, waterfowl, and upland game hunting are all conducted outside this date range. In addition, the refuge's hunt zones do not overlap with the preferred habitat of intertidal zone beaches and mudflats.

Regarding the impacts of lead ammunition, specifically for the beach shorebirds (i.e., roseate tern,

red knot and piping plover), the deer, sika, and upland game hunts in the Northern Zone hunt unit is the primary hunting opportunity in which hunters may use lead ammunition (upland game may be hunted at the same time). This hunt only occurs from November to January, in the more forested habitat of the refuge. Thus, it will not occur within, or in close proximity to, areas where those species occur. We do not anticiatpe high participation in hunting for rail, snipe, gallinule, woodcock, crow and dove as compared to deer, sika, or waterfowl hunting on the refuges, since access for these opportunities must occur by boat only, and the hunting seasons for the new migratory game bird species end each year by the end of January. The voluntary use of non-lead ammunition for new migratory game bird species (woodcock, crow, and dove) will initially be encouraged, and would be required after a 3-year transition period is implemented, starting September 1, 2026. Even if lead could leach out into the beach habitat these species use, the increase in lead would be extremely minor and dispersed, and therefore insignificant. Because hunting—including the use of lead ammunition, until it is discontinued starting September 1, 2026, is highly unlikely to overlap with piping plovers, red knots or roseate terns in time or space, these species are not likely to be adversely affected by the proposed hunting activities.

Eastern black rail
Because Eastern black rails do not occur on the refuge, the proposed activities are not likely to adversely affect this species. Hunting takes place September 15 through March 15, and would not overlap with breeding season for black rails during May. Any potential effects from disturbance are extremely unlikely to occur and considered discountable because the hunting area is far away from the marshes where Eastern black rail would occur.

The potential for lead impacts to black rails is discountable because of the bird's preferred habitat. Because of the federal and state regulations already in place requiring the use of non-lead ammunition for waterfowl, coot, gallinule, snipe and rail hunting, and that hunting with lead ammunition primarily occurs in the Northern Hunt zone (an upland area), and because we would require the use of non-lead ammunition for hunting all species on the refuges beginning September 1, 2026, impacts from lead are not likely to adversely affect black rail. In conclusion, the proposed hunting activities are not likely to adversely affect the Eastern black rail.

Northeastern beach tiger beetle
Northeastern beach tiger beetle (*Habroscelimorpha* (formerly *Cicindela*) *dorsalis dorsalis*) is not likely to be adversely affected by the proposed changes because they do not occur on the refuge. Only a subspecies, *Cicindela dorsalis media*, which is not federally protected, is found on Chincoteague's beaches.

Atlantic sturgeon
All proposed hunting changes are inland from the beach, and not near the ocean. Furthermore, all waterfowl hunting currently requires non-lead ammunition. For the next 4 years, lead ammunition is allowed in the Northern Hunt Zone, and for limited new migratory game bird hunting by boat only in the designated Migratory Game Bird Zone. Because Atlantic sturgeon also do not occur on the refuge, are separated from the forested areas of the Northern Hunt Zone by Service Road on the west, and distanced by 200 to 300 feet of beach/dune/scrub habitats on the east, the species will not experience any effects from the proposed activities. Therefore, the proposed activities will have no effect on the Atlantic sturgeon.

Northern long-eared bats
Northern long-eared bats (NLEB) may occur in some hunting zones but are not likely to experience any significant disturbance or habitat loss even if bats and hunters may briefly overlap. Firearms hunting is conducted in the Northern Hunt Zone (usually from November 19 through January 7) and archery hunting in the Archery Only Hunt Zone (usually from October 1 to November 18). Bats are typically nocturnal and inactive during most hunting seasons and times, and not present for most of the hunting seasons; therefore, disturbance would be highly unlikely.

Potential disturbances from expanded hunting, such as an increase in gun noise or additional portable tree stands, are expected to be insignificant given the amount of hunting expected to occur on these acres. Noise from firearms or dog barks could disturb roosting bats but it is likely that the bats would remain in the tree during daylight hours. Such noise disturbances are temporary and last only for the duration of the noise, not fundamentally unlike other temporary disturbances that bats may naturally experience, with no long-term effects; therefore, any potential disturbance 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.

The potential for lead impacts to bats is discountable due to Northern long-eared bats' diet 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 refuges will not consume lead derived from ammunition fired by hunters on the refuge. Because there have been no known occurrences of NLEB; because the potential for overlap in time or space between hunters and bats is very low; because the expected impacts to roosting bats even if there is overlap are insignificant; and because the potential for lead impacts are discountable, the proposed hunting activities are not likely to adversely affect the NLEB.

Sea turtles: Loggerhead, Green, Hawksbill, Kemp's Ridley, Leatherback
Five species of federally listed sea turtles use Assateague Island's ocean and bay waters. The leatherback sea turtle, Kemp's Ridley sea turtle, and the hawksbill sea turtle are listed as endangered species under the ESA; the loggerhead sea turtle and green sea turtle are listed as threatened. In Virginia, the state status is the same as the Federal status for these species. Of the five sea turtles, only loggerheads are known to nest on the refuge, which is the northern extent of its breeding range. In recent years, crawl and nesting activity (one to three nests) occurs June through August. Because incubation takes longer (90 or more days) at this latitude, the hatch window is August through October. Hunting activities do not occur where loggerhead sea turtles nest. Refuge beaches on Assateague, Assawoman, and Metompkin Islands will remain closed to hunting during the sea turtle nesting seasons. All waterfowl, coot, rail, snipe and gallinule hunting requires non-lead ammunition. Turtles present but not nesting, remain in the water, and thus, will not be impacted by hunting activities. Accordingly, the proposed hunting changes will have no effect on the five listed turtle species because the sea turtles are separated from the proposed hunting activities—including the use of lead ammunition—in space, and therefore, the species do not have the potential to be exposed to the effects of the proposed activities.

Monarch butterfly
Monarch butterflies are observed on nectar plants within beach strand habitat and impoundment management units during their peak migration (last two weeks of September through the first two weeks of October). Monarch butterflies typically concentrate on seaside goldenrod located along the Beach Road corridor and the dunes from Swan Cove Trail south to Toms Cove, which is closed to hunting. Dogs are not allowed on the Assateague Island unit of the refuge to minimize any potential for disturbance in the most sensitive areas of the refuge.

The plants senesce as the butterflies begin their fall migration, usually in October. Before then in, in the fall, hunting activity could result in some trampling of nectar sources available for monarchs, but any potential impact would be concentrated, insignificant, and leave plenty of available nectar sources on other areas of the refuge and unit. Only light foot travel from hunters accessing the area for hunting is expected to occur on these acres. While hunters are walking through habitat used by monarchs, there could be some impacts including flushing while resting or feeding. This disturbance is minimal as the monarchs can easily move to another spot when disturbed, which is a normal behavior response that does not result in long-term effects. Furthermore, hunting does not result in the removal of vegetation, including nectar sources or milkweed, and so it would have negligible impacts to habitat resources important for monarchs.

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

Seabeach amaranth
Seabeach amaranth was federally listed as threatened in 1993 by the Service. Seabeach amaranth is an annual plant species that occurs on the upper beach and sparsely vegetated over wash fans and inter-dune areas. This species appears to require extensive areas of barrier island beaches and inlets functioning in a relatively natural and dynamic manner. This plant has been determined not to occur on the refuge, and any impacts from hunting or the associated use of lead ammunition would be extremely unlikely to occur. Therefore, the proposed activities are not likely to adversely affect seabeach amaranth.

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 use of non-lead ammunition will initially be voluntary, 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. We will educate hunters about the impacts of lead and strongly encourage non-lead ammunition alternatives for the next 3 years.

The bioaccumulation of lead is a potential concern, but it does not likely present an issue on this refuge as: (1) non-lead shot is currently required for hunting waterfowl, coot, rail, snipe and gallinule; (2) the refuge strongly encourages use of non-lead alternatives for hunting for the next 3 years; (3) we would require the use of non-lead ammunition for all species beginning September 1, 2026. Some hunters will also choose non-lead methods of take such as archery.

For more detail, see the completed Intra-Service Section 7 Evaluation (Appendix D). Hunting activities may affect, but are not likely to adversely affect, any threatened or endangered species at the refuge. However, if there is a potential for hunting activities to have a negative impact on such species, or a new species of concern is identified on refuge lands, we will reevaluate our programs and implement program changes as necessary.

Habitat and Vegetation

Habitat types on Chincoteague NWR include forests, shrub/scrub, beach/dune, wet meadow/impoundment, and salt marsh. Waterfowl hunting may result in trampling of wetland vegetation, alteration of drainage patterns, and creation of trails (Liddle and Scorgie 1980). Upland game hunters will likely traverse a larger area of the refuge than big game and migratory bird hunters. However, all these impacts will be minimal, as vegetation may be dormant or entering dormancy during the hunting seasons.

Heavily browsed forest understory and shrub vegetation leaves less food and cover for migratory birds, a resource that the refuge is focused on protecting. Reducing the deer population will decrease the browse effects on vegetation and enable the forest understory to grow and produce more food and cover for migrants (Horsley et. al 2003). This will also provide additional habitat for small mammals, reptiles, and invertebrates.

Visitor Use and Experiences

Chincoteague NWR is open to all six priority public uses of the Refuge System. In 2021, the refuge had 1,408,451 recreational visits. Of those visits, 2,074 were for hunting. With the expanded hunting program at Chincoteague NWR, the likelihood for conflicts between hunters and conflicts with non-consumptive users increases. Public outreach, zoning, and restrictions in some locations have been proposed to reduce conflicts among the different user groups. If conflicts arise among user groups, mitigation efforts can be implemented to ensure that the proposed use will not have significant impacts to other user groups. Impacts to other users will primarily be limited to the hunting season and are minimized by time and space zoning that lessens the interactions between hunters and other wildlife-dependent users.

There is some possibility of negative economic impacts for hunters who must comply with the proposed non-lead requirements beginning in 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. 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 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 game 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.

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 Chincoteague and Wallops Island NWR Hunting opening package. The hunting plan was coordinated with all interested and/or affected parties, including VDWR staff. We informed the public through local venues, the refuge website, and social media. We released the original draft plan, CDs and EA for public review and comment from May 3 through August 8, 2022, a total of 97 days. A total of eleven comment letters were submitted that offered input to the refuge. Any comments and our responses can be found in the Finding of No Significant Impact (Appendix E of the 2022 EA).

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 Chincoteague 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 of the program's components are found not compatible.

The following stipulations are necessary to ensure compatibility:

1. Hunting for any species will be in accordance with State seasons and limited between September 16 to March 14 (except for the spring turkey State-managed hunt).

2. Hunters may only access the refuge from 2 hours before sunrise until 2 hours after sunset. No night hunting is allowed.

3. Trained dogs may be used for the hunting of migratory birds only. Dogs are prohibited on Assateague Island.

4. The use of non-lead ammunition would be required for use beginning September 1, 2026 for all big game (deer, sika, turkey), upland game, and migratory birds where not already required (woodcock, crow, and dove). This transition period will provide hunters time to gradually transition their supplies of ammunition to non-lead alternatives, lessening the impact of the change.

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.

Not only does hunting satisfy a recreational need, but hunting on NWRs is also an important, proactive management action that can prevent overpopulation and the deterioration of habitat (i.e., overbrowsing by deer). Disturbance to other species will occur, but this disturbance is generally short-term or minor. Suitable habitat exists on refuge lands to support hunting as proposed.

This activity will have minimal conflicts with other priority public uses and will not adversely affect biological resources. Therefore, through this compatibility determination process, we have determined that hunting on the refuge, in accordance with the stipulations provided above is a compatible use that will not materially interfere with or detract from the fulfillment of the Refuge System mission or the purposes 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

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.

Literature cited

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

Chincoteague and Wallops Island National Wildlife Refuges Comprehensive Conservation Plan (CCP). U.S. Fish and Wildlife Service. October 2015.

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

Gross, John, B. Cohen, B. Collier, and M. Chamberlain. 2015. Influences of hunting on movements of male wild turkeys during spring. Proceedings of the National Wild Turkey Symposium. 11. 259-268.

Haig, S.M., J. D'Elia, C. Eagles-Smith, J.M. Fair, J. Gervais, G. Herring, J.W. Rivers, and J.H. Schulz. August 1, 2014. The persistent problem of lead poisoning in birds from ammunition and fishing tackle, The Condor, Volume 116, Issue 3, Pages 408–428. Available from: https://doi.org/10.1650/CONDOR-14-36.1

Hanley, B.J., A.A. Dhondt, M.J. Forzan, E.M. Bunting, M.A. Pokras, K.P. Hynes E. Dominguez-Villegas, and K.L. Schuler. 2022. Environmental lead reduces the resilience of bald eagle populations. The Journal of Wildlife Management 1-18. https://doi.org/10.1002/jwmg.22177

Horsley, S.B., S.L. Stout, and D.S. DeCalesta. 2003. White-tailed deer impact on the vegetation dynamics of a northern hardwood forest. Ecol. Appl. 13(1)98-118. https://www.fs.fed.us/ne/warren/aboutus/pdf/Horsley%20et%20al%20-%202003.pdf.

Kelly A. and S. Kelly. 2005. Are mute swans with elevated blood lead levels more likely to collide with overhead power lines? Waterbirds 28: 331-334.

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

Liddle, M.J. and H.R.A. Scorgie. 1980. The effects of recreation on freshwater plants and animals: a review. Biological Conservation 17: 183-206. https://doi.org/10.1016/0006-3207(80)90055-5.

Lomnicky, G.A, A.T. Herlihy, and P.R. Kaufmann. 2019. Quantifying the extent of human disturbance activities and anthropogenic stressors in wetlands across the conterminous

United States: results from the National Wetland Condition Assessment. Environmental Monitoring and Assessment. https://link.springer.com/article/10.1007/s10661-019-7314-6.

O'Halloran, J., A.A. Myers, and P.F. Duggan. 1989. Some sub-lethal effects of lead on mute swan *(Cygnus olor)*. Journal of Zoology 218: 627-632.

Slabe, V.A., J.T. Anderson, B.A. Milsap, J.L. Cooper, A.L. Harmata. M. Resatni, R.H. Crandall, B. Bodenstein, P.H. Bloom, T. Booms, J. Buchweitz, R. Culver, K. Dickerson, R. Domenech, E. Dominguez-Villegas, D. Driscoll, B.W. Smith, M.L. Lockhart, D. McRuer, T.A. Miller, P.A. Ortiz, K. Rogers, M. Schwartz, N. Turley, B. Woodbridge, M.E. Finkelstein, C.A. Triana, C.R. DeSorbo, and T.E. Katner. 2022. Demographic implications of lead poisoning for eagles across North America. Science. 375: 779-782.

U.S. Fish and Wildlife Service. 2017. Banking on Nature: The Economic Contributions of National Wildlife Refuge Recreational Visitation to Local Communities. 32 pp. https://www.fws.gov/sites/default/files/documents/USFWS_Banking_on_Nature_2017.pdf

COMPATIBILITY DETERMINATION

Refuge Use Category

Hunting

Refuge Use Type(s)

Recreational hunting of big game (white-tailed deer and turkey), upland game (racoon, opossum, fox, rabbit, squirrel and coyote), and migratory game birds (rail, coot, snipe, gallinule, duck, goose, swan, woodcock, dove, and crow).

Refuge

Wallops Island National Wildlife Refuge

Refuge Purpose(s) and Establishing and Acquisition Authority

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

"... particular value in carrying out the national migratory bird management program." 16 U.S.C. § 667b (Fish and Wildlife Coordination Act)

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System, otherwise known as the Refuge System, is to administer a national network of lands and waters for the conservation, management and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (Pub. L. 105-57; 111 Stat. 1252).

Description of Use

The use is public hunting of big game (white-tailed deer and turkey), migratory game birds (duck, goose, swan, rail, coot, snipe, gallinule, dove, woodcock, and crow), and upland game (raccoon, opossum, fox, coyote, rabbit, and squirrel) on Wallops Island National Wildlife Refuge (NWR, refuge), which is managed as a satellite refuge of the Chincoteague National Wildlife Refuge Complex (NWRC). 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 2015 compatibility determination (CD) for big game hunting, and opens for upland game and migratory game bird hunting.

What is the use?

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

Is the use a priority public use?

Yes

Where would the use be conducted?

Wallops Island NWR is located on the mainland, east of Wattsville, VA in Accomack County. The refuge is immediately adjacent to Highway 175, which provides access to the Town of Chincoteague and to Chincoteague NWR. Wallops Island NWR (373 acres) is comprised mainly of salt marsh (195 acres) and forest/shrub (178 acres) and contains habitat for a variety of species, including upland and wetland dependent migratory birds. There is a safety zone (approximately 50 acres) located at the southern end of the unit where hunting will not be allowed.

When would the use be conducted?

Hunting would be permitted from September 16 until March 14. Season dates within this time period will be in accordance with State regulations. The only exception is for spring turkey hunting, which will occur during the State spring season from mid-April though early May. Big game and migratory game bird hunting hours will be in accordance with State regulations and hunters may access the refuge 2 hours before sunrise until 2 hours after sunset. Upland game hunting will only occur during regular refuge access hours for all hunters (2 hours before sunrise to 2 hours after sunset). Night hunting will not be allowed.

How would the use be conducted?

Hunting would be permitted in designated areas of the refuge in accordance with State and refuge-specific regulations. Hunters will read and sign a hunt brochure prior to hunting on the refuge. Hunt brochures are available online on the refuge website or at the Visitor Center.

Big Game
Big game hunting would be permitted for white-tailed deer and wild turkey in accordance with State seasons and methods of take. Spring and fall turkey hunting would be administered via a mentored quota hunt, initially through targeted hunts for youth and apprentice hunters. Providing special hunt opportunities would assist the State with hunter recruitment and retention efforts (commonly referred to as R3). Daily and seasonal bag limits would follow State regulations.

Upland Game
Upland game hunting for racoon, opossum, fox, coyote, rabbit, and squirrel would be allowed in accordance with State regulations and during regular refuge hours for all hunters from 2 hours

before sunrise to 2 hours after sunset (i.e., no night hunting). Season dates would be concurrent with State seasons from September 16 through March 14.

Migratory Game Birds
Migratory game bird hunting would be permitted for rail, coot, snipe, gallinule, duck, goose, swan, woodcock, dove, and crow. Sunday hunting would be permitted for all migratory game birds. The use of dogs for hunting of migratory birds would be allowed according to State regulations. Hunters must obtain, sign, and have in their possession a signed hunt brochure. Migratory bird hunting would occur within State seasons from September 16 through March 14.

Hunter Access
The refuge will make reasonable efforts to provide hunter access. The intention is to provide safe, quality hunting opportunities that consider the welfare of refuge wildlife resources. If hunting conditions are deemed unsafe to hunters or refuge staff or negative impacts on resources are discovered, the hunt program procedures and timing are subject to change. All access points and hunter parking lots will be delineated on refuge hunt maps and will be included in the hunt brochures. Hunters may be permitted to enter refuge lands prior to normal refuge operating hours in order to reach hunt units at the start of State hunting hours for big game, upland game and migratory game bird hunting.

Migratory bird hunters may access hunting by boat via several private and public boat launches within the vicinity of the refuge. No boat launches exist on the refuge. State and municipal boat launches are within a short distance of refuge hunting areas and can be used for the launch and retrieval of boats. Migratory bird hunters may also access areas by foot, but no established trails exist from the parking areas to the marsh.

Non-Lead Ammunition
Where not already required, we will encourage the voluntary use of non-lead ammunition for all hunting, and we would require use of non-lead ammunition after a 3-year transition period is implemented on September 1, 2026. We think the three-year timeline is necessary to educate hunters and ease the transition to non-lead alternatives. This transition period will provide hunters time to gradually transition their supplies of ammunition to non-lead alternatives, lessening the impact of the change. The refuge staff will provide information to assist in a valuable transition period that benefits fish, wildlife, and people.

Why is this use being proposed or reevaluated?

This use is a priority public use and being reevaluated to meet the 15-year mandatory requirement for reevaluation. Hunting is one of the priority public uses defined by the NWRSAA of 1966, as amended by the Refuge System Improvement Act of 1997 (Public Law 105-57). Department of the Interior Secretarial Order 3356 (September 15, 2017) further emphasized identifying opportunities to increase outdoor recreation opportunities for all Americans, including opportunities to hunt and fish. This legitimate and appropriate use of a national wildlife refuge is generally considered compatible as long as it does not materially interfere with or detract from the fulfillment of the Refuge System mission or the purposes of the refuge.

Objectives for the hunting program at the Wallops Island NWR include providing the public with high quality, wildlife-dependent recreational opportunities that align with refuge purposes and management objectives. The FWS 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.

Hunting is consistent with the refuge's 2015 Comprehensive Conservation Plan's (CCP) larger goal to have "people of all ages and abilities develop a stewardship ethic while enjoying their refuge experience and increasing their knowledge of the FWS, Refuge System, and the refuge." This goal includes a specific objective (Goal 6, Objective 6.1) to "increase level of opportunity (e.g., expansion of hunted species) in the hunt program, such as the fall/winter light goose hunt, through expansion of hunted species, trapping, and new hunting programs." This objective will help provide safe and high-quality big game, small game, and waterfowl hunting opportunities for the public.

Availability of Resources

Cost analysis for administration and management of the hunt is estimated to be approximately $24,000. Adequate FWS resources currently exist and can be provided with existing personnel to properly develop, operate, and maintain the hunt and will not detract from refuge purposes or the Refuge System mission.

Resources involved in management and administration of the hunt include personnel to provide annual updates to the hunt brochure, website information, and hunt kiosk; personnel to maintain boundary markers in the field; staff and equipment to maintain roads and create designated parking and install signage in new units (see Table B-1).

Table B-1. Estimated Costs for Hunting at Chincoteague and Wallops Island NWRs Combined*

Identifier	Cost
Staff and/or Contractors	$9,000
Maintain roads, parking lots, trails**	$13,000
News releases, fact sheets, permitting, reports	$1,000
Maintain hunt/fish materials and supplies (signs, deer check station)	$1,000
Total Annual Cost	**$24,000**

**Wallops Island NWR is unstaffed and unfunded, and as such, the hunting program would be funded through Chincoteague NWR.*

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

Anticipated Impacts of the Use

The following are anticipated impacts for hunting on Wallops Island NWR. For more specific impacts related to all proposed changes detailed in the Hunting Plan, please refer to the Environmental Assessment (Appendix C).

Hunting has been permitted on the refuge since 2002 with no discernible adverse impacts to resources. Hunting provides wildlife-dependent recreational opportunities and can foster a better appreciation and more complete understanding of the wildlife and habitats associated with the southern Delmarva Peninsula landscape. This could result in more widespread and stronger support for wildlife conservation, the refuge, the Refuge System, and the FWS.

This section predicts foreseeable impacts of implementing the hunting program on refuge resources. When detailed information may be deficient or unavailable, we base our evaluation on professional judgment and experience. We usually identify potential impacts within a long-range timeframe (i.e., 15 years) and beyond that timeframe, they become more speculative.

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 following are anticipated impacts for hunting on Wallops Island NWR. This section predicts foreseeable impacts of implementing the hunting program on refuge resources. When detailed information may be deficient or unavailable, we base our evaluation on professional judgment and experience. We usually identify potential impacts within a long-range timeframe (i.e., 15 years) and beyond that timeframe, they become more speculative. For more specific impacts related to all proposed changes detailed in the Hunting Plan, please refer to the Environmental Assessment (Appendix C).

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).

The refuge hunt program is designed to be sustainable through time, given relatively stable conditions, particularly because of close coordination with the Virginia Department of Wildlife Resources (VDWR). Adverse impacts of hunting on big game (white-tailed deer and turkey), upland game (raccoon, opossum, fox, coyote, rabbit, and squirrel), and migratory game birds (rail, coot, snipe, gallinule, duck, goose, swan, woodcock, dove, and crow) on the refuge are expected to be negligible. The proportion of the refuge's harvest of these species would be negligible when compared to local, regional, and statewide populations and harvest.

Because of the regulatory process for harvest management in place within the FWS, the ability of individual refuge hunt programs to adapt refuge-specific hunting regulations to changing local conditions, and the wide geographic separation of individual refuges, we anticipate no significant impacts on resident wildlife, migratory birds, and non-hunted wildlife as a result of hunting on Wallops Island NWR.

In comparison with the entire Atlantic Flyway, or the breeding ranges of the many birds and wildlife that use it, the hunting area of the refuge comprises a relatively small total land mass. FWS recognizes that the refuge is not isolated ecologically from the land around it; however, we may have overstated positive or negative impacts in that larger geographic context. Nevertheless, many of the actions we propose conform with the 2015 CCP and other regional landscape plans, and provide positive, incremental contributions to those larger landscape goals.

Big Game

Deer hunting on the refuge has been occurring since 2002 and annual harvest numbers on the refuge remain low (e.g., 2020/21: 6 deer reported; 2019/20: 1 deer reported). We anticipate a small increase in the number of deer harvested annually, but this would not meaningfully affect the current overpopulation of deer in the county. Deer may avoid hunting areas due to increased pressure, but this will not create negative impacts to the population.

According to VDWR, the wild turkey population was estimated as 0.45 to 0.61 turkeys per square mile of suitable habitat for the northern Virginia region in the 2016-2017 season. In the refuge's region, the wild turkey density ranges from 0.26 to 0.44 turkeys per square mile. The northern Virginia region population is considered stable to rising. Approximately 20,525 turkeys were harvested during the 2020 spring gobbler season. During the 2020 spring season, 232 of those recorded harvests were made in Accomack County.

Studies examining the direct effects of hunting on turkey behavior and movement are limited. One study conducted in Louisiana tracked the movements of wild turkey during the hunting season and found that distances traveled by wild turkeys were only 8 percent greater during hunting days than non-hunting days (Gross et al. 2015). Although hunting made it more likely for a turkey to change their movement patterns, a small-scale increase in range is not biologically significant.

The refuge will open to a limited quota mentored turkey hunt during the spring and fall seasons.

The remainder of the year would allow turkey to rest and recover. The refuge estimates less than two turkey will be harvested annually from Wallops Island NWR due to the small number of turkeys that have been observed on the island through observations by staff. Relative to State harvest numbers, refuge impacts on statewide populations are expected to be negligible.

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 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. 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.

Upland Game

We anticipate small harvest levels of these species and only minor impacts to their population levels. Most of the land use surrounding the refuge lands consists of Federal, agriculture and residential areas where populations of these species proliferate on the broader surrounding landscape. Any impacts will be short-term and minor and will mostly include changes in habitat use by individuals.

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 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. 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.

Migratory game birds

Opening to waterfowl hunting will have some short-term disturbance to the waterfowl resting and feeding in the area. Marsh areas are prone to disturbance and increased foot traffic to access hunting sites will result in trampling of sensitive marsh plants in frequently used areas (Lomnicky et al. 2019). There will be few long-term impacts to waterfowl populations since most of the marsh area on the eastern shore is owned by the State and is already open to migratory bird hunting.

We will avoid potential adverse impacts to bald eagles by following management guidelines developed in consultation with the State, including sight and distance setbacks from nests and concentration areas that may develop, and time-of-year restrictions. Bald eagle nesting season starts

around December 15 and continues throughout the times of most winter and spring hunts.

Migratory game bird hunting would occur within State seasons from September 16 through March 14, although the State seasons for many of the newly added species will end each year before February. In accordance with existing federal and state regulations, non-lead ammunition will be required for coot, rail, snipe and waterfowl hunting. We will strongly encourage the voluntary use of non-lead ammunition for woodcock, crow, and dove, and will require non-lead ammunition for all migratory game bird species beginning September 1, 2026 (after the 3-year transition period).

The proposed opening of Wallops Island NWR to migratory bird hunting for the first time is anticipated to result in only minimal take of newly hunted species and negligible increases in take for those species already hunted in the area.

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 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. 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.

Non-target Species

Wallops Island NWR hosts a wide diversity of both resident and migratory wildlife. The refuges are important stopover sites in the Atlantic Flyway and provide important habitat for resident species in an area with rising development trends. Many common bird species will be in areas adjacent to hunting, in both upland and wetland areas, and they may relocate to other areas of the refuge during hunting.

Thirty-four mammal species are recorded on the lower Delmarva Peninsula and 9 bat species may be found on or around the refuges. Frogs and toads that can be found at Wallops Island NWR include the Northern spring peeper, Southern green frog, Southern leopard frog, Fowler's toad, and Eastern narrow-mouthed toad. The freshwater and estuarine turtles that inhabit the refuge include the Eastern painted turtle, spotted turtle, Eastern mud turtle, Northern red-bellied cooter, Eastern box turtle, Eastern snapping turtle, and the estuarine Northern diamond-backed terrapin. The red-backed salamander is also commonly found.

Finfish of primary importance found near the refuges include the black drum, red drum, bluefish, winter flounder, summer flounder, menhaden, spot, Atlantic croaker, grey trout, mullet, spotted seatrout, and striped bass.

Some disturbance to non-target wildlife species and impacts on vegetation may occur. While not targeted for hunting or fishing, other wildlife may experience disturbance, avoidance of areas,

habitat damage, or injury as a result of the use (Cole 1990). Hunting is not likely to adversely affect these species given the time of year the activities take place (September 16 through March 14) and where the uses occur on the refuge. In addition, hunting will not be permitted at night for any species.

Opening the refuge to fox and coyote hunting may result in fewer predator species that have negative impacts on nesting migratory birds on the refuge. Populations of these species prey on eggs and disturb nesting birds resulting in reduced productivity. Allowing harvest of these species will likely result in desirable, positive outcomes of decreased predation on nesting migratory birds.

As discussed above for big game, lead from previous hunting activities will still be present in the environment and may impact non-target 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.

A transition to non-lead ammunition for all hunting will minimize the inadvertent exposure and subsequent lethal or sub-lethal impacts to wildlife, including 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. These additive effects will likely not reach significant adverse cumulative effects, as the total amount of bioaccumulation is likely negligible. It is unlikely that the amount of lead entering the environment from hunting activities would cause additional direct mortality of wildlife and non-target species.

Threatened and Endangered Species
For Wallops Island NWR, potential impacts were evaluated along with the hunting activities for Chincoteague NWR. Thus, some of the specific locations mentioned in the section may not occur at Wallops Island, but can be applicable.

Piping plover, red knot, roseate tern
In order to protect these shorebird species, staff at Chincoteague NWR close certain critical nesting, foraging, and roosting areas on Assateague, Assawoman, and Metompkin islands to public entry from March 15 through September 15. This timing does not overlap when the overwhelming majority of hunters visit the refuge. For example, deer, waterfowl, and upland game hunting are all conducted outside this date range. In addition, the refuge's hunt zones do not overlap with the preferred habitat of intertidal zone beaches and mudflats.

Regarding the impacts of lead ammunition, specifically for the beach shorebirds (i.e., roseate tern, red knot and piping plover), big game hunting (deer,sika, and turkey) is the primary hunting opportunity in which hunters may use lead ammunition (upland game may be hunted at the same time). This hunt occurs primarily in upland habitats from November to January, in the more forested habitat of the refuge. Hunting for rail, snipe, gallinule, woodcock, crow, and dove is not as popular as deer or waterfowl hunting on the refuge, access must occur by boat only, and the hunting seasons of many of the migratory game bird species end each year by the end of January. Thus, it will not occur within, or in close proximity to, areas where those species occur. Even if lead could leach out into the beach habitat these species use, the increase in lead would be extremely minor and

dispersed, and therefore insignificant. Because hunting—including the use of lead ammunition, until it is discontinued after September 1, 2026, is highly unlikely to overlap with piping plovers, red knots or roseate terns in time or space, these species are not likely to be adversely affected by the proposed hunting activities.

Eastern black rail
Because Eastern black rails do not occur on the refuge, the proposed activities are not likely to adversely affect this species. Hunting takes place September 15 through March 15, and would not overlap with breeding season for black rails during May. Any potential effects from disturbance are extremely unlikely to occur and considered discountable because the hunting area is far away from the marshes where Eastern black rail would occur.

The potential for lead impacts to black rails is discountable because of the bird's preferred habitat. Because of the federal ban already in place requiring the use of non-lead ammunition for waterfowl hunting, and that hunting with lead ammunition primarilyoccurs for deer hunting in upland areas, and because we would require the use of non-lead ammunition for hunting all species on the refuge beginning September 1, 2026, impacts from lead are not likely to adversely affect black rail. In conclusion, the proposed hunting activities are not likely to adversely affect the Eastern black rail.

Northeastern beach tiger beetle
Northeastern beach tiger beetle (*Habroscelimorpha* (formerly *Cicindela*) *dorsalis dorsalis*) is not likely to be adversely affected by the proposed changes because they do not occur on the refuge. Only a subspecies, *Cicindela dorsalis media*, which is not federally protected, is found on Chincoteague's beaches.

Atlantic sturgeon
All proposed hunting changes are inland from the beach, and not near the ocean. Furthermore, all waterfowl hunting currently requires non-lead ammunition. For the next 3 years, lead ammunition is allowed in the Chincoteague NWR Northern Hunt Zone and for limited new migratory game bird hunting by boat only in the designated Migratory Game Bird Zone. Because Atlantic sturgeon also do not occur on the refuge, are separated from the forested areas of the Northern Hunt Zone by Service Road on the west, and distanced by 200 to 300 feet of beach/dune/scrub habitats on the east, the species will not experience any effects from the proposed activities. Therefore, the proposed activities will have no effect on the Atlantic sturgeon.

Northern long-eared bats
Northern long-eared bats (NLEB) may occur in some hunting zones but are not likely to experience any significant disturbance or habitat loss even if bats and hunters may briefly overlap. Firearms hunting is conducted in the Northern Hunt Zone (usually from November 19 through January 7) and archery hunting in the Archery Only Hunt Zone (usually from October 1 to November 18). Bats are typically nocturnal and inactive during most hunting seasons and times, and not present for most of the hunting seasons; therefore, disturbance would be highly unlikely.

Potential disturbances from expanded hunting, such as an increase in gun noise or additional portable tree stands, are expected to be insignificant given the amount of hunting expected to occur on these acres. Noise from firearms or dog barks could disturb roosting bats but it is likely that the

bats would remain in the tree during daylight hours. Such noise disturbances are temporary and last only for the duration of the noise, not fundamentally unlike other temporary disturbances that bats may naturally experience, with no long-term effects; therefore, any potential disturbance 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.

The potential for lead impacts to bats is discountable due to Northern long-eared bats' diet 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 refuges will not consume lead derived from ammunition fired by hunters on the refuge. Because there have been no known occurrences of NLEB; because the potential for overlap in time or space between hunters and bats is very low; because the expected impacts to roosting bats even if there is overlap are insignificant; and because the potential for lead impacts are discountable, the proposed hunting activities are not likely to adversely affect the NLEB.

Sea turtles: Loggerhead, Green, Hawksbill, Kemp's Ridley, Leatherback
Five species of federally listed sea turtles use Assateague Island's ocean and bay waters. The leatherback sea turtle, Kemp's Ridley sea turtle, and the hawksbill sea turtle are listed as endangered species under the ESA; the loggerhead sea turtle and green sea turtle are listed as threatened. In Virginia, the state status is the same as the Federal status for these species. Of the five sea turtles, only loggerheads are known to nest on the refuge, which is the northern extent of its breeding range. In recent years, crawl and nesting activity (one to three nests) occurs June through August. Because incubation takes longer (90 or more days) at this latitude, the hatch window is August through October. Hunting activities do not occur where loggerhead sea turtles nest. Refuge beaches on Assateague, Assawoman, and Metompkin Islands will remain closed to hunting during the sea turtle nesting seasons. All waterfowl hunting currently requires non-lead ammunition. Turtles present but not nesting, remain in the water, and thus, will not be impacted by hunting activities. Accordingly, the proposed hunting changes will have no effect on the five listed turtle species because the sea turtles are separated from the proposed hunting activities—including the use of lead ammunition—in space, and therefore, the species do not have the potential to be exposed to the effects of the proposed activities.

Monarch butterfly
Monarch butterflies are observed on nectar plants within beach strand habitat and impoundment management units during their peak migration (last two weeks of September through the first two weeks of October). Monarch butterflies typically concentrate on seaside goldenrod located along the Beach Road corridor and the dunes from Swan Cove Trail south to Toms Cove, which is closed to hunting. Dogs are not allowed on the Assateague Island unit of the refuge to minimize any potential for disturbance in the most sensitive areas of the refuge.

The plants senesce as the butterflies begin their fall migration, usually in October. Before then in, in the fall, hunting activity could result in some trampling of nectar sources available for monarchs, but any potential impact would be concentrated, insignificant, and leave plenty of available nectar

sources on other areas of the refuge and unit. Only light foot travel from hunters accessing the area for hunting is expected to occur on these acres. While hunters are walking through habitat used by monarchs, there could be some impacts including flushing while resting or feeding. This disturbance is minimal as the monarchs can easily move to another spot when disturbed, which is a normal behavior response that does not result in long-term effects. Furthermore, hunting does not result in the removal of vegetation, including nectar sources or milkweed, and so it would have negligible impacts to habitat resources important for monarchs.

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

Seabeach amaranth
Seabeach amaranth was federally listed as threatened in 1993 by the Service. Seabeach amaranth is an annual plant species that occurs on the upper beach and sparsely vegetated over wash fans and inter-dune areas. This species appears to require extensive areas of barrier island beaches and inlets functioning in a relatively natural and dynamic manner. This plant has been determined not to occur on the refuge, and any impacts from hunting or the associated use of lead ammunition would be extremely unlikely to occur. Therefore, the proposed activities are not likely to adversely affect seabeach amaranth.

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 use of non-lead ammunition will initially be voluntary, 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. We will educate hunters about the impacts of lead and strongly encourage non-lead ammunition alternatives for the next 3 years.

The bioaccumulation of lead is a potential concern, but it does not likely present an issue on this refuge as: (1) non-lead shot is currently required for hunting waterfowl, coot, snipe, rail, and gallinule; (2) the refuge strongly encourages use of non-lead alternatives for hunting all other species for the next 3 years; (3) we would require the use of non-lead ammunition for all species 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.

For more detail, see the completed Intra-Service Section 7 Evaluation (Appendix D). Hunting activities may affect, but are not likely to adversely affect, any threatened or endangered species at

the refuge. However, if there is a potential for hunting activities to have a negative impact on such species, or a new species of concern is identified on refuge lands, we will reevaluate our programs and implement program changes as necessary.

Habitat and Vegetation
Habitat types on Wallops Island NWR include forests, shrub/scrub, and salt marsh. Migratory bird hunting may result in trampling of wetland vegetation, alteration of drainage patterns, and creation of trails (Liddle and Scorgie 1980). Upland game hunters will likely traverse a larger area of the refuge than other hunters. However, all these impacts will be reduced, as vegetation will likely be dormant or entering dormancy during the hunting seasons.

Heavily browsed forest understory and shrub vegetation leaves less food and cover for migratory birds, a resource that the refuge is focused on protecting. Reducing the deer population will decrease the browse effects on vegetation and enable the forest understory to grow and produce more food and cover for migrants (Horsley et al. 2003). This will also provide additional habitat for small mammals, reptiles, and invertebrates.

Visitor Use and Experiences
Wallops Island NWR is not open to any other public uses, therefore the expanded hunting program at Wallops Island NWR is unlikely to cause visitor use conflicts. If conflicts arise among hunters, mitigation efforts can be implemented to ensure that the proposed use will not have significant impacts to the hunting community. Impacts to individual hunters will be limited to the hunting season and are minimized by time and space zoning that lessens the interactions between hunters.

There is some possibility of negative economic impacts for hunters who must comply with the proposed non-lead requirements beginning in 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. 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 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 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 game 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 Chincoteague and Wallops Island NWR hunting opening package. The hunting plan was coordinated with all interested and/or affected parties, including VDWR staff. We informed the public through local venues, the refuge website, and social media. We released the draft plan, CDs and EA for public review and comment from May 3 through August 8, 2022, a total of 97 days. A total of eleven comment letters were submitted that offered input to the refuge. Any comments and our responses can be found in the Finding of No Significant Impact (Appendix E of the 2022 EA).

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 Wallops Island 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. Hunting for any species will be limited between September 16 to March 14 (except for the spring turkey State-managed hunt).

2. Hunters may access the refuge from 2 hours before sunrise to 2 hours after sunset (no night hunting).

3. Trained dogs may be used for the hunting of migratory game birds only.

4. Non-lead ammunition would be required for all hunting after September 1, 2026.

Justification

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

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

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

Signature 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

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.

Literature Cited

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

Chincoteague and Wallops Island National Wildlife Refuges Comprehensive Conservation Plan (CCP). U.S. Fish and Wildlife Service. October 2015.

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

Gross, John, B. Cohen, B. Collier, and M. Chamberlain. 2015. Influences of hunting on movements of male wild turkeys during spring. Proceedings of the National Wild Turkey Symposium. 11. 259-268.

Haig, S.M., J. D'Elia, C. Eagles-Smith, J.M. Fair, J. Gervais, G. Herring, J.W. Rivers, and J.H. Schulz. August 1, 2014. The persistent problem of lead poisoning in birds from ammunition and fishing tackle, The Condor, Volume 116, Issue 3, Pages 408–428. Available from: https://doi.org/10.1650/CONDOR-14-36.1

Hanley, B.J., A.A. Dhondt, M.J. Forzan, E.M. Bunting, M.A. Pokras, K.P. Hynes E. Dominguez-Villegas, and K.L. Schuler. 2022. Environmental lead reduces the resilience of bald eagle populations. The Journal of Wildlife Management 1-18. https://doi.org/10.1002/jwmg.22177

Horsley, S.B., S.L. Stout, and D.S. DeCalesta. 2003. White-tailed deer impact on the vegetation dynamics of a northern hardwood forest. Ecol. Appl. 13(1)98-118. https://www.fs.fed.us/ne/warren/aboutus/pdf/Horsley%20et%20al%20-%202003.pdf.

Kelly A. and S. Kelly. 2005. Are mute swans with elevated blood lead levels more likely to collide with overhead power lines? Waterbirds 28: 331-334.

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

Liddle, M.J. and H.R.A. Scorgie. 1980. The effects of recreation on freshwater plants and animals: a review. Biological Conservation 17: 183-206. https://doi.org/10.1016/0006-3207(80)90055-5.

Lomnicky, G.A, A.T. Herlihy, and P.R. Kaufmann. 2019. Quantifying the extent of human disturbance activities and anthropogenic stressors in wetlands across the conterminous

United States: results from the National Wetland Condition Assessment. Environmental Monitoring and Assessment. https://link.springer.com/article/10.1007/s10661-019-7314-6.

O'Halloran, J., A.A. Myers, and P.F. Duggan. 1989. Some sub-lethal effects of lead on mute swan *(Cygnus olor)*. Journal of Zoology 218: 627-632.

Rattner, B.A., J.C. Franson, S.R. Sheffield, C.I. Goddard, N.J. Leonard, D. Stang, and P.J. Wingate. 2008. Sources and Implications of Lead-based Ammunition and Fishing Tackle to Natural Resources. Wildlife Society Technical Review. The Wildlife Society, Bethesda, Maryland, USA

Slabe, V.A., J.T. Anderson, B.A. Milsap, J.L. Cooper, A.L. Harmata. M. Resatni, R.H. Crandall, B. Bodenstein, P.H. Bloom, T. Booms, J. Buchweitz, R. Culver, K. Dickerson, R. Domenech, E. Dominguez-Villegas, D. Driscoll, B.W. Smith, M.L. Lockhart, D. McRuer, T.A. Miller, P.A. Ortiz, K. Rogers, M. Schwartz, N. Turley, B. Woodbridge, M.E. Finkelstein, C.A. Triana, C.R. DeSorbo, and T.E. Katner. 2022. Demographic implications of lead poisoning for eagles across North America. Science. 375: 779-782.

U.S. Fish and Wildlife Service. 2017. Banking on Nature: The Economic Contributions of National Wildlife Refuge Recreational Visitation to Local Communities. 32 pp. https://www.fws.gov/sites/default/files/documents/USFWS_Banking_on_Nature_2017.pdf

Virginia Department of Wildlife Resources. 2021. Map of Wildlife Turkey Population Status in Virginia. Available online at: https://dwr.virginia.gov/wp-content/uploads/Virginia-Wild-Turkey-Population-Status.pdf

Table of Contents

CHINCOTEAGUE NATIONAL WILDLIFE REFUGE AND WALLOPS ISLAND NATIONAL WILDLIFE REFUGE 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, and selected portions of the Code of Federal Regulations (CFR) and Fish and Wildlife Service Manual.

The Secretary of the Department of the Interior (DOI) established Chincoteague National Wildlife Refuge (NWR, refuge) in 1943 under 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), especially migrating and wintering waterfowl. Since that time, refuge objectives have been expanded to include the protection and management of threatened and endangered species and other wildlife, and to provide for wildlife-oriented public use. Other refuge purposes, and their associated acquisition authorities, now include:

- "... suitable for— (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ..." 16 U.S.C. § 460k- "... the Secretary ... may accept and use ... real ... property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors ..." (Refuge Recreation Act (16 U.S.C. § 460k-460k-4), as amended);

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

- "... for the development, advancement, management, conservation, and protection of fish and wildlife resources ..." 16 U.S.C. § 742f(a)(4) "... for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude ..." 16 U.S.C. § 742f(b)(1) (Fish and Wildlife Act of 1956); and,

- "... for conservation purposes ..." 7 U.S.C. § 2002 (Consolidated Farm and Rural Development Act).

Wallops Island NWR was created on March 11, 1971, when 373 acres of land were transferred to the Service from the National Aeronautics and Space Administration (NASA) Wallops Flight Center. Formally, Wallops Island NWR was established:

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

- for "... particular value in carrying out the national migratory bird management program" 16 U.S.C. § 667b (Fish and Wildlife Coordination Act).

Chincoteague NWR encompasses approximately 14,032 acres. All but 418 of those acres are located in Accomack County, Virginia. In addition to the Virginia portion of Assateague Island, Chincoteague NWR also includes all 427 acres of Morris Island (located between Chincoteague and Assateague Islands), 546 acres of the northern end of Chincoteague Island (known as Wildcat Marsh), all 1,434 acres of Assawoman Island, 174 acres of the northern end of Metompkin Island, and 2,012 acres of Cedar Island in both fee title and easements. Chincoteague NWR has been designated as part of a Globally Important Bird Area (IBA) by the American Bird Conservancy and the Audubon Society; one of the top 10 birding Hotspots by the National Audubon Society; and a Site of International Importance within the Western Hemisphere Shorebird Reserve Network (WHSRN), a conservation partnership of stewards and landowners led by the Manomet Center for Conservation Sciences.

Chincoteague NWR is also an important recreational destination, particularly for people living in the Washington, D.C., Baltimore, Philadelphia, and New York City metropolitan areas. With approximately 1.2 to 1.4 million recreational visits annually, Chincoteague NWR is one of the most visited refuges in the United States. Chincoteague NWR is open to all six of the priority public uses of the Refuge System (hunting, fishing, wildlife observation and photography, environmental education and interpretation) as well as other public uses that have been deemed appropriate and compatible. Most visits to the refuge are for the recreational beach. The beach is managed by the National Park Service (NPS) under an agreement with the FWS resulting from a congressional mandate from when the Assateague Island National Seashore was designated in 1965. Visitation to Chincoteague NWR supports the Town of Chincoteague's tourist economy.

Wallops Island NWR is located on the mainland, east of Wattsville, Virginia in Accomack County. The refuge is immediately adjacent to Highway 175, which provides access to the Town of Chincoteague and Chincoteague NWR. Wallops Island NWR is comprised mainly of salt marsh and woodlands and contains habitat for a variety of species, including upland- and wetland-dependent migratory birds. Wallops Island NWR is managed as a satellite refuge of Chincoteague NWR.

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 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 FWS 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.

Hunting on the Delmarva Peninsula is a traditional outdoor pastime and remains a popular form of wildlife-dependent recreation on the refuges and a vital part of the cultural, social, and economic fabric of the communities near the refuges. All hunting is conducted within the regulatory framework established annually by the Commonwealth of Virginia. Chincoteague NWR is open to white-tailed deer, sika, and migratory bird hunting. Wallops Island NWR is closed to the public except for white-tailed deer hunting. It was opened to public hunting in 2002 to reduce effects of overbrowsing by white-tailed deer and to reduce the potential of deer collisions with vehicles on the adjacent Highway 175 and aircraft at the neighboring NASA flight facility.

New proposed changes for Chincoteague NWR include the following:

- In the Northern Hunt Zone, we would add raccoon, opossum, fox, and coyote hunting during the regular State deer season. Also in the Northern Hunt Zone, we would allow the use of muzzleloaders for big game hunting, remove the limit on the number of hunters in the sign-in/sign-out process, follow the State bag limit for white-tailed deer and open a quota hunt for turkey.

- The current Toms Cove Hook Hunt Zone would be merged into the Archery Only Hunt Zone, removing shotguns as a method of take.

- In the expanded Archery Only Hunt Zone, we would add raccoon, opossum, fox, and coyote hunting during the regular State deer season. Also in the Archery Only Hunt Zone, we would remove the limit on the number of hunters in the sign-in/sign-out process, we would follow the State bag limit for white-tailed deer, and we would open a quota hunt for wild turkey.

- The Migratory Game Bird Hunt Areas would open to all migratory game birds during State seasons, from September 16 through March 14.

New proposed changes for Wallops Island NWR include the following:

- The refuge would open for the first time to hunting for upland game (raccoon, opossum, fox, coyote, rabbit, and squirrel), and all migratory game birds. Hunting for these species would occur during State seasons between September 16 and March 14. Mentored quota turkey hunting is also proposed.

- The refuge would eliminate the existing sign-in/out process for all hunts.

For both refuges, the use of non-lead ammunition for hunting deer, sika, turkey, woodcock, crow, and dove, and upland game will initially be voluntary, and would be required for use after a 3-year transition period is implemented, beginning September 1, 2026. This transition period will allow hunters time to adapt to the new regulations without diminishing hunting opportunities on the refuges. The refuge staff will provide information to assist in a valuable transition period that benefits fish, wildlife, and people.

II. Statement of Objectives

The stated objectives of a hunting program on the two refuges are to:

- provide the public with high quality wildlife-dependent recreational opportunities that align with refuge purposes and management objectives;

- design a program consistent with the refuges' 2015 Comprehensive Conservation Plan (CCP) to provide the opportunity for "people of all ages and abilities [to] develop a stewardship ethic while enjoying their refuge experience and increasing their knowledge of the Service, Refuge System, and the refuge;" and

- "increase level of opportunity (e.g., expansion of hunted species) in the hunt program, such as the fall/winter light goose hunt, through expansion of hunted species, trapping, and new hunting programs" (CCP Goal 6, Objective 6.1) to help provide safe and high-quality big game, small game, and waterfowl hunting opportunities for the public;

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 effectively manage wildlife population levels.

III. Description of Hunting Program

A. Areas to be Opened to Hunting

We allow public hunting to occur in the following designated areas. Please see the attached map (Figure 1).

- Northern Hunt Zone (3,869 acres)
- Archery Only Zone (3,268 acres)
- Migratory Game Bird Hunt Area (2,703 acres)
    - Morris Island (located between Chincoteague and Assateague Islands);
    - Wildcat Marsh (northern end of Chincoteague Island);
    - Assawoman Island; and
    - Metompkin Island (northern end)
- Wallops Island NWR (373 acres)

No-hunting zones would include beach areas, the over wash zone on the Assateague Island Unit, the southwest portion of Wildcat Marsh, and a 100-foot buffer area around any building, road or trail. Areas that would require a buffer area include the bunkhouse, visitor center, maintenance buildings, the Wildlife loop trail, headquarters office, lighthouse, Service Road, and the Marsh, Swan Cove, and the Woodland trails.

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

Hunting at Chincoteague and Wallops Island NWRs will be permitted from September 16 to March 14. Hunting hours and season dates within this time period will be in accordance with State regulations and may include additional refuge-specific limitations.

Chincoteague NWR
Migratory game bird hunting would be permitted for duck, goose, swan, rail, coot, snipe, gallinule, woodcock, dove, and crow in the designated Migratory Game Bird Hunt Zones (see map). Hunting and access for migratory game birds will be by boat only. Sunday hunting will be permitted for all migratory birds. The use of dogs will be allowed in designated areas. In accordance with existing federal and state regulations, the use of non-lead ammunition will be required for waterfowl, coot, rail, snipe, and gallinule. We will strongly encourage the voluntary use of non-lead ammunition for all other migratory game bird species (woodcock, crow, and dove) until September 1, 2026, when we will require non-lead ammunition for hunting of all species.

Upland game hunting for raccoon, opossum, fox, and coyote would be allowed in the Northern and Archery Only Hunt Zones. Upland game hunting would be permitted during regular refuge

hours only (i.e., no night hunting, access from 2 hours before sunrise to 2 hours after sunset) and would be concurrent with the State deer season. No dogs will be allowed. The requirement of non-lead ammunition will become effective September 1, 2026 where firearms are allowed.

Big game hunting will be permitted for white-tailed deer and sika in accordance with State seasons and methods of take in the Northern and Archery Only Hunt Zones. Spring and fall turkey hunting would also be allowed in the Northern and Archery Only Hunt Zones via a mentored quota hunt initially targeted to hunts for youth and apprentice hunters to assist the State with hunter recruitment and retention efforts (commonly referred to as R3). The Northern Hunt Zone is the firearms zone. In this area, methods of take will include all methods permitted by the State. Where firearms are allowed, the use of non-lead ammunition will be encouraged until it's required for all species in September 2026. The Archery Only Zone will be restricted to archery equipment only. Chase dogs will not be permitted for hunting deer on the refuge. Big game hunting will not be permitted on Sundays. Daily sign-in and sign-out procedures will be required for big game hunters. This procedure notifies hunters of current management activities that may impact the hunt zones and allows for the collection of harvest and hunter participation data for planning of future hunt opportunities. The number of hunters will not be limited within each zone. Daily and seasonal bag limits will follow State regulations. The sika harvest will be regulated in accordance with the state Deer Population Reduction Program (DPOP).

Wallops Island NWR
Migratory game bird hunting would be permitted for waterfowl, rail, coot, snipe, gallinule, dove, woodcock, and crow. Hunting would adhere to State seasons except that it will start on September 16 and end on March 14 to minimize disturbance to shore birds arriving to nest in the spring. Use of dogs would be permitted according to State regulations for hunting migratory game birds. Upland game hunting would include raccoon, opossum, fox, coyote, rabbit, and squirrel from September 16 to March 14. For big game, the refuge will remain open to white-tailed deer hunting in accordance with State seasons and methods of take. Chase dogs will not be permitted for hunting of upland game or deer on the refuge. Spring and fall turkey hunting would be administered via a mentored quota hunt and initially targeted to hunts for youth and apprentice hunters to assist the State with hunter recruitment and retention efforts (commonly referred to as R3). The use of non-lead ammunition will be encouraged until it is required for all species in September 2026.

C. Hunter Permit Requirements

Hunters will be required to obtain all relevant State and Federal licenses and permits and have in their possession a signed refuge-specific hunt brochure. See "Hunter Permit Application and/or Registration Procedures" below.

D. Consultation and Coordination with the State

The refuge reviewed the operations and regulations for neighboring State Wildlife Management Areas and refuges to find consistency where possible. Refuge staff worked with the local State biologist and conservation officers early in the development of the plan. We continue to coordinate with the State to address changes to hunting programs on national wildlife refuges

within Virginia. We reached out to VDWR on June 11, 2021, to discuss this Hunting Plan. Refuge staff requested review by the State regional office that covers our area to help adjust our plan to align, where possible, with State management goals. Refuge staff have continued to consult and coordinate on specific aspects of the Hunting Plan. The State is in agreement with the refuges' hunting program, as it will help meet State objectives. Chincoteague NWR and Virginia Department of Wildlife Resources (VDWR) will continue to work together to ensure safe and enjoyable recreational hunting opportunities.

Refuge staff will continue to coordinate with federally recognized Tribal governments in areas of mutual interest, including hunting opportunities. Seven tribes will be contacted once the draft hunting plan is complete and will include distribution of the draft for review and further coordination if needed.

E. Law Enforcement

Enforcement of refuge violations normally associated with management of a national wildlife refuge is the responsibility of commissioned Federal Wildlife Officers (FWOs). Other officers, Special Agents, NPS Rangers, State Conservation Police Officers, and the local Sheriff's Department may assist the Service's full-time FWOs.

F. Funding and Staffing Requirements

Annual hunt administration costs for Chincoteague and Wallops Island NWRs including equipment, updating brochures, signs, collection of hunt data and analysis of biological information, etc. total approximately $24,000. Chincoteague NWR funds are used to conduct hunts on the Chincoteague and Wallops Island NWRs. Funding specifically for hunts has not been allocated, although funds are available through recreation fees. We anticipate that funding would continue to be sufficient to continue the hunting program at Chincoteague and Wallops Island NWRs in the future.

Table C-1. Funding and Staffing Requirements

Identifier	Cost
Hunt Program Staff	$9,000
Maintain roads, parking lots, trails*	$13,000
News releases, fact sheets, permitting reports	$1,000
Maintain hunt/fish materials and supplies (signs, deer check station)	$1,000
Total Annual Cost	**$24,000**

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

IV. Conduct of the Hunting Program

To ensure compatibility with refuge purposes and the mission of the Refuge System, hunting is conducted in accordance with State and Federal regulations and supplemented by refuge-specific regulations (50 CFR 32.65). However, the refuge managers may, upon annual review of the hunting program, impose further restrictions on hunting, recommend the refuges be closed to activities, or

further liberalize hunting regulations up to the limit of State regulations. The refuges will restrict activity if it becomes inconsistent with other priority refuge programs or endangers refuge resources or public safety.

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

Hunters are required to sign the appropriate hunt brochure prior to hunting on Chincoteague and Wallops Island NWRs. Hunt brochures are available to be printed or downloaded from the refuge website. Brochures are also available at the hunter check station and at the Herbert H. Bateman Visitor and Administrative Center. Hunters are required to sign in and out at the hunt check station each day in order to hunt in the Chincoteague NWR Northern or Archery Only Hunt Zones. Spring and fall turkey hunting will be administered via a mentored quota hunt and initially targeted to hunts for youth and apprentice hunters to assist the State with hunter recruitment and retention efforts (commonly referred to as R3). Hunter application and selection procedures for the proposed turkey quota hunts will be developed in coordination with the State and published online on the refuge website and in our hunting brochure.

B. Refuge-Specific Hunting Regulations

Listed below are proposed refuge-specific regulations and procedures that pertain to hunting on Chincoteague and Wallops Island NWRs upon implementation of this plan. These regulations and procedures may be modified as conditions change or if refuge expansion continues or occurs.

Chincoteague NWR
Migratory Birds

- Hunting of waterfowl (duck, goose, swan), rail, coot, snipe, gallinule, dove, woodcock, and crow is allowed on designated areas of the refuge in accordance with State regulations between September 16 to March 14.

- Hunters must obtain and possess a signed refuge migratory game bird hunt brochure while hunting.

- Hunters may access the refuge from 2 hours before sunrise until 2 hours after sunset.

- Trained dogs may be used for the hunting of migratory birds according to State regulations.

- Portable blinds and decoys must be removed at the end of each day's hunt.

- Permanent blinds and pit blinds are prohibited.

- Hunting areas are only accessible by boat.

- Non-lead ammunition is required for waterfowl,coot, rail, snipe, and gallinule. We will

strongly encourage the voluntary use of non-lead ammunition for all other migratory game bird species (woodcock, crow, and dove) until September 1, 2026, when we will require non-lead ammunition for all species.

Big Game

- Hunting of white-tailed deer and sika is allowed on designated areas of the refuge in accordance with State regulations.
- We allow hunting for turkey through a quota hunt process.
- Hunters must obtain and possess a signed big and upland game refuge hunt brochure while hunting.
- Firearms are prohibited in the designated archery only areas.
- Hunters may access the refuge from 2 hours before sunrise until 2 hours after sunset.
- All occupants of a vehicle or hunt party must possess a signed refuge hunt brochure and be actively engaged in hunting unless aiding a disabled person who possesses a valid State disabled hunting license.
- Portable tree stands are allowed but must be removed at the end of each day's hunt.
- Virginia DPOP tags will be provided by refuge staff and must be used on sika taken on the refuge.
- Hunting is prohibited within 100 feet of any building, road, or trail.
- Organized deer drives are prohibited.
- Deer chase dogs are prohibited.
- Hunters must sign in at the hunter check station prior to hunting and sign out upon exiting the refuge.
- Hunters must report all harvested animals on the sign-out sheet at the hunter check station. Self-serve jawbone extraction may be requested in accordance with State permit requirements.
- The use of non-lead ammunition for hunting deer, sika, and turkey will initially be voluntary, and would be required for use after a 3-year transition period is implemented on September 1, 2026. This transition period will allow hunters time to adapt to the new

regulations without diminishing hunting opportunities on the refuges.

Upland Game

- Hunting of raccoon, opossum, fox, and coyote is allowed on designated areas of the refuge concurrent with the State deer season.
- Hunters must obtain and possess a signed refuge big and upland game hunt brochure while hunting.
- Hunters may access the refuge from 2 hours before sunrise until 2 hours after sunset.
- Firearms are prohibited in designated archery only areas.
- All occupants of a vehicle or hunt party must possess a signed refuge hunt brochure and be actively engaged in hunting unless aiding a disabled person who possesses a valid State disabled hunting license.
- Hunting is prohibited within 100 feet of any building, road, or trail.
- Hunters must sign in at the hunter check station prior to hunting and sign out upon exiting the refuge.
- Dogs are prohibited.
- The use of non-lead ammunition for hunting upland game will initially be voluntary, and would be required for use after a 3-year transition period is implemented on September 1, 2026. This transition period will allow hunters time to adapt to the new regulations without diminishing hunting opportunities on the refuges.

Wallops Island NWR

Migratory Birds

- Hunting of waterfowl (duck, goose, swan), rail, coot, snipe, gallinule, dove, woodcock, and crow is allowed on designated areas of the refuge in accordance with State regulations between September 16 to March 14.
- Hunters must obtain and possess a signed refuge hunt brochure while hunting.
- Hunters may access the refuge from 2 hours before sunrise to 2 hours after sunset.
- Trained dogs may be used for the hunting of migratory birds according to state regulations.

- Portable blinds and decoys must be removed at the end of each day.

- Permanent blinds and pit blinds are prohibited.

- Non-lead ammunition is required for waterfowl,coot, rail, snipe, and gallinule. We will strongly encourage the voluntary use of non-lead ammunition for all other migratory game bird species (woodcock, crow, and dove) until September 1, 2026, when we will require non-lead ammunition for all species.

Big Game

- Hunting of white-tailed deer is allowed on designated areas of the refuge in accordance with State regulations.

- We allow the hunting of turkey through a quota hunt process.

- Hunters must obtain and possess a signed refuge hunt brochure while hunting

- Hunters may access the refuge from 2 hours before sunrise to 2 hours after sunset.

- Portable tree stands are allowed but must be removed at the end of each day.

- Chase dogs for deer are prohibited.

- Organized deer drives are prohibited.

- The use of non-lead ammunition for hunting deer and turkey will initially be voluntary, and would be required for use after a 3-year transition period is implemented on September 1, 2026. This transition period will allow hunters time to adapt to the new regulations without diminishing hunting opportunities on the refuges.

Upland Game

- Hunting of raccoon, opossum, fox, coyote, rabbit, and squirrel is allowed on designated areas of the refuge from September 16 to March 14 in accordance with State regulations.

- Hunters must obtain and possess a signed refuge hunt brochure while hunting

- Hunters may access the refuge from 2 hours before sunrise to 2 hours after sunset.

- The use of non-lead ammunition for hunting upland game will initially be voluntary, and would be required for use after a 3-year transition period is implemented on September 1, 2026. This transition period will allow hunters time to adapt to the new regulations without

diminishing hunting opportunities on the refuges.

For both refuges, where not already required, we will strongly encourage the use of non-lead alternatives until September 1, 2026, when we will require non-lead ammunition for all hunting. Firearms hunting for white-tailed deer, sika, upland game, and turkey is only allowed in the designated Northern Hunt Zone (3,869 acres) during the appropriate season (usually November to January), or on Wallops Island NWR. We think the three-year timeline is necessary to educate hunters and ease the transition to non-lead alternatives. This transition period will provide hunters time to learn about available alternatives and gradually transition their supplies of ammunition to non-lead alternatives, lessening the impact of the change. The refuge staff will provide information to assist in a valuable transition period that benefits fish, wildlife, and people.

C. Relevant State Regulations

We allow hunting on the refuges in accordance with State regulations subject to certain conditions including some season date restrictions. Additionally, the refuges coordinate 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 32.65, and summarized above in Section IV, subsections B and C. In addition to CFRs and refuge rules, hunters participating in refuge hunt should refer to the Virginia Hunting or Fishing Regulations Guide for general hours, requirements, definition of approved method, limits, license requirements, and other important information. Information can also be found on the VDWR website and through the annual Virginia Hunting and Trapping and/or Fishing Regulation Digests. Hunters are responsible for knowing and complying with all applicable State, Federal, and refuge-specific regulations.

D. Other Refuge Rules and Regulations for Hunting

- Visitors, including hunters, must pay the refuge entrance fee to access the Assateague Island unit of the Chincoteague NWR.
- Four-wheel drive vehicles are required to access Toms Cove Hook (does not require ORV zone permit for access).
- All over-sand vehicles must carry a shovel, jack, tow rope or chain, a board or similar support for the jack, and a low-pressure tire gauge.
- All vehicles must be parked in designated areas.
- Mopeds and other motorized vehicles are prohibited on trails meant for walking and biking.
- Pets are prohibited unless specifically allowed for a hunting purpose.

V. <u>Public Engagement</u>

A. Outreach for Announcing and Publicizing the Hunting Program

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 seasons. In addition, information about the hunt will be available at the Chincoteague NWR Visitor Center, on the Chincoteague NWR and Wallops Island NWR websites, and/or posted on the hunt check station.

B. Anticipated Public Reaction to the Hunting Program

Based on the comments received during the 2015 CCP process and because hunting has been allowed on Chincoteague NWR for almost 20 years, little negative public reaction to the proposed changes is expected. Hunting is an important economic and recreational use of natural resources in Virginia and along the Eastern shore. Some hunters may oppose combining the old Toms Cove Hook Zone with the Archery Only Zone, and the removal of shotgun as a method of take on Toms Cove Hook.

For the 2022 EA, we released the 2022 draft plan and EA for public review and comment 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 websites. A total of 11 comment letters were submitted that offered input to the refuge. Any comments and our responses can be found in the Finding of No Significant Impact (2022 EA, Appendix E).

The refuge anticipates some public concern about obtaining non-lead ammunition given the phasing out of lead use on the refuge. It is for this reason that the requirement to use non-lead ammunition will not be implemented until September 1, 2026, providing hunters time to learn about available alternatives and transition their supplies.

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

General information regarding hunting and other wildlife-dependent public uses can be obtained at Chincoteague NWR Visitor Center located at 8231 Beach Road, Chincoteague, VA 23336 or by calling (757) 336-6122. Dates, forms, hunting unit directions, maps, applications, and permit requirements about the hunt will be available at the Refuge Visitor Center and on the Chincoteague and Wallops Island NWR websites. See https://www.fws.gov/refuge/chincoteague/visit-us/activities/hunting

VI. Compatibility Determination

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

Figure 1. Chincoteague and Wallops Island NWRs Hunt Zones