

# Erie National Wildlife Refuge Hunting and Recreational Fishing Plan – Draft *May 2022*



NATIONAL  
**WILDLIFE**  
REFUGE SYSTEM



Appendix A – Hunting Compatibility Determination  
Appendix B – Fishing Compatibility Determination  
Appendix C – Environmental Assessment

**Erie National Wildlife Refuge  
Hunting and Recreational Fishing Plan**

**May 2022  
Draft**

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

**Erie National Wildlife Refuge  
11296 Wood Duck Lane  
Guys Mills, PA 16327**

Submitted By:  
Project Leader

---

Signature

---

Date

Concurrence:  
Refuge Supervisor

---

Signature

---

Date

Approved:  
Regional Chief  
National Wildlife Refuge System

---

Signature

---

Date

## Table of Contents

I. Introduction	1
II. Statement of Objectives	3
III. Description of Hunting and Fishing Program	3
A. Areas to be Opened to Hunting and Fishing	3
B. Species to be Taken, Hunting Periods, Hunting and Fishing Access	5
C. Hunter and Angler Permit Requirements	5
D. Consultation and Coordination with the State	5
E. Law Enforcement	6
F. Funding and Staffing Requirements	6
IV. Conduct of the Hunting and Fishing Program	7
A. Hunter Permit Application, Selection, and/or Registration Procedures	7
B. Refuge-Specific Regulations	7
C. Relevant State Regulations	7
D. Other Rules and Regulations for Hunters and Anglers	8
V. Public Engagement	8
A. Outreach Plan for Announcing and Publicizing the Hunting and Fishing Program	8
B. Anticipated Public Reaction to the Hunting and Fishing Program	8
C. How the Public Will be Informed of Relevant Rules and Regulations	8
VI. Compatibility Determination	9

## List of Figures

Figure 1. Map of Erie NWR, Sugar Lake Division	10
Figure 1. Map of Erie NWR, Seneca Division	11

## Appendices

Appendix A – Hunting Compatibility Determination	A-1
Appendix B – Fishing Compatibility Determination	B-1
Appendix C – Environmental Assessment	C-1

# ERIE NATIONAL WILDLIFE REFUGE HUNTING and RECREATIONAL FISHING PLAN

## I. Introduction

National wildlife refuges are guided by the mission and goals of the National Wildlife Refuge System (Refuge System), the purposes of an individual refuge, U.S. Fish and Wildlife Service (Service) policy, and laws and international treaties. Relevant guidance includes the National Wildlife Refuge System Administration Act (NWRSA) 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.

Erie National Wildlife Refuge (NWR, refuge) was established pursuant to Migratory Bird Conservation Act of 1929 (16 U.S.C. §715). The primary purposes of the refuge 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).
- “for the development, advancement, management, conservation, and protection of fish and wildlife resources...” 16 U.S.C. § 742f(a) (4) 11...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).
- “suitable for (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, and (3) the conservation of endangered species or threatened species...” 16 U.S.C. § 460k-1 (Refuge Recreation Act).

Erie NWR was established in 1959. The first lands for the refuge were purchased with funds provided from the sale of the Migratory Bird Hunting and Conservation Stamps (also known as Duck Stamps). Erie NWR is a namesake of the Erie Native Americans who resided in the area. This refuge is not on the shores of Lake Erie, but lies in Crawford County, 35 miles south of the city of Erie and Lake Erie in northwestern Pennsylvania.

Erie NWR is the only refuge in the nation protecting endangered Northern riffleshell and clubshell mussels. French Creek, the most biologically diverse stream in Pennsylvania, flows near the refuge where over 80 species of native fish can be found. Erie NWR is designated as an Important Bird Area by the National Audubon Society and attracts more than 230 species of birds.

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

*“... to administer a national network of lands and waters for the conservation, management and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”*

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

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

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

Erie NWR consists of two separate land divisions: Sugar Lake Division and Seneca Division. Sugar Lake Division lies 10 miles east of Meadville on the outskirts of the Guys Mills village. The Seneca Division is about 10 miles north of Sugar Lake Division and 4 miles southeast of Cambridge Springs, Pennsylvania.

The Service proposes to expand hunting and fishing opportunities at Erie NWR and open additional acres on the Seneca Division. Two parcels of land have been acquired since 2013. We propose the following changes as part of the update to this existing hunting and fishing plan:

1. **Species changes:** Open hunting to mute swan, feral hog, weasels and porcupine.
2. **Hunttable acreage:** Open an additional 159 acres to hunting.
3. **Method of take changes:** The refuge will phase out use of lead ammunition for hunting

all species by 2026. Hunters would be encouraged to use non-lead ammunition voluntarily until 2026.

4. **Fishing:** Open additional 4 miles of frontage to fishing along Dead and Muddy Creeks. We will require the use of non-lead tackle for fishing.

## **II. Statement of Objectives**

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

1. Allow visitors to enjoy quality wildlife-dependent recreation, appreciate the cultural and natural resources of the refuge, and increase their understanding and support of the refuge's mission;
2. Provide the public with a high quality recreational experience on refuge lands and waters and increase opportunities and access for hunters and anglers;
3. Provide wildlife-dependent public recreation as mandated by and according to Service law and policy;
4. Design a hunting and fishing program that is administratively efficient and manageable with existing staffing levels and in alignment with State regulations when possible;
5. Provide hunting and fishing opportunities for youth, disabled people, apprentice hunters and anglers, and other underrepresented groups; and
6. Design a hunting and fishing program that aligns with refuge habitat management objectives, utilizing the Service's Hunt/Fish Opportunity Tool (SHOT) Station Report.

These objectives will help to maintain historic, wildlife-dependent public uses and provide accessible hunting and fishing opportunities in cooperation with local accessibility experts and organizations. We will ensure the public's understanding of the refuge's hunting and fishing opportunities by providing quality maps, signs, and information in outreach materials and on the station web pages.

The NWRSA, as amended by the Refuge System Improvement Act of 1997, and the Refuge Recreation Act of 1962 authorize public hunting and fishing on refuges when compatible with the purposes for which the refuge was established. As part of this document, compatibility determinations were prepared. Assuming management decisions are based on sound biological principles and that user time and space restrictions are utilized to minimize wildlife disturbance, hunting and fishing are deemed compatible and worthwhile recreational opportunities to provide for the public.

## **III. Description of Hunting and Fishing Programs**

### **A. Areas to be Opened to Hunting and Fishing**

Hunting zones have been simplified to only two units (Unit A and B). Big game and upland game hunting would be permitted throughout the refuge, except for within permanent no-hunting zones. These no-hunting zones include: a 150-yard safety buffer around all refuge buildings, such as refuge headquarters; maintenance shop; Youth Conservation Corps (YCC) building; refuge residences and private residences adjacent to the refuge; and a 330-foot radius around bald eagle nesting sites between January 15 through August 15 each year.

Migratory bird (coot, dark goose, mute swan, duck and sea duck) hunting would be permitted on Unit B in accordance with State seasons and regulations. Unit A is closed to migratory bird hunting. Migratory bird hunting will be allowed in the following areas:

- Sugar Lake Division (see Map 1 for specific locations);
- Area west of Hanks Road (including Woodcock Creek);
- Area south of Shaffer Road and north of Route 27 (including Pool 7N and 7S);
- Area north of Fowler Road;
- Seneca Division (see Map 2 for specific locations); and
- Section east of Swamp Road and west of Teepleville Road and south of Muddy Creek.

For recreational fishing, the refuge would open 4 miles of frontage on Muddy and Dead Creeks. Bank fishing is permitted on all creeks and beaver ponds within the Seneca Division except for a 330-foot radius around bald eagle nesting sites. Recreational fishing would be allowed in the following areas in the Sugar Lake Division:

- **Woodcock Creek at north end:** from the northern refuge boundary, upstream or south past Hickory Corners Road for about one-tenth of a mile;
- **Woodcock Overlook Pond:** on the west side of Hanks Road;
- **Woodcock Creek south:** downstream from Hanks Road for 150 feet;
- **Peterson Pond:** bank fishing permitted on the west side of McFadden Road;
- **Pool 4 Outlet:** downstream from Shaffer Road for 150 feet;
- **Pool 9 Dike area:** bank fishing on the dike and below the dike along Lake Creek for about 400 feet. Boats without motors and ice fishing permitted upstream from the dike north 3,000 feet; and
- **Pool K:** bank fishing permitted along the dike, on 300 feet of southwestern shore and

on the accessible fishing pier.

## **B. Species to be Taken, Hunting and Fishing Periods, and Access**

Hunting will only occur on the refuge between September 1 and May 31. Night hunting is not allowed on the refuge. Hunters may enter the refuge 2 hours before State posted legal shooting time in the morning and must leave no later than 2 hours after legal shooting time in the evening. Anglers may access the refuge one half hour before sunrise and one half hour after sunset.

### Migratory Bird Hunting

Migratory bird species open to hunting on the refuge would be coot, dove, woodcock, duck, sea duck, mute swan, Wilson's snipe, crow, Canada goose and rail. The refuge offers special hunts for youth, senior, disabled, and active duty military personnel (Pennsylvania resident hunters) for migratory bird hunting.

### Upland Game Hunting

Upland game species open to hunting on the refuge would be rabbit, skunk, coyote, opossum, raccoon, fox, squirrel, woodchuck, porcupine, weasel, grouse, pheasant, and quail. Upland game hunting would be permitted on all units of the refuge in accordance with State regulations.

### Big Game Hunting

White-tailed deer, bear, and turkey hunting is permitted on all units of the refuge in accordance with State seasons and regulations. Mentored and youth hunts are open during all turkey hunting seasons. Feral hog hunting is permitted on all units of the refuge from September 1 through the end of February in accordance with all other State hunting seasons. The refuge offers special big game hunts for youth, senior, disabled, and active duty military personnel (Pennsylvania resident hunters) on all hunting units.

### Recreational Fishing

All fishing seasons are in accordance with Pennsylvania State regulations. Available species include rainbow, brook and brown trout, largemouth bass, yellow perch, bluegill, sunfish, carp, crappie and bullhead.

## **C. Permit Requirements**

*Hunting:* Refuge-specific hunting permits are not required; however, hunters must still read and follow all refuge hunting regulations. All persons hunting on the refuge will be required to obtain the necessary State and Federal licenses, permits, and stamps.

*Recreational Fishing:* There is no refuge-specific permit for fishing, but anglers must have in their possession a valid fishing license as outlined by State regulations.

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

NWRs, including Erie NWR, conduct their hunting program within the framework of State and Federal regulations. The refuge has developed this hunting and fishing plan in coordination with the Pennsylvania Game Commission (PGC). In developing this plan, the refuge reviewed the operations and regulations for neighboring State Wildlife Management Areas to find consistency where possible. Refuge leadership consulted with the PGC on April 30, 2021 to discuss proposed changes to the refuge’s hunting and fishing plan and received support for the proposal.

**E. Law Enforcement**

Enforcement of refuge violations normally associated with management of a refuge is the responsibility of commissioned Federal Wildlife Officers (FWOs). Other officers, Special Agents, State game wardens, and the local Sheriff’s Department often assist the Federal law enforcement officers.

The following methods are used to control and enforce hunting and fishing regulations:

- Refuge and hunt area boundaries will be clearly posted;
- The refuge will provide brochures on the website that show hunt and fish areas and list refuge specific regulations;
- The refuge will post the hunt brochure and maps on the four major informational kiosks on the refuge; and
- FWOs will randomly check hunters and anglers for compliance with Federal and State laws.

**F. Funding and Staffing Requirements**

Table 1 shows the estimated amount of funds needed to administer the hunting and fishing program at Erie NWR. Refuge trails and roads are maintained for a variety of activities. Costs shown are a percentage of total costs for trail and road maintenance on the refuge and are reflective of the percentage of trail and road use for this activity. Annual hunt and fish administration costs for Erie NWR including salary, equipment, brochures, analysis of biological information, etc. total approximately \$7,500. Estimated annual costs for administering the fishing program would be \$2,000 and the hunting program would be \$5,500. It is anticipated that funding would continue to be sufficient to administer the hunting and fishing programs at Erie NWR in the future.

**Table 1. Erie NWR Funding and Staffing Requirements**

Identifier	Cost
Hunt/Fish Program Staff (Manager, Biologist, Maintenance)	\$3,000
Outreach: Signature, Brochures, and Reports	\$1,500
Parking Lot/Facilities Maintenance	\$3,000
<b>Total Annual Cost</b>	<b>\$7,500</b>

#### **IV. Conduct of the Hunting Program**

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

Refuge-specific hunting and fishing permits are not required; however, hunters and anglers must still know and follow all refuge hunting regulations. All persons hunting on the refuge will be required to obtain the necessary State and Federal licenses, permits, and stamps.

##### **B. Refuge-Specific Hunting and Fishing Regulations**

Listed below are refuge-specific regulations and procedures that pertain to hunting and fishing on Erie NWR as of the date of this plan. These regulations and procedures may be modified as conditions change or if refuge expansion continues.

- Night hunting is prohibited. Hunters may enter the refuge 2 hours before State posted legal shooting time in the morning and must leave no later than 2 hours after legal shooting time in the evening.
- Scouting is allowed throughout the hunting season dates and 7 days prior to the start of each hunting season.
- We require the use of non-lead shot when hunting with a shotgun for all species except deer and turkey.
- Hunters are encouraged to voluntarily use non-lead ammunition when hunting deer and turkey. By 2026, we will eliminate use of all lead ammunition for hunting on Erie NWR.
- The use and possession of lead tackle is prohibited for angling purposes.
- Fishing is permitted from one half hour before sunrise until one half hour after sunset.
- The use or possession of live baitfish is prohibited on the Seneca Division.
- Ice fishing is permitted in Areas 5 and 7 only (Pool 9 and Pool K).

##### **C. Relevant State Regulations**

The refuge conducts its hunting program within the framework of State and Federal regulations. Hunting and fishing at the refuge is at least as restrictive as the State of Pennsylvania and more restrictive in some cases. Additionally, the refuge coordinates with the State as needed to maintain regulations and programs that are consistent with the State's management programs. Refer to the annual PGC hunting and trapping regulations digest for

more information.

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

- **Spotlights.** Using illuminating devices, including automobile headlights, for the purpose of spotlighting is prohibited.
- **Camping.** Camping, overnight parking, open fires and littering are prohibited.
- **Vehicles.** Vehicle travel is allowed on designated roads and parking areas only. Snowmobiles and all-terrain vehicles are prohibited.
- **Dogs.** Dogs may always be used for hunting but must be under the immediate control of the hunter.
- **Wading.** Seneca Division is open to bank fishing only. Wading is not permitted.
- **Boats.** Boats (without motors) are only permitted in Area 5 and only from the second Saturday in June through September 15. Boats must remain in an area from the dike to 3,000 feet upstream. All watercraft must be removed from the refuge within one half hour after sunset.
- **Frogs, turtles, baitfish and shellfish.** The taking or possession of frogs, turtles, baitfish and shellfish is prohibited.
- **Safety Zones.** There is a 150-yard safety zone around all refuge buildings

#### **V. Public Engagement**

##### **A. Outreach for Announcing and Publicizing the Hunting and Fishing 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 and fishing seasons. In addition, information about the hunt and fish programs will be available at Erie NWR headquarters office, on the Erie NWR website and on Erie NWR's social media page.

##### **B. Anticipated Public Reaction to the Hunting and Fishing Programs**

Hunting and fishing has already been allowed on Erie NWR for more than 40 years and little negative public reaction is expected. Hunting and fishing are important economic and recreational uses of Pennsylvania's natural resources. The refuge anticipates little to no negative reactions to this hunting and fishing plan.

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

Hunting and fishing information is available on the refuge website. Dates, maps, and refuge-specific requirements related to the hunting and fishing programs will be available on the station websites at: <https://www.fws.gov/refuge/erie/>. General information regarding hunting and fishing can be obtained by request and at the refuge office at:

11296 Wood Duck Lane  
Guys Mills, PA 16327  
(814) 789-3585

## **VI. Compatibility Determination**

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

Figure 1: Map of Erie NWR, Sugar Lake Division

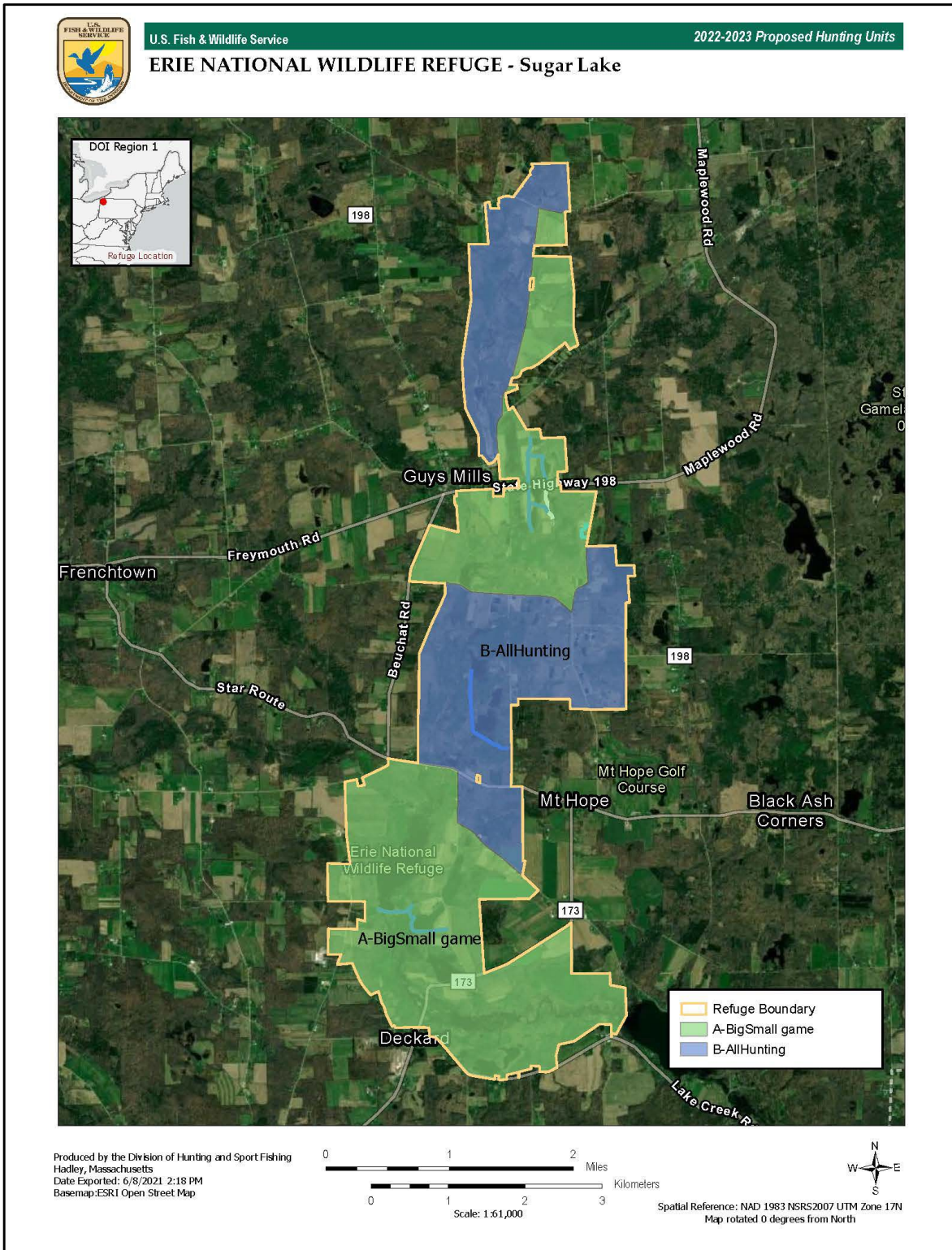
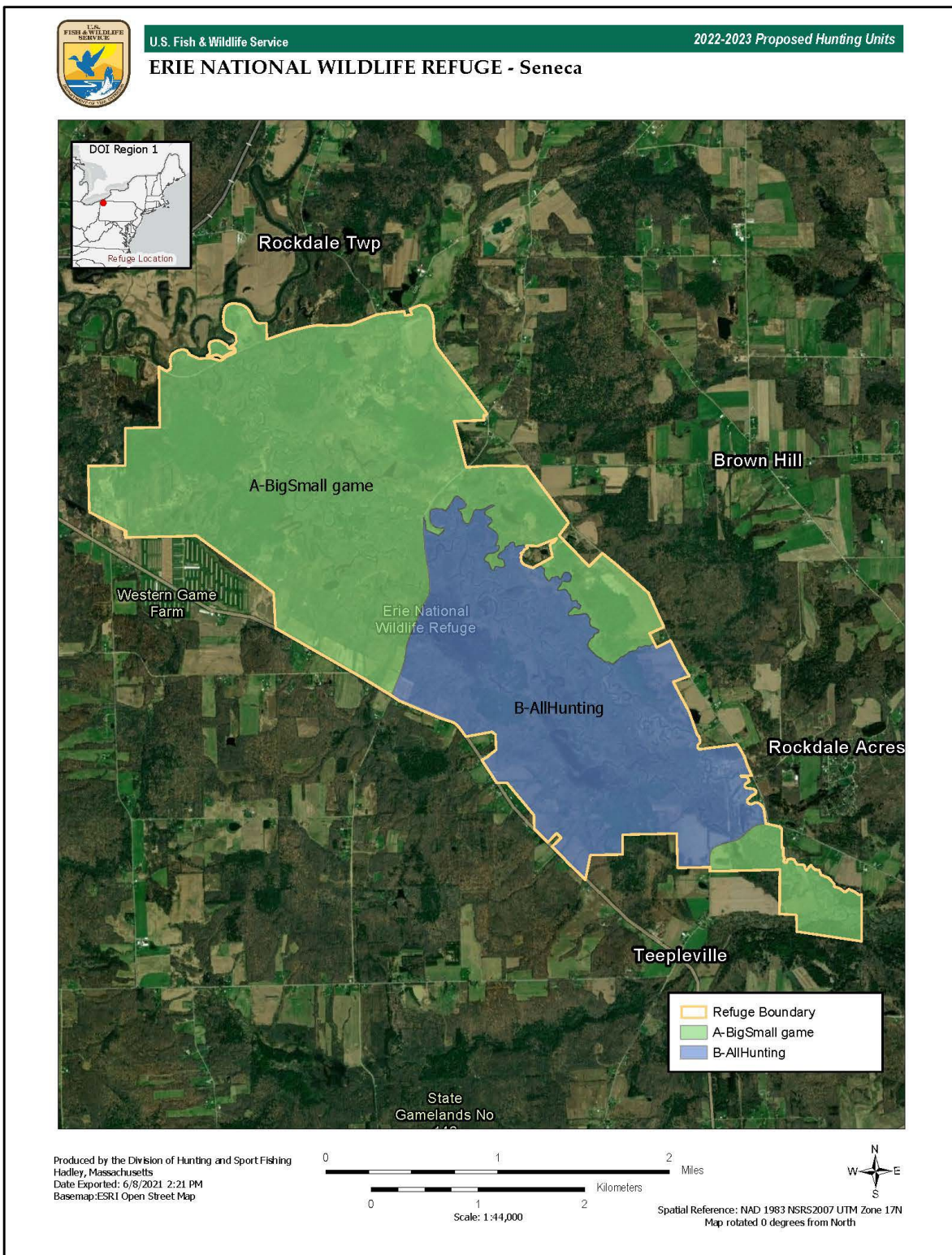


Figure 2: Map of Erie NWR, Seneca Division



## **COMPATIBILITY DETERMINATION**

**USE:** Hunting

**REFUGE NAME:** Erie National Wildlife Refuge

**DATE ESTABLISHED:** May 22, 1959

### **ESTABLISHING and ACQUISITION AUTHORITY(IES):**

- 1) Migratory Bird Conservation Act of 1929, as amended (16 U.S.C. 715d).
- 2) Fish and Wildlife Act of 1956, as amended (16 U.S.C. 742f(a)(4)).
- 3) Refuge Recreation Act of 1966, as amended (16 U.S.C. 460k-1).

### **REFUGE PURPOSE(S):**

- “...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds” (Migratory Bird Conservation Act, 16 U.S.C. 715 – 715R).
- “...for the development, advancement, management, conservation, and protection of fish and wildlife resources... for the benefit of the United States Fish and Wildlife Service, in performing its activities and services.” (16 U.S.C. 742f(b)(1), Fish and Wildlife Act of 1956).
- “...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, Refuge Recreation Act of 1966, as amended).

### **NATIONAL WILDLIFE REFUGE SYSTEM MISSION:**

The mission of the National Wildlife Refuge System (Refuge System) is “... to administer a national network of lands and waters for the conservation, management and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (Refuge System Improvement Act of 1997, Public Law 105-57).

### **DESCRIPTION OF USE:**

#### **(a) What is the use? Is the use a priority public use?**

The use is public hunting on Erie National Wildlife Refuge (NWR, refuge) in northwest Pennsylvania. This includes hunting for big game (deer, turkey, feral hog and bear), upland game (ringneck pheasant, ruffed grouse, cottontail rabbit, gray squirrel, coyote, raccoon, skunk, woodchuck, quail, opossum, porcupine, weasel and fox) and migratory game birds (Canada geese, ducks, coot, mute swan, Wilson’s snipe, mourning dove, crow, woodcock, and rail). Hunting is identified as one of the six priority public uses of the Refuge System under the

National Wildlife Refuge System Administration Act (NWRSA) of 1966 (16 U.S.C. 668dd-668ee), as amended by the Refuge System Improvement Act of 1997, when found to be compatible.

**(b) Where would the use be conducted?**

Hunting zones have been simplified to only two units (Unit A and B). Big game and upland game hunting would be permitted throughout the refuge, except for within permanent no-hunting zones. These no-hunting zones are a 150-yard safety buffer around all refuge buildings, such as refuge headquarters; maintenance shop; Youth Conservation Corps (YCC) building; refuge residences and private residences adjacent to the refuge; and a 330-foot radius around bald eagle nesting sites between January 15 through August 15 each year.

Migratory bird (coot, dark goose, mute swan, duck and sea duck) hunting would be permitted on Unit B in accordance with State seasons and regulations. Unit A is closed to migratory bird hunting. Migratory bird hunting will be allowed in the following areas:

- Sugar Lake Division (see Map 1 for specific locations);
- Area west of Hanks Road (including Woodcock Creek);
- Area south of Shaffer Road and north of Route 27 (including Pool 7N and 7S);
- Area north of Fowler Road;
- Seneca Division (see Map 2 for specific locations); and
- Section east of Swamp Road and west of Teepleville Road and south of Muddy Creek.

**(c) When would the use be conducted?**

Hunting will be conducted in accordance with Federal and State regulations. In cooperation with the State, we may adjust hunt season dates and bag limits in the future to be more restrictive than State regulations as needed to achieve wildlife population levels consistent with refuge goals. Hunting will only occur on the refuge between September 1 and May 31. Night hunting is not allowed on the refuge. Hunters may enter the refuge 2 hours before State posted legal shooting time in the morning and must leave no later than 2 hours after legal shooting time in the evening.

*Deer*

Deer hunting and scouting would be permitted during the State archery, shotgun, and muzzleloader seasons between September 1 and the last day of February. Archery hunting is open from early October to mid-November and then again for a week in late December after the regular shotgun season closes in accordance with State season dates. The regular shotgun season occurs from mid-November to mid-December and muzzleloader season is during 1 week in mid-October and 1 week in December. These are general season periods and may change as the State of Pennsylvania regulations change. All hunting hours will follow State regulations. The refuge

will support special hunts (e.g. senior citizens, women, youth, etc.) in conjunction with the Pennsylvania Game Commission (PGC) and/or Sportsmen's Club(s).

#### *Turkey*

Turkey hunting seasons are open in accordance with State seasons and regulations. Fall season normally occurs for 1 week in early November and a few days in late November. Spring turkey hunting is open for most of May. The seasons may change as the State regulations change. All hunting hours will follow State regulations.

#### *Black bear*

Black bear hunting will occur in accordance with State season and regulations. Muzzleloader season for black bear hunting occurs in accordance with State seasons and normally occurs 1 week in mid-October. Special firearms season is open for 2 days in late October. Bow hunting is open the last week in October and the first week in November. General hunting is a 5-day season at the end of November, with a second 1-week season the first week of December. These are general season periods and may change as the State regulations change. All hunting hours will follow State regulations. The refuge will support special hunts (e.g., senior citizens, women, youth) in conjunction with the PGC and/or Sportsmen's Club(s).

#### *Upland game*

Upland game hunting will occur in accordance with State seasons and regulations by species, but it will conclude on the refuge no later than the last day of February. The refuge will support special hunts in conjunction with the PGC and/or Sportsmen's Club(s). Cottontail rabbit, squirrel, pheasant, and ruffed grouse hunting is open from mid-October to the last day of February. Hunting for raccoon, skunk, opossum, and fox is open from late October to mid-February. Quail hunting is open from late October to late November. These are general season periods and may change as the State regulations change. The State has no closed season for woodchuck, coyote, skunks, or opossum hunting, so hunting on the refuge for these species would be allowed from September 1 until the end of February (see State regulations for some exceptions during big game hunting season where hunting for these species is not allowed).

#### *Migratory bird*

All hunting hours will follow State regulations. The refuge will foster and sponsor a Youth Orientation Day leading into Youth Hunt (one or two events for waterfowl) in conjunction with the PGC and/or Sportsmen's Club(s). This would include a half day of instruction. Annual migratory game bird seasons are selected by the State from a framework established by the Service. The State selections are made after reviewing last year's season results, survey data, and input gathered from migratory game bird hunters and the public. Once these seasons are finalized, they will be posted on the PGC's website. The State has no closed season for mute swans so hunting on the refuge for this species would be allowed from September 1 until the end of February.

#### *Feral hog*

Feral hog hunting would be permitted on the refuge from September 1 until the end of February. Feral hogs are not a regulated game species in the State. Hunting hours will follow the State-

regulated hours for deer hunting.

**(d) How would the use be conducted?**

We will continue to conduct the use according to State and Federal regulations. Federal regulations in 50 CFR pertaining to the NWRSA, 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.

All persons hunting on the refuge must hold a valid State hunting license. Refuge hunting rules and regulations can be found at the refuge headquarters, information kiosks throughout the refuge, and online. Hunters must abide by all refuge rules and regulations while hunting on the refuge. Individuals hunting on the refuge are subject to the inspection of licenses, hunting equipment, harvested game, vehicles, and their contents by Federal or State officers. Unarmed hunters may scout hunting areas from September 1 through the end of February and 7 days prior to the start of the hunting seasons. All hunters must wear solid-colored hunter orange clothing or material in accordance with State regulations.

Dogs may be used for hunting in accordance with State regulations but must always be under the immediate control of the hunter. Dog training is not permitted on the refuge and dogs are prohibited while scouting. We prohibit hunting with the use of raptors (falconry) to take small game or migratory birds due to the potential for incidental take of unintended species of small game or migratory birds and the risk of spreading disease to other avian species on the refuge.

Vehicles are only allowed on established roads marked open for vehicular travel and parking areas. Vehicles must be parked off the lane of travel and clear of gates. Canoes and other non-motorized boats (watercraft) may only be used for waterfowl hunting. Waterfowl hunters would be responsible for carrying boats to hunting locations as there is no vehicular access available for these areas. There are no established boat launches or access points. Watercraft must be removed from the refuge within one hour after hunting hours end for the day.

Temporary portable tree stands, blinds, and platforms are acceptable and must be removed within 2 weeks of the end of the hunting season. Hunters cannot use screw-in steps, nails, spikes, wire, or bolts as climbing or hanging devices, or to attach a stand to a tree.

Deer may be hunted with centerfire rifles, shotguns, muzzleloaders, or archery equipment during designated State and refuge seasons. Turkey may be hunted with manually operated rifles and handguns, including rim fires, manually operated and semiautomatic shotguns, muzzleloaders, or archery equipment during designated State and refuge seasons. Decoys may be used for turkey hunting in accordance with State regulations. All decoys must be removed daily within 1 hour after hunting hours end. Bear may be hunted with centerfire rifles, handguns, shotguns, muzzleloaders, or archery equipment during designated State and refuge seasons. Feral hogs may be hunted with the same firearms allowed for coyote and fox hunting. Migratory game birds may

be hunted with manual and semiautomatic shotguns or archery equipment during designated State and refuge seasons. Non-lead shot is required for all shotgun hunting of migratory game birds.

Upland game may be hunted with centerfire rifles, handguns, shotguns, muzzleloaders, or archery equipment during designated State and refuge seasons. The use and possession of lead shot is prohibited for hunting with a shotgun of all upland game.

Hunters are encouraged to voluntarily use non-lead ammunition when hunting deer and turkey. By 2026, we will eliminate use of all lead ammunition for hunting on Erie NWR.

**(e) Why is the use being proposed?**

Hunting is one of the six priority public uses outlined in the Refuge System Improvement Act of 1997. The Service supports and encourages priority uses when they are appropriate and compatible on NWR lands. Hunting is used in some instances to manage wildlife populations. Hunting is a healthy, traditional recreational use of renewable natural resources deeply rooted in America’s heritage, and it can be an important wildlife management tool.

Furthermore, Department of the Interior Secretarial Order 3356 directs the Service to enhance and expand public access to lands and waters on NWRs for hunting, fishing, recreational shooting, and other forms of outdoor recreation. The proposed action would promote one of the priority public uses of the Refuge System and providing opportunities for visitors to hunt would promote stewardship of our natural resources and increase public appreciation and support for the refuge.

**AVAILABILITY OF RESOURCES:**

Table A-1 shows the estimated amount of funds needed to administer the hunting program at Erie NWR. Refuge trails and roads are maintained for a variety of activities. Costs shown are a percentage of total costs for trail and road maintenance on the refuge and are reflective of the percentage of trail and road use for this activity. Annual hunting administration costs for Erie NWR including salary, brochures, data collection and analysis, etc. totals approximately \$5,500. It is anticipated that funding would continue to be sufficient to administer the hunting program at Erie NWR in the future. Volunteers account for some maintenance hours and help to reduce overall cost of the program.

**Table A-1. Erie NWR Funding and Staffing Requirements for Hunting**

Identifier	Cost
Hunt Program Staff (Manager, Biologist, Maintenance)	\$2,550
Outreach: Signature, Brochures, and Reports	\$650
Parking Lot/Facilities Maintenance	\$2,300
<b>Total Annual Cost</b>	<b>\$5,500</b>

## **ANTICIPATED IMPACTS OF THE USE:**

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 (Cole and Knight 1990, Cole 1995, Bell and Austin 1985). In many cases, hunting removes a portion of the wildlife population that will otherwise naturally succumb to predation, disease, or competition (Bartmann et al. 1992). Typical changes in deer behavior in response to hunting include avoidance of certain areas, becoming 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 (Raveling 1979, Owen 1973, White-Robinson 1982, Madsen 1985, Bartelt 1987).

In general, refuge visitors engaged in hunting will be walking off-trail in designated areas open to hunting. General disturbance from recreational activities, including hunting, vary with the wildlife species involved and the activity's type, level, frequency, duration, and the time of year it occurs. The responses of wildlife to human activities, such as hunting, include avoidance or departure from the site (Owen 1973, Burger 1981, Kaiser and Fritzell 1984, Korschen et al. 1985, Kahl 1991, Klein 1993, Whittaker and Knight 1998), the use of suboptimal habitat (Erwin 1980, Williams and Forbes 1980), altered behavior or habituation to human disturbance (Burger 1981, Korschen et al. 1985, Morton et al. 1989, Ward and Stehn 1989, Havera et al. 1992, Klein 1993, Whittaker and Knight 1998), attraction (Whittaker and Knight 1998), and an increase in energy expenditure (Morton et al. 1989, Belanger and Bedard 1990). The amount of disturbance tends to increase with decreased distance between visitors and birds (Burger 1986).

### **Migratory Birds**

Some bird species flee from human disturbance, which can lower their nesting productivity and cause disease and death (Knight and Cole 1991). Miller et al. found bird abundance and nesting activities (including nest success) increased as distance from a recreational trail increased in both grassland and forested habitats (1998). Bird communities in this study were apparently affected by the presence of recreational trails, where common species like American robins were found near trails and more specialized species like grasshopper sparrows were found farther from trails. Nest predation also was found to be greater near trails (Miller et al. 1998). Disturbance may affect the reproductive fitness of males by hampering territory defense, male attraction and other reproductive functions of song (Arcese 1987). Disturbance, which leads to reduced singing activity, makes males rely more heavily on physical deterrents in defending territories, which consumes time and energy (Ewald and Carpenter 1978). These potential negative impacts are anticipated to be minimal.

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 only 40 percent of the refuge, and methods of take for many opportunities permitted.

### **Non-target Wildlife**

While some disturbance to non-target wildlife species is expected, we anticipate that impact to be minimal because hunting is regulated by the refuge and occurs outside the breeding season (except for the spring turkey season). While spring turkey season is during the spring migration, we believe the limitation on the amount of time hunters are afield in the first half of May will lessen the impact to migratory birds and those that breed on the refuge. The no-hunting zones will require hunters to stay away from and not disturb nesting bald eagles. We expect any impact on migratory waterfowl to be negligible considering that most big game hunting takes place in upland habitats away from the marshes where the birds feed and rest. Additionally, rifle and shotgun deer hunting will only occur on the refuge for approximately 2 weeks which will give the birds an opportunity to feed and rest undisturbed in those areas before and after the season. Black bear hunting seasons are open intermittently through the fall, which will similarly provide opportunities for birds to feed and rest in those areas before and after. Resident wildlife impacts will also be minimal due to the same reasons stated above.

Lead ammunition can be used on the refuge for hunting as detailed in the Hunting and Recreational Fishing Plan, but lead fishing tackle is prohibited for angling purposes. We require the use of non-lead shot when hunting with a shotgun for all species except deer and turkey. The negative impacts of lead on wildlife are documented and clear (Golden et al. 2016). To move towards reduction and future elimination of this threat on the refuge, we will be eliminating the use of lead ammunition over a 4-year period for all species to educate and work with hunters on the use of non-lead alternatives. The phased transition to lead-free 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.

Lead shot and bullet fragments found in animal carcasses and gut piles are the most likely source of lead exposure. Many hunters do not realize that the carcass or gut pile they leave in the field usually contains lead bullet fragments. Research will continue on the effects of lead ammunition and the fragments it can deposit in killed game. Avian predators and scavengers can be susceptible to lead poisoning when they ingest lead fragments or pellets in the tissues of animals killed or wounded by lead ammunition. Lead poison may weaken raptors and increase mortality rates by leaving them unable to hunt, or more susceptible to vehicles or power line accidents. The bioaccumulation of lead is a potential concern, but it does not likely present a significant issue on this refuge, as: 1) non-lead shot is currently required for hunting waterfowl; 2) we are proposing a 4-year phase out to the use of lead ammunition for all species by 2026; 3) the refuge strongly encourages use of non-lead alternatives for hunting big game (deer and turkey) for the next 4 years; 4) we will educate hunters and the public to the potential adverse impacts of lead; and 5) the updated hunting activities are not likely to introduce substantially more lead into the environment over existing amounts with the current or proposed hunting program. Some hunters will also choose non-lead methods of take such as archery.

### **Threatened and Endangered Species**

There are at least 22 species of freshwater mussels on the refuge, 5 of which are federally listed as threatened or endangered (Mohler et al. 2006). To date, known populations of federally listed species are concentrated in Muddy Creek in the Seneca Division. The refuge's federally listed mussel species currently include the endangered Northern riffleshell, clubshell, rayed bean, and snuffbox and the threatened rabbitsfoot.

Non-motorized boating used for waterfowl hunting in areas of Muddy Creek has the potential to affect populations of mussel species. Watercraft may scrape the bottom of the creek, disturbing the streambed and potentially crushing any exposed mussels. Similar impacts may result from hunters getting in and out of their boats and walking in the streambed if not using a boat. Minor wake from non-motorized boats and other watercraft activities may slightly increase suspended sediments that potentially erode mussels' shells, making them more susceptible to shell-dissolving pollutants (Box and Mossa 1999). Suspended sediments interfere with mussel respiration and feeding, often resulting in diminished health and can indirectly affect mussels by reducing light availability for photosynthesis and productivity of food resources (Box and Mossa 1999). Considering the low numbers of non-motorized boaters refuge staff have seen for hunting purposes, we anticipate these impacts to be minor. We can mitigate their impacts by continuing education, outreach, and initiating a monitoring program of the streambeds. Educational materials will encourage boaters to stay out of water less than 6 inches in depth (reducing the likelihood of scraping the streambed) and teach them how to identify quality mussel habitat, thus allowing them to avoid those areas. Overall, as compared to big game and upland game bird hunting, the refuge sees a low number of migratory bird hunters and most of those hunters are concentrated on the Sugar Lake Division (where no federally listed mussels have been identified). Therefore, we expect minor, if any, impacts to federally listed mussels from public hunting.

In addition to mussels, the refuge also contains the threatened Northern long-eared bat (confirmed by mistnetting in 2015) and potentially contains the endangered Indiana bat (detected via acoustic surveys in 2013 and 2014). During the hunting season, bats that use the refuge for roosting in the summer will be migrating or have already migrated to a cave or abandoned mine off-refuge for winter hibernation. Therefore, any potential impacts to these species would be negligible.

The scarce amount of lead introduced on this refuge from updated hunting and fishing activities is not likely to adversely affect the bats or mussels, because those species will not be present or active in the refuge hunting areas during the hunting seasons. Furthermore, these species are not scavengers and, therefore, will not be impacted by bioaccumulation of lead or lead fragments in gut piles left on the refuge after hunting seasons.

### **Big game (deer, turkey, feral hog and bear)**

Impacts to big game species could include temporary and localized disturbance, changes in behavior, direct injury or mortality of individuals, and changes in population dynamics. The refuge does not currently collect data for deer, bear or turkey harvest on the refuge. The refuge is contained within the State's Wildlife Management Unit (WMU) 1B. Data for that unit show an average of 9,175 antlered and 14,825 antlerless deer harvested between 2017 and 2020 (PGC

2016, 2017, 2018a, 2018b). The buck to doe ratio in the harvest is approximately 1:1. State deer density estimates for this region are approximately 30 per square mile (San Julian and Smith 2001) and have shown little change in the last several years. Data for WMU 1B showed an average of 298 turkey harvested in the fall and 1,941 harvested in the spring between 2016 and 2019 (PGC n.d.). Black bear harvests are reported by county rather than WMU. Data for Crawford County show an average of 56 bear harvested annually between 2016 and 2020 (PGC n.d.). Refuge staff assume that the refuge deer and turkey populations are similar to the overall western Pennsylvania population, which are intensely managed by the State of Pennsylvania, while bear may be slightly higher.

**Small/upland game (ringneck pheasant, ruffed grouse, cottontail rabbit, gray squirrel, coyote, raccoon, skunk, woodchuck, quail, opossum, porcupine, weasels and fox)**

Small/upland game hunting has been part of the hunt program for many years, yet harvest of small/upland is not recorded by the refuge. Small/upland game hunting has had relatively low use when compared with other public uses on the refuge. There will be temporary and insignificant disturbance to vegetation and wildlife from hunters walking through the woods, fields, and marshes, but will not affect the purpose of the refuge. A study by Nixon et al. concluded that squirrel populations are variable depending on mast production for the year and population numbers were more impacted by mast production than hunting (1975).

Over the past 5 years, harvests have declined statewide for grouse and woodchuck and have remained stable for rabbit, squirrel, pheasant, and porcupine, while furbearers, coyote, fox, and weasel have also remained stable (PGC 2020). Year to year, populations for small/upland game species tend to fluctuate and reproductive rates are typically high enough to maintain adequate population levels. Any potential negative impacts are anticipated to be minimal.

**Vegetation and Soil**

The physical effects on vegetation from hunting are expected to be minimal. Hunting may result in some trampling of vegetation, but since most of the vegetation will be dormant for most of the hunting season, we expect the impact to be minimal. Additionally, hunter use is generally dispersed over large areas, minimizing the impact to any one area. All-terrain vehicles will not be allowed on the refuge and other vehicles are restricted to public roads.

Positive effects on the vegetation would result from a reduction in the white-tailed deer population. The impacts of dense deer populations on forest regeneration and the composition and diversity of the herbaceous understory have been well documented (Tierson et al. 1966, Behrend et al. 1970, Tilghman 1989). Well-managed hunting can effectively control deer populations and produce dramatic changes in the forest vegetation (Behrend et al. 1970). The impact of deer hunting on the vegetation would be positive, resulting in better regeneration of forest canopy species and an increase in the diversity of the herbaceous understory. In summary, there would be few if any negative impacts from this use on the refuge's vegetation, but there would be beneficial impacts from the decrease of deer browsing on the refuge's vegetation.

It is anticipated that minor impacts to soils would occur because of hunting. Erosion potential would likely vary during the season based on soil moisture and temperatures. During much of the

hunting season, soils may be frozen or covered in snow, thereby reducing the impacts greatly. At the current use level, impacts to soils like erosion and compaction are not significant.

### **Hydrology**

Paths (both on-trail and off-trail) used by hunters can affect the hydrology of an area, primarily through alteration of drainage patterns. It is anticipated that existing trails would continue to influence hydrology regardless of pedestrian travel. Most hunters using the refuge would be walking off-trail potentially creating new trails and therefore new drainage patterns. We expect those impacts to be minimal since hunters do not use the same paths repeatedly. Additionally, during some of the hunting season, soils may be frozen or covered in snow, thereby reducing the impacts. Refuge staff has observed only negligible or minor problems with erosion, incision, or stream alteration to date. Therefore, current and projected participation in these uses are not expected to increase these minor issues. Thus, no additional hydrologic impacts are anticipated from this use.

### **Visitor Use**

Hunting provides additional wildlife-dependent recreational opportunities and can foster a better appreciation and more complete understanding of the wildlife and habitats associated with the western Pennsylvania landscape. This can translate into more widespread and stronger support for wildlife conservation, the refuge, the Refuge System, and the Service.

Hunting is a popular, longstanding public use on the refuge. Of all the hunting activities on the refuge, big game hunting is by far the most popular with an average of 7,555 visits over a 4-year time frame (2014 to 2018), and upland game hunting is the second most popular with an average of 1,164 visits from 2010 to 2014. Migratory bird (including waterfowl and non-waterfowl) hunting is the least popular with an average of 825 visits from 2010 to 2014. All areas of the refuge are open to some form of hunting except for safety zones.

While many hunters use the refuge to hunt deer, more do so during the shotgun season than any other season. The heaviest usage is during the first full week of the shotgun season and on the weekends. Conflicts between hunters may occur. In some cases, competition among hunters for choice sites is keen and has led to unethical behavior. Hunters may only use portable tree stands that must be removed daily. However, some stands are left in place illegally for prolonged periods or are nailed directly into trees.

The activity of deer hunters has some impact on other refuge visitors, but non-hunters must remain on refuge trails so impacts are minimal. While the bow hunting season has little to no impact on the public, the shotgun and muzzleloader season may. Some users may be impacted by the presence and noise associated with shotgun and muzzleloader hunting which occurs on the entire refuge. Visitors will be impacted by this as they walk on refuge trails and visit refuge overlooks or they may avoid the refuge completely for concerns of safety. Similar impacts to visitors are associated with bear and turkey hunting. Although conflicts between user groups can arise, that does not appear to be an issue at the present levels of use. In the future, we may need to manage public use to minimize conflicts and ensure public safety. That may include public outreach or zoning to separate user groups.

**Economic**

According to the 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, approximately 775,000 residents and nonresidents participated in hunting in Pennsylvania in 2011. That same year, hunters spent approximately \$970 million on activities and equipment related to hunting (USFWS and US Census Bureau 2014). While we do not have exact numbers of hunters on the refuge units, visitors participating in this use provided some economic benefit to the local economies by purchasing goods and services (like food, lodging, and gas) in and around the refuge.

**PUBLIC REVIEW AND COMMENT:**

This Compatibility Determination (CD) is part of the Erie NWR Hunting and Fishing Plan and the accompanying EA. The plan was coordinated with all interested and/or affected parties, including PGC staff. The public will be notified of the availability of the Hunting Plan, EA, and accompanying CD 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 (CHECK ONE BELOW):**

Use is not compatible

Use is compatible, with the following stipulations

**STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:**

To ensure compatibility with the refuge's purpose and the Refuge System mission, hunting can occur at Erie NWR in accordance with State and Federal regulations and special refuge-specific regulations (50 CFR 32.38) 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. Adherence to the regulations, as detailed in the hunting plan and associated hunt-specific brochures, will ensure compatibility with the purpose for which the refuge was established. The following stipulations are necessary to ensure compatibility:

- We only allow non-motorized boats for waterfowl hunting in permitted areas;
- We prohibit field possession of migratory game birds in areas of the refuge closed to migratory game bird hunting;
- We only allow hunting on the refuge from September 1 through the end of February, with the exception of the spring turkey hunt;
- We prohibit the use of raptors (falconry) to take small game and migratory birds;

- There is a 150-yard safety zone around all refuge buildings;
- We require the use of non-lead shot when hunting with a shotgun for all species except deer and turkey;
- Non-lead ammunition will be required for hunting all species beginning in fall of 2026; and
- Night hunting is prohibited. Hunters may enter the refuge 2 hours before State posted legal shooting time in the morning and must leave no later than 2 hours after legal shooting time in the evening.

**JUSTIFICATION:**

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

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

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

**SIGNATURE:**

Refuge Manager

\_\_\_\_\_

(Signature)

\_\_\_\_\_

(Date)

**CONCURRENCE:**

Regional Chief

\_\_\_\_\_

(Signature)

\_\_\_\_\_

(Date)

**MANDATORY 15 YEAR RE-EVALUATION DATE:**

\_\_\_\_\_

(Date)

## **LITERATURE CITED:**

- Arcese, P. (1987). Age, intrusion pressure and defense against floaters by territorial male Song Sparrows. *Animal Behavior*, 35, 773-784.
- Augustine, D.J. and P.A. Jordan. 1998. Predictors of white-tailed deer grazing intensity in fragmented deciduous forests. *Journal of Wildlife Management* 62:1076-1085.
- Bartelt, G.A. (1987). Effects of disturbance and hunting on the behavior of Canada geese family groups in East Central Wisconsin. *Journal of Wildlife Management*, 51, 517-522.
- Bartmann, R.M., White, G.C., and Carpenter, L.H. (1992). Compensatory mortality in a Colorado mule deer population. *Wildlife Monographs*, 121, 1-39.
- Behrend, D.F., Mattfield, G.F., Tierson, W.C., and Wiley, J.E. (1970). Deer density control for comprehensive forest management. *Journal of Forestry*, 68, 695-700.
- Belanger, L. and Bedard, J. (1990). Energetic cost of man-induced disturbance to staging snow geese. *Journal of Wildlife Management*, 54, 36-41.
- Bell, D.V. and Austin, L.W. (1985). The game-fishing season and its effects on overwintering wildfowl. *Biological Conservation*, 33, 65-80.
- Box, J.B. and Mossa, J. (1999). Sediment, land use, and freshwater mussels: prospects and problems. *Journal of the North American Benthological Society*, 18, 99-117.
- Burger, J. (1981). Effect of human activity on birds at a coastal bay. *Biological Conservation* 21, 231-241.
- Burger, J. (1986). The effect of human activity on shorebirds in two coastal bays in northeastern United States. *Biological Conservation*, 13, 123-130.
- Cole, D.N. (1990). Ecological impacts of wilderness recreation and their management. In J.C. Hendee, G.H. Stankey, and R.C. Lucas (Eds.), *Wilderness Management* (pp. 425-466). Golden, CO: North American Press.
- Cole, D.N. and Knight, R.L. (1990). Impacts of recreation on biodiversity in wilderness. *Natural Resources and Environmental Issues*, 0, 33-40.
- Erwin, R.M. (1980). Breeding habitat by colonially nesting water birds in two Mid-Atlantic U.S. regions under different regimes of human disturbance. *Biological Conservation*, 18, 39-51.
- Ewald, P.W. and Carpenter, F.L. (1978). Territorial responses to energy manipulations in the Anna hummingbird. *Oecologia*, 31, 277-292.

- Havera, S.P., Boens, L.R., Georgi, M.M., and Shealy, R.T. (1992). Human disturbance of waterfowl on Keokuk Pool, Mississippi River. *Wildlife Society Bulletin*, 20, 290-298.
- Kahl, R. (1991). Boating disturbance of canvasbacks during migration at Lake Poygan, Wisconsin. *Wildlife Society Bulletin*, 19, 242-248.
- Kaiser, M.S. and Fritzell, E.K. (1984). Effects of river recreationists on green-backed heron behavior. *Journal of Wildlife Management*, 48, 561-567.
- King, M.M. and Workman, G.W. (1986). Response of desert bighorn sheep to human harassment: management implications. *Transactions 51st North American Wildlife and Natural Resource Conference*.
- Klein, M.L. (1993). Waterbird behavioral responses to human disturbance. *Wildlife Society Bulletin*, 21, 31-39.
- Knight, R.L. and Cole, D.N. (1991). Effects of recreational activity on wildlife in wildlands. *Transactions of the 56th North American Wildlife and Natural Resources Conference*, 238-247.
- Korschen, C.E., George, L.S., and Green, W.L. (1985). Disturbance of diving ducks by boaters on a migrational staging area. *Wildlife Society Bulletin*, 13, 290-296.
- Madsen, J. (1985). Impact of disturbance on field utilization of pink-footed geese in West Jutland, Denmark. *Biological Conservation*, 33, 53-63.
- Miller S.G., Knight, R.L., and Miller, C.K. (1998). Influence of Recreational Trails on breeding bird communities. *Ecological Society of America*, 8(1), 162-169.
- Mohler et al. 2006. The Mussels of Muddy Creek on Erie National Wildlife Refuge. *Northeastern Naturalist*. 13. 569-582.  
10.1656/1092=6194(2006)13[569:TMOMCO]2.0.CO;2.
- Morton, J.M., Fowler, A.C., and Kirkpatrick, R.L. (1989). Time and energy budgets of American black ducks in winter. *Journal of Wildlife Management*, 53, 401-410 (also see corrigendum in *Journal of Wildlife Management*, 54, 683.
- Nixon, C., McClain, M., and Donohoe, R. (1975). Effects of Hunting and Mast Crops on a Squirrel Population. *The Journal of Wildlife Management*, (1), 1-25.  
doi:10.2307/3800460
- Owen, M. (1973). The management of grassland areas for wintering geese. *Wildfowl*, 24,123-130.

- Pennsylvania Game Commission (PGC). N.d. *Harvest Data and Maps*. Harrisburg, PA: Bureau of Wildlife Management. Retrieved from <https://www.pgc.pa.gov/HuntTrap/Hunting/HarvestDataandMaps/Pages/default.aspx>, accessed May 2019.
- . (2018a). *Pennsylvania 2018-19 Deer Harvest Estimates*. Harrisburg, PA: Bureau of Wildlife Management. Retrieved from <https://www.pgc.pa.gov/Wildlife/WildlifeSpecies/White-tailedDeer/Documents/2018-19%20Deer%20Harvest%20Estimates%20Report.pdf>, accessed May 2019.
- . (2018b). *Pennsylvania 2017-18 Deer Harvest Estimates*. Harrisburg, PA: Bureau of Wildlife Management. Retrieved from <https://www.pgc.pa.gov/Wildlife/WildlifeSpecies/White-tailedDeer/Documents/2017-18%20Deer%20Harvest%20Estimates%20Report.pdf>, accessed May 2019.
- . (2017). *Pennsylvania 2016-17 Deer Harvest Estimates*. Harrisburg, PA: Bureau of Wildlife Management. Retrieved from <https://www.pgc.pa.gov/Wildlife/WildlifeSpecies/White-tailedDeer/Documents/2016-17%20Deer%20Harvest%20Estimates%20Report.pdf>, accessed May 2019.
- . (2016). *Pennsylvania 2015-16 Deer Harvest Estimates*. Harrisburg, PA: Bureau of Wildlife Management. Retrieved from <https://www.pgc.pa.gov/Wildlife/WildlifeSpecies/White-tailedDeer/Documents/2015-16%20Harvest%20Estimates%20Report.pdf>, accessed May 2019.
- . (2014). *Deer health, forest habitat health, deer harvests, and deer population trends by wildlife management unit*. Harrisburg, PA: Bureau of Wildlife Management. Retrieved from [http://www.portal.state.pa.us/portal/server.pt/document/1460120/21001-13z\\_pdf](http://www.portal.state.pa.us/portal/server.pt/document/1460120/21001-13z_pdf), accessed November 2014.
- 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
- Raveling, D.G. (1979). Traditional use of migration and winter roost sites by Canada geese. *Journal of Wildlife Management*, 43, 229-235.
- San Julian, G.J. and Smith, S.S. (2001). White-tailed deer. State College: PA. Pennsylvania State University, College of Agricultural Sciences.
- Tierson, W.C., Patric, E.F., and Behrend, D.F. (1966). Influence of white-tailed deer on the logged northern hardwood forest. *Journal of Forestry*, 64, 804-805.
- Tilghman, N.G. (1989). Impacts of white-tailed deer on forest regeneration in northwestern

- Pennsylvania. *Journal of Wildlife Management*, 53, 524-532.
- Ward, D.H. and Stehn, R.A. (1989). Response of brant and other geese to aircraft disturbance at Izembek Lagoon, Alaska. Anchorage, AK: U.S. Fish and Wildlife Service, Alaska Fish and Wildlife Research Center. Final report to the Minerals Management Service.
- White, M.A. 2012. Long-term effects of deer browsing: composition, structure and productivity in a northeastern Minnesota old-growth forest. *Forest Ecology and Management* 269: 222-228.
- . (2018b). *Pennsylvania 2017-18 Deer Harvest Estimates*. Harrisburg, PA: Bureau of Wildlife Management. Retrieved from <https://www.pgc.pa.gov/Wildlife/WildlifeSpecies/White-tailedDeer/Documents/2017-18%20Deer%20Harvest%20Estimates%20Report.pdf>, accessed April 2021.
- White-Robinson, R. (1982). Inland and saltmarsh feeding of wintering brent geese in Essex. *Wildfowl*, 33, 113-118.
- Whittaker, D. and Knight, R. (1998). Understanding wildlife responses to humans. *Wildlife Society Bulletin*, 26(3), 312-317.
- Williams, G.J. and Forbes, E. (1980). The habitat and dietary preferences of dark-bellied brant geese and widgeon in relation to agricultural management. *Wildfowl*, 31, 151-157.
- U.S. Fish and Wildlife Service (USFWS) and U.S. Census Bureau. (2014). *2011 National survey of fishing, hunting, and wildlife-associate recreation* (revised edition). Washington, DC: U.S. Department of the Interior and U.S. Department of Commerce. Retrieved from <https://www.census.gov/prod/2012pubs/fhw11-nat.pdf>, accessed July 2014.

## **COMPATIBILITY DETERMINATION**

**USE:** Recreational Fishing

**REFUGE NAME:** Erie National Wildlife Refuge

**DATE ESTABLISHED:** May 22, 1959

### **ESTABLISHING and ACQUISITION AUTHORITY(IES):**

- 1) Migratory Bird Conservation Act of 1929, as amended, (16 U.S.C. 715d).
- 2) Fish and Wildlife Act of 1956, as amended, 16 U.S.C. 742f(a)(4).
- 3) Refuge Recreation Act of 1966, as amended, (16 U.S.C. 460k-1).

### **REFUGE PURPOSE(S):**

- “...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds” (Migratory Bird Conservation Act, 16 U.S.C. 715 – 715R).
- “...for the development, advancement, management, conservation, and protection of fish and wildlife resources... for the benefit of the United States Fish and Wildlife Service, in performing its activities and services.” (16 U.S.C. 742f(b)(1), Fish and Wildlife Act of 1956).
- “...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, Refuge Recreation Act of 1966, as amended).

### **NATIONAL WILDLIFE REFUGE SYSTEM MISSION:**

The mission of the National Wildlife Refuge System (Refuge System) is “to administer a national network of lands and waters for the conservation, management and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (Refuge System Improvement Act of 1997, Public Law 105-57).

### **DESCRIPTION OF USE:**

#### **(a) What is the use? Is the use a priority public use?**

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

**(b) Where would the use be conducted?**

Fishing is permitted in the following areas in the Sugar Lake Division:

- **Woodcock Creek at north end:** from the northern refuge boundary, upstream or south past Hickory Corners Road for about one tenth of a mile;
- **Woodcock Overlook Pond:** on the west side of Hanks Road;
- **Woodcock Creek south:** downstream from Hanks Road for 150 feet;
- **Peterson Pond:** bank fishing permitted on the west side of McFadden Road;
- **Pool 4 Outlet:** downstream from Shaffer Road for 150 feet;
- **Pool 9 Dike area:** bank fishing on the dike and below the dike along Lake Creek for about 400 feet. Boats without motors and ice fishing permitted upstream from the dike north 3,000 feet; and
- **Pool K:** bank fishing permitted along the dike, on 300 feet of southwestern shore and on the accessible fishing pier.

Bank fishing is also permitted in all creeks and beaver ponds in the Seneca Unit north of Muddy Creek and west of Swamp Road. There would be 4 miles of additional frontage opened to fishing on Muddy Creek and Dead Creek.

**(c) When would the use be conducted?**

All fishing seasons would align with State regulations. Fishing is permitted from one half hour before sunrise until a one half hour after sunset.

**(d) How would the use be conducted?**

There is no refuge-specific permit for fishing, but anglers must have in their possession a valid fishing license as outlined by State regulations. Anglers can access waters by foot or road. All fishing must comply with Pennsylvania Fish and Boat Commission (PFBC) regulations and the following specific conditions:

- Seneca Division is open to bank fishing only. Wading is not permitted.
- Fishing is permitted from one half hour before sunrise until one half hour after sunset.
- Boats (without motors) are only permitted in Area 5 and only from the second Saturday in June through September 15.
- All watercraft must be removed from the refuge within one half hour after sunset.

- Ice fishing is permitted in Areas 5 and 7 only.
- The taking of frogs and turtles is prohibited.
- The use or possession of live baitfish is prohibited.
- The taking or possessing of shellfish is prohibited.
- Fishing within a 330-foot radius of any bald eagle nesting site is prohibited.
- We prohibit the use of lead tackle for fishing.

At the discretion of the refuge manager, we may close some areas seasonally, temporarily, or permanently to fishing if wildlife or habitat impacts or user conflicts become an issue. In cooperation with State fisheries biologists, we may manipulate the fisheries or habitat to promote or improve the local native fishery resource, if warranted. That may include changing fishing regulations (season dates, creel limits, and methods of take), directly manipulating the fisheries by controlling exotic species or stocking, adjusting water levels, introducing or removing fish barriers, manipulating in-stream or stream bank habitat.

**(e) Why is the use being proposed?**

Fishing is one of the priority public uses defined by the NWR SAA 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) emphasized identifying opportunities to increase outdoor recreation opportunities for all Americans including opportunities to hunt and fish. This legitimate and appropriate use of a NWR 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.

**AVAILABILITY OF RESOURCES:**

Annual hunt and fish administration costs for Erie NWR including salary, brochures, data collection and analysis, etc. totals approximately \$2,000. It is anticipated that funding would continue to be sufficient to continue the fishing at Erie NWR in the future.

**Table B-1. Erie NWR Funding and Staffing Requirements for Fishing**

Identifier	Cost
Fish Program Staff (Manager, Biologist, Maintenance)	\$450
Outreach: Signature, Brochures, and Reports	\$850
Parking Lot/Facilities Maintenance	\$700
<b>Total Annual Cost</b>	<b>\$2,000</b>

## **ANTICIPATED IMPACTS OF THE USE:**

### **Vegetation and Soils**

Bank and trail erosion from human activity (dragging and launching of boats and foot traffic) may cause negative impacts including increasing the aquatic sediment loads of streams and rivers or altering riparian or lakeshore habitat or vegetation in ways harmful to fish or other wildlife. Non-motorized boat access for fishing will be restricted to Area 5. The Pool 9 dike area in Area 5 is already somewhat developed due to the large water control structure installed there to control water levels in the impoundment. Therefore, bank erosion should be minimal in this location since there is already a hardened surface. The refuge will monitor this area to ensure that impacts from launching boats do not expand outside of the already hardened area and may close this area if conditions warrant. All new trail and access construction will follow best management practices. Therefore, we do not expect trail erosion to increase because of foot traffic related to increased fishing opportunities.

### **Hydrology and Water Resources**

Pollutants from human waste and litter have the potential to have negative impacts on water quality. Additionally, paths (both on-trail and off-trail) used by anglers can affect the hydrology of an area, primarily through alteration of drainage patterns. It is anticipated that existing trails would continue to influence hydrology regardless of pedestrian travel. Some anglers may walk off-trail to access a fishing area, thereby creating new trails and therefore new drainage patterns. We expect those impacts to be minimal considering anglers are not using the same paths repeatedly. Refuge staff has observed only negligible or minor problems with erosion, incision, or stream alteration to date. Therefore, current and projected participation in these uses is not expected to increase these minor issues.

### **Fish Species**

Recreational fishing by the public can have negative impacts on fish populations if it occurs at high levels or is not managed properly. Potential impacts from fishing include direct mortality from harvest and catch-and-release, injury to fish caught and released, changes in age and size class distribution, changes in reproductive capacity and success, loss of genetic diversity, altered behavior, and changes in ecosystems and food webs (Lewin et al. 2006, Cline et al. 2007). In addition, recreational fishing may lead to the accidental or deliberate introductions of non-native fish that may negatively affect native fish, wildlife, or vegetation. The addition of a refuge law enforcement officer will help supplement State enforcement and help reduce the potential for non-native introductions.

These impacts are often disproportionate among fish species, sizes, ages, sexes, and based on other behavioral traits because anglers selectively catch fish based on these factors (Lewin et al. 2006). In general, anglers tend to target larger and older fish. The selective removal of larger and older fish can have a variety of impacts of fish population dynamics. First, it can decrease the age and size class distribution in fish populations. Second, larger and older fish tend to have greater reproductive capacity because they are better able to compete for spawning areas and generally have higher egg outputs. Because of this, their selective removal may reduce the population's overall reproductive success. Depending upon the species, anglers may also be

more likely to catch males (e.g., some male largemouth bass are more aggressive towards lures) or females (e.g., in some species females grow faster). Also, fish that are more active during the day are often more vulnerable to being caught (Lewin et al. 2006).

Catch-and-release fishing can also have impacts on individual fish, including immediate or delayed mortality. The likelihood of mortality is related to the type of fishing gear used, where the fish is hooked, how the fish is handled, angler experience, and environmental conditions. In general, circle hooks tend to cause less damage than barbed hooks. Also, fish hooked in the lips or jaws tend to have minimal mortality as compared to fish hooked in the gills, esophagus, intestine, or eyes. Fish caught and released with nonlethal injuries may also be exposed to parasites and bacterial or fungal infections. Individuals that are caught and then handled may also experience stress, which can lead to changes in physiology and behavior which can in turn impact their growth, reproduction, and immune system (Lewin et al. 2006).

Since fishing generally removes individuals from a population, it can lead to reduced population sizes and loss of genetic diversity at high levels. The loss of genetic diversity can ultimately reduce a population's fitness, resilience, and ability to adapt to environmental changes and stressors, such as climate change. The higher the fishing mortality, the greater these types of impacts will be (Lewin et al. 2006).

While fishing does remove individuals from the population, we do not anticipate that current or projected fishing pressure will affect the refuge's fish populations. The State sets catch limits, designated waters, and fishing seasons to protect the State's fish populations.

### **Non-target Species**

Since fishing occurs along and in wetland areas, it has the greatest potential to impact aquatic and semi-aquatic species in refuge fishing areas. In particular, fishing has the potential to disturb waterfowl, wading birds, and federally listed freshwater mussels. Fishing seasons in Pennsylvania coincide in part with spring/early summer nesting and brood-rearing periods for many species of aquatic-dependent birds. Anglers can also affect the number, behavior, and temporal distribution of birds, including bald eagles, common ravens, and American crows (Knight et al. 1991). Human activity, including walking along trails and boat use, has the potential to affect the distribution, abundance, and species richness of water birds by disturbing birds that are overwinter, resting, foraging, reproducing, and nesting.

Disturbance from recreational activities 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 include avoidance or departure from the site (Owen 1973, Burger 1981, Kaiser and Fritzell 1984, Korschen et al. 1985, Kahl 1991, Klein 1993, Whittaker and Knight 1998), the use of suboptimal habitat (Erwin 1980, Williams and Forbes 1980), altered behavior or habituation to human disturbance (Burger 1981, Korschen et al. 1985, Morton et al. 1989, Ward and Stehn 1989, Havera et al. 1992, Klein 1993, Whittaker and Knight 1998), attraction (Whittaker and Knight, 1998), and an increase in energy expenditure (Morton et al. 1989, Belanger and Bedard 1990). Anglers and other boaters may disturb nesting birds by approaching too closely to nests, causing nesting birds to flush. Flushing may expose eggs to predation or

cooling, resulting in egg mortality. We will close refuge areas, as needed, to fishing and boating around sensitive nest sites. Areas used around bald eagle nests are closed to fishing activity during the nesting season, January 15 to August 15. We will also continue public outreach and the placement of warning signs.

Visitors to the refuge engaged in fishing will generally be walking along refuge trails and roads or non-motorized boats in refuge ponds. A study by Miller, Knight, and Miller indicates that species composition and nest predation was altered adjacent to trails in both forested and grassland habitats (1998). Species composition changes are due to the presence of humans and not the trail or roadway itself. On the other hand, nest predation does appear to be a function of the trail which allows access to mammalian nest predators. Several studies have examined the effects of recreationists on birds using shallow-water habitats adjacent to trails and roads through wildlife refuges and coastal habitats in the eastern United States (Burger 1981, Burger 1986, Klein 1993, Klein et al. 1995, Rodgers and Smith 1995, Rodgers and Smith 1997, Burger and Gochfeld 1998). Overall, the existing research clearly demonstrates that disturbances from recreation activities have at least temporary effects on the behavior and movement of birds within a habitat or localized area.

The use of boats for fishing can also have impacts on fish and other species. Potential impacts include increased stress levels, increased water turbidity, loss of food sources, and the dislodging of eggs and larvae from their substrate (Lewin et al. 2006).

Lost fishing tackle may harm waterfowl, eagles, and other birds externally by catching and tearing skin. Fishing line may also become wrapped around legs or wings and hinder movement, around bills which impairs feeding or cause constriction with subsequent reduction of blood flow and tissue damage. An object above or below the water surface may snag entangled animals, from which they are unable to escape. Nineteen percent of loon mortalities in Minnesota were attributed to entanglement in fishing line (Ensor et al. 1992). Entanglement in fishing line has also caused mortality in bald eagles. Birds may also ingest sinkers, hooks, floats, lures, and fishing line. Ingested tackle may cause damage or penetration of the mouth or other parts of the digestive tract, resulting in impaired function or death. Lead tackle is particularly toxic to wildlife. The PFBC has an advertising campaign explaining the wildlife hazards associated with line and lead tackle. The refuge prohibits the use of lead tackle for fishing, and will continue to provide education and outreach on the hazards of lead sinkers and discarded fishing tackle.

### **Threatened and Endangered Species**

There are at least 22 species of freshwater mussels on the refuge, 5 of which are federally listed as threatened or endangered (Mohler et al. 2006). To date, known populations of federally listed species are concentrated in Muddy Creek in the Seneca Division. The refuge's federally listed mussel species currently include the endangered Northern riffleshell, clubshell, rayed bean, and snuffbox and the threatened rabbitsfoot.

Fishing may have an adverse effect on federally listed freshwater mussels. However, fishing along Muddy Creek, the body of water which supplies the habitat for the mussels, is limited to bank fishing. Mussels may be directly impacted from individuals walking in the streams and

stepping on mussels or indirectly by stirring up sediment. Persons engaged in fishing activities are not allowed in the stream proper, so we expect the impact on mussels, if any, should be negligible. Fishing has occurred on the refuge since it was created and refuge staff has not noticed bank erosion caused by fishing activities. Staff will continue to educate anglers on the importance of federally listed mussels and how to minimize impacts on mussel habitat while fishing along refuge streams.

In addition to mussels, the refuge also contains the threatened Northern long-eared bat (confirmed by mistnetting in 2015) and potentially contains the endangered Indiana bat (detected via acoustic surveys in 2013 and 2014). Since these species are nocturnal and visitors are not permitted on the refuge one half hour after sunset, most potential impacts would be eliminated. At this time, no maternity roost trees have been identified on the refuge. If any are identified near fishing areas in the future, we may need to limit or restrict access to that area.

### **Visitor Use**

Fishing provides additional wildlife-dependent recreational opportunities and can foster a better appreciation and more complete understanding of the wildlife and habitats associated with the western Pennsylvania landscape. This can translate into more widespread and stronger support for wildlife conservation, the refuge, the Refuge System, and the Service.

Erie NWR is open to all six priority wildlife-dependent recreational uses. In 2017, fishing visits made up 12 percent of total refuge visitation, which totaled 3,650 visits (USFWS 2017).

Ideally, expanded fishing activities conducted on Erie NWR would positively contribute to appreciation and protection of fish and wildlife, both on and off the refuge. The beneficial impacts of providing this wildlife-dependent activity and the modest increases in opportunities include helping meet the existing and future demands for outdoor recreation and education. An increase in recreational fishing on the refuge may lead to conflict and competition between the anglers. Additionally, anglers may also impact other user groups. For example, they may disturb or flush wildlife that other users were observing. Although these conflicts may arise, it is not a significant issue at the present levels of use, and we do not expect the number of anglers to rise to such a level that it would become an issue in the future. Should significant conflicts become evident, we may need to manage public use to minimize conflicts and ensure public safety. That may include public outreach or zoning to separate user groups.

### **Economic**

The 2011 national survey of fishing, hunting, and wildlife-associated recreation reveals that 1,101,000 Pennsylvania residents and nonresidents 16 years old and older fished in Pennsylvania (USFWS and US Census Bureau 2014). That same year anglers spent approximately \$485 million on activities and equipment related to fishing (USFWS and US Census Bureau 2014). While we have not maintained exact numbers of anglers on the refuge units, visitors participating in this use provided some economic benefit to the local economies by purchasing goods and services (e.g., food, lodging, gas) in and around the refuge.

**Other Impacts**

Accidental introduction of invasive plants, pathogens, or exotic invertebrates attached to non-motorized boats in Area 5 could negatively impact refuge waters. Some invasive aquatic plants do exist on the refuge. However, we have not carried out extensive surveys of aquatic invasive plants. We can mitigate their impacts by continuing education, outreach, and initiating an intensive monitoring program. The refuge will provide PFBC outreach materials to educate visitors about invasive management practices (e.g., no washing, bait dumping, felt lined boots, etc.). The PFBC has an aggressive public education effort to warn the boating community about the introduction of invasive species.

**PUBLIC REVIEW AND COMMENT:**

This Compatibility Determination (CD) is part of the Erie NWR Hunting and Recreational Fishing Plan and the accompanying Environmental Assessment (EA). The plan was coordinated with all interested and/or affected parties, including Pennsylvania Game Commission (PGC) and Pennsylvania Fish and Boat Commission staff. The public will be notified of the availability of the 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 (CHECK ONE BELOW):**

Use is not compatible

Use is compatible, with the following stipulations

**STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:**

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

The following stipulations are necessary to ensure compatibility:

- We allow non-motorized watercraft use in Area 5. Watercraft must remain in an area from the dike to 3,000 feet (900 meters) upstream.
- Boats (without motors) are only permitted in Area 5 and only from the second Saturday in June through September 15.
- Seneca Division is open to bank fishing only. Wading is not permitted.
- Fishing is permitted from one half hour before sunrise until one half hour after sunset.

- Ice fishing is permitted in Areas 5 and 7 only.
- Fishing within a 330-foot radius of any bald eagle nesting site is prohibited.
- We prohibit the taking of turtles or frogs.
- We prohibit the collecting or releasing of baitfish.
- We prohibit the taking or possession of shellfish on the refuge.
- We prohibit the use of lead tackle for fishing.

**JUSTIFICATION:**

Fishing is a priority public use in the Refuge System through which the public can develop an appreciation for fish and wildlife and reinforced as a priority use by Secretarial Order 3356 (September 15, 2017). The Service’s policy is to provide expanded opportunities for wildlife dependent public uses when compatible and consistent with sound fish and wildlife management and ensure that they receive enhanced attention during planning and management. The Refuge System Improvement Act of 1997 identifies fishing as a priority public use. Priority public uses are to receive enhanced consideration when developing goals and objectives for refuges if they are determined to be compatible. Providing fishing opportunities would promote public appreciation and support for the refuge. The stipulations above would ensure control and provide management flexibility should detrimental impacts develop. Allowing this use furthers the mission of the Refuge System by providing a wildlife dependent recreational use for benefit of the American public while conserving fish, wildlife, and plant resources. This activity is a compatible use that will not materially interfere with or detract from the mission of the Refuge System or the purposes for which the refuges were established.

**SIGNATURE:**

Refuge Manager

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Date)

**CONCURRENCE:**

Regional Chief

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Date)

**MANDATORY 15 YEAR RE-EVALUATION DATE:**

\_\_\_\_\_  
(Date)

## **LITERATURE CITED:**

- Belanger, L. and Bedard, J. (1990). Energetic cost of man-induced disturbance to staging snow geese. *Journal of Wildlife Management*, 54, 36-41.
- Burger, J. (1981). Effect of human activity on birds at a coastal bay. *Biological Conservation* 21, 231-241.
- . (1986). The effect of human activity on shorebirds in two coastal bays in northeastern United States. *Biological Conservation*, 13, 123-130.
- Burger, J. and Gochfeld, M. (1998). Effects of ecotourists on bird behaviour at Loxahatchee National Wildlife Refuge, Florida. *Environmental Conservation*, 25, 13-21.
- Cline, R., Sexton, N., and Steward, S.C. (2007). A human-dimensions review of human-wildlife disturbance: a literature review of impacts, frameworks, and management solutions. For Collins, CO: U.S. Geological Survey, Open-File Report 2007-1111.
- Ensor, K.L., Helwig, D.D., and Wemmer, L.C. (1992). The common loon in Minnesota: potential contaminant implications. In L. Morse, S. Stockwell and M. Pokras (Eds.), *Proceedings from the 1992 conference on the loon and its ecosystem: status, management, and environmental concerns*. Bar Harbor, ME: North American Loon Fund.
- Kahl, R. (1991). Boating disturbance of canvasbacks during migration at Lake Poygan, Wisconsin. *Wildlife Society Bulletin*, 19, 242-248.
- Kaiser, M.S. and Fritzell, E.K. (1984). Effects of river recreationists on green-backed heron behavior. *Journal of Wildlife Management*, 48, 561-567.
- Havera, S.P., Boens, L.R., Georgi, M.M., and Shealy, R.T. (1992). Human disturbance of waterfowl on Keokuk Pool, Mississippi River. *Wildlife Society Bulletin*, 20, 290-298.
- Klein, M.L. (1993). Waterbird behavioral responses to human disturbance. *Wildlife Society Bulletin*, 21, 31-39.
- Klein, M.L., Humphrey, S.R., and Percival, H.F. (1995). Effects of ecotourism on distribution of waterbirds in a wildlife refuge. *Conservation Biology*, 9, 1454-1465.
- Knight, R.L., and Cole, D.N. (1991). Effects of recreational activity on wildlife in wildlands. *Transactions of the 56th North American Wildlife and Natural Resources Conference*, 238-247.
- Korschen, C.E., George, L.S., and Green, W.L. (1985). Disturbance of diving ducks by boaters

- on a migrational staging area. *Wildlife Society Bulletin*, 13, 290-296.
- Lewin, W.C., Arlinghaus, R., and Mehner, T. (2006). Documented and potential biological impacts of recreational fishing: insights for management and conservation. *Reviews in Fisheries Science*, 14, 305-367.
- Morton, J.M., Fowler, A.C., and Kirkpatrick, R.L. (1989). Time and energy budgets of American black ducks in winter. *Journal of Wildlife Management*, 53, 401-410 (also see corrigendum in *Journal of Wildlife Management*, 54, 683.
- Miller S.G., Knight, R.L, and Miller, C.K. (1998). Influence of Recreational Trails on breeding bird communities. *Ecological Society of America*, 8(1), 162-169.
- Owen, M. (1973). The management of grassland areas for wintering geese. *Wildfowl*, 24,123-130.
- Rattner, B.A., J.C. Franson, S.R. Sheff-field, 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
- Rodgers, J.A. and Smith, H.T. (1995). Set-back distances to protect nesting bird colonies from human disturbance in Florida. *Conservation Biology*, 9, 89-99.
- . (1997). Buffer zone distances to protect foraging and loafing waterbirds from human disturbance in Florida. *Wildlife Society Bulletin*, 25, 139-145.
- Whittaker, D. and Knight, R. (1998). Understanding wildlife responses to humans. *Wildlife Society Bulletin*, 26(3), 312-317.
- Ward, D.H. and Stehn, R.A. (1989). Response of brant and other geese to aircraft disturbance at Izembek Lagoon, Alaska. Anchorage, AK: U.S. Fish and Wildlife Service, Alaska Fish and Wildlife Research Center. Final report to the Minerals Management Service.
- Williams, G.J. and Forbes, E. (1980). The habitat and dietary preferences of dark-bellied brant geese and widgeon in relation to agricultural management. *Wildfowl*, 31, 151-157.
- U.S. Fish and Wildlife Service (USFWS) and U.S. Census Bureau. (2014). 2011 National survey of fishing, hunting, and wildlife-associate recreation (revised edition). Washington, DC: U.S. Department of the Interior and U.S. Department of Commerce. Retrieved from <https://www.census.gov/prod/2012pubs/fhw11-nat.pdf>, accessed July 2014.

## **Erie National Wildlife Refuge Hunting and Recreational Fishing Environmental Assessment**

This Environmental Assessment (EA) is being prepared to evaluate the effects associated with the proposed action 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. 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**

Erie National Wildlife Refuge (NWR, refuge) consists of two separate land divisions: Sugar Lake and Seneca. Sugar Lake Division lies 10 miles east of Meadville on the outskirts of Guys Mills village. The Seneca Division is about 10 miles north of Sugar Lake Division and 4 miles southeast of Cambridge Springs, Pennsylvania. The U.S. Fish and Wildlife Service (Service) is proposing to expand hunting and fishing opportunities at Erie NWR in accordance with the refuge's Hunting and Recreational Fishing Plan by opening an additional 159 acres of recently acquired land on the Seneca Division to hunting and 4 miles of frontage along Dead and Muddy Creeks to recreational fishing. We also propose to open hunting for mute swan, feral hogs, weasels, and porcupine on both refuge hunt units. Hunt units recently decreased from Units A, B, C, D, E, F, and G to just Units A and B. Big and small game hunting would be permitted on both units, and migratory bird hunting would be permitted only on Unit B.

The Service would initially promote voluntary use of non-lead ammunition where not already required by existing regulations. This process will involve education about the impacts of lead on non-target species and the use of non-lead alternatives. To move towards reduction and future elimination of this threat on the refuge, we will be eliminating the use of lead over a 4-year period to educate and work with hunters on the use of non-lead alternatives. The phased transition to non-lead ammunition and tackle will minimize the inadvertent exposure and subsequent lethal or sub-lethal impacts to wildlife.

A proposed action may evolve during the NEPA process as the Agency refines its proposal and gathers feedback from the public, Tribes, and other agencies. Therefore, the final proposed action may be somewhat different from the original. The proposed action would be finalized at the conclusion of the public comment period for the EA.

### **Background**

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

The primary purposes of the refuge are:

- “for use as an inviolate sanctuary, or for any other management purpose, for migratory birds....” 16 U.S.C. § 7J5d (Migratory Bird Conservation Act).
- “for the development, advancement, management, conservation, and protection of fish and wildlife resources...” 16 U.S.C. § 742f(a) (4) 11...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).
- “(1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, and (3) the conservation of endangered species or threatened species...” 16 U.S.C. § 460k-1 (Refuge Recreation Act).

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

*“... to administer a national network of lands and waters for the conservation, management and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans”*

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

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

appreciation for fish and wildlife;

- Ensure that opportunities are provided within the Refuge System for compatible wildlife-dependent recreational uses; and
- Monitor the status and trends of fish, wildlife, and plants in each refuge.

### **Purpose and Need for the Action**

Hunting and fishing are healthy and traditional recreational uses of renewable natural resources deeply rooted in America's heritage and can be important wildlife management tools. NWRs, including Erie NWR, conduct hunting and fishing programs within the framework of Federal, State, and refuge regulations. The NWRSA of 1966, the Refuge System Improvement Act of 1997, and Service policy permit hunting and fishing on a refuge as a priority wildlife-dependent recreational opportunity when it is compatible with the purposes for which the refuge was established and acquired. Hunters and anglers on the refuge are expected to be ethical and respectful of other users, wildlife species, and the environment while on refuge lands.

The purpose of the proposed action is to provide compatible wildlife-dependent recreational opportunities on Erie NWR. The need of the proposed action is to meet the Service's priorities and mandates as outlined by the NWRSA 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 two of the priority public uses of the Refuge System, and providing opportunities for visitors to hunt and fish can promote stewardship of our natural resources and increase public appreciation and support for the refuge.

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

### **Alternatives**

#### **Alternative A – No Action Alternative**

The No Action Alternative would continue the refuge's current hunting and fishing program. The refuge offers big game (black bear, white-tailed deer, turkey), small/upland game (ruffed grouse, squirrel, cottontail rabbit, pheasant, woodchuck, quail, opossum, skunk, coyote), and migratory bird hunting opportunities. Big game and small and upland game may be hunted on all refuge hunt units, and migratory birds may be hunted on less than 40 percent of refuge lands. Fishing is available throughout the bodies of water in the Seneca Division and at select points in the Sugar Lake Division. All hunting and fishing seasons align with State regulations.

#### **Alternative B – Proposed Action Alternative**

The refuge has prepared a Hunting and Recreational Fishing Plan, which is presented in this

document as the Proposed Action Alternative. Under this alternative, the refuge would expand hunting and fishing opportunities at Erie NWR by opening additional acres and frontage on the Seneca Division and adding new species. Two parcels of land have been acquired since 2013, totaling 159 acres. This would increase total huntable land on the refuge to 8,959 acres. The refuge would remain open for species hunted in the current program and would open for the first time to mute swan, feral hog, porcupine, and weasel hunting on all hunting units. Feral hog season would align with the deer seasons, and mute swan, porcupine and weasel season would align with State seasons. The refuge would also open an additional 4 miles of frontage on Dead and Muddy Creeks to fishing.

*Measures to Avoid Conflicts:*

- There are 330-foot safety zone buffers around eagle nests to minimize disturbance.
- There is a 150-yard safety zone around all refuge buildings.
- Refuge and hunt area boundaries will be clearly posted.
- The refuge will provide a brochure on the website that shows hunt areas and post the hunt brochure and maps on four major informational kiosks on the refuge and online.
- The refuge would encourage all visitors, including non-hunters, to wear blaze orange during the hunting season to minimize potential safety issues.
- Hunting is only permitted from September 1 through the end of February (and additionally for the spring turkey season) to minimize disturbance to migratory birds and nesting bald eagles.
- Hunting and fishing will take place during daylight hours only to avoid nighttime disturbance to wildlife. Hunters may enter the refuge 2 hours before State posted legal shooting time in the morning and must leave no later than 2 hours after legal shooting time in the evening. Anglers may access the refuge one half hour before sunrise to one half hour after sunset.
- Nationwide, there is concern about the bioavailability of spent lead ammunition (bullets) and sinkers on the environment, endangered and threatened species, birds (especially raptors), mammals, and other fish and wildlife susceptible to biomagnification. Only federally approved non-lead shot would be permitted while hunting for upland game and migratory birds. We will continue to encourage the use of non-lead ammunition for big game (white-tailed deer, black bear, turkey and feral hog) hunts and will educate hunters and anglers about lead and its impacts. By 2026, we will eliminate use of all lead ammunition for hunting on Erie NWR.
- Lead fishing tackle would be prohibited.

This alternative offers increased opportunities for public hunting and fishing and fulfills the Service’s mandate under the NWRSA. The Service has determined that the hunting and recreational fishing plan is compatible with the purposes of Erie NWR and the mission of the Refuge System.

**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 other alternatives. Cumulative impacts are defined as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. This EA focuses on the written analyses of the environmental consequences on a resource only when the impacts on that resource could be more than negligible and therefore considered an “affected resource.” Any resources that would not be more than negligibly impacted by the action may be dismissed from further analyses.

Erie NWR was established in 1959. The first lands for the refuge were purchased with funds provided from the sale of the Migratory Bird Hunting and Conservation Stamps (also known as Duck Stamps). Erie NWR is a namesake of the Erie Indians, a Native American Tribe that resided in the area. This refuge is not on the shores of Lake Erie, but lies in Crawford County, 35 miles south of the city of Erie and Lake Erie in northwestern Pennsylvania. The refuge consists of approximately 14 square miles.

<b>Resources</b>	<b>Not Applicable:</b> Resource does not exist in project area	<b>No/Negligible Impacts:</b> Exists but no or negligible impacts	<b>Greater than Negligible Impacts:</b> Impacts analyzed in this EA
Species to Be Hunted/Fished	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Non-Target Wildlife and Aquatic Species	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Threatened and Endangered Species and Other Special Status Species	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Habitat and Vegetation (includes vegetation of special management concern)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Geology and Soils	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Air Quality	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Water Quality	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

<b>Resources</b>	<b>Not Applicable:</b> Resource does not exist in project area	<b>No/Negligible Impacts:</b> Exists but no or negligible impacts	<b>Greater than Negligible Impacts:</b> Impacts analyzed in this EA
Floodplains	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Wilderness	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Visitor Use and Experiences	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cultural Resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Refuge Management and Operations	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Socioeconomics and Environmental Justice	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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
- Floodplains
- Wilderness

As such, these resources are not further analyzed in this EA. As stated above, this section predicts the foreseeable impacts of implementing the hunting and fishing 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.

### **Big Game (white-tailed deer, black bear, turkey and feral hog)**

#### **Affected Resource Description**

The refuge does not currently collect data for deer, bear or turkey harvest on the refuge. The refuge is contained within the State’s Wildlife Management Unit (WMU) 1B. Data for that unit show an average of 9,175 antlered and 14,825 antlerless deer harvested between 2017 and 2020 (PGC 2016, 2017, 2018a, 2018b). The buck to doe ratio in the harvest is approximately 1:1. State deer density estimates for this region are approximately 30 per square mile (San Julian and Smith 2001) and have shown little change in the last several years. Data for WMU 1B showed an average of 298 turkey harvested in the fall and 1,941 harvested in the spring between 2016 and

2019 (PGC n.d.). Black bear harvests are reported by county rather than WMU. Data for Crawford County show an average of 56 bear harvested annually between 2016 and 2020 (PGC n.d.). Refuge staff believe that the refuge deer and turkey populations are similar to the overall western Pennsylvania population, which are intensely managed by the State of Pennsylvania, while the bear population may be slightly higher.

## **Anticipated Impacts**

### Alternative A

Under the No Action Alternative, Erie NWR's hunt program would not add any new big game hunting opportunities. Current levels of harvest would be expected as no new opportunities would be provided and public interest in big game hunting would likely remain the same. Impacts to white-tailed deer populations would also remain consistent and could include temporary and localized disturbance, changes in behavior, direct injury or mortality of individuals, and changes in population dynamics.

### Alternative B

Under the Proposed Action Alternative, recently acquired acreage would be open to big game hunting. Feral hog hunting would also be added to the refuge hunt program. This alternative may result in a slight increase in harvest for these species, but otherwise have similar anticipated impacts as the No Action Alternative.

Refuges, including Erie NWR, conduct the refuge hunting and fishing program within the framework of State and Federal regulations. PGC sets hunting frameworks based on species' populations and monitored harvests. The proposed refuge hunting regulations will be the same as, or more restrictive than, hunting regulations throughout the State. By maintaining hunting regulations that are the same as or more restrictive than the State, the refuge can ensure that they are maintaining seasons that are supportive of management on a more regional basis. Such an approach also provides consistency with large-scale population status and objectives.

**Small/Upland Game (ringneck pheasant, ruffed grouse, cottontail rabbit, gray squirrel, coyote, raccoon, skunk, woodchuck, quail, opossum, porcupine, weasel and fox)**

### **Affected Resource Description**

Small/upland game hunting has been part of the hunt program for many years, yet harvest of small/upland game is not recorded by the refuge. Participation in small/upland game hunting has been relatively low when compared with other public uses on the refuge and therefore likely has small impacts on these populations due the limited hunting pressure.

Over the past 5 years, harvests have declined statewide for grouse and woodchuck, and have remained stable for rabbit, squirrel, pheasant, porcupine, furbearers, coyote, fox, and weasel (PGC Annual Project Report 2020). Year to year populations for small/upland game species tend to fluctuate and reproductive rates are typically high enough to maintain adequate population levels.

## **Anticipated Impacts**

### Alternative A

Under the No Action Alternative, there would be no additional small game hunting opportunities. There would be temporary and insignificant disturbance to vegetation and wildlife from hunters walking through the woods, fields, and marshes, but it would not affect the purpose of the refuge.

### Alternative B

Under the Proposed Action Alternative, recently acquired acreage would be opened to small game hunting and weasel and porcupine hunting would be added to the refuge hunt program. Potential impacts from this new use could include greater disturbance to habitat and landscape, changes in wildlife behavior, changes in species distribution, and temporary reductions to local populations. Injury and mortality of individuals is an anticipated impact of the expanded hunt program. All impacts to these species would be localized to the refuge and are not expected to result in long-term negative impacts.

**Migratory Birds (coot, dove, woodcock, grouse, duck, sea duck, mute swan, Wilson's snipe, crow, dark goose and rail)**

## **Affected Resource Description**

Migratory birds are managed on a flyway basis and hunting regulations are established in each State based on flyway data. The refuge lays within the Atlantic flyway and is an important area for spring and fall migrating waterfowl. Wood duck, hooded merganser, mallard, and Canada goose regularly nest on the refuge; another 10 species of waterfowl use the refuge during migration. The predominant waterfowl species hunted in Pennsylvania are mallard, wood duck, and Canada goose. Woodcock populations are increasing on the refuge as a result of ongoing young forest restoration work, as they require young, dense, moist woodland habitat with nearby openings or fields.

## **Anticipated Impacts**

### Alternative A

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

Some bird species flee from human disturbance, which can lower their nesting productivity and cause disease and death (Knight and Cole 1991). Miller et al. found bird abundance and nesting activities (including nest success) increased as distance from a recreational trail increased in both grassland and forested habitats (1998). Bird communities in this study were apparently affected by the presence of recreational trails, where common species like American robins were found

near trails and more specialized species like grasshopper sparrows were found farther from trails. Nest predation also was found to be greater near trails (Miller et al. 1998). Disturbance may affect the reproductive fitness of males by hampering territory defense, male attraction and other reproductive functions of song (Arcese 1987). Disturbance, which leads to reduced singing activity, makes males rely more heavily on physical deterrents in defending territories, which are time and energy consuming (Ewald and Carpenter 1978). These potential negative impacts are anticipated to be minimal.

### Alternative B

Impacts described under the No Action Alternative would be comparable to the Proposed Action Alternative. There could be disturbance related to increased human presence and noise associated with hunting and fishing. 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 only 40 percent of the refuge, and methods of take for many opportunities permitted under this alternative. Although the frequency of activity would likely increase under this alternative, the Service expects negligible to minor impacts on non-target wildlife on parts of the refuge during the hunting season. There would be very few (i.e., less than 20) additional acres opening for migratory bird hunting; thus, additional hunting opportunities would likely result in minimal increases in harvest and disturbance.

The Service believes that due to the time of year in which it is allowed, hunting on the refuge will not add significantly to the cumulative impacts of migratory bird management on local, regional, or Atlantic Flyway populations because the percentage likely to be taken on the refuge, 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. Several points support this conclusion: (1) the proportion of the national waterfowl harvest that occurs on NWRs is only 6 percent (Service 2013); (2) there are no populations that exist wholly and exclusively on NWRs; (3) annual hunting regulations within the United States are established at levels consistent with the current population status; (4) refuges cannot permit more liberal seasons than provided for in Federal frameworks; and (5) refuges purchased with funds derived from the Federal Duck Stamp must limit hunting to 40 percent of the available area. As a result, changes or additions to hunting on the refuge will have minor impacts on wildlife species in Pennsylvania. Although the Proposed Action Alternative will increase hunting opportunities compared to the No Action Alternative, the slight increase in hunter activity will not rise to a significant cumulative impact locally, regionally, or nationally.

## **Non-Target Wildlife and Aquatic Species**

### **Affected Resource Description**

Erie NWR, due to diverse habitat types, is home to 250 bird species, 52 mammal species, 21 reptile and amphibian species, 48 fish species and 22 freshwater mussel species. The diverse habitat types found on Erie NWR attract many species of birds, including marsh birds, raptors, songbirds, and waterfowl, and 136 of these species are known to nest on the refuge. Thirty-seven of these birds are listed as species of concern for the refuge. Muddy Creek is a tributary to French Creek and they hold numerous species of darters crucial for the freshwater mussels to

complete a stage of their lifecycle. Some notable darter species found here are the rainbow darter, Eastern sand darter, blue-breasted darter, and the greenside darter. The biodiversity of French Creek is among one of the highest in waterways east of the Mississippi River.

The refuge's diversity led to its designation as an Important Bird Area (IBA) by the National Audubon Society in 2004. The IBA program is an international bird conservation initiative to identify the most important places for birds, and to conserve them.

Nationwide, there is concern about the bioavailability of spent lead ammunition (bullets) and sinkers on the environment, endangered and threatened species, birds (especially raptors), mammals, and other fish and wildlife susceptible to biomagnification. 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 2010).

## **Anticipated Impacts**

### Alternative A

We expect some minor disturbance by hunting and fishing activities to non-target wildlife. Most hunting on the refuge is confined to between September and February, overlapping briefly with the peak of fall neotropical bird migration which lasts until mid-October. Hunting does not occur during the breeding bird season in select grassland and shrubland habitat. Displacement of resident birds is usually brief, infrequent, and confined to the immediate area. Disturbance would be unlikely for many small mammals like bats which are inactive during hunting season and/or are nocturnal. Hibernation or torpor by cold-blooded reptiles and amphibians also limits their activity during the hunting season when temperatures are low, making encounters with reptiles and amphibians infrequent and inconsequential to local populations. Invertebrates are also not active during cold weather and will have few interactions with hunters during the hunting season. The Service anticipates no measurable negative impacts to resident non-hunted wildlife populations locally, regionally, or globally due to this alternative. In summary, the impact of the current hunting and fishing program does not result in more than temporary flushing or relocation.

## Alternative B

Under the Proposed Action Alternative, we anticipate a small increase in the number of hunters and anglers using the refuge. Increased hunting and fishing visitation may result in additional short-term disturbance to wildlife, especially in areas previously closed to hunting or fishing. This includes temporary displacement of resident wildlife from foot and boat traffic moving through the area, increased mortality of target fish species, and increased disturbance. Resident and non-game wildlife in areas newly opened to hunting may be negatively impacted by disturbance, but the impact is expected to be short term and negligible.

While some disturbance to non-target wildlife species is expected, we anticipate that impact to be minimal because hunting occurs outside the breeding season (except for the spring turkey season). Hunting and fishing will take place during daylight hours only to avoid nighttime disturbance to wildlife. While spring turkey season occurs during the spring migration, we believe the impact of the hunt would be minimal. The no-entry zones will require hunters and anglers to stay away from and reduce disturbance to nesting bald eagles. We expect any impact on migratory waterfowl to be negligible considering that most big game hunting takes place in upland habitats away from the marshes where the birds feed and rest.

The negative impacts of lead on wildlife are documented and clear (Golden et al. 2016). To move towards reduction and future elimination of this threat on the refuge, we will be eliminating the use of lead ammunition over a 4-year period to educate and work with hunters on the use of non-lead alternatives. The phased 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.

The bioaccumulation of lead is a potential concern, but it does not likely present a significant issue on this refuge as: 1) non-lead shot is currently required for hunting waterfowl; 2) we are proposing a 4-year phase out to the use of lead ammunition for all species by 2026; 3) the refuge strongly encourages use of non-lead alternatives for hunting big game for the next 4 years; 4) we will educate hunters, anglers, and the public to the potential adverse impacts of lead; and 5) the updated hunting and fishing activities are not likely to introduce substantially more lead into the environment over existing amounts with the current or proposed programs. 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**

There are about 22 species of freshwater mussels on the refuge, 5 of which are federally listed as threatened or endangered (Mohler et al. 2006). To date, known populations of federally listed species are concentrated in Muddy Creek in the Seneca Division. The refuge's federally listed mussel species currently include the endangered Northern riffleshell, clubshell, rayed bean, and snuffbox and the threatened rabbitsfoot.

In addition to listed species of mussels, the refuge also contains the threatened Northern long-eared bat (confirmed by mistnetting in 2015) and potentially the endangered Indiana bat (detected via acoustic surveys in 2013 and 2014). During the hunting season, bats that typically use the refuge for roosting in the summer will be migrating, or have already migrated, to a cave or abandoned mine located off-refuge for winter hibernation.

Main threats to the freshwater mussel species noted above include dams that fragment river connections and form silt-laden impoundments, stream channelization or ditching, stream dredging, commercial harvesting, water pollution, and zebra mussels.

Monarch butterflies use the refuge grasslands, old fields and roadsides during spring and fall migration as well as during the spring breeding season.

Pennsylvania is the eastern edge of the range for eastern massasauga. In 2013, a survey was conducted to determine their population, and they were only found in two counties in western Pennsylvania. Eastern massasauga have not been recorded on any refuge lands or waters. The closest recorded sighting of the species has been at Goddard State Park, 25 miles south of the refuge.

### **Anticipated Impacts**

#### Alternative A

Under the No Action Alternative, impacts to threatened and endangered species would not increase since there would be no additional hunting or fishing on the refuge. Non-motorized boating used for waterfowl hunting in areas of Muddy Creek has the potential to affect mussel populations. Watercraft may scrape the bottom of the creek, disturbing the streambed and potentially crushing any exposed mussels. Similar impacts may result from hunters getting in and out of their boats and walking in the streambed if not using a boat. Minor wake from non-motorized boats and other watercraft activities may slightly increase suspended sediments that potentially erode mussels' shells, making them more susceptible to shell-dissolving pollutants (Box and Mossa, 1999). Suspended sediments interfere with mussel respiration and feeding, often resulting in diminished health and can indirectly affect mussels by reducing light availability for photosynthesis and productivity of food resources (Box and Mossa, 1999). Considering the low numbers of non-motorized boaters refuge staff have observed for hunting purposes, we anticipate these impacts to be minor.

#### Alternative B

The river bottom habitat and associated freshwater mussel populations are unlikely to be affected by proposed expansion of the hunting and fishing program. Under the Proposed Action Alternative, there may be an increase in the number of hunters and anglers using the refuge. This slight increase in use and disturbance will most likely be negligible for freshwater mussels. We can mitigate the potential impacts of hunters and anglers by continuing education, outreach, and initiating a monitoring program of the streambeds and the mussel communities. Educational materials will encourage boaters to stay out of water less than 6 inches in depth (reducing the likelihood of scraping the streambed) and teach them how to identify quality mussel habitat so they avoid those areas. Overall, as compared to big game and upland game bird hunting, the

refuge sees a low number of migratory bird hunters and most of those hunters are concentrated on the Sugar Lake Division (where no federally listed mussels have been identified). Therefore, we expect minor, if any, impacts to federally listed mussels from public hunting or fishing, and any disturbance from hunters or anglers (by boat or foot traffic) would not rise to the level of take.

Hunting has not been shown to have negative impacts on monarch breeding or migration. When hunters are walking through habitat used by monarchs, primarily from September to mid-November and during the short spring turkey season, monarchs are passing through and plants have senesced. These impacts are considered insignificant and discountable. Therefore, the proposed changes for hunting are not likely to adversely affect monarch butterflies.

The largest threat to massasaugas is habitat loss. Despite suitable habitats within the current range for the Eastern massasauga snake, there have been no records, even casual references, beyond the closest recorded sighting 25 miles south of the refuge. Therefore, the proposed changes for hunting will have no effect on the Eastern massasauga.

Indiana bats and Northern long-eared bats may be found within the refuge (maternity season only). These species hibernate in caves and mines from October through April (the majority of the hunting season) and would not be impacted by hunting during this time. They are unlikely to be disturbed by hunter or angler activity during September as they are nocturnal species and would not be encountered during foraging flights, and hunting and angling access is restricted to daylight hours. Potential disturbances from expanded hunting, such as an increase in gun noise or additional portable tree stands, would likely not rise to the level of take. It is possible that hunters, especially spring turkey hunters, could be in the vicinity of roost trees later in the season. However, with low numbers of turkey hunters spread out just under 9,000 acres, the probability of a hunter discharging a firearm at or near a roost tree is low. Tree climbing and placing portable tree stands, or noise from firearms, could flush roosting bats from the trees, but it is more likely that the bats would remain in the tree or roost soon again after being flushed.

We anticipate the amount of lead introduced on the refuge to decline with our proposed measures. Therefore, the scarce amount of lead introduced on this refuge from updated hunting activities is not likely to adversely affect the bat species, because those species will not be present or active in the refuge hunting areas during the hunting seasons. Furthermore, these species are not scavengers and, therefore, will not be impacted by bioaccumulation of lead or lead fragments in gut piles left on the refuge after hunting seasons. The hunting programs would not result in any tree cutting or other habitat alteration. Thus, the Service concludes that the hunt program may affect, but is not likely to adversely affect, the Indiana bat and Northern long-eared bat.

### **Habitat and Vegetation (including vegetation of special management concern)**

#### **Affected Resource Description**

Both divisions of the Erie NWR support a variety of habitat types including streams, floodplain forests, bottomland swamps, freshwater impoundments, emergent wetlands, fens and seeps, mixed hardwood and softwood forest, grasslands, shrublands, as well as abandoned orchards,

pine plantations, and croplands. The uplands are in various stages of succession. The major streams that flow through the refuge are Muddy Creek and Dead Creek in the Seneca Division and Lake Creek and Woodcock Creek in the Sugar Lake Division, along with their associated tributaries.

## **Anticipated Impacts**

### Alternative A

Under the No Action Alternative, there would be no new additional hunting or fishing opportunities and likely no new impacts. During hunting and scouting, hunters walk off-trail, damaging vegetation and creating new pathways in the process. Minor vegetation trampling is the most likely impact of the hunting program. However, this impact is diminished as most plants are senescing or entering dormancy during the fall and winter seasons. Fishing occurs throughout all seasons and has the occasional foot traffic on vegetation while accessing fishing areas and we have seen no real evidence of disturbance. No significant negative impacts from the current programs have been observed under this alternative.

### Alternative B

Under the Proposed Action Alternative, the additional opportunities may attract more hunters and anglers, but the slight increases would be minimal, and therefore, physical effects on vegetation from hunting or angling are expected to be minimal. Hunting may result in some trampling of vegetation, but since most of the vegetation will be dormant for most of the hunting season, we expect the impact to be minimal. Additionally, hunter use is generally dispersed over large areas, minimizing the impact to any one area. All-terrain vehicles would not be allowed on the refuge and other vehicles are restricted to public roads.

Positive effects on the vegetation would result from a reduction in the white-tailed deer population. The impacts of dense deer populations on forest regeneration and the composition and diversity of the herbaceous understory have been well documented (Tierson et al. 1966, Behrend et al. 1970, Tilghman 1989). Well-managed hunting can effectively control deer populations and produce dramatic changes in the forest vegetation (Behrend et al. 1970). The impact of deer hunting on the vegetation would be positive, resulting in better regeneration of forest canopy species and an increase in the diversity of the herbaceous understory. In summary, there would be few if any negative impacts from this use on vegetation, but there would be beneficial impacts from the decrease of deer browsing.

Foot travel to and use of fishing locations can have indirect impacts to plants by compacting soils and diminishing soil porosity, aeration and nutrient availability that affect plant growth and survival. Walking to fishing areas during the growing season could cause increased damage to plants in the wetland communities. Plants that are in the process of growth and producing flowers, and are growing in wet or moist soils, are the most sensitive to disturbance from trampling effects (Kuss 1986).

It is anticipated that increasing fishing access may cause negligible to minor vegetation loss. Foot travel may increase root exposure and trampling, and some rare plant species could be impacted by anglers walking around beaver ponds or along riparian corridors. Angler density is

expected to remain manageably low so any damage to refuge habitats should be minimal. Additionally, the area of impact is generally spread to a variety of sites which prevents a concentrated impact at any one location. Overall, pedestrian access for fishing is not anticipated to cause any significant impacts to plants or plant communities.

## **Geology and Soils**

### **Affected Resource Description**

The refuge supports excessively, well, poorly and very poorly drained (hydric) soils. The most common soil is very poorly drained and deep, nearly level to sloping soils that formed in materials weathered from stream deposits and glacial outwash. This soil can be found on floodplains and terraces. Typical vegetation found in this soil type can include soft maple, alder, elder, willow, and other tree species tolerant of wetland environments. The soil found on Erie NWR can support agricultural activities (i.e., hay, oats, and corn) and upland species such as elm, beech, red and sugar maple, ash, Eastern white pine, and Eastern hemlock (National Cooperative Soil Survey, 2008a; 2008b; 2011).

### **Anticipated Impacts**

#### Alternative A

Under the No Action Alternative, it is anticipated that minor impacts to soils would continue to occur as a result of hunting and fishing. Erosion potential would likely vary during the season based on soil moisture and temperatures. During much of the hunting season, soils may be frozen or covered in snow, thereby reducing the impacts greatly. When fishing, minor soil erosion may occur near the water's edge. At the current use level, impacts to soils like erosion and compaction are not significant.

#### Alternative B

Under the Proposed Action Alternative, there could be an increase in the number of hunters and anglers on the refuge. The additional 4 miles of river frontage for fishing may increase the erosion potential. Many of the hunt program activities are focused on upland areas where soils are more resilient and less likely to be easily manipulated by foot or vehicular traffic. In the limited areas where moist soils and the public hunt program intersect, no-hunting zones and use of structures (i.e., tree stands, platforms, etc.) will help to limit impacts on highly erodible soils. Access into hunting and fishing areas would have multiple entry points, thus reducing the creation of heavily worn passageways that become denuded of vegetation, hold water, and prompt topsoil depletion. The additional hunting and fishing areas may increase the impacts slightly, but the impacts would still be negligible.

## **Water Quality**

### **Affected Resource Description**

The French Creek and the West Branch of French Creek originate in Chautauqua County in western New York and flow southwest to their confluence in Erie County, Pennsylvania, to form the main branch. The South Branch of French Creek rises in southeast Erie County near the town of Corry, PA and flows west to its confluence with the main branch near Union City. The main branch then follows a southerly route through Crawford County, the northeast corner of Mercer County, and into Venango County where it joins the Allegheny River at Franklin, PA. The main

branch of French Creek is approximately 117 miles long. The French Creek Watershed encompasses approximately 1,250 square miles of land, more than 790,000 acres. The French Creek acts as the northern border of the Seneca Division on the refuge. The Muddy Creek and Dead Creek are tributaries of French Creek and run through the Seneca Division. Woodcock Creek and Lake Creek both run through the Sugar Lake Division of the refuge and are important drainages within the watershed.

## **Anticipated Impacts**

### Alternative A

Non-motorized boats are only permitted in Area 5 and only from the second Saturday in June through September 15. The use of boats by hunters and anglers has the potential to affect water quality negatively by increasing erosion, stirring up bottom sediments, or introducing pollutants into waterways. The impacts from boating are expected to continue to be minor and short-term, as no evidence exists that current hunting and fishing activity at the refuge degrade water quality on or around waterways associated with refuge properties. Hunting and fishing are, therefore, expected to have minimal adverse impacts on wetlands based upon staff observations of past effects. These impacts are not likely to be significant at the existing level of use.

### Alternative B

Opening hunting and fishing to additional species and acres will lengthen the time hunters and anglers will be traversing the landscape, but reducing the overall number of hunters within a given zone. The new hunting and fishing opportunities would not cause a significant increase in the number of hunters and anglers, so additional impacts on water quality like sedimentation would be negligible. Increased hunting and fishing activity may also increase boating activity. Since the number of additional hunters and anglers is not significant, negative impacts from boating activity like erosion and stirring of sediment would likely be negligible.

## **Visitor Use and Experience**

### **Affected Resource Description**

Erie NWR is open to all six priority public uses (hunting, fishing, wildlife observation, photography, environmental education, and interpretation). In 2017, there were 9,553 hunting visits and 3,650 fishing visits made to Erie NWR. There were also 17,264 other priority use (wildlife observation, photography, environmental education, and interpretation) visits made to the refuge in 2017 (USFWS 2017). In 2019, 860,743 general hunting licenses and 934,238 fishing licenses (all available kinds) were sold by the State of Pennsylvania (PGC 2020, Schneck 2020).

## **Anticipated Impacts**

### Alternative A

This alternative would continue the current hunting and fishing areas on the refuge. The refuge currently allows visitors to hike on the five hiking trails during hunting season without restrictions. It is recommended that visitors wear blaze orange while hiking during hunting seasons to remain visible to any hunters. Visitor conflicts currently do not arise on the refuge with the current fishing and hunting activity. Under the No Action Alternative, visitor use on the

refuge would likely not increase.

### Alternative B

This alternative would open all units of the refuge to all six of the Refuge System's priority public uses. The increased opportunities for recreational hunting and fishing would be available to the hunters and anglers, meeting a demand. Hunting and fishing on the refuge would contribute to the State's wildlife management objectives and allow a traditional use to continue. The refuge would remain open to other public uses on designated areas during hunting and fishing season. Visitor conflicts currently do not arise on the refuge with the adjacent fishing and hunting activity and we do not anticipate more conflict as a result of the increase in activities. Visitors hiking on the refuge are limited to walking on the trails and there are no hiking trails in the recently acquired properties. Therefore, we anticipate little to no visitor use conflicts when opening fishing and hunting on these new units.

## **Cultural Resources**

### **Affected Resource Description**

In 2008, GAI Consultants, Inc. completed an archaeological overview study and created sensitivity models for the refuge. The overview involved examining existing archaeological data such as historical texts and atlases, county histories, scientific reports, archaeological site files, and Service documentation; having conversations with refuge personnel; and visiting libraries and historical societies local to the refuge area. The model incorporated several variables (e.g., percent slope, cost distance to streams, cost distance to confluences, distance to prime farmland, and hydric soils) to identify potential areas of archaeological sensitivity within the refuge (Glenn, Cremeens, and Cole 2010). The refuge will use all the information provided by the archaeological overview and sensitivity model to inform future refuge projects. When an action is proposed in an area of archaeological sensitivity or where potential sites have been identified, the Service will perform an archaeological investigation to locate any archaeological or historical resources that may be present.

### **Anticipated Impacts**

#### Alternative A

Under this alternative, there would be no change to the hunting or fishing program and, therefore, we expect that we would continue to observe no adverse impacts under this alternative.

#### Alternative B

Hunting and fishing, regardless of method or target species, are activities that do not pose any threat to prehistoric or historic properties on or near the refuge. No impacts to cultural resources are anticipated above what may be caused by any refuge visitor. Although hunters and anglers 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 or fishing, nor is it likely that hunters or anglers would be more likely to engage in vandalism or disturbance than any other refuge visitor.

## **Refuge Management and Operations**

### **Affected Resource Description**

Hunters and anglers on the refuge utilize 27 parking areas (7 in the Seneca Division and 20 in the Sugar Lake Division), refuge roads, and a network of trails. Anglers can access fishing spots by foot using refuge trails or by road. There are four information kiosks: one on Route 27 and Boland Road, one east of Route 173 and Richie Road, one on Route 408 and Swamp Road, and one outside of the refuge headquarters off Route 198 in Guys Mills.

There are three trails in the Sugar Lake Division: the Beaver Run Trail, Tsuga Nature Trail, and Deer Run Trail (with an observation deck). On the Seneca Division, there is the Muddy Creek Holly Trail and the Trolley Line Trail. The Muddy Creek Holly Trail and Deer Run Trails are accessible to those with physical disabilities. In the Sugar Lake Division, there are three wildlife observation areas, one having an observation blind. The Refuge Headquarters/Visitor Center is located off Route 198 in the Sugar Lake Division.

There are currently four permanent, full-time employee positions that oversee the refuge. Federal Wildlife Officers receive assistance from State Conservation Officers and local police departments to enforce the laws and refuge regulations.

### **Anticipated Impacts**

#### Alternative A

Under the No Action Alternative, refuge infrastructure would continue its current usage with negligible short-term impacts. Approximately \$5,000 of the Erie NWR's budget is spent on the current hunting program and \$1,500 is spent on the current fishing program. The Refuge Manager coordinates the budget each year to ensure funds are available. The refuge does not charge the public any permit fees or any other kind of funding to hunt or fish on the refuge.

#### Alternative B

Under the Proposed Action Alternative, there may be a slight increase in use of refuge infrastructure. As a result of the increased hunting and fishing opportunities, additional hunters and anglers may result in more use of the trails and parking areas. It is anticipated that this increase in usage would likely have negligible impacts on the infrastructure.

Annual hunt and fish administration costs for Erie NWR including salary, equipment, brochures, and analysis of biological information totals approximately \$7,500. Annual costs for administering the fishing program would be \$2,000 and hunting program would be \$5,500. Increases to the hunting and fishing expenses would be from a slight increase in parking lot maintenance, new signage and boundary postings, and additional employee time spent on the hunting and fishing program management. It is anticipated that funding would continue to be sufficient to administer the hunting and fishing program at Erie NWR in the future.

## **Socioeconomics and Environmental Justice**

### **Affected Resource Description**

This refuge is not on the shores of Lake Erie, but lies in Crawford County, 35 miles south of the city of Erie and Lake Erie in northwestern Pennsylvania. Erie NWR created about eight jobs in

2017. In 2019, the population of Crawford County was 84,629. The median income was \$50,304 with a per capita median income of \$26,582. The poverty rate for Crawford County is 12.6 percent (Census 2019). The industries that employ the most people are manufacturing, healthcare and social assistance, and retail trade.

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**

### Alternative A

In 2017, there were 9,553 hunting visits and 3,650 fishing visits made to Erie NWR (USFWS 2017). Although this sum is minimal compared to the annual output of tourism in the area, it represents a negligible but positive impact. These wildlife dependent recreational visits to the refuge have a minor, long-term beneficial impact to the local economy. The Service has not identified any potential high and adverse environmental or human health impacts from the current hunting or angling that occurs at Erie NWR. Minority or low-income communities are not disproportionately affected by this activity or its impacts.

### Alternative B

Under the proposed action, the refuge is expected to attract approximately 15 to 20 additional hunters and 5 to 10 additional anglers each year. While still minimal, this means the expanded hunting program would have a greater positive impact on the local economy, boosting the overall economic value of the refuge for the local Crawford County economy. This alternative would not disproportionately affect minority or low-income populations.

## **Monitoring**

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

## **Summary of Analysis**

### **Alternative A – 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. There would not be an increase in economic impacts to local economies. New hunting and fishing opportunities would not be created under this alternative, including newly available acreage and

frontage. This alternative would likely have less short-term impact to physical and biological resources; however, this alternative would not meet goals and mandates under the NWRSA and Secretarial Order 3356 as well as the proposed action.

### **Alternative B – Proposed Action Alternative**

This alternative is the Service’s proposed action because it offers the best opportunity for public hunting and fishing that would result in a minimal impact on physical and biological resources, while meeting the Service’s mandates under NWRSA and Secretarial Order 3356. 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. Additional hunting and fishing would not add more than slightly to the cumulative impacts stemming from hunting at the local, regional, or flyway levels, and would only result in minor, negative impacts to migratory bird or other species populations. This alternative would best meet the objectives identified in the Hunting and Recreational Fishing Plan as well as the purpose and need of this document.

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

Wildlife Management Institute  
French Creek Valley Conservancy  
Pennsylvania Game Commission  
Pennsylvania Fish and Boat Commission  
Ducks Unlimited  
Western Pennsylvania Conservancy  
Pennsylvania Department of Conservation and Natural Resources  
Foundation for Sustainable Forests  
Crawford County Conservation District

### **List of Preparers**

Vicki Muller, Wildlife Refuge Manager  
Wilson Darbin, Visitor Services Assistant  
Tom Bonetti, Regional Hunting and Fishing Coordinator  
Stacey Lowe, Regional Hunting and Fishing Chief  
Laura Kelly, Cover Graphics

### **State Coordination**

National wildlife refuges, including Erie NWR, conduct their hunting and fishing programs within the framework of State and Federal regulations. The refuge developed this hunting and fishing plan based on coordination with the PGC and PFBC. Refuge leadership consulted with PGC R3 Coordinators on April 30, 2021, to discuss proposed changes to the refuge’s hunting and fishing plans.

**Tribal Consultation**

Erie NWR, as part of a refuge complex with Iroquois NWR, has consulted with the Seneca Reservation in the past. Refuge staff will coordinate with federally recognized Tribal governments in areas of mutual interest, including hunting and fishing opportunities.

**Public Outreach**

The public will be notified of the availability of the Erie NWR Hunting and Recreational Fishing Plan, EA and CDs 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.

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

## References

- Arcese, P. (1987). Age, intrusion pressure and defense against floaters by territorial male Song Sparrows. *Animal Behavior*, 35, 773-784.
- Augustine, D.J. and P.A. Jordan. 1998. Predictors of white-tailed deer grazing intensity in fragmented deciduous forests. *Journal of Wildlife Management* 62:1076-1085.
- Bartelt, G.A. (1987). Effects of disturbance and hunting on the behavior of Canada geese family groups in East Central Wisconsin. *Journal of Wildlife Management*, 51, 517-522.
- Bartmann, R.M., White, G.C., and Carpenter, L.H. (1992). Compensatory mortality in a Colorado mule deer population. *Wildlife Monographs*, 121, 1-39.
- Behrend, D.F., Mattfield, G.F., Tierson, W.C., and Wiley, J.E. (1970). Deer density control for comprehensive forest management. *Journal of Forestry*, 68, 695-700.
- Belanger, L. and Bedard, J. (1990). Energetic cost of man-induced disturbance to staging snow geese. *Journal of Wildlife Management*, 54, 36-41.
- Bell, D.V. and Austin, L.W. (1985). The game-fishing season and its effects on overwintering wildfowl. *Biological Conservation*, 33, 65-80.
- Box, J.B. and Mossa, J. (1999). Sediment, land use, and freshwater mussels: prospects and problems. *Journal of the North American Benthological Society*, 18, 99-117.
- Burger, J. (1981). Effect of human activity on birds at a coastal bay. *Biological Conservation* 21, 231-241.
- Burger, J. (1986). The effect of human activity on shorebirds in two coastal bays in northeastern United States. *Biological Conservation*, 13, 123-130.
- Cline, R., Sexton, N., and Steward, S.C. (2007). *A human-dimensions review of human-wildlife disturbance: a literature review of impacts, frameworks, and management solutions*. For Collins, CO: U.S. Geological Survey, Open-File Report 2007-1111.
- Cole, D.N. (1990). Ecological impacts of wilderness recreation and their management. In J.C. Hendee, G.H. Stankey, and R.C. Lucas (Eds.), *Wilderness Management* (pp. 425-466). Golden, CO: North American Press.
- Cole, D.N. and Knight, R.L. (1990). Impacts of recreation on biodiversity in wilderness. *Natural Resources and Environmental Issues*, 0, 33-40.
- Ensor, K.L., Helwig, D.D., and Wemmer, L.C. (1992). The common loon in Minnesota: potential contaminant implications. In L. Morse, S. Stockwell and M. Pokras (Eds.),

*Proceedings from the 1992 conference on the loon and its ecosystem: status, management, and environmental concerns.* Bar Harbor, ME: North American Loon Fund.

- Erwin, R.M. (1980). Breeding habitat by colonially nesting water birds in two Mid-Atlantic U.S. regions under different regimes of human disturbance. *Biological Conservation*, 18, 39-51.
- Ewald, P.W. and Carpenter, F.L. (1978). Territorial responses to energy manipulations in the Anna hummingbird. *Oecologia*, 31, 277-292.
- Glenn, J., D.L. Cremeens, and H.L. Cole. 2010. Archaeological overview and sensitivity models. Erie National Wildlife Refuge, Crawford County, Pennsylvania. GAI Consultants, Homestead, PA.
- Havera, S.P., Boens, L.R., Georgi, M.M., and Shealy, R.T. (1992). Human disturbance of waterfowl on Keokuk Pool, Mississippi River. *Wildlife Society Bulletin*, 20, 290-298.
- Kahl, R. (1991). Boating disturbance of canvasbacks during migration at Lake Poygan, Wisconsin. *Wildlife Society Bulletin*, 19, 242-248.
- Kaiser, M.S. and Fritzell, E.K. (1984). Effects of river recreationists on green-backed heron behavior. *Journal of Wildlife Management*, 48, 561-567.
- King, M.M. and Workman, G.W. (1986). Response of desert bighorn sheep to human harassment: management implications. *Transactions 51st North American Wildlife and Natural Resource Conference*.
- Klein, M.L. (1993). Waterbird behavioral responses to human disturbance. *Wildlife Society Bulletin*, 21, 31-39.
- Knight, R.L. and Cole, D.N. (1991). Effects of recreational activity on wildlife in wildlands. *Transactions of the 56th North American Wildlife and Natural Resources Conference*, 238-247.
- Korschen, C.E., George, L.S., and Green, W.L. (1985). Disturbance of diving ducks by boaters on a migrational staging area. *Wildlife Society Bulletin*, 13, 290-296.
- Kuss, F.R. 1986. A review of major factors influencing plant responses to recreation impacts. *Environmental Management*, 10:638-650.
- Lewin, W.C., Arlinghaus, R., and Mehner, T. (2006). Documented and potential biological impacts of recreational fishing: insights for management and conservation. *Reviews in Fisheries Science*, 14, 305-367.

- Madsen, J. (1985). Impact of disturbance on field utilization of pink-footed geese in West Jutland, Denmark. *Biological Conservation*, 33, 53-63.
- Miller S.G., Knight, R.L, and Miller, C.K. (1998). Influence of Recreational Trails on breeding bird communities. *Ecological Society of America*, 8(1), 162-169.
- Mohler et al. 2006. The Mussels of Muddy Creek on Erie National Wildlife Refuge. *Northeastern Naturalist*. 13. 569-582.  
10.1656/1092=6194(2006)13[569:TMOMCO]2.0.CO;2.
- Morton, J.M., Fowler, A.C., and Kirkpatrick, R.L. (1989). Time and energy budgets of American black ducks in winter. *Journal of Wildlife Management*, 53, 401-410 (also see corrigendum in *Journal of Wildlife Management*, 54, 683.
- Nixon, C., McClain, M., and Donohoe, R. (1975). Effects of Hunting and Mast Crops on a Squirrel Population. *The Journal of Wildlife Management*, (1), 1-25.  
doi:10.2307/3800460.
- Owen, M. (1973). The management of grassland areas for wintering geese. *Wildfowl*, 24,123-130.
- Pennsylvania Game Commission (PGC). N.d. *Harvest Data and Maps*. Harrisburg, PA: Bureau of Wildlife Management. Retrieved from <https://www.pgc.pa.gov/HuntTrap/Hunting/HarvestDataandMaps/Pages/default.aspx>, accessed May 2019.
- . (2018a). *Pennsylvania 2018-19 Deer Harvest Estimates*. Harrisburg, PA: Bureau of Wildlife Management. Retrieved from <https://www.pgc.pa.gov/Wildlife/WildlifeSpecies/White-tailedDeer/Documents/2018-19%20Deer%20Harvest%20Estimates%20Report.pdf>, accessed May 2019.
- . (2018b). *Pennsylvania 2017-18 Deer Harvest Estimates*. Harrisburg, PA: Bureau of Wildlife Management. Retrieved from <https://www.pgc.pa.gov/Wildlife/WildlifeSpecies/White-tailedDeer/Documents/2017-18%20Deer%20Harvest%20Estimates%20Report.pdf>, accessed May 2019.
- . (2017). *Pennsylvania 2016-17 Deer Harvest Estimates*. Harrisburg, PA: Bureau of Wildlife Management. Retrieved from <https://www.pgc.pa.gov/Wildlife/WildlifeSpecies/White-tailedDeer/Documents/2016-17%20Deer%20Harvest%20Estimates%20Report.pdf>, accessed May 2019.
- . (2016). *Pennsylvania 2015-16 Deer Harvest Estimates*. Harrisburg, PA: Bureau of Wildlife Management. Retrieved from <https://www.pgc.pa.gov/Wildlife/WildlifeSpecies/White-tailedDeer/Documents/2015-16%20Harvest%20Estimates%20Report.pdf>, accessed May 2019.

- . (2014). *Deer health, forest habitat health, deer harvests, and deer population trends by wildlife management unit*. Harrisburg, PA: Bureau of Wildlife Management. Retrieved from [http://www.portal.state.pa.us/portal/server.pt/document/1460120/21001-13z\\_pdf](http://www.portal.state.pa.us/portal/server.pt/document/1460120/21001-13z_pdf), accessed November 2014.
- Rattner, B.A., J.C. Franson, S.R. Shefffield, 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
- Raveling, D.G. (1979). Traditional use of migration and winter roost sites by Canada geese. *Journal of Wildlife Management*, 43, 229-235.
- Rodgers, J.A. and Smith, H.T. (1995). Set-back distances to protect nesting bird colonies from human disturbance in Florida. *Conservation Biology*, 9, 89-99.
- San Julian, G.J. and Smith, S.S. (2001). White-tailed deer. State College: PA. Pennsylvania State University, College of Agricultural Sciences.
- Tierson, W.C., Patric, E.F., and Behrend, D.F. (1966). Influence of white-tailed deer on the logged northern hardwood forest. *Journal of Forestry*, 64, 804-805.
- Tilghman, N.G. (1989). Impacts of white-tailed deer on forest regeneration in northwestern Pennsylvania. *Journal of Wildlife Management*, 53, 524-532.
- Ward, D.H. and Stehn, R.A. (1989). Response of brant and other geese to aircraft disturbance at Izembek Lagoon, Alaska. Anchorage, AK: U.S. Fish and Wildlife Service, Alaska Fish and Wildlife Research Center. Final report to the Minerals Management Service.
- White, M.A. 2012. Long-term effects of deer browsing: composition, structure and productivity in a northeastern Minnesota old-growth forest. *Forest Ecology and Management* 269: 222-228.
- . (2018b). *Pennsylvania 2017-18 Deer Harvest Estimates*. Harrisburg, PA: Bureau of Wildlife Management. Retrieved from <https://www.pgc.pa.gov/Wildlife/WildlifeSpecies/White-tailedDeer/Documents/2017-18%20Deer%20Harvest%20Estimates%20Report.pdf>, accessed April 2021.
- White-Robinson, R. (1982). Inland and saltmarsh feeding of wintering brent geese in Essex. *Wildfowl*, 33, 113-118.
- Whittaker, D. and Knight, R. (1998). Understanding wildlife responses to humans. *Wildlife Society Bulletin*, 26(3), 312-317.

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

U.S. Fish and Wildlife Service (USFWS) and U.S. Census Bureau. (2014). *2011 National survey of fishing, hunting, and wildlife-associate recreation* (revised edition). Washington, DC: U.S. Department of the Interior and U.S. Department of Commerce. Retrieved from <https://www.census.gov/prod/2012pubs/fhw11-nat.pdf>, accessed July 2014.

## **OTHER APPLICABLE STATUTES, EXECUTIVE ORDERS AND REGULATIONS**

### ***Cultural Resources***

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

### ***Fish and Wildlife***

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

### ***Natural Resources***

- Clean Air Act, as amended, 42 U.S.C. 7401-7671q; 40 CFR Parts 23, 50, 51, 52, 58, 60, 61, 82, and 93; 48 CFR Part 23.
- Wilderness Act, 16 U.S.C. 1131 et seq.
- Wild and Scenic Rivers Act, 16 U.S.C. 1271 et seq.

- Executive Order 13112 – Invasive Species, 64 Fed. Reg. 6183 (1999).

***Water Resources***

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