

# **Environmental Assessment**

## **Environmental Assessment for Proposed 2020-2021 Muscatatuck National Wildlife Refuge Migratory Game Bird, Upland Game and Big Game Hunt Plan**

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Prepared by

Muscatatuck National Wildlife Refuge

Seymour, Indiana

*Estimated Lead Agency Total Costs Associated with Developing and Producing  
This Environmental Assessment: \$8,072*

## **Environmental Assessment for Muscatatuck 2020-21 Hunt/ Fish Plan**

This Environmental Assessment is being prepared to evaluate the effects associated with this preferred action and complies with the National Environmental Policy Act 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. The National Environmental Policy Act requires examination of the effects of proposed actions on the natural and human environment.

### **1.0 Introduction**

#### **Proposed Action**

The U.S. Fish and Wildlife Service (Service) is proposing to open and expand hunting opportunities for woodcock, dove, raccoon, red and gray fox, coyote, opossum, skunk, coot, ducks, merganser, light and dark geese on the Muscatatuck National Wildlife Refuge in accordance with the refuge's hunt step down plan. This hunt proposal, if implemented, will bring the refuge more in alignment with the state of Indiana's hunting opportunities. It will specifically add more upland game species, expand hunting boundaries for all upland game and add a waterfowl hunting zone.

The current hunting program includes a big game area of 5,394 acres with a small game area overlaying 1,896 acres of the Southeast portion of the big game area. Current species hunted on the refuge are deer, turkey, squirrel, rabbit and quail. Deer hunting runs concurrent with the State's Archery and Muzzle Loader seasons. Turkey hunting is allowed in the spring and runs concurrent with the state's Spring Turkey season. Squirrel, rabbit, and quail seasons all run concurrent with the state's seasons and are limited to the small game area.

Changes to the hunting areas would include combining the big game and upland game hunting units into one single hunting unit. There would be no change for hunting big game but would expand the small game hunting area to an additional 3,694 acres. We also propose to establish a 747 acre waterfowl hunting zone, also known as Unit B, which would include all acreage south of Lake Linda Road excluding the waterfowl sanctuary. See hunting unit map in Appendix B, Attachment A.

This proposed action is often iterative and evolves over time during the process as the agency refines its proposal and learns more from the public, tribes and other agencies. Therefore, the final proposed action may be different from the original. The final decision on the proposed action will be made at the conclusion of the public comment period for the Environmental Assessment and the 2020-2021 Refuge-Specific Hunting and Sport Fishing Regulations. The Service cannot open a refuge to hunting and/or fishing until a final rule has been published in the Federal Register formally opening the refuge to hunting and/or fishing.

#### **Background**

The mission and goals of the National Wildlife Refuge System, the purposes of an individual refuge, Service policy, and laws and international treaties guide national wildlife refuges. Relevant guidance includes the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife 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 Muscatatuck National Wildlife Refuge (refuge) was established pursuant to the Migratory Bird Conservation Act on October 6, 1966. By April 24, 1973, acquisition was considered complete with 7,724 acres acquired. The Migratory Bird Conservation Commission approved the acquisition of 7,922 acres to provide duck breeding and migration habitat as the additional 198 acres were not able to be acquired. The refuge is located near Seymour, Indiana and spans across Jackson and Jennings Counties of southern Indiana. The primary purpose of the refuge is:

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

When proposed as a refuge to the Migratory Bird Conservation Commission in 1966, the area was identified as having good potential for waterfowl with expected increases in production and use during the spring and fall migrations. The refuge mission is to restore, preserve, and manage a mix of forest, wetland, and grassland habitat for fish, wildlife and people. More than 280 species of birds have been seen at Muscatatuck, and the refuge is recognized as a “Continentially Important” bird area.

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

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

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

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

Therefore, it is a priority of the 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 National Wildlife Refuge System. Hunting rabbit, quail, squirrel, deer and turkey is currently permitted on the refuge. This action was authorized and found compatible in the 2009 Comprehensive Conservation Plan and Compatibility Determination. The refuge supports a number of diverse plant and animal assemblages in a mosaic of upland and bottomland forests, freshwater marshes, seasonally flooded impoundments, ditches, streams and their riparian corridors, permanent lakes and ponds, ephemeral ponds, grasslands and other habitat types. These areas support waterfowl, deer, turkey, squirrels, rabbits and other game species.

There are no official visitor counts for visitation associated to hunting on Muscatatuck Refuge. However, in 2017 the number of visitors for hunting was estimated to be 700 hunters with a majority of these hunters hunting deer and turkey. These anecdotal assessments are based upon observations by staff. All hunting activities are planned and operated with the refuge's primary goals and objectives as the guiding principles.

This hunt proposal, if implemented, will bring the refuge more in alignment with the state of Indiana's hunting rules and regulations. It will specifically add more upland game species, expand hunting boundaries for all upland game and add waterfowl hunting.

The current hunting program includes a Big Game area of 5,394 acres with a small game area overlaying 1,896 acres of the Southeast portion of the big game area. Current species hunted on the refuge are deer, turkey, squirrel, rabbit and quail. The deer hunting season is concurrent with the State's Archery and Muzzle Loader seasons. Turkey hunting is allowed in the spring and runs concurrent with the State's Spring Turkey season. Squirrel, rabbit and quail seasons all run concurrent with the State's seasons and are limited to the small game area.

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

The purpose of this proposed action is to provide compatible wildlife-dependent recreational opportunities on Muscatatuck National Wildlife Refuge. The need of the preferred action is to meet the Service's priorities and mandates as outlined by the Refuge System Administration Act to "recognize compatible wildlife-dependent recreational uses as the priority general uses of the Refuge System" and "ensure that opportunities are provided within the Refuge System for compatible wildlife-dependent recreational uses" (16 U.S.C. 668dd(a)(4)). The need of the proposed action also meets the Service's implementation of Secretarial Order (S.O.) 3347 *Conservation Stewardship and Outdoor Recreation* and S.O. 3356 *Hunting, Fishing, Recreational Shooting, and Wildlife Conservation Opportunities and Coordination with States, Tribes, and Territories* by expanding hunting opportunities and aligning Service regulations with State regulations. Furthermore the proposed action should further help the refuge realize their Recreation Goal to cultivate "visitors understand and appreciate the natural environment and its processes through participation in high-quality, wildlife-dependent recreation and educational opportunities" (Service 2009).

## **2.0 Alternatives**

### **Alternatives Considered**

Alternative A – As described in the 2020-21 Hunt Plan, in addition to current authorized hunting opportunities, allow expanded hunting of woodcock, dove, raccoon, fox, coyote, opossum,

skunk, coot, ducks, merganser, light and dark geese and open additional lands for hunting. – [Preferred Action Alternative]:

The refuge has prepared a hunt plan, which is presented in this document as the preferred action alternative (see Appendix B). Under the proposed action alternative, 5,202 acres of land will be opened for hunting (see below for specific species open in the two areas). Hunting will be open for all species currently open (deer, turkey, quail, squirrel and rabbit) and proposed to be open including eleven additional species: woodcock, dove, raccoon, fox, coyote, opossum, skunk, coot, ducks, merganser, light and dark geese. All species will be added to the list of species to be taken on open areas as described below. Indiana State regulations and refuge specific regulations define season length and method of take by hunters for all huntable species. The following is a list of proposed changes to the refuge hunting program. A more detailed description can be found in the 2020 Hunt Plan. The refuge would continue to serve as habitat for fish and wildlife as well as provide outdoor recreational opportunities for all six priority wildlife dependent public uses – hunting, fishing, wildlife observation, photography, environmental education and interpretation.

*Areas to be Opened/Closed*

- Open Unit A (4455 acres). To include deer, turkey, rabbit, squirrel, raccoon, fox, coyote, opossum, skunk, quail.
- Open Unit B (747 acres south of County road 475 East). To include all species huntable in Unit A, in addition to migratory game birds (dove, woodcock, merganser, coot, duck and light and dark geese).
- Closed area (2625 acres).

*Species to be open for hunting--Migratory birds*

- Woodcock, dove, coot, duck, merganser, light and dark geese to be hunted in Unit B.

*Species to be open for hunting --Upland game*

- Raccoon, fox, opossum, coyote, skunk to be hunted throughout the open areas on the refuge in concurrence with State seasons and regulations. Excludes any night hunting.
- Coyote hunting is open only to permitted deer hunters.
- Turkey to be hunted throughout open area on the refuge in concurrence with state seasons and regulations. To include spring and fall season.

*Proposed Regulation Changes*

These refuge-specific regulations will be published in the Federal Register as part of the 2020-2021 Muscatatuck National Wildlife Refuge Hunting Regulations.

**§ 32.33 Indiana**

(b) Muscatatuck National Wildlife Refuge.

(1) Migratory Game Bird Hunting. We allow hunting of duck, goose, coot, merganser, woodcock and dove on designated areas of the refuge subject to the following conditions:

- i. You must remove all boats, decoys, blinds, blind materials, stands, and platforms brought onto the refuge at the end of each day's hunt(see §27.93 of

this chapter) .

- ii. We allow the use of dogs when hunting, provided the dogs are under the immediate control of the hunter at all times.
- iii. Cutting trails or trimming trees is prohibited.  
We prohibit hunting and the discharge of a firearm within 100 yards (30 meters) of any dwelling or any other building that people, pets, or livestock may occupy.

(2) Upland Game Hunting. We allow hunting of turkey, squirrel, rabbit, quail, raccoon, opossum, coyote, fox and skunk on designated areas of the refuge subject to the following conditions:

- i. For hunting, you may use or possess only approved nontoxic shot shells while in the field.
- ii. The use of rimfire weapons is allowed for upland/ small game hunting. We recommend the use of non-toxic ammunition.
- iii. The use of centerfire weapons is not allowed for any hunts on refuge property.
- iv. During spring turkey hunting hunters must possess a State-issued hunting permit during the first 6 days of the season.
- v. Turkey hunting ends at 1 p.m. each day.
- vi. Coyote hunting is open only to permitted deer hunters
- vii. The conditions set forth at paragraphs (b)(1)(i-iii) apply.

(3) Big Game Hunting. We allow hunting of white-tailed deer on designated areas of the refuge subject to the following conditions:

- i. The conditions set forth at paragraph (b)(1)(i-iii) and (b)(2)(i-iii) apply.
- ii. We prohibit organized deer drives. We define a “deer drive” as an organized or planned effort to pursue, drive, chase, or otherwise frighten or cause deer to move in the direction of any person(s) who is part of the organized or planned hunt and known to be waiting for the deer.
- iii. The use or possession of tree spikes, plastic flagging and reflective tacks is prohibited.
- iv. We prohibit the use of firearms during the State deer firearms season (archery and muzzleloader only).
  - v. We close archery deer hunting during the State muzzleloader season.
  - vi. We prohibit the possession of game trail cameras on the refuge.
- vii. We require you to remove arrows from crossbows during transport in a vehicle.

*Mitigation Measures to Avoid Conflicts:*

The refuge manager may establish specific regulations for individual species or portions of the refuge depending on conflicts with other wildlife dependent recreation priorities. Permanent or periodic hunting closures for specific species or closures of portions of the refuge may be necessary if the refuge manager determines that there is specific habitat, wildlife protection

and/or public safety requirements. The need to implement mitigation measures will be evaluated annually; at this time there is no perceived conflict and need for mitigation measures than what is described below. All hunting would be conducted in accordance with all applicable state, refuge and federal regulations. Coordination with the public and refuge stakeholders including the Indiana Department of Natural Resources will promote continuity and understanding of refuge and Service resource goals and objectives, and will help assure that the decision-making process takes into account all interests but the ultimate decision making authority lies with the Service.

### *Biological Conflicts*

- The refuge minimizes conflict related to biological resources by adopting a “wildlife first” principle explicitly stated in the Refuge Improvement Act. Staff monitors species population trends to ensure that target species can be hunted on the refuge without adversely affecting the species. These monitoring activities include direct and indirect observation of populations, consultation with state and Service species specialists and review of current species survey information and research.
- The refuge limits or excludes hunting activities where there are biological and safety concerns. This is the case at the Waterfowl Sanctuary, which is not hunted specifically to provide a sanctuary for migratory birds in an area otherwise hunted heavily for migratory birds. This area is off limits to all hunting. Furthermore, migratory game bird hunting is not authorized on Hunt Unit A in order meet Inviolate Sanctuary requires as defined in the Migratory Bird Treaty Act that authorizes the refuge. Although not proposed in this current plan, the refuge, in the future, could limit or exclude hunting activities on additional portions of the refuge to avoid conflicts related to biological resources, such as threatened or endangered species. Special hunts could also be used to manage hunting pressure, provide increased opportunities and manage overall take at appropriate levels.
- The refuge follows recovery plan guidelines for the management of the following federally threatened and endangered species.
  - Indiana bat (*Myotis sodalis*) The range of the endangered Indiana bat includes most of the upper Midwestern United States from Oklahoma, Iowa and Wisconsin east to Vermont and south to northwestern Florida (USFWS 2009a). Indiana bats have been documented on the refuge through mist net and acoustic surveys primarily between April and November.
  - Northern long-eared bat (*Myotis septentrionalis*) The Northern long-eared bat has been listed as threatened and is known to occur in Jackson and Jennings counties and have been documented on the refuge through mist net surveys and acoustic surveys.
  - Whooping Crane (*Grus Americana*) Whooping cranes observed in Indiana are the result of a restoration effort by the Whooping Crane Eastern Partnership, an international coalition of governmental agencies and private organizations to establish a migratory population of whooping cranes in the eastern United States. Since 2001, captive-bred whooping cranes have been taught to follow ultralight aircraft to teach them a migration route from central Wisconsin to the Gulf Coast of Florida. Until 2008, this route took them through Indiana, and free-flying birds regularly stop in Indiana during the fall and spring seasons. Other birds have been released in the company of older cranes from whom the young birds are expected

to learn the migration route. Once led south, the cranes are able to migrate on their own, without assistance, in following years (IDNR, 2019).

- An Endangered Species Act Section 7 consultation was conducted and it was determined that the proposed alternative is not likely to conflict with recovery and/or protection of these species. A determination of “may affect but not likely to adversely affect” was made for Indiana bat, northern long-eared bat and the whooping crane, as the proposed project is likely to cause insignificant, discountable or wholly beneficial effects to individuals and designated critical habitat (Appendix C). Section 7 of the Endangered Species Act requires Federal agencies to evaluate potential impacts to Threatened and Endangered species and their habitats and an Environmental Assessment under the National Environmental Policy Act specifically for the hunting program and addresses each of these species.

#### *Public Use Conflicts*

- In an effort to minimize conflicts with priority non-hunting recreational uses outlined in the Improvement Act, and for public safety, the refuge designates areas open to hunting and enforces refuge-specific regulations. The boundaries of all lands owned or managed by the Service are posted with refuge boundary signs. Areas administratively closed to hunting are clearly marked with “No Hunting Zone” or “Area beyond This Sign Closed” signs. Overall, hunting impacts to visitor services/recreation opportunities are considered short-term, minor and local. Past conflicts have been minimal and we anticipate future conflicts to be about the same.

#### *Administrative Use Conflicts*

- The most potential for conflict with management activities occurs in areas where habitat treatments are conducted. Occasionally, an area open to hunting is proposed to receive a prescribed fire treatment. Typically, a notice of the impending treatment is posted at the unit public access points to alert all users, including hunters. Prior to implementing the fire treatment, the treatment unit is scouted by refuge fire staff to ensure that no one is endangered by the treatment. Other habitat treatments such as invasive species treatment may generate a temporary closure of an area. Notice or information about any of these closures may be posted and available at the refuge Office to mitigate conflicts.

This alternative offers increased opportunities for public hunting and fulfills the Service’s mandate under the National Wildlife Refuge System Improvement Act of 1997. The Service has determined that the hunt plan is compatible with the purposes of the Muscatatuck National Wildlife Refuge and the mission of the Refuge System (See Appendix B, Attachment e.

Alternative B – Maintain current hunting opportunities for upland and big game species on refuge lands as described in the 2003 Hunt Plan. New hunting opportunities for species identified in the 2020 Hunt Plan would remain closed. All other existing public uses will remain unchanged. – [No Action Alternative]:

Under this alternative, current refuge hunting opportunities for specific upland and big game species would continue and remain the same across those portions of the refuge. The current hunting program includes a big game area of 5,394 acres with a small game area overlaying 1,896 acres of the Southeast portion of the big game area. Current species hunted on the refuge are deer, turkey, squirrel, rabbit and quail. The refuge would continue to serve as habitat for fish

and wildlife as well as provide outdoor recreational opportunities for all six priority wildlife dependent public uses – hunting, fishing, wildlife observation, photography, environmental education and interpretation.

Opportunities to create additional outdoor recreation experiences by adding additional species would be lost. The refuge will continue to provide hunting opportunities for the public, offering reasonable opportunities for the refuge to promote natural resources conservation, environmental education and natural resources stewardship. Under this alternative, the public would have slightly more limited access to hunt certain species on public lands in the general area. As no changes would occur the 2003 approved Hunt Plan would still be implemented. All other public uses on the refuge would not change and would continue as described in current plans.

### **Alternative(s) Considered, But Dismissed from Further Consideration**

Concerns were expressed during the public comment period of the comprehensive conservation planning process that hunting should not be allowed on the refuge, specifically for waterfowl. Under the 1966 Refuge Administration Act (16 U.S.C. 668dd) the Service is authorized to permit the migratory game bird hunting use of an area up to 40% of an area designated an inviolate sanctuary for migratory birds. 7,714 acres of the refuge has been designated as inviolate sanctuary so up to 3,085 acres can be open for migratory bird hunting. Under the proposed alternative only 747 acres will be opened for migratory game bird hunting. Specific language out of the 1966 Refuge Administration Act (16 U.S.C. 668dd) states:

*d) Use of areas; administration of migratory bird sanctuaries as game taking areas; rights of way, easements, and reservations; payment of fair market value*

*(1) The Secretary is authorized, under such regulations as he may prescribe, to--*

*(A) permit the use of any area within the System for any purpose, including but not limited to hunting, fishing, public recreation and accommodations, and access whenever he determines that such uses are compatible with the major purposes for which such areas were established: Provided, That not to exceed 40 per centum at any one time of any area that has been, or hereafter may be acquired, reserved, or set apart as an inviolate sanctuary for migratory birds, under any law, proclamation, Executive order, or public land order may be administered by the Secretary as an area within which the taking of migratory game birds may be permitted under such regulations as he may prescribe unless the Secretary finds that the taking of any species of migratory game birds in more than 40 percent of such area would be beneficial to the species*

Expanding quality hunting experiences includes waterfowl hunting in the preferred alternative and analysis of take of these species is included for both expanding and not expanding to hunting of waterfowl and other migratory birds. Expansion without waterfowl hunting was not specifically considered as another alternative as the analysis in both circumstances is included in the affected environment section. No specific concerns or issues were excluded from analysis. During the public comment period it was proposed that the refuge evaluate an alternative to not open to furbearer hunting or allow the use of lead ammunition. Neither alternatives were further explored, reference Appendix D for further response to those comments.

## 3.0 Affected Environment and Environmental Consequences

### Affected Environment

The refuge consists of approximately 7,922 acres in Jackson and Jennings county, Indiana. Hunting rabbit, quail, squirrel, deer and turkey is currently permitted on the refuge. This action was authorized and found compatible in the 2009 Comprehensive Conservation Plan and is described in the 2003 Hunt Plan. The refuge supports a number of diverse plant and animal assemblages in a mosaic of habitats.

Muscatatuck National Wildlife Refuge is primarily upland and bottomland forests, freshwater marshes, seasonally flooded impoundments, ditches, streams and their riparian corridors, permanent lakes and ponds, ephemeral ponds, grasslands and other habitat types. The proposed action is located in the western and southern parts of the refuge. See map of the general area and proposed project site on the refuge in Attachment A of Appendix B.

For more information regarding the affected environment, please see Chapter three of the refuge's Comprehensive Conservation Plan, which can be found at <https://ecos.fws.gov/ServCat/DownloadFile/1519>.

### Environmental Consequences of the Action

This section analyzes the environmental consequences of the action on each affected resource, including direct and indirect effects. This Environmental Assessment only includes the written analyses of the environmental consequences on a resource when the impacts on that resource could be more than negligible and therefore considered an "affected resource."

Impact Types:

- *Direct effects* are those that are caused by the action and occur at the same time and place.
- *Indirect effects* are those that are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.
- *Cumulative impacts* result 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.

### Affected Natural Resources and Anticipated Impacts of the Alternatives

#### **Waterfowl (coot, duck, merganser, light and dark geese)**

A rich diversity of waterfowl are commonly observed on the refuge. Wood duck broods are common sightings in the spring and summer months. Waterfowl use days during the fall and spring migrations number in the hundreds of thousands. According to the United States Fish and Wildlife Service, in all of Indiana, 75,000±24% ducks (includes mergansers, which totaled only 928 birds), 41,000±36% geese and 1,100 ± 109% coots were harvested in 2018. There were an estimated 9,800±21% waterfowl hunters that hunted in Indiana in 2018. Each waterfowl hunter harvested an average of 8.1±32% ducks and 5.9±45% geese in the season. Total ducks harvested at the Atlantic flyway level was 1,609,600±10% (Raftovich, et al 2019).

### ***Alternative A – Preferred Action Alternative***

Estimated Hunter numbers: 10

Estimated Take: 80 ducks (includes mergansers), 60 geese, 150 coots

The Indiana state season for harvesting waterfowl was from September 14, 2019- February 9, 2020. The daily bag limit is six ducks and the possession limit is 18. The bag limit for all dark geese (Canada, white-fronted and brant) is five geese, no more than three of which can be Canada geese. The bag limit in September is five dark geese, all of which can be Canada geese. The possession limit is three times the daily bag limit. The daily bag limit for light geese (snow, blue and or ross geese) is 20, with no possession limit for light geese. For 2018, Seasonal duck harvest per hunter was  $8.1 \pm 32\%$ , seasonal goose harvest per hunter was  $5.9 \pm 45\%$  and seasonal coot harvest was  $14.7 \pm 125\%$ . Estimated take of waterfowl on the refuge is less than 1 percent of the flyway harvest rates. The refuge hosts thousands of ducks during the spring and fall migration and allowing for this estimated take is not likely to have substantial impacts on waterfowl populations as they migrate through the state of Indiana and likely have negligible impacts at the flyway level. Use of non-toxic shot is required for waterfowl hunting reducing the impact of lead in the environment to no impacts to waterfowl as a result of this activity.

### ***Alternative B – No Action***

Under this alternative hunting of waterfowl is not permitted. There would be neutral effects on the local waterfowl populations as no individuals would be taken under this alternative. Impacts would be limited to temporary disturbance from hunting and other public recreational uses.

### **Woodcock**

The American woodcock is a popular game bird throughout eastern North America. The management objective of the U.S. Fish and Wildlife Service is to stabilize woodcock populations, while ultimately returning the population to a level that occurred in the early 1970s (Kelley et al. 2008). Nationally woodcock hunters numbered about 103,300 in 2017 and harvested 203,500 ( $\pm 17\%$ ) birds. In Indiana there were an estimated  $200 \pm 136\%$  woodcocks harvested by approximately  $100 \pm 78\%$  woodcock hunters (Raftovich, et al 2019).

### ***Alternative A – Preferred Action Alternative***

Estimated Hunter numbers: 4

Estimated Take: 2

The addition of hunting woodcock is estimated to attract four hunters and to take two woodcock annually. This increase in take and use is expected to have negligible impacts to the local woodcock population as well as the state population as take on the refuge is less than 1 percent.

### ***Alternative B – No Action***

There would be neutral effects on the local woodcock population, as no individuals would be taken under this alternative due to woodcock hunting would not be permitted. Impacts would be limited to temporary disturbance from hunting and other public recreational uses.

### **Dove (mourning and white-winged)**

The mourning dove is one of the most widely distributed and abundant species in urban and rural areas of North America. At this time the responsibility to manage this species has been delegated to the Department of Interior. The primary management goal of the Service is to maintain dove

populations at a healthy and productive state. (Seamans 2017). At a national level, the Service estimates approximately 709,000 dove hunters harvested 11,561,100  $\pm$  6% mourning doves in 2017 at a national level. In Indiana, there were 110,800 $\pm$ 56% doves harvested by 7,400 $\pm$ 43% hunters. Indiana represents only 3% of the total doves harvested at a national level and only 2% of the total dove hunters nationally (Raftovich, et al 2019).

#### ***Alternative A – Preferred action alternative***

Estimated Hunter numbers: 2

Estimated Take: 6

Hunting mourning dove is estimated to increase the number of hunters by two and the number of mourning doves taken from the refuge by six. This increase in take and use is expected to have neutral impacts to the local dove population. The white-winged dove range does not extend into Indiana and there have been no recorded sightings of these species on the refuge. Some migrants have been sighted in Indiana during the summer months (Engel 2015). It is estimated that there would be no take of this species thus there would be no impact to the local population. Effects of hunting all dove species will have a negligible impact.

#### ***Alternative B – No Action***

There would be neutral effects on the local dove population as no individuals would be taken under this alternative due to dove hunting not being permitted. Impacts would be limited to temporary disturbance from hunting and other public recreational uses.

#### **Raccoon**

The raccoon is a medium-sized mammal that is common throughout Indiana. Its black mask makes it easy to identify. Raccoons are found in both urban and rural areas and are a species that thrives around people. They are native only to North America. Raccoons occur statewide. They are most numerous where a mix of woodlands, cropland and shallow water are found.

Northeastern Indiana, with its glacial lakes, is where the raccoon population is the greatest. The farmland of central Indiana is also home to many raccoons. The heavily forested south-central hills and northwestern prairie regions are less attractive to raccoons, but they are still common in these areas. Raccoon populations were low in the early 1900s, but began to rebound in the mid-1900s. A few attempts at bringing raccoons in from other states to bolster populations were conducted into the 1970s, despite growing raccoon populations. Now, with raccoons readily adapting to urban living, populations are strong throughout the state.

#### ***Alternative A – Preferred Action Alternative***

Estimated Hunter numbers: 12

Estimated Take: 10

Resident landowners and tenants can trap a raccoon that is causing damage on their own property without a permit from the state. The raccoon must be euthanized or released within the county of capture on private property in which you have permission to release the raccoon. In order to prevent the spread of disease, the state encourages homeowners to safely and humanely euthanize the raccoons, if possible. Beyond take of raccoon out of private property, in the most recent, 2014-15 Annual Statewide Fur Harvest and Value Survey, 59,416 raccoon pelts were harvested down from the 2013-14 harvest of 90,305 pelts (Rossler, 2016). Hunting raccoon on

the refuge does not include the use of trapping, the most common form of take of raccoons. We allow the use of dogs when hunting, provided the dogs are under the immediate control of the hunter at all times. Therefore, it seems likely that opening up the refuge to hunting raccoon would have negligible impact on the local or regional population. Raccoon hunting on the refuge will only be allowed during normal hunting hours (1 hour before sunrise to 1 hour after sunset), no nighttime hunting will be allowed.

### ***Alternative B – No Action***

There would be neutral effects on the local raccoon population, as individuals would only be taken through management actions of the refuge to control the population to meet management and safety needs. There would be no take of raccoons through hunting activities as this is not permitted under this alternative. Impact would be limited to disturbance from existing hunters, however this will be limited as this species is most active at night when hunters are not using the refuge.

### **Red and Gray Fox**

The red fox is likely not native to Indiana. Records suggest that in much of the U.S., red foxes were introduced from Europe and expanded throughout the country. Red foxes likely moved into Indiana with European settlers, possibly in the mid-1800s. They are now a common and charismatic member of Indiana's wildlife community and are found in a variety of habitats, including in urban areas.

The gray fox is a unique canid (member of the dog family) because they are capable of climbing trees. Unlike dogs, coyotes and red fox, their claws partially retract, allowing them to stay sharp enough to climb a tree. Because of this skill, many people used to think they were more closely related to cats, but they are a true fox and in the dog family just like red foxes and coyotes.

Red and Gray fox do not require specialized habitat management due to their adaptability and tolerance of human activity. They are an important component of Indiana's wildlife community due to their effectiveness as predators in controlling small mammals, and they are an important animal in Indiana's fur harvest. Both hunting and trapping are allowed for red foxes. They are protected from hunting and trapping when the young are born and learning to survive. Rules and regulations can be found in the Indiana Hunting and Trapping Guide.

### ***Alternative A – Preferred Action Alternative***

Estimated Hunter numbers: 6

Estimated Take: 1

Resident landowners and tenants can trap a red fox that is causing damage on their own property without a permit from the state. The fox must be euthanized or released within the county of capture on private property on which you have permission to release the fox. In order to prevent the spread of disease, the state encourages homeowners to safely and humanely euthanize the fox, if possible. In the 2014-15 Annual Statewide Fur Harvest and Value Survey 1,042 red and 155 gray pelts were harvested down from the 2013-14 harvest of 1,386 and 195 pelts respectively (Rossler, 2016). Hunting fox on the refuge does not include the use of trapping, the most common form of take of fox. Therefore, it seems likely that opening up the refuge to hunting fox would have negligible impact on the local or regional population. Red and gray fox

hunting on the refuge will only be allowed during normal hunting hours (1 hour before sunrise to 1 hour after sunset), no nighttime hunting will be allowed.

### ***Alternative B – No Action***

There would be neutral effects on the red and gray fox population, as no take of these species would occur through hunting activities as this is not permitted under this alternative. Impact would be limited to disturbance from existing hunters, however this will be limited as this species is most active at night when hunters are not using the refuge.

### **Coyote**

Coyotes are native to Indiana and were often called “prairie wolves.” Before the European settlement of Indiana, coyotes were primarily restricted to prairie regions of the state. Today, coyotes are found throughout Indiana, including urban areas. Coyotes are present in all sections of the state. There are records of coyotes in Indiana as early as 1816, though they likely inhabited Indiana well before that time. Bounties were in place in Indiana on coyotes from at least 1849 through the late 1960s. Despite this persecution by early European settlers, coyotes persisted in Indiana. Historically, coyote populations were limited in range to the prairie regions of the state, and expansion may have partially been limited because wolves suppress coyote populations, and both red and gray wolves were once abundant in Indiana. However, with the eradication of wolves and conversion of habitat to farmland, coyotes have been able to expand and adapt to new habitats. Statewide coyote abundance has slowly increased as coyotes continued to expand into previously unoccupied habitat. Today, coyotes occupy all of Indiana, no matter the habitat type or amount of development (IDNR, 2019).

### ***Alternative A –Preferred Action Alternative***

Estimated Hunter numbers: 10

Estimated Take: 2

Landowners may take coyotes at any time on the land they own without a special permit or license, or they may provide written permission for others to take coyotes on their land at any time. A valid hunting or trapping license or nuisance wild animal control permit is required to take a coyote on land other than your own. This type of harvest would not be allowed on the refuge. Hunting season typically occurs between mid-October through Mid-March, however harvest will be limited to permitted deer hunters, and take will likely be opportunistic in nature. The hunting season is set in Indiana to It is illegal to hunt coyote with the use of mouth- or hand operated calls, or with the use of recorded calls. In the 2014-15 Annual Statewide Fur Harvest and Value Survey (which reports pelts harvested using typically trapping methods) 3,918 coyote pelts were harvested down from the 2013-14 harvest of 5,413 pelts (Rossler, 2016). Hunting coyote on the refuge does not include the use of trapping, the most common form of take according to the Indiana Department of Natural Resources. Coyote hunting will only be allowed by permitted deer hunters during open refuge hours (no night hunting), and is likely to be opportunistic. Coyote hunting on the refuge will only be allowed during normal hunting hours (1 hour before sunrise to 1 hour after sunset), no night time hunting will be allowed. A lot of coyote hunting occurs at dusk, dawn, and at night. This further narrows the window of which hunters would be successful at harvesting coyotes. The refuge estimated that of the permitted deer hunters that use the refuge approximately 10 hunters would take a chance at harvesting a coyote while deer hunting. This was estimated, as most harvest of coyote would occur by muzzleloader

deer hunters, and not archery deer hunters. It was further estimated that on an annual average basis two coyotes could be harvested by deer hunters, although this is still a 20% success rate and fairly high considering the main reason for the hunting trip is to harvest deer. In some years, there could be no harvest of coyotes depending on the ability of deer hunters to encounter coyotes. Therefore, it seems likely that opening up the refuge to hunting coyote would have negligible impact on the local or regional population.

### ***Alternative B – No Action***

There would be neutral effects on the coyote population, as no take of these species would occur through hunting activities as this is not permitted under this alternative. Impact would be limited to disturbance from existing hunters, however this will be limited as this species is most active at night when hunters are not using the refuge.

### **Opossum**

The Virginia opossum is Indiana's only native marsupial, meaning a mammal that raises its young in a pouch. Opossums spend a lot of time grooming and tend to eat any ticks that jump on them, so they help reduce the amount of ticks in the environment. Though many people think they look odd, opossums can provide a lot of benefits and are a unique member of Indiana's wildlife community.

Opossums, because of their wide variety of eating habits, do not require special management techniques. There is a regulated hunting and trapping season for opossums. Dogs, coyotes, foxes, bobcats and owls will prey upon them. However, their slow travel pattern across highways probably spells doom to more opossums than any other cause.

### ***Alternative A – Preferred Action Alternative***

Estimated Hunter numbers: 5

Estimated Take: 3

Resident landowners and tenants can live-trap an opossum that is causing damage on their own property without a permit from the state. The opossum must be euthanized or released within the county of capture on private property for which you have permission to release the opossum. In order to prevent the spread of disease, the state encourages homeowners to safely and humanely euthanize caught opossums, if possible. In the 2014-15 Annual Statewide Fur Harvest and Value Survey 1,234 opossum pelts were harvested down from the 2013-14 harvest of 3,327 pelts (Rossler, 2016). Hunting opossum on the refuge does not include the use of trapping, the most common form of take. We allow the use of dogs when hunting, provided the dogs are under the immediate control of the hunter at all times. It seems likely that opening up the refuge to hunting opossum would have negligible impacts on the local or regional population. Opossum hunting on the refuge will only be allowed during normal hunting hours (1 hour before sunrise to 1 hour after sunset), no night time hunting will be allowed.

### ***Alternative B – No Action***

There would be neutral effects to the Opossum population found on the refuge as there would be no take that would occur under this alternative. Impact would be limited to disturbance from existing hunters, however this will be limited as this species is most active at night when hunters are not using the refuge.

### **Striped Skunk**

Striped Skunks live in a variety of habitats, but prefer forest edge. They are abundant on agricultural lands. They use abandoned woodchuck, muskrat, fox, or badger burrows, but often rest above ground during the warmer months. They also will use stumps, buildings, or rock/brush piles as den sites. This species is not a species of concern in Indiana as it is considered to be widely distributed in a variety of habitats, though population data is lacking. Skunks are omnivores (eat plant and animal material). They prefer to eat insects, particularly grasshoppers, beetles, and crickets. They also eat grubs and other insect larvae, and bees and wasps. When the opportunity arises they will take mice, rats, voles, shrews, young ground squirrels and rabbits, nesting birds, nestlings and bird/snake eggs. Due to their musk, they are not a preferred food item by most predators, but great horned owls, coyote, badger, fox, and bobcats take them when other food resources are scarce. Skunks help control insect and small mammal populations.

### ***Alternative A – Preferred Action Alternative***

Estimated Hunter numbers: 3

Estimated Take: 1

In Indiana, striped skunks are protected as Furbearers. Resident landowners or tenants may use legal methods, without a permit, to take skunk that is on their own property and damaging property or posing a health or safety threat. The state hunting season for striped skunk in 2019-20 is October 15-March 15<sup>th</sup> with no daily limit. In the 2014-15 Annual Statewide Fur Harvest and Value Survey 66 skunk were harvested down from the 2013-14 harvest of 111 pelts (Rossler, 2016). Hunting skunk on the refuge does not include the use of trapping, the most common form of take of skunk. We allow the use of dogs when hunting, provided the dogs are under the immediate control of the hunter at all times. There would be a negligible impact to local or regional skunk populations as few people are expected to hunt skunks on the refuge. Skunk hunting on the refuge will only be allowed during normal hunting hours (1 hour before sunrise to 1 hour after sunset), no night time hunting will be allowed.

### ***Alternative B – No Action***

There would be neutral effects to the skunk population found on the refuge as there would be no take that would occur under this alternative. Impact would be limited to disturbance from existing hunters, however this will be limited as this species is most active at night when hunters are not using the refuge.

### **Other Wildlife and Aquatic Species**

More than 279 bird species have been reported on the refuge and 120 of those are considered nesting species. A rich diversity of waterfowl, raptors and songbirds is commonly observed on the refuge. Wood Duck broods are common sightings in the spring and summer months. Waterfowl use days during the winter and spring migrations number in the thousands. A Bald Eagle nest has been active since 2002 and winter migrants are commonly seen. Muscatatuck National Wildlife Refuge is also known for the spring and summer migration of songbirds, especially warblers in May. The refuge was designated a Continentally Important Bird Area in June 1998. Whooping cranes also migrate through the refuge and have even started overwintering. The Refuge was a stopover site for the Whooping Crane Eastern Partnership (WCEP) ultralight-led Whooping Cranes annually from the fall of 2001 through the fall of 2007.

37 species of mammals, 44 species of amphibians and reptiles, 54 species of fish, 33 species of dragonfly and 24 species of mollusks among others are known to be present on the refuge. A complete list of bird species and a general guide to their seasonal occurrence and status on the refuge can be found in Appendix C of the Comprehensive Conservation Plan.

### ***Alternative A – Preferred Action Alternative***

Increased hunting may result in additional short-term disturbance to wildlife over a larger area, since additional units would be open to hunting as well as additional opportunities for hunting of new species. This disturbance may include temporary displacement of migratory and resident wildlife from foot traffic moving through the area.

Disturbance to other non-hunted wildlife under either alternative is minimal. Direct impacts to non-hunted migratory birds such as woodpeckers, raptors, and some songbirds including indigo buntings, red-winged blackbirds, nuthatches, finches, chickadees are negligible. Indirect impacts to this group of species are also minimal and do not appreciably reduce their numbers at the population level. Shorebirds and wading birds would not be impacted by hunting since, in most cases, they have already migrated through the area prior to the fall hunting season. Disturbance by hunting to non-hunted migratory birds would likely not have substantial negative indirect impacts because the majority of hunting does not coincide with the nesting season. Other disturbance to these species by hunters afield would be temporary in nature.

Migratory birds of prey (eagles, hawks, etc.) are on the refuge during most hunting seasons but disturbance is minimal. Disturbance to the daily wintering activities, such as feeding and resting, of residential birds might occur but are insubstantial because such interactions are infrequent and of short duration when they do occur. Areas around eagle nest are closed to hunting, so there would be neutral impact. Additionally, there is a possibility of conflict with birds of prey feeding on gut piles that may contain lead fragments. Research has indicated that lead is present in gut piles. As a way to mitigate this the refuge has a voluntary non-lead ammunition outreach program to encourage all hunters to use non-toxic ammunition. Additional impacts of use of lead ammunition can be found in the lead section.

Small mammals, such as voles and mice, are generally nocturnal or secretive. Both of these qualities make hunter interactions with small mammals very rare. Hibernation, or torpor, of cold-blooded reptiles and amphibians also limits their activity during most of the hunting season when temperatures are low. Hunters would rarely encounter reptiles and amphibians during most of the hunting season. Some species of butterflies and moths are migratory and will not be present for most of the refuge hunting season. Resident invertebrates are not active during cold weather and would have few interactions with hunters during the hunting season. Impacts to these species due to habitat disturbance related to hunting are negligible at the local and flyway levels.

Overall, hunting impacts to other wildlife and their habitats and impacts to the biological diversity of the refuge will be unsubstantial and negligible.

### ***Alternative B – No Action***

Impacts would be similar to those described in Alternative A (minimal, short-term disturbance related to increased human presence and noise associated with hunting). Under this alternative,

the harvest of big game and upland game may occur over a shorter period, concurrent with state hunting regulations. The likelihood of disturbance to non-target wildlife associated to hunting is likely to be less than other forms of refuge recreation.

### **Threatened and Endangered species and Other Special Status Species**

Two endangered and threatened species, Indiana bat and Northern long-eared bat, have ranges that overlap the refuge boundary. The range of the endangered Indiana bat includes most of the upper Midwestern United States from Oklahoma, Iowa and Wisconsin east to Vermont and south to northwestern Florida. The distribution of this species is greatest in cave-rich areas where there is suitable forested habitat. During the summer, the Indiana bat disperses over their entire range selecting old growth bottomland hardwood forests and riparian areas for feeding and reproduction (USFWS 2009a). Roosting bats and maternity colonies occur under the loose bark of dead standing trees and also under large bark scales on live shagbark hickory, kingnut hickory and water hickory trees, or other trees with loose, shaggy bark (USFWS 2008). Indiana bats have been documented on the refuge through mist net and acoustic surveys primarily between April and November.

The Northern long-eared bat has been listed as threatened and is known to occur in Union and Pulaski counties. The species has a broad range that expands from Maine to North Carolina on the Atlantic Coast, westward to eastern Oklahoma and north through the Dakotas, even reaching into eastern Montana and Wyoming. In Canada it is found from the Atlantic Coast westward to the southern Yukon Territory and eastern British Columbia. (USFWS 2016d). Northern long-eared bats spend winter hibernating in caves and abandoned mines. During summer, they roost alone or in small colonies underneath bark or in cavities or crevices of both live trees and snags (USFWS 2015b). Northern long-eared bats have been documented on the refuge through mist net surveys and acoustic surveys.

Whooping cranes observed in Indiana are the result of a restoration effort by the Whooping Crane Eastern Partnership, an international coalition of governmental agencies and private organizations to establish a migratory population of whooping cranes in the eastern United States. Since 2001, captive-bred whooping cranes have been taught to follow ultralight aircraft to teach them a migration route from central Wisconsin to the Gulf Coast of Florida. Until 2008, this route took them through Indiana, and free-flying birds regularly stop in Indiana during the fall and spring seasons. Other birds have been released in the company of older cranes from whom the young birds are expected to learn the migration route. Once led south, the cranes are able to migrate on their own, without assistance, in following years.

### ***Alternative A – Preferred Action Alternative***

A consultation pursuant to Section 7 of the Endangered Species Act was formerly conducted as part of this EA and the updated Hunt Plan. While a determination of “Not Likely to Adversely Affect species/critical habitat list species/critical habitat” was made for Indiana bat, Northern long-eared bat and whooping cranes as the proposed project is likely to cause “insignificant, discountable, or wholly beneficial effects to individuals and designated critical habitat” (Appendix C). At this time, no impacts are anticipated for state listed species.

### ***Alternative B –No Action***

No effect is expected under this alternative for any federally listed threatened or endangered species or their critical habitat.

### **Vegetation**

Approximately 69 percent (about 5,400 acres) of the refuge is covered by forests. Of this, about half of the refuge, or approximately 78 percent of the forested area (about 4,180 acres), is classified as one of several types of bottomland hardwood forest. Bottomland hardwood forests are a type of old deciduous forest that are temporarily or seasonally flooded and occur on wet soils and in floodplains. American beech and a variety of maple and oak species typically dominate bottomland forests while ash, sweetgum, river birch and sycamore can also be present. The remaining 15 percent of the forested area (approximately 1,210 acres) of the refuge is upland hardwood forest. Upland hardwood forest is also classified as an old deciduous forest type that primarily occurs in lowland or submontane habitats on soils that are unaffected by seasonal flooding. Varieties of oaks and maples typically dominate these forests while American beech and eastern red cedar can also be found (Sieracki et al. 2002).

Areas of grasslands totaling approximately 80 acres, including road edges, dam spillways and dikes, are mowed for maintenance purposes and, secondarily, for wildlife viewing along the auto tour route. The majority of these fields contain nonindigenous species such as fescue, timothy and orchard grass and clover with the remaining dominant grassland vegetation including native broadleaves, bluegrass, bluegrass-fescue, alfalfa-brome and panic grass. Fescue is the dominant species over much of the non-cultivated open area. A wide variety of wildlife utilize the grasslands including an abundance of small mammals, especially various mice and vole species, eastern cottontail rabbit, and larger mammals such as white-tailed deer and coyote, several snake species including black king snake, black rat snake, eastern garter snake, many raptor species including red-tailed hawk, and northern harrier, and a plethora of grassland birds.

### ***Alternative A and B***

Under both alternatives approximately 68% of the refuge would be open to hunting during the specified seasons. The only difference between the alternatives is addition of new species. In 2018 there were approximately 1000 hunting visits to the refuge and it is expected to increase to 1200 in 2019 based on new openings and expansion. The majority of visits will occur after vegetation is dormant during the fall and winter. Negligible effect is expected to vegetation from trampling of hunters, because of the low number of users and days of use expected.

### **Wetlands**

Wetlands cover roughly 70 percent of the refuge and much of this land floods annually. The majority of wetland habitat is bottomland hardwood forest (4,180 acres), and managed water units that include moist soil units, brood marshes, green tree impoundments, and Stanfield, Moss and Richart Lakes (approximately 1,260 acres), which were built between 1979 and 1982 with Bicentennial Land Heritage Program funds. The refuge also has more than 70 other small ponds and wetland areas included in the 1,260 acres referenced above; these were constructed by former land owners to be stock ponds or ponds near residences and are utilized by migratory birds and wildlife. Several seeps exist on the refuge, one of which is the Muscatatuck Seep Springs Research Natural Area. This wetland type is an acid seep spring that has only been

documented in seven other locations in Indiana, one of which was destroyed, making it extremely rare in the state. Examples of wildlife that use these wetlands include Wood ducks and hooded mergansers, which nest in the bottomland hardwoods, American bald eagle, copperbelly watersnake, river otter and many other species from all faunal assemblages.

### ***Alternative A and B***

Negligible impacts to wetlands are expected to occur in both alternatives. Impacts would be associated with use of habitat for hunting and as stated in the vegetation analysis this is not expected to have positive or negative impacts on the wetland ecosystem. Take of species associated with wetlands would result in negligible impacts as hunting take limits are monitored and set for long-term viability of a species which includes consideration of the impact on habitat. Executive Order 11990-Protection of Wetlands only applies if the refuge creates structures to support hunting in wetlands and will be evaluated on a project by project basis. As it stands now, there would be no impact to wetlands due to this proposed activity. See Appendix A for environmental compliance evaluation.

### **Floodplains**

The subwatersheds of Upper and Lower- Mutton Creek and Upper- and Lower Storm Creek, which cover 30,100 acres above the refuge, flow into the refuge. Approximately 8,525 acres of the Mutton Creek-Sandy Branch subwatershed, which includes the eastern portion of Seymour, also flows into the refuge. The annual floodplain of the Vernon Fork extends 2,000 to 3,500 feet into the refuge along its southern border. Annual floods inundate approximately 2,700 acres of the refuge.

### ***Alternative A and B***

Negligible impacts to resources related to function of the floodplain are expected to occur in both alternatives. Impacts would be associated with use of habitat for hunting and as stated in the wetland and habitat analyses this is not expected to have positive or negative impacts on the ecosystems functions. Take of species would result in negligible impacts as hunting take limits are monitored and set for long-term viability of a species, which includes consideration of the impact on habitat. No modifications will be made that will increase the floodplain elevation or negatively affect its function and value and thus there will be no impacts to E.O. 11988 – Floodplain Management. See Appendix A for environmental compliance evaluation.

### **Water Resources**

The refuge lies within a flat, relatively well-drained portion of the Wabash River Basin. Water flows away from the refuge down the Vernon Fork of the Muscatatuck River, into the Muscatatuck River, the White River and on to the Wabash River. Three small streams, Sandy Branch, Mutton Creek and Storm Creek, flow through the refuge and enter the Vernon Fork soon after leaving the refuge.

### ***Alternative A and B***

No effects to water resources related to water quality or quantity are expected as a direct or indirect result of increasing hunting opportunities and expanding access.

### **Affected Visitor Use and Experience Resources and Anticipated Impacts of the Alternatives**

The refuge is open to wildlife observation, photography, plant and animal product gathering and other public uses. In 2018, the refuge had 180,000 visitors use the refuge. Hunting brought 1,000 visitors to the refuge while fishing brought 7,000 and wildlife observation inspired 62,000 visitors to use the refuge. This visitor usage was spread across the entire year averaging out to approximately 493 people using the refuge per day.

In an effort to minimize conflicts with priority non-hunting recreational uses outlined in the Improvement Act and for public safety, the refuge designates areas open to hunting and enforces refuge-specific regulations. The boundaries of all lands owned or managed by the Service are posted with refuge boundary signs. Areas administratively closed to hunting are clearly marked with “No Hunting Zone” or “Area Beyond This Sign Close” signs.

#### **Alternative A – Preferred Action Alternative**

All other public uses on the refuge would not change and would continue to be managed as described in current plans. Overall, hunting impacts of Alternative A and B to visitor services or other recreation opportunities are considered short-term, minor and local since other parts of the refuge are available for use by non-hunters (other wildlife-dependent recreation users). Impacts between hunters and non-hunters are anticipated to be similar to the impacts between other user groups (i.e. like that between hikers and photographers) and will be negligible

#### **Alternative B – No Action**

Under this alternative, current refuge hunting opportunities for specific upland game, big game and migratory bird species would continue across the refuge. The refuge would continue to serve as habitat for fish and wildlife as well as provide outdoor recreational opportunities for all six priority wildlife dependent public uses – hunting, fishing, wildlife observation, photography, environmental education, and interpretation. Opportunities to create additional outdoor recreation experiences by adding additional species would be lost. So there may be less impacts between user groups than Alternative A, however in that alternative there is expected to be negligible impact. In this case, the impact would also be negligible, just to a lesser degree than alternative A.

In addition, the refuge’s ability to connect with certain segments of the public would potentially be diminished since hunting for some popular game species would not be permitted. Hunters would pursue these species off-refuge and thus the refuge’s ability to reach those members of the public and promote natural resources conservation, environmental education and natural resources stewardship may be more limited.

### **Affected Cultural Resources and Anticipated Impacts of the Alternatives**

The refuge has a rich cultural history that dates back to the Archaic (10,000 to 1,000 B.C.) and Woodland (1,000 B.C. to A.D. 1200) time-periods. Archaeological artifacts found on the refuge from this time-period can be found on display at the Glenn Black Museum at the University of Indiana in Bloomington, Indiana. The refuge has two national register archaeological sites, the Low Spur site and the Sand Hill site. They also have some more recent cultural history in two cemeteries, the Myers Cabin and barn. A full narrative of the cultural resources of the refuge can be found in the comprehensive conservation plan, chapter three.

### **Alternative A and B**

The Service is charged with the responsibility, under Section 106 of the National Historic Preservation Act of 1966, of identifying historic properties (cultural resources that are potentially eligible for listing on the National Register of Historic Places) that may be affected by our actions. The regional historic preservation officer advises the regional director about procedures, compliance and implementation of these and other cultural resource laws. The actual determinations relating to cultural resources are made by the preservation officer for undertakings on Service fee title lands and for undertakings funded in whole or in part under the direct or indirect jurisdiction of the Service including; those carried out by or on behalf of the Service; those carried out with federal financial assistance and those requiring a federal permit, license, or approval.

It is the responsibility of the refuge manager to identify undertakings that could affect cultural resources and coordinate the subsequent review process as early as possible with the preservation officer and state, Tribal and local officials. Also, the refuge manager assists the preservation officer by protecting archeological sites and historic properties on Service managed and administered lands, by monitoring archaeological investigations by contractors and permittees and by reporting Archaeological Resources Protection Act violations.

Neither alternative will likely have any positive or negative impacts to cultural resources. No buildings or structures exist on-site that are listed on the National Register of Historic Places. The refuge has two national register archaeological sites, however there will be no impact to these resources. Hunting is not expected to cause ground disturbance. Any activity that might cause an effect to a historic property would be subject to a case-by-case Section 106 review.

### **Affected Refuge Management and Operations Resources and Anticipated Impacts of the Alternatives**

#### **Land Use**

Despite changes that have occurred over the years, the refuge provides valuable habitat for migratory birds as well as numerous species of resident mammals, birds, reptiles, amphibians, and fish. The refuge lies in a predominantly agricultural landscape. Agricultural land constitutes 63.5 percent of the land area in Jackson County and 59.1 percent in Jennings County (FedStats 2002). Within this predominantly agricultural landscape, the developed area of Seymour, to the west of the refuge, is a notable exception. Forested lands and woodlots are scattered among the agricultural lands. Based on 2001 national land cover data developed by the Multi-Resolution Land Characteristics Consortium, the area within a 6-mile distance of the refuge is 61.8 percent agricultural, 10.8 percent developed, and 26.4 percent forested.

#### ***Alternative A and B***

The refuge will continue to engage in habitat management activities during the hunting season to ensure the refuge meets its other management objectives (see Habitat Management Plan). Impacts would be minimized by ensuring hunters, cooperators, and partners are aware of each other's activities and timed to minimize conflict when possible. No impacts are anticipated under Alternative A or B to habitat, buildings, infrastructure, traffic or roadways. A negligible increase to traffic on local or adjacent roadways is anticipated under Alternative A, with no increased cost or impacts to infrastructure.

### **Administration**

The hunting program is designed to be administered with minimal refuge resources. The costs of administering and enforcing the refuge hunting program comes out of the refuge's annual budget. Expenses include program management, staff resources, boundary posting, signage, brochures, parking lot construction, facility maintenance, gate installation, and other hunting specific activities.

Law enforcement of refuge and State hunting regulations, trespass and other violations associated with management of the refuge is the responsibility of a refuge law enforcement officer. Refuge officers cooperate with, and are assisted by, state and county officers as well as state conservation officers. Ongoing coordination and communication between refuge staff and law enforcement officers is conducted throughout the year.

### ***Alternative A – Preferred Action Alternative***

A minor increase in annual Law Enforcement operation, refuge management and administrations, biological monitoring and research is anticipated under Alternative A. This minor increase can be met with existing resources of the refuge and no additional funding will be needed. Staff will be able to meet other administrative needs of the refuge.

### ***Alternative B – No Action***

No additional increase in costs for administration, law enforcement, biological monitoring and research, or annual maintenance is anticipated for Alternative B.

## **Affected Socio-economic Resources and Anticipated Impacts of the Alternatives**

### **Environmental Justice**

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.

### ***Alternative A and B***

The Service has not identified any potential high and adverse environmental or human health impacts from this proposed action of any of the alternatives. The Service has identified no minority or low-income communities within the impact area. Minority or low income communities will not be disproportionately affected by any impacts from this proposed action or any of the alternatives.

### **Local and Regional economies**

Muscatauck National Wildlife Refuge is located in Jackson and Jennings Counties. These two counties are less racially and ethnically diverse than the state of Indiana as a whole. The county populations have a lower average income and a lower percentage of high school and college graduates than the state's population as a whole. The population estimate for the two counties was 71,619 in 2017. In 2016 manufacturing was the largest major economic sector in both counties accounting for 31 percent of the jobs in Jackson County and 26 percent of the jobs in Jennings County. The Second largest major economic sector in both counties was health care and

education with 18 and 19 percent respectively. Retail trade, transportation, and food services were also notable employment sectors (Data USA, 2017).

#### ***Alternative A – Preferred Action Alternative***

We anticipate greater visitation and expenditure under Alternative A. Although impacts to the local economy and regional economy are likely to have a negligible impact.

#### ***Alternative B – No Action***

No additional effects on the local and regional economy are expected to occur as visitation and expenditure is estimated to stay the same as today under this alternative.

### **Cumulative Impact Analysis**

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” (40 CFR 1508.7). Cumulative impacts are the overall, net effects on a resource that arise from multiple actions. Impacts can “accumulate” spatially when different actions affect different areas of the same resource. They can also accumulate over the course of time from actions in the past, the present, and the future. Occasionally, different actions counterbalance one another, partially cancelling out each other’s effects on a resource. But more typically, multiple effects add up, with each additional action contributing an incremental impact on the resource.

The sections below contain brief descriptions of each resource affected by the alternatives considered and anticipated direct, indirect and cumulative impacts on each resource.

### **Other Past, Present and Reasonably Foreseeable Activity Impacting Affected Environment**

#### **Hunting/Fishing**

Refuges, including Muscatatuck National Wildlife Refuge, conduct hunting programs within the framework of state and federal regulations. Population estimates of huntable species are developed at a regional, state and continental scale. Hunting frameworks and take limits are set based upon these estimates. The proposed refuge hunting program rules would conform to hunting regulations in the state of Indiana. By maintaining hunting regulations that are the same as or more restrictive than the state, individual refuges ensure that they are maintaining seasons which are supportive of management on a more regional basis. Such an approach also provides consistency with large-scale population status and objectives.

#### ***Alternative A – Preferred Action Alternative Impact***

The refuge would consistently coordinate with the state about the hunting program. Under the proposed action alternative, the refuge would allow the harvest of all species allowed by the state except coyote. By comparison, the state already allows general season hunts and depredation hunts for these species on lands surrounding the refuge.

The proposed hunts would have a negligible cumulative effect on regional and statewide wildlife populations as additional take is a small portion of take compared to the state level. Wildlife management of populations is important to ensure the health of the ecosystem. The refuge’s hunt program provides minor, additional beneficial impacts to the cumulative impacts of wildlife management in the state.

As a result, changes or additions to hunting on the refuge will have minor cumulative effects on wildlife species in Indiana. Although the preferred alternative would increase hunting opportunities compared to the no action alternative, only limited numbers of hunters would be allowed on the refuge at any given time. The slight increase in hunter activity will not rise to a substantial cumulative effect locally, regionally or nationally.

The proposed action would have minor impacts on the environment of other hunting opportunities locally, regionally or at the national level. The Service does not believe that increasing hunting opportunities on our land would decrease hunting opportunities on other lands near the refuge. Because trends of the number of hunters participating in the sport is declining we believe providing additional opportunities will potentially increase the numbers of hunters that utilize public land for hunting recreation. Private land hunting will not be impacted by the use of public land for hunting. Cumulative impacts of hunting on the refuge are likely negligible but could presumably result in more hunters participating in the sport over the long term having positive benefits for conservation.

#### **Other wildlife-dependent recreation (i.e. road and trail development and use)**

To support wildlife dependent recreation the refuge has defined public use access projects in their 2009 Comprehensive Conservation Plan (pg. 36). There is no network of roads or trails that are causing cumulative impacts to the area that are being developed solely to support wildlife-dependent recreation opportunities. However, some wildlife-dependent recreation is reliant upon existing county roads and trails for access.

#### ***Alternative A – Preferred Action Alternative Impact***

Wildlife dependent recreation in either alternative is a socio- economic driver locally, regionally or at the state level. Future development of trails or access to support all wildlife dependent recreational opportunities, not just hunting, on the refuge are not expected to have a cumulative impact on the environment. As projects are proposed they will go through additional environmental review.

#### **Development and Population Increase**

The City of Seymour is located just west of the Refuge, with Interstate 65 between the two as depicted in Figure 4 on page 11. U.S. Highway 50 passes across the northern boundary of the Refuge and continues west into the downtown Seymour. Because of this crossroads, the development of businesses along the U.S. 50 corridor west of the Refuge has increased steadily, and the northern and western sides of the Refuge have seen an increase in residential development. According to the U.S. Census, the population and number of housing units in both Jackson and Jennings Counties increased between 2000 and 2007. Both Jackson and Jennings Counties populations increased by just under 1,000 people, but the number of housing units in each increased by over 1,200 units in that same time period. These population and development increases bring additional concerns regarding impervious surfaces, increased traffic on roadways, additional water management needs, habitat loss and fragmentation, and increased visitation at the Refuge

#### ***Alternative A – Preferred Action Alternative Impact***

Because the refuge uses an adaptive management approach for its hunt program, reviewing the hunt program annually and revising annually ( if necessary), the Service's hunt program can be

adjusted to ensure that it does not contribute further to the cumulative impacts of population growth and development on migratory waterfowl and other wildlife.

### **Agricultural land uses**

Indiana is a leading producer of soybeans, corn and chicken. Agriculture is a part of the states major commodities and produces more than \$12 billion annually (Indiana Department of Agriculture 2018). Land that is currently farmed in Southern Indiana is not converting to developed land, however on an annual basis crop type could vary. This variation provides resources for wildlife but isn't consistent on a year to year basis.

### ***Alternative A – Preferred Action Alternative Impact***

The refuge will use an adaptive management approach for its hunt program to ensure that the refuge will only mitigate and not add to the impacts of potential decrease in agricultural land use, such as crop depredation from game species. For example, the refuge can adjust its season dates, bag limits, shooting hours, and other options to ensure that the population does not become over-abundant on the refuge and lead to increased bird mortality due to the spread of disease.

### **Use of lead ammunition/tackle**

Historically, the principal cause of lead poisoning in waterfowl was the collection of high densities of lead shot in wetland sediments associated with migratory bird hunting activities (Kendall et al. 1996). In 1991, as a result of high bird mortality, the Service instituted a nationwide ban on the use of lead shot for hunting waterfowl and coots (50 CFR 32.2(k)). The Service requires any new shot types for waterfowl and coot hunting to undergo rigorous testing in a three-tier approval process that involves an ecological risk assessment and an evaluation of the candidate shot's physical and chemical characteristics, short- and long-term impacts on reproduction in waterbirds, and potential toxic impacts on invertebrates (50 CFR 20.134). Because of this rigorous testing, the shot toxicity issue of the past is substantially less of an ecological concern.

There is a concern about the bioavailability of spent lead ammunition (bullets) and sinkers on the environment, endangered and threatened species, birds (especially raptors), mammals, and humans or other fish and wildlife susceptible to biomagnification. Lead shot and bullet fragments found in animal carcasses and gut piles are the most likely source of lead exposure (Kelly et al. 2011). Many hunters do not realize that the carcass or gut pile they leave in the field usually contains lead bullet fragments. Research continues on the effects of lead ammunition and the fragments it can deposit in killed game. Avian predators and scavengers can be susceptible to lead poisoning when they ingest lead fragments or pellets in the tissues of animals killed or wounded by lead ammunition. Lead poison may weaken raptors and increase mortality rate 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, College of Veterinary Medicine, at Washington State University from 1991 to 2008 it was found that 48% of bald eagles and 62% of golden eagles tested had blood lead levels considered toxic by current standards. Of the bald and golden eagles with toxic lead levels, 91% (bald) and 58% (golden) respectively, were admitted to the rehabilitation facility after the end of the general deer and elk hunting seasons in December (Stauber 2010).

Additionally, recent studies have found that wildlife hunted with lead ammunition can increase risks to human health due to the ingestion of lead (Hunt et. al 2009). While no lead poisoning of humans has been documented from ingestion of wild game, some experts, including the Center for Disease Control, have recommended the use of non-toxic bullets when hunting to avoid lead exposure and that pregnant women and children under six should not consume wild-game shot with lead ammunition. (Streater 2009). This recommendation comes after a study done in North Dakota found that those who ate wild game had significantly higher levels of lead in their blood than those who did not (Iqbal et. al 2009).

Use of lead ammunition is allowed under Indiana regulations for deer and some upland hunting, but many State wildlife areas along with federal refuges prohibit the use of toxic (lead) shot. Lead shot cannot be used to for migratory birds, upland game and wild turkey hunting on the refuge. Use of lead ammunition is permitted for big game muzzleloader hunts and hunting of small game species as defined by state regulations, although, non-toxic ammunition is recommended for all hunts on the refuge.

#### ***Alternative A – Preferred Action Alternative Impact***

The use of toxic shot for migratory bird hunting is prohibited, therefore there will be no cumulative impacts from the proposed action or the no action alternative. Additionally, hunters may only use approved non-toxic shot shells while hunting upland and big game minimizing the impacts of lead ammunition for shotgun hunting. Most hunters use shotguns to harvest upland game like furbearers however they can use some lead ammunition to support this use. Muscatatuck and other refuges within the Great Lakes Region have been educating hunters about the risk to wildlife from lead ammunition. Refuge staff provide information on websites, signage and through other means to ensure hunters have relevant information to voluntarily switch to lead ammunition. Under this alternative, the refuge represents a small portion of hunting that would allow the use of lead ammunition, as all shotgun hunters using scattershot are required to use non-toxic shot. Lead ammunition may be used by furbearer hunters, however they may also use shotguns to harvest species. In addition, there is limited estimated take of furbearers compared to take of these species (reference sections on furbearers for comparison of take to state level). Deer harvest numbers in the counties in which the refuge is located have remained stable or declined over the last decade. In 2018, there were 44 deer harvested from the refuge during the archery and muzzleloader seasons. In that same year, in the counties the refuge is located in 8,165 deer were harvested and 39,719 deer were harvested using muzzleloaders and archery at the state level (Caudell and Vaught 2019). The refuge accounts for approximately 1.3% of the harvest of deer in the counties the refuge is located in and only .11% of the deer harvest for muzzleloader and archery when compared to state totals in 2018. Method of take is not collected during harvest data collection, however it is estimated that of the deer harvest on the refuge 70% of it is from muzzleloader hunting and 30% would be from archery. Using this estimate there were approximately 31 deer harvested using muzzleloaders in 2018, or .38% of the state total (8,165, Caudell and Vaught 2019). Not all muzzleloader hunters utilize lead ammunition. Therefore, the continued allowance of lead ammunition for hunting of white-tail deer and some furbearer species on the refuge in alignment with state regulations will result in such a small addition of lead to the environment as compared to hunting in the local area and the state that the cumulative impacts of the proposed action will be negligible. Especially as

surrounding public hunting land also requires non-toxic shot use and recommends use of non-toxic ammunition. The Service's hunt program can be adjusted to ensure that it does not contribute further to the cumulative impacts of lead on refuge habitats or wildlife.

### **Climate Change**

Warming, whether it results from anthropogenic or natural sources, is expected to affect a variety of natural processes and associated resources. However, the complexity of ecological systems means that there is a tremendous amount of uncertainty about the impact climate change will actually have. In particular the localized effects of climate change are still a matter of much debate. In the Midwest, the effects are more frequent flooding and warmer overall temperatures (EPA 2016).

### ***Alternative A – Preferred Action Alternative Impact***

The proposed action is not anticipated to contribute to the impacts of climate change. Under both alternatives, the refuge would use an adaptive management approach for its hunt program, reviewing the hunt program annually and revising annually (if necessary), the Service's hunt program can be adjusted to ensure that it does not contribute further to the cumulative impacts of climate change on migratory waterfowl, upland game and big game.

### **Summary of Analysis**

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

### **Alternative A – Preferred Action Alternative**

As described above, this alternative will open existing refuge lands to hunting woodcock, dove, raccoon, red and gray fox, coyote, opossum, skunk, coot, duck, merganser and light and dark geese according to state seasons and regulation and expand hunting opportunities. As new lands are acquired, they will be open to all species identified in this plan after completing required compliance needs.

Additional opportunities are likely to attract more hunters, potentially impacting and leading to conflicts with other users. At this time we believe hunting use will not conflict with other visitor uses, and in the future if there is evidence of conflict, the impact will be mitigated. There is not likely to be an adverse effect on endangered or threatened species. Effects on wildlife and habitat would be negligible.

This alternative helps meet the purpose and needs of the Service as described above, because it provides additional wildlife-dependent recreation opportunities on the refuge meeting the Service's priorities and mandates. This alternative also helps align Service regulations with State regulations in an effort to making hunting more accessible and understandable by the American public. The Service has determined that the proposed action is compatible with the purposes of the Muscatatuck National Wildlife Refuge and the mission of the National Wildlife Refuge System. The Compatibility Determination is attached (see Appendix B, Attachment B). Because of this alternative, a minor amendment to the Comprehensive Conservation Plan was also completed (see Appendix B, Attachment C).

### **Alternative B – No Action Alternative**

As described above, this alternative would continue to offer hunting of upland game and big game on Muscatatuck National Wildlife Refuge, however does not provide more alignment with state regulations as hunting of woodcock, dove, raccoon, red and gray fox, coyote, opossum, skunk, coot, duck, merganser and light and dark geese would not be allowed. Hunting opportunities would be limited to those interested in only hunting species currently allowed for hunting on the refuge. Effects on wildlife and habitat would be negligible because there would likely be the same amount of use by hunters. This alternative also meets the purpose and needs of the Service as described above, because it would provide wildlife-dependent recreation opportunities for youth and people with disabilities. However, it does not allow for the variety of hunting opportunities that could be offered nor allow for alignment with state regulations where practicable.

### **Mitigation Measures and Conditions**

There are no additional mitigation measures required beyond what has been described above in Alternative A mitigation measures.

### **Monitoring**

Continued annual biological monitoring of both resident and migratory wildlife and their habitats is done on the refuge in conjunction with our state partners. An Inventory and Monitoring Plan was completed for the refuge in 2013. For additional information on monitoring reference that plan: <https://ecos.fws.gov/ServCat/DownloadFile/19535?Reference=20833>. In addition, the station will stay apprised on the status of threatened and endangered species on the refuge through consultation and local monitoring.

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

Indiana Department of Natural Resources

USFWS Personnel: Muscatatuck National Wildlife Refuge Staff, Brandon Jones, Kristin Rasmussen, and Cathy Nigg

### **List of Preparers**

Alejandro Galvan, Project Leader

Shane Baxter, Wildlife Refuge Specialist

### **State Coordination**

National wildlife refuges, including Muscatatuck Refuge, conduct hunting programs within the framework of state and federal regulations. All authorized hunts are regulated by the State of Indiana, but the refuge may elect to be more restrictive to support refuge management goals. The preferred alternative of this environmental assessment and the associated hunt plan have been reviewed and are supported by the Indiana Department of Natural Resources. The refuge has moved forward with developing an environmental assessment and hunt plan based upon coordination with the Indiana Department of Natural Resources.

The results of this coordination are reflected in this environmental assessment and hunt plan. Muscatatuck National Wildlife Refuge will continue to consult and coordinate with the Indiana Department of Natural Resources annually to maintain regulations and programs that are

consistent with the state; as well as, to monitor populations of game species and potentially set harvest goals. The refuge will strive to maintain consistent regulations with the state of Indiana whenever applicable.

### **Tribal Consultation**

Tribes and tribal members are welcome to provide comment during the public comment period. Formal tribal consultation was not required during this process as there are no federally recognized tribes active in Indiana to consult with.

### **Public Outreach**

Public input was sought regarding hunting and fishing opportunities on the refuge as a recreational opportunity several times over the last 10 years; as part of public outreach and open comment period during the planning stages for the 2009 Comprehensive Conservation Plan and the 2012 Habitat Management Plan and for the 2003 hunt plan.

On March 23, 2020 the Service released the draft 2020 Hunt Plan, draft environmental assessment, draft minor amendment to the Comprehensive Conservation Plan, final Section 7 and draft compatibility determination for public review. Members of the public were notified of the availability of the Draft documents through a press release posted on the Service website at <https://www.fws.gov/refuge/muscatatuck/> and through a statewide Indiana press release. A second press release was sent out to local newspapers in early May. All documents were available to the public for 60 days (Monday, March 23rd, 2020 through Friday May 15th, 2020) and extended through the Federal Register Public Comment Period for the 2020/2021 Proposed Hunt and Fish Rule that ended June 8th, 2020. The national notice in the Federal Register (Volume 85, Number 69; Docket Number FWS-HQ-NWRS-2020-0013, FXRS12610900000-201-FF09R20000) published on April 9, 2020. The public was encouraged to submit comments regarding the draft documents via email, by phone, or by mail.

Twenty-one comments were received through the local public comment period, and a total of 9 comments were received through the federal register. A summary of all comments received and the Service's response to those comments can be found in Appendix D, at the end of this document.

**Determination**

Within the spirit and intent of the Council of Environmental Quality's regulations for implementing the National Environmental Policy Act (NEPA) and other statutes, executive orders, and policies that protect fish and wildlife resources, it has been determined that:

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

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

**Submitted By:**

**ALEJANDRO GALVAN**

Digitally signed by ALEJANDRO GALVAN  
Date: 2020.07.15 08:18:53 -04'00'

Refuge Manager Signature and Date

**Concurrence:**

**CATHERINE NIGG**

Digitally signed by CATHERINE NIGG  
Date: 2020.07.20 14:01:42 -05'00'

Refuge Supervisor Signature and Date

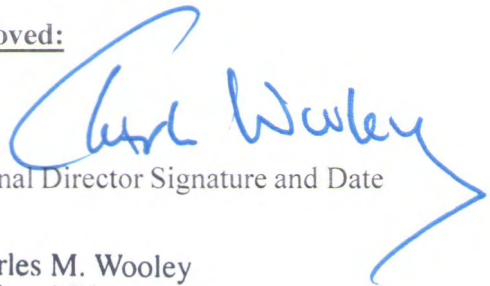
**Concurrence:**

**SUZANNE BAIRD**

Digitally signed by SUZANNE BAIRD  
Date: 2020.07.22 14:34:11 -05'00'

Regional Refuge Chief Signature and Date

**Approved:**



Regional Director Signature and Date

7/23/2020

Charles M. Wooley  
Regional Director

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## **Appendix A**

### **Other Applicable Statutes, Executive Orders and Regulations**

List any additional steps taken by the Service to comply with these laws. This should include steps that the Applicant has taken to comply with these laws that have additional impacts on the environment, including any applicable permits. It should also include any steps the Service has taken to meet its responsibilities to comply with these laws, but should be clear about whose responsibility and action it is, the Applicant's or the Service's. If a law is selected additional compliance was required.

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

Cultural resources will not be impacted under either alternatives proposed to meet the purpose and need for action. No additional compliance is required.

### **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)

Some temporary disturbance and displacement of wildlife may result from public hunting activities. Disturbances include potential of noise, trampling, destruction of habitat. These short term disturbances will be temporary. No critical habitat is currently found on the refuge. See Appendix 4 for full evaluation form.

### **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)

Natural resources will not be impacted under either alternatives proposed to meet the purpose and need for action. No additional compliance is required.

## **Appendix B**

### **Migratory Game Bird, Upland Game and Big Game Hunt Plan**

See separate attached document.

## **Appendix C**

### **Intra-Service Section 7 Biological Evaluation Form**

See separate attached document.

## **Appendix D**

### **Public Comment Analysis Report and Response to Comment**

On March 23, 2020 the Service released the draft 2020 Hunt Plan, draft environmental assessment, draft minor amendment to the Comprehensive Conservation Plan, final Section 7 and draft compatibility determination for public review. Members of the public were notified of the availability of the Draft documents through a press release posted on the Service website at <https://www.fws.gov/refuge/muscatatuck/> and through a statewide Indiana press release. A second press release was sent out to local news papers in early May. All documents were available to the public for 60 days (Monday, March 23rd, 2020 through Friday May 15th, 2020) and extended through the Federal Register Public Comment Period for the 2020/2021 Proposed Hunt and Fish Rule that ended June 8th, 2020. The national notice in the Federal Register (Volume 85, Number 69; Docket Number FWS-HQ-NWRS-2020-0013, FXRS1261090000-201-FF09R20000) published on April 9, 2020. The public was encouraged to submit comments regarding the draft documents via email to [Alejandro Galvan@fws.gov](mailto:Alejandro.Galvan@fws.gov), by phone, or by mail.

### **Nature of Comments Received**

Twenty-one comments were received through the local public comment period, and a total of 9 comments were received through the federal register. Of those comments, 18 were in support of opening the refuge to hunting while the remaining 12 were against opening the refuge to hunting. Three letters came from organizations while the remaining came from individuals. Of the comments three were substantive, however the refuge is using this chance to respond to all comments received based on topics derived from the comments.

### **Response to Comments by Topic**

#### **General Support of Hunting**

Eighteen comments were received in support of expanding hunting opportunities at Muscatatuck National Wildlife Refuge.

#### **Our Response**

In passing the Improvement Act, Congress reaffirmed that the Refuge System was created to conserve fish, wildlife, plants, and their habitats, and would facilitate opportunities for Americans to participate in compatible wildlife-dependent recreation, including hunting and fishing on Refuge System lands. We did not make any changes to the rule as a result of these comments.

#### **General Opposition to Hunting**

Twelve commenters expressed general opposition to any hunting in the Muscatatuck National Wildlife Refuge. In many cases, commenters stated that hunting was antithetical to the purposes of a “refuge,” which, in their opinion, should serve as a safe place from hunting.

#### ***Our Response***

Hunting is one of the six wildlife-dependent public uses of national wildlife refuges specifically encouraged by the National Wildlife Refuge System Improvement Act of 1997. Whenever a particular type of hunting is compatible with the Refuge’s purposes, goals and objectives, and

can be conducted in a sustainable manner, it may be permitted. The current administration is committed to expanding public access on public lands, and this proposal is executing on that directive by opening and increasing more access to hunting. Hunting and fishing are more than just traditional pastimes as they are also vital to the conservation of our lands and waters. The proposal also outlines a comprehensive revision and simplification of all refuge-specific hunting and fishing regulations to more closely match Indiana state regulations while continuing to ensure safe and compatible opportunities. Our agency worked closely with the state in preparing the proposed rule. The Refuge currently allows hunting for deer, turkey, rabbit, squirrel and quail. The proposed plan will add additional species but will remain in a similar footprint as the current big game hunting area which consists of 5,202 acres. Expanding hunting at the refuge allows us to align with the state regulations where appropriate. In general, we did not make any changes to the rule as a result of these comments. Some of these comments captured in this category had additional concerns and are addressed in further comment summaries and responses.

### **Take of coyotes for population control and sufficient analysis of environmental impacts of hunting coyotes**

One comment was specifically concerned about the take of coyotes for population control. The organization further provided science to show that hunting coyotes was ineffective for population control. The organization felt that the Service should not expand opportunities for hunting coyotes on Service lands and if we do that we must fully analyze the environmental impacts of that action.

#### ***Our Response***

The purpose of hunting coyotes on the Muscatatuck National Wildlife Refuge is not for population management control but to align with the Indiana Department of Natural Resources who has the trust responsibility to manage this species. Hunting coyotes on the Refuge is more restrictive than the state season as they would only be allowed to be taken by permitted deer hunters during the deer seasons and during refuge open hours (no night hunting).

The Service works closely with our State partners in managing hunting and fishing programs on refuge lands. The Service generally allows hunting or fishing of wildlife on refuges and hatcheries consistent with State regulations, including seasons and bag limits. Refuge-specific hunting and fishing regulations can be more restrictive (but not more liberal) than State regulations and often are more restrictive in order to help meet specific refuge objectives. Our authority to do so stems from the Administration Act, as amended, which states, “when the Secretary [of the Interior] determines that a proposed wildlife-dependent recreational use is a compatible use within a refuge, that activity should be facilitated, subject to such restrictions or regulations as may be necessary, reasonable, and appropriate” (16 U.S.C. 668dd(a)(3)(D)), and “[r]egulations permitting hunting or fishing of fish and resident wildlife within the [Refuge] System shall be, to the extent practicable, consistent with State fish and wildlife laws, regulations, and management plans” (16 U.S.C. 668dd(m)). The Service refers to the State Game and Fish Agency to monitor populations of these species and implement any adjustments to future harvests as needed under the existing state regulations to ensure sustainable populations and minimize cumulative impacts.

As a result, of this comment the evaluation of impacts of coyote hunting was clarified. The removal of a few individuals from the population of coyotes will not result in impacts to the biological integrity of the refuge. As the organization summarized coyotes can provide ecosystem benefits to rodent communities, indirectly benefit ground nesting birds from smaller mesocarnivores, and help with floral production by decreasing deer herbivory. However, the remove of a few individuals from the coyote population will not prevent these ecosystem functions from occurring on the refuge. Coyote hunting by permitted deer hunters will continue to be opened as part of this rule.

### **Use of Muzzleloaders.**

One comment was concerned with the use of muzzleloaders for hunting on the Refuge. The commenter raised questions regarding disturbance to wildlife and toxic smoke cause by the use of muzzle loading weapons. The commenter also stated that muzzleloading firearms present risk of injury to the hunters themselves.

### ***Our response***

Muzzleloading shotguns are allowed for use in hunting waterfowl and upland game in the State of Indiana, but not muzzleloading rifles or pistols. The current hunting program allows muzzleloading rifles for hunting deer on the Refuge. The commenter raised questions regarding disturbance to wildlife and toxic smoke cause by the use of muzzleloading weapons. We believe the effects to both hunted and non-hunted species on Muscatatuck NWR as a result of use of muzzleloading firearms would be negligible, for the following reasons:

- The percentage of hunters that use muzzleloaders nation wide is low. The 2016 National Survey of Hunting and Fishing reported that 12 percent of all hunters reported using muzzleloaders. Therefore the number of hunters on the refuge using muzzleloaders would be expected to be very small.
- Noise produced by muzzleloading and modern rifles and shotguns of the same caliber and barrel length are similar in decibel range (approximately 150-160 dB for shotguns). However, the noise produced by these weapons has quite different characteristics. Black powder used in muzzleloaders makes a much lower frequency noise of longer duration. Smokeless cartridges used in modern firearms have a faster burn, which gives a much higher pitched noise, much shorter. The high pitched crack of modern firearms is much more damaging to hearing, and likely more disturbing to wildlife than the lower-pitched sound of black-powder weapons.
- Muzzleloading weapons have a shorter effective range and require a closer approach to game than needed if using modern firearms. In addition, the long reloading time of muzzleloaders (approximately 30 seconds) means that hunters typically wait for better opportunities, and fewer shots are fired.
- Muzzleloaders use a variety of propellants, including black powder, a mixture of potassium nitrate, charcoal, and sulfur. Black powder does produce relatively large quantities of smoke when fired. If combustion of black powder is complete, smoke would contain primarily nitrogen and carbon dioxide. However, since combustion is incomplete, black powder combustion produces hydrogen sulfide, sulfur oxides, carbon monoxide, and nitrogen oxides (Del’Aria and Opperman 2017). These compounds are toxic if breathed in high concentrations, however in field conditions encountered when hunting,

black power smoke disperses rapidly. Total amounts produced as a result of hunting activity, and therefore effects to wildlife would be negligible.

- Whooping Cranes do occasionally stop at the Muscatatuck National Wildlife Refuge during their migration. Although they have been seen in other areas of the Refuge, they usually roost in the waterfowl sanctuary that is closed to the public and feed in the adjacent off refuge agricultural fields. An Endangered Species Act Section 7 consultation was conducted and it was determined that the proposed alternative is not likely to conflict with recovery and/or protection of these species. The commenter also stated that muzzleloading firearms present risk of injury to the hunters themselves. Muzzleloaders do take significantly more knowledge to operate than modern firearms, and involve greater risk. However, A Political and Social Research Firearm Injury Surveillance Study, which accumulated data from 1993 to 2008, reported that firearm-related incidents (all firearms) occurred in only 9 per 1 million hunting days (Loder and Farren 2014). In 2017 there were over 17 million hunters with firearms according to the NSGA (National Sporting Goods Association), and only 35 injuries occurred per 100,000 participants, of which a vast majority were non-serious injuries (Target Tamers 2020). Thus, while hunting with any type of firearm involves risk, overall it is an extremely safe activity. Under the current hunting program, the refuge has held a muzzleloader deer hunt for over 25 years with no known injuries caused to hunters from the use of muzzleloader rifles.

### **Impacts to Whooping Cranes**

A total of three comments mentioned concerns about impacts of hunting on whooping cranes.

#### ***Our response***

Through the Intra-Service Section 7 consultation impacts to whooping cranes were evaluated. It was determined that whooping cranes would not likely be adversely affected from expanding hunting opportunities on Muscatatuck National Wildlife Refuge and they would still be present on the refuge for roosting activity. Whooping cranes may be present on the refuge during hunting seasons and increased hunting as proposed in the revised plan may result in additional disturbance to whooping cranes since the refuge would be open for additional opportunities for hunting of new species. However, the refuge does not anticipate a major change in levels of hunting use historically seen on the refuge as most new species would be hunted concurrently with current hunting seasons. Although they have been seen in other areas of the Refuge, they usually roost in the waterfowl sanctuary that is closed to the public and feed in the adjacent off refuge agricultural fields. The cranes are highly monitored and actions will be taken to avoid disturbance to known bird locations. These monitoring activities include direct observation of cranes, consultation with state and Service species specialists, and review of current species survey information and research.

### **Impacts to Indiana Bat**

One comment had concerns about impacts of hunting on the Indiana bat.

#### ***Our response***

Through the Intra-Service Section 7 consultation impacts to Indiana Bats were evaluated. It was determined that Indiana Bats would not likely be adversely affected from expanding hunting

opportunities on Muscatatuck National Wildlife Refuge. Increased hunting as proposed in the revised plan may result in additional disturbance to Indiana Bats since the refuge would be open for additional opportunities for hunting of new species. However, the refuge does not anticipate a major change in levels of hunting use historically seen on the refuge as most new species would be hunted concurrently with current hunting seasons. Indiana Bats would still be present on the refuge through October, but are expected to be in hibernation during the most popular hunting times on the Refuge for deer and waterfowl which occur in the winter months from November through January.

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