

# Public Notice

## *Wallkill River National Wildlife Refuge*

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For Immediate Release

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### **Hunt plan proposed for Wallkill River National Wildlife Refuge, opportunity for public comment**

The U.S. Fish and Wildlife Service has released, for public review, a hunt plan and draft environmental assessment (EA) proposing to expand hunting opportunities within Wallkill River National Wildlife Refuge (New York and New Jersey). The proposed hunt plan includes management actions that promote consistency with New York and New Jersey hunting regulations and were approved in the refuge's comprehensive conservation plan (CCP) in 2009.

The hunt plan and draft EA will be available for public review and comment for 30 days, through September 8 2014. The Service will consider all comments before completing a final EA for the proposed hunt. The document can be viewed online at [www.fws.gov/refuge/wallkill\\_river](http://www.fws.gov/refuge/wallkill_river).

The proposed hunt plan and draft EA would open up new lands to hunting, including portions of the refuge falling within the State of New York. The plan also includes the addition of small game and bear hunting on all portions of the refuge. Existing deer, migratory game bird and turkey hunts will continue under the proposed hunt plan.

Wallkill River National Wildlife Refuge was established to conserve and enhance populations of wildlife and their habitats, to protect and enhance water quality, and to provide opportunities for wildlife-dependent recreation and research. The refuge conserves the biological diversity of the Wallkill Valley by protecting and managing land, with a special emphasis on forest-dwelling and grassland birds, migrating waterfowl, wintering raptors, and endangered species. The North American Waterfowl Management Plan identifies the Wallkill River bottomlands as a priority focus area for waterfowl management within New Jersey.

The **U.S. Fish and Wildlife Service** works with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people. For more information, visit [www.fws.gov](http://www.fws.gov), or connect with us through any of these social media channels:



**ENVIRONMENTAL ASSESSMENT  
FOR  
WALLKILL RIVER NATIONAL WILDLIFE REFUGE  
HUNTING PLAN**

**WALLKILL RIVER NWR  
SUSSEX COUNTY, NEW JERSEY AND ORANGE COUNTY, NEW YORK**

United States Department of the Interior  
Fish and Wildlife Service  
Wallkill River National Wildlife Refuge  
1547 Route 565, Sussex, NJ 07461



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## **Chapter 1: INTRODUCTION**

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

The United States Fish and Wildlife Service (Service) is proposing to open additional areas of Wallkill River National Wildlife Refuge (NWR, refuge) for the hunting of big game, migratory bird, and small game species. Specifically, the Service seeks to open hunting on New York portions of the refuge, to include big game, migratory birds, small game, and furbearer hunting; and to add small game and bear hunting opportunities on portions of New Jersey lands. These changes will provide the public with additional recreational opportunities, and give managers added flexibility in managing wildlife populations to promote habitat health and species diversity.

The National Wildlife Refuge System Improvement Act of 1997 (P.L. 105-7), signed into law by President Clinton on October 9 of that year, identified hunting as one of six priority public uses of the National Wildlife Refuge System (Refuge System). These public uses are to receive priority consideration in the planning and management of refuges, and those uses deemed compatible with refuge purposes should be facilitated.

The refuge's Comprehensive Conservation Plan (CCP) was approved in February 2008, and called for continuing the deer, turkey, and migratory bird hunts on existing refuge lands; for opening the refuge to bear hunting in accordance with New Jersey State regulations; and for opening Service-owned land in the expansion area to public hunting when appropriate conditions exist. Through this process, it was determined that hunting for deer, turkey, woodcock, migratory bird, and black bear is compatible with refuge purposes. In 2011, the refuge acquired property in New York falling outside of the permanent no-hunting area maintained at the Liberty Loop impoundments. Opening these lands to hunting supports the CCP's intention to open Service-owned land in the expansion area to public hunting when appropriate.

The proposed activities are compatible with the purposes for which Wallkill River NWR was established, and with Service policy regarding hunting on national wildlife refuges. All hunts will be conducted in accordance with New Jersey and New York State and Federal regulations as appropriate. The purpose of this Environmental Assessment (EA) is to evaluate the feasibility of expanding the hunting opportunities on the refuge, and to analyze the subsequent environmental consequences.

### **National Wildlife Refuge System Mission**

The Refuge System's mission 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.

### **Purposes of Wallkill River National Wildlife Refuge**

Wallkill River NWR was first established by the Director in an administrative decision document on March 9, 1990. Congress later enacted Public Law No. 101-593, 104 Stat. 2955 on November 16, 1990, to confirm the establishment of the 7,500-acre refuge along a 9-mile stretch of the Wallkill River by special legislation. The approved CCP expanded the refuge acquisition

boundary to 17,050 acres reaching into the townships of Wantage, Vernon, Frankford, and Hardyston in New Jersey, and Warwick and Minisink in New York. The purposes of the refuge are to:

“...preserve and enhance the refuge’s lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations;”

“...conserve and enhance populations of fish, wildlife, and plants within the refuge, including populations of black ducks and other waterfowl, raptors, passerines, and marsh and water birds;”

“...protect and enhance the water quality of aquatic habitats within the refuge;”

“...fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats;” and,

“...provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation (104 Stat. 2955).”

#### **Applicable Authorities and Direction**

The National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (16 U.S.C. §668dd et seq.) (Improvement Act) provides authority for the Service to manage the refuge and its wildlife populations. In addition, it declares that compatible wildlife-dependent public uses are legitimate and appropriate uses of the Refuge System and are to receive priority consideration in planning and management. Six wildlife-dependent public uses were identified in the law: hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation. The Improvement Act directs managers to increase recreational opportunities including hunting on national wildlife refuges when compatible with the purposes for which the refuge was established and the mission of the Refuge System.

Management of Wallkill River NWR is guided by a CCP developed and approved in 2008 (USFWS 2008), which identifies the following long-term natural resource management goals:

**Goal 1: Protect and enhance habitats for Federal trust species and other species of special management concern, with particular emphasis on migratory birds and bog turtles.**

**Goal 2: Promote actions that contribute to a healthier Wallkill River.**

**Goal 3: Increase or improve opportunities for hunting, fishing, environmental education, interpretation, wildlife observation, and wildlife photography.**

**Goal 4: Cultivate an informed and conservation-educated public that works to support the refuge purposes and the Refuge System's mission.**

**Regulatory Compliance**

Concurrence on a Federal Consistency Determination from the State of New Jersey, Division of Fish and Wildlife (NJDFW); and the State of New York, Department of Environmental Conservation (NYSDEC) will be sought. Intra-service consultation for compliance with the Endangered Species Act (ESA) will also be sought.

**Preparers and Reviewers**

The wildlife biologist and refuge manager for Wallkill River NWR prepared this EA. Reviewers included the refuge manager and subject matter specialists in the Service's Regional Office located in Hadley, Massachusetts.

## **Chapter 2: ISSUES, CONCENS, AND OPPORTUNITIES**

### **Public Involvement and Participation**

A draft version of this EA and related documents will be made available to the public for their comment and participation for a 30-day public comment period. Copies of this document will be published on the Wallkill River NWR Web site: <http://www.fws.gov/northeast/wallkillriver>, and made available at the Wallkill River NWR office. A news release alerting the public to the public comment period will be carried by the local papers and will be posted at the refuge for the duration of the comment period.

### **Issues, Concerns and Opportunities**

Refuge staff, in consultation with local municipalities and species experts, identified concerns and opportunities to be addressed in evaluating the various management alternatives considered.

#### Issues and Concerns

*How will the alternatives affect the natural vegetative communities on the national wildlife refuge?*

Refuge hunt regulations prohibit the trimming, cutting, or alteration of habitat. In the 20 years that the refuge has been open to hunting, little to no damage to vegetative communities has been noted and we anticipate no additional impacts. Under the preferred alternative, we estimate that new hunting opportunities may result in the sale of approximately 64 new hunt permits, or a 12 percent increase in current use. Some trampling of plants and habitats may occur; however, since fall and winter hunt seasons coincide with dormant, non-flowering seasons, we expect that damage to plants would be minimal. Hunters are likely to use existing trails to access hunt areas, and the expected amount of off-trail traffic should not result in adverse impacts to natural vegetative communities.

Most of the impact to vegetative communities on the refuge results from white-tailed deer. An overabundance of deer can adversely affect natural communities by their excessive browsing on native plants, resulting in reduced habitat productivity. Such browsing may hamper growth of some plant species, and result in their under-representation in the community. All alternatives considered incorporate the hunting of white-tailed deer.

*How will the alternatives affect public safety?*

All alternatives consider the use of public hunting as a recreational opportunity, as well as a tool to help manage deer density. The use of firearms associated with hunters could pose a safety risk if handled improperly. Safety zones will be established and enforced surrounding occupied buildings, parking areas, and refuge trails as per State regulations, and notice of the active hunt season(s) will be posted on all refuge kiosks and Web site to inform the public. The refuge will maintain permanent no-hunting zones at the Liberty Loop impoundments and at Owens Station Crossing (high public use areas).

*How will the alternatives affect game populations?*

The refuge's planning process seeks to maintain game populations consistent with the States' respective species management plans. The States of New Jersey and New York (the States) annually evaluate harvest and hunter effort data to set bag limits that will allow recovery, conservation, and habitat management targets to be met. The refuge will monitor the impact of the hunt on game populations, and will make refuge-specific adjustments if necessary to ensure that wildlife populations and habitats remain at healthy and stable conditions.

*Why is the refuge considering a bear hunt?*

The States have recognized that the bear population continues to increase, resulting in bear-human conflicts. The States have determined that a bear hunt provides an effective, low-cost means for controlling the population without threatening its sustainability. The refuge includes approximately 6,000 acres of land that has previously been closed to bear hunting and thus has not contributed to the States' efforts to control the bear population. Bear and bear sign are frequently found on the refuge in numbers consistent with off-refuge populations. Since the refuge's wildlife management objectives are broadly consistent with those of the States, we are seeking to offer a policy and approach to support their management objectives.

*How will species of concern, including threatened and endangered species, be affected?*

The goal of the refuge hunt plan is to have the least impact possible on threatened and endangered species. Impacts to bog turtles would be limited by closures and restrictions surrounding bog turtle habitats. No impacts would accrue to the Indiana bat, which hibernates from October through April and is inactive during daylight hours. Any impacts to other resident and migratory wildlife would be brief and infrequent.

*How will the alternatives influence the availability of other recreational opportunities on the refuges including wildlife viewing?*

We do not expect that hunting (which was historically done in this area) will adversely impact other recreational activities. Areas open to hunting will be evaluated on an annual basis with closures around public use areas (i.e., safety zones) and will be regulated by the issuance of permits. Permanent no-hunting zones will be maintained at the Liberty Loop impoundments and at Owens Station Crossing, which will preserve recreational opportunities for non-hunters wishing not to encounter hunting activities.

*What will the effects be on non-game migratory birds?*

Brief disturbances to migratory birds may occur due to hunter travel and the sound of gunshot. The September and October dove, rail, moorhen, and gallinule seasons most coincide with the migration season, though the majority of birds will have completed their migrations before other firearm-based seasons open in mid-October. The amount of disturbance likely to occur during this timeframe is not expected to detrimentally impact birds' abilities to complete their migrations, especially given that hunting is currently conducted on neighboring lands.

*How will other public and conservation lands be affected?*

The Appalachian Trail crosses the refuge at the Liberty Loop Trail, and the Trust for Public Land (TPL) owns parcels within the refuge acquisition boundary, which are managed by the refuge

under a cooperative agreement. Effects on these properties would be commensurate with those experienced by other refuge visitors and neighbors, and are not expected to produce noticeable impacts.

*Is there an economic benefit to any of the alternatives?*

All alternatives incorporate hunting as a management tool and a recreational opportunity. All alternatives will bring hunters to the area who will need lodging, food, fuel, and supplies, thereby benefitting the local economy. There is expected to be little additional benefit from the most liberal recreational alternative, as the numbers of additional hunters brought to the refuge is not expected to be significant.

*How do the cost of the alternatives compare to each other?*

The alternatives proposed range in cost from \$50,000 to \$75,000.

*How will refuge neighbors be affected?*

All the alternatives include the potential for disturbance to neighbors in the form of audible gunshot. Under alternatives B and C, neighboring properties may hear some additional gunshot. Alternative C would likely produce the greatest amount of audible disturbance, as it would allow both night hunting and the use of dogs for the hunting of small game.

#### Opportunities

Opening the refuge to hunting as per NJDFW and NYSDEC game regulations will increase the recreational opportunities offered to the hunting public, and will assist the States in meeting their management goals for species such as deer and bear.

Opening New York lands to hunting will permit the regulation of a deer population that is currently causing depredation damage to the crops of neighboring farmers. In this way, the opening of these lands will help to establish and maintain good relationships within the community. Opening these lands will also help mitigate other deer-human conflicts, such as vehicle collisions and damage to gardens.

Opening New York lands to hunting will create an opportunity for New York residents to hunt on the refuge without the need for a New Jersey hunting license.

Opening the refuge to bear hunting will help reduce bear-human conflicts, such as damage to crops, gardens, and personal property.

### **Chapter 3: ALTERNATIVES INCLUDING THE PROPOSED ACTION**

Based on the issues, concerns, and opportunities identified to date, refuge staff expertise, and consultation with those experienced in wildlife management, the refuge identified a series of alternatives to consider in addressing management of hunting-related opportunities on Wallkill River NWR.

#### **Features Common to All Alternatives**

Regardless of an alternative considered, there are minimum requirements to which all alternatives adhered:

1. All alternatives were subject to Inter-agency consultation to ensure all requirements of the ESA are fulfilled.
2. Cultural resources will be protected, and no net loss of wetlands will occur.
3. Alternatives are designed in such a way as to protect public safety.

Refuge units would be opened to hunting in a manner consistent with public safety and the provision of quality hunting opportunities. There would be no hunting within the permanent no-hunting area at the Liberty Loop impoundments. Safety zones around public use areas such as trails and parking areas would minimize conflicts between hunters and other recreational visitors. The public would be informed of the hunt dates through posting of information on the refuge Web site and kiosks, and also through the States' respective annual Hunting and Trapping guides.

Trapping for recreational purposes will not be allowed. No stocking of game will occur. Once refuge lands are opened to hunting, refuge staff will monitor hunt-related impacts to these lands and reserves the right to close properties or impose restrictions if needed.

#### **Alternative A: No Action Alternative**

No action means that no change from current management practices would occur. Hunting of deer, turkey, and migratory birds would continue on approximately 5,000 acres in New Jersey portions of the refuge. No hunting would be allowed within New York. The refuge would be open to hunting from September through late January, and again during the spring turkey season. Under current conditions, approximately 534 permits are sold annually to deer, turkey, and migratory bird hunters. Exact numbers of harvested game are not available, though we estimate that on average 72 deer, 61 turkey, 937 ducks, 893 geese, and 44 woodcock are harvested off the refuge each year.

The total annual cost of administering the refuge hunt program would be approximately \$50,000. This amount reflects staff costs, hunt-related materials, maintenance of parking areas and signs, and administration of hunt permits.

### **Alternative B: Hunting of Game Generally Following State Regulations, with Some Restrictions (Preferred Alternative)**

This is the Service's preferred alternative. We believe it provides the best balance between public safety, priority public uses, and wildlife management goals. This alternative would generally allow for hunting of species covered by New Jersey and New York's respective hunting regulations, but would incorporate regulations that protect against disturbance to wildlife and neighboring private landowners resulting from hunting activities. Annual changes or restrictions would be outlined in the annually issued refuge regulations.

Portions of the refuge would be open to hunting for the better part of 9 months out of the year, though most hunting would occur between September and January. Restrictions common to both States include the permitted use of dogs for waterfowl and woodcock only, and a prohibition on the use of dogs during upland game and big game hunting. Night hunting of upland game is also prohibited. These restrictions are in place to protect both refuge resources and to mitigate social conflicts with non-hunters and refuge neighbors. Dogs may yield significant disturbance to non-target wildlife, and hunting may represent potential conflict with bog turtle management, especially where dogs may be used to flush upland game from shrubby habitats where hunters would not desire to go. Dogs represent a potential predator for bog turtles, and human disturbance has been shown to cause local extinction of turtle populations when wilderness areas are opened to human recreation (Garber and Burger 1995). In order to prevent conflicts in bog turtle habitats, the refuge will prohibit the use of dogs for anything other than waterfowl and woodcock hunting (waterfowl habitats are not likely to be suitable for bog turtles, and the use of retrieval dogs for this purpose represents little threat). Were the use of dogs to be allowed, the long and linear nature of the refuge, and its close interspersions with private properties, would produce a high likelihood that dogs may frequently venture off-refuge onto private properties and yield trespass issues for owners attempting to retrieve them. Night hunting will be prohibited to limit wildlife disturbance and to ensure consistency with existing refuge policies, which close the refuge to public access from sunset to sunrise. These restrictions (in addition to their biological justification) will ensure consistency with existing refuge policies and limit disturbance to neighbors from dogs.

Additional restrictions within the State of New Jersey include a restriction on the hunting of woodchuck prior to July 15, and to rimfire-only rifles. The woodchuck hunting season coincides with the nesting and breeding seasons of birds, and the date restriction resolves this potential disturbance conflict with grassland nesting birds. The limitation of rimfire-only rifles in woodchuck hunting limits the potential for conflict and disturbance to refuge neighbors and non-hunting visitors, and increases safety for private property owners living adjacent to huntable refuge lands.

Additional restrictions within the State of New York include no Sunday hunting; no hunting of reptiles and amphibians; and no falconry hunting. Sunday hunting will be prohibited so as to facilitate consistency across the entire refuge (New Jersey law prohibits Sunday hunting). The prohibitions of amphibian and turtle hunting, and of hunting with falcons, will facilitate consistency across the entire refuge (New Jersey has no analogous game laws), limit disturbance

to wildlife occurring within or near the refuge's impoundments (proximate to New York lands), and limit disturbance to nongame, nontarget wildlife.

The total annual cost of administering the refuge hunt program would be approximately \$60,000. This amount reflects increased responsibilities and costs for maintaining a more complex hunt program. Extra costs include salaries for administrative and law enforcement personnel, creation and distribution of hunting information, permit fee administration, transportation, monitoring, signing, and other miscellaneous expenses.

**Alternative C: Hunting of All Game as Allowed by New Jersey and New York Regulations, Respectively**

Under this alternative, refuge lands would be open to hunting as per New Jersey and New York's respective hunting regulations. Permanent no-hunting areas would be maintained at the Liberty Loop impoundments and Owens Station Crossing.

This alternative would provide for maximum recreational hunting opportunities. Hunting would follow the seasons specified by the State of New Jersey and the State of New York. The refuge would be open to hunting nearly year-round.

The total annual cost of administering the refuge hunt program would be approximately \$75,000. This amount reflects increased responsibilities and costs for maintaining a more complex hunt program that includes Sunday hunting (New York lands only), night hunting, hunting with dogs, and falconry. Extra costs include salaries for administrative and law enforcement personnel, creation and distribution of hunting information, permit fee administration, transportation, monitoring, signage, and other miscellaneous expenses.

## **Chapter 4: AFFECTED ENVIRONMENTS**

This chapter describes the physical, cultural, socioeconomic, biological, and administrative environments of the Wallkill River NWR. It relates those resources to refuge goals and key management issues, and provides context for the management direction outlined by the CCP.

### **Location**

The refuge is located approximately 60 miles northwest of New York City, in northeastern Sussex County, New Jersey (Wantage, Hardyston, Frankford, and Vernon Townships), and in southern Orange County, New York (towns of Minisink and Warwick). The refuge headquarters is in Vernon Township, New Jersey.

### **A. Physical Resources**

#### **Climate**

The average temperature of the area is approximately 48 degrees Fahrenheit, with high temperatures in July around 85 degrees and low temperatures in January around 15 degrees. Average annual precipitation measures between 43 and 47 inches (Office of the New Jersey State Climatologist 2011).

#### **Geology**

The Wallkill River watershed was formed at the end of the Pleistocene Epoch, during the last glaciation event. Melting water from retreating ice sheets formed massive glacial lakes. Their bottoms received extensive deposits of organic matter that is the source of the region's fertile "black dirt." (U.S. Fish and Wildlife Service 1997)

The refuge lies in the Upper Wallkill River Valley Habitat Complex. A 1997 report, "Significant habitats and habitat complexes of the New York Bight watershed," by the Southern New England - New York Bight Coastal Ecosystems Program, describes that habitat complex as being in a rolling valley in the Appalachian Ridge and Valley physiographic province between the Kittatinny Ridge to the west and the Hudson Highlands to the east. That valley is part of the Great Valley, which extends from Canada to the southern United States. Elevations in the complex range from sea level to 200 meters (650 feet) above sea level. Limestone, dolomites, and shales underlie the valley. Metamorphic, crystalline rocks such as gneisses and schists compose the Highlands. The Kittatinny Ridge is composed of sandstones and conglomerates. The terminal moraine of the Wisconsin glacier crosses the valley well south of the habitat area near the Delaware River. A recessional moraine crosses the valley just south of the habitat complex from Ogdensburg west to Culvers Gap. Glacial lake sediments underlie the major wetlands in the complex, including the Wallkill River bottomlands and the upper Wallkill River between the Highlands and Pimple Hills, Papakating Creek, Crooked Swamp, and Wildcat Brook (U.S. Fish and Wildlife Service 1997).

#### **Soils**

The Wallkill River valley, previously a mix of wetland types, was cleared and drained during the 1700's and 1800's. The valley's fertile Carlisle muck soils were highly desirable for farming. Before being drained, those diverse wetlands supported many nesting and wintering waterfowl. Soil maps from the Sussex County Soil Conservation District and Planning Board indicate that "prime farm land" soils, specifically Washington, Wooster, and Riverhead loams, are scattered throughout the refuge. Unique soils include Carlisle muck and Wallkill silt loam, both very productive, which cover large areas in the refuge boundary.

### **Lakes and streams**

The current refuge boundary straddles a 9-mile stretch of the Wallkill River. The Papakating Creek is a major tributary which flows into the Wallkill River approximately 0.6 miles west of refuge Headquarters, or 2.5 miles north of the refuge's southernmost boundary. The acquisition boundary approved in 2009 encompasses a large portion of the Papakating Creek watershed.

### **Refuge infrastructure**

The land that now makes up the refuge was largely in agriculture before being incorporated into the refuge. Dairy farming and row crops were the principle means of farming. Due to the linear nature of the refuge, there are several miles of paved roads running south to north and crisscrossing east to west around and through the refuge with three bridges crossing the Wallkill River along these public roads. As a holdover from the farming days, there are numerous farm and tractor roads throughout the refuge. Some of these have been incorporated into a trail system; the 3.7-mile Dagmar Dale Nature Trail and others are maintained as service roads for refuge staff use. Two abandoned rail beds transect the refuge. The former Lehigh-New England railroad bed runs almost the entire length of the refuge, from Sussex Borough north to the State of New York. Part of that abandoned rail bed constitutes the 2.5-mile Liberty Loop Nature Trail and the 0.8-mile Timberdoodle Trail. The former rail bed of the Hanford Branch of the New York, Susquehanna, and Western Railroad runs along the southernmost 2 miles of the refuge and constitutes the 1.5-mile Wood Duck Nature Trail. The refuge owns portions of both former rail beds. There are three properties that contain dwellings that are maintained as refuge housing, and many private residences and active farms still exist within the original acquisition boundary. The headquarters complex consists of the main office building, which is a restored farm house, a former milk shed that is now the maintenance work shop, an old pole barn used for equipment storage, and a new pole barn used for vehicle and equipment storage.

## **B. Biological Resources**

### **Vegetation**

The refuge lies in the Appalachian Ridge and Valley Province between the Kittatinny Ridge to the west and the Hudson Highlands to the east. The fact that the refuge lies along a riparian corridor dictates its vegetation. A typical riparian corridor consists of a mosaic of wet meadows, mixed bottomland hardwood forests and higher elevation wetland types surrounded by smaller tributaries of the Wallkill River. Additionally, there are segments of upland forests above the riparian corridor on the eastern ridge of the valley.

The riparian forest is dominated by red and silver maple (*Acer rubrum* and *A. saccharinum*), pin oak (*Quercus palustris*), green ash (*Fraxinus pennsylvanica*), slippery elm (*Ulmus rubra*), black willow (*Salix nigra*), and river birch (*Betula nigra*). The dominant understory species are spicebush (*Lindera benzoin*), silky dogwood (*Cornus amomum*), and gray dogwood (*C. racemosa*). Upland forests are typically dominated by sugar maple (*A. saccharum*), red, chestnut and white oak (*Q. rubra*, *Q. prinus*, *Q. alba*), sweet birch (*B. lenta*), shagbark and pignut hickory (*Carya ovata*, *C. glabra*), with an understory of witch hazel (*Hamamelis virginiana*), and maple leaf viburnum (*Viburnum acerifolium*). Eastern hemlock (*Tsuga canadensis*) occurs in isolated locations. A small Atlantic white cedar (*Chamaecyparis thyoides*) bog, considered a globally endangered ecosystem, can also be found here.

Other wetland habitats are dominated by sedges (*Carex spp.*), rushes (*Juncus spp.*), and smartweeds (*Polygonum spp.*). There are also tracts of grasslands which contain a mix of native and non-native species. Native species include big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), purpletop (*Tridens flavus*), and indian grass (*Sorghastrum nutans*). Non-natives such as Kentucky bluegrass (*Poa pratensis*) and reed canary grass (*Phalaris arundinacea*) are present. Successional field habitat is dominated by eastern red-cedar (*Juniperus virginiana*), gray birch (*B. populifolia*), and multiflora rose (*Rosa multiflora*). There are no known federally listed plant species on the refuge.

### **Wildlife**

The refuge provides habitat for a wide diversity of vertebrate and invertebrate fauna. It provides both migratory and nesting habitat for 248 species of birds throughout the year. While there are no federally listed species of birds, there are 20 State-listed species found on the refuge. Approximately 40 species of mammals can also be found on the refuge including the federally listed Indiana Bat (*Myotis sodalis*) and the State-endangered Bobcat (*Lynx rufus*). There are also about 40 species of herpetofauna including the federally threatened bog turtle (*Glyptemys muhlenbergii*) and the State-threatened wood turtle (*Clemmys insculpta*).

## **C. Social/Cultural Resources**

### **Population**

Development is occurring at a rapid rate in northern New Jersey. In 2010, Sussex County, New Jersey, had a population of 149,265 (U.S. Census Bureau 2013). This represents a 3.5 percent increase from 2000. For comparison, the State of New Jersey had an overall 4.5 percent increase in population over the same 10-year period. The passage of the Highlands Water Protection and Planning Act (Highlands Act) afforded additional protection for areas that lie within the designated Preservation Area, including protection for critical wildlife habitat. In the short-term, this is accomplished through strict limitations on impervious cover; limitations on development on steep slopes, in forested areas, within 300-foot buffers of all water bodies, and in flood areas; and implementation of Category 1 water quality protections on all Highlands waters.

Orange County, New York, had a population of 372,813 as of 2010 (<http://www.census.gov/2010census/data/>), an increase of 9.2 percent from 2000. According to

the New York State Comprehensive Wildlife Conservation Strategy (NYSDEC 2006), between 2000 and 2015, the greatest increase in human population in New York State will be in the lower Hudson River corridor; specifically, in the increasingly suburban Orange County (13 percent increase by 2015).

### **Economy**

Sussex County is a bedroom community experiencing a rapid rate of residential development. The number one industry for the area is outdoor recreation, mainly in the form of downhill and cross-country skiing, mountain biking, hiking, sailing, canoeing, kayaking, and birding. Recreational facilities such as water parks and golf courses also provide all-season revenue to municipalities. Agriculture contributes to the local economy as well, but overall, farming has declined in importance. Residential growth has outpaced business growth. The area lies within commuting distance of New York City and Bergen and Morris Counties in New Jersey. Because tourism and agriculture constitute most of the economic base, 60 percent of the area's workforce commutes to work outside the county. The manufacturing and technology sectors contribute only minimally to the local economy, due to the lack of major transportation facilities and access. The median household income in 2010 was \$84,860; the per capita income was \$36,986. The unemployment rate in 2010 was 6.0 percent (US Census Bureau 2013).

### **Recreational Use/Natural Resource Utilization**

Wallkill River NWR provides hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation for the public. Wildlife observation is available on the Wood Duck Nature Trail, the Liberty Loop Nature Trail, and Dagmar Dale Nature Trail, and by motorized boat, canoe, kayak, or rowboat along the Wallkill River. Fishing and watercraft launch sites are located on the refuge at Oil City Road, Bassett's Bridge, and County Route 565. Refuge staff and volunteers occasionally visit local schools, host scout groups, and occasionally lead interpretive walks on the nature trails on the refuge. The refuge is open for fishing along the Wallkill River in accordance with New York and New Jersey fishing regulations, though the refuge does not allow the removal of frogs or turtles. The part of the refuge that lies in New Jersey is also open for all-State deer hunting seasons, spring and fall turkey hunting, and all migratory bird hunting except for crows. No hunting is currently allowed on the part of the refuge in New York State.

### **Cultural History**

The Wallkill River area is said to have been known by the Native Americans as "Twischsawkin," meaning the land where plums abound. Many prehistoric resources are found in the area, including at least three Indian rock shelters. The Wallkill Valley was an important source of flint and chert for the aboriginal inhabitants, who used these stones to fashion their projectile points. Thus, it appears that the Native Americans not only valued the area for its abundant food resources, but also traveled considerable distances to exploit its mineral resources.

In historic times, an influx of Dutch settlers followed the Wallkill River up from the Hudson River. They dubbed the Wallkill River bottomland “The Drowned Lands” because the valley flooded extensively, forming a huge lake in the spring. Before it was effectively drained, settlers used the bottomland meadows as pasturage for cattle.

As early as 1760, efforts were made to straighten, dredge, and drain the river corridor to make the land dry enough to farm. The effort did not succeed until 66 years later when a large canal lowered the water table of the river. Mill owners, however, sought to keep the lands flooded, and a battle ensued between the millers and the farmers who wanted the lands drained. These battles were known as the “Muskrat and Beaver Wars.” The millers were known as the “beavers.” The farmers were known as the “muskrats.” The disputes were finally settled in the farmers' favor in 1871.

Until just recently, the Wallkill River valley was primarily agricultural. Dairy farming is no longer the dominant economic force in the valley. Due to the proximity of the valley to larger metropolitan areas, the region is becoming more suburbanized. However, an abundance of State and Federal public lands are helping preserve the natural beauty of the area and provide valuable habitat for wildlife.

## **Chapter 5: ENVIRONMENTAL CONSEQUENCES**

### **Effects Common to All Alternatives**

None of the alternatives is expected to have any adverse effects on ecologically critical areas, historic/cultural/archaeological resources, air quality, fisheries resources, public health and safety, or water quality, including drinking water. No land use changes are expected. No hazardous wastes will be generated, transported, treated, stored, or disposed of as a result of the implementation of any of the alternatives. Hunting currently occurs on other national wildlife refuges, and Erie NWR maintains a hunt program very similar to what is proposed herein. Thus, the alternatives will not present unknown or unique environmental risks. The impacts of the implemented plan will be evaluated on an annual basis and modified as needed to limit effects on resources. Thus, the alternatives proposing hunting do not establish a precedent for future actions that will have significant effects on resources. None of the alternatives will lead to a violation of Federal, State, or local environmental laws. The effects of the alternatives on the quality of the human environment are not likely to be highly controversial.

#### *Public Health and Safety*

Each alternative would have similar effects or minimal to negligible effects on human health and safety. All of the alternatives present potential for hypothermia, and firearms incidents. However, these potential concerns are no greater than found on hunting activities located off refuge lands. Additionally, many safety measures will be put in place, or are already required by State law, that will ensure public safety.

#### *Cultural Resources*

There are no known cultural resources that would be impacted by any of the proposed alternatives.

#### *Impacts to Refuge Facilities (roads, trails, parking lots)*

The Service defines facilities as, “real property that serves a particular function(s) such as buildings, roads, utilities, water control structures, raceways, etc.” Under the proposed action, naturally surfaced roads/real property may exist in the hunt area; however, the use of vehicles on these roads will be limited or prohibited, so no impact to refuge real property is anticipated as a result of the proposed action. The facilities most utilized by hunters are: roads, parking lots, and trails that are located on refuge. Access to hunting areas will be on foot to minimize soil erosion and potential negative impacts. The use of all-terrain vehicles will be prohibited.

### **Alternative A: No Action Alternative**

Under the No Action alternative, hunting would continue as it is currently administered on the refuge. New York lands would remain closed to all hunting, and within New Jersey lands hunting would be allowed for deer, migratory birds, and wild turkey.

The current hunt program has produced no effects on the federally endangered dwarf wedgemussel, as the species is aquatic and has not been confirmed within the refuge’s boundary. Similarly, there are no effects on Mitchell’s Satyr Butterfly, which has not been documented on

the refuge. There are few to no effects on the federally endangered Indiana bat, which is nocturnal and roosts in dead and dying trees during the day, and hibernates from mid-October through mid-April. It is unlikely that daytime hunter travel causes any disturbance to this species, or to other bat species of special concern occurring within the area. Similarly, the hunt has had no effect on the federally threatened bog turtle, as it occurs in habitats not likely to draw deer, turkey, or migratory bird hunters. Furthermore, fall and winter represent periods of low or no activity for bog turtles, minimizing the likelihood that they would be encountered by hunters. The use of dogs for woodcock hunting may put dogs in habitats utilized by federally threatened bog turtles; however, where potential exists for impacts to accrue, we minimize disturbance by implementing area closures or no-dog restrictions such that bog turtles are not impacted by woodcock hunting activities. It is possible, though unlikely, that hunter travel results in some trampling of rare plants (such as the small-whorled pogonia), though any damage is minimal as the hunt season coincides with seasonal plant senescence. Rare plants occurring within the boundary benefit from the decreased browse pressure resulting from fewer deer, and experience far more benefit than detriment as a result of the existing hunt.

There may be some minor effects on species of concern. The migration of long-distance migratory species (warblers and neotropical migrants) may coincide with the September and October rail, moorhen, and gallinule seasons. Thus, songbirds may be briefly disturbed by hunter travel and/or the sounds of gunshot as they attempt to forage or rest. These migratory species largely complete their migrations before the waterfowl season opens in mid-October. The same disturbance may affect nocturnal resting bats and insect species, though disturbances are brief and transitory and produce no lasting effects. Placement of tree stands has no impact on bats roosting in dead and dying trees, as hunters do not utilize these trees. The greatest impact experienced by species of concern is an improvement in the habitat structure and survival of food plants resulting from reduction of the deer herd.

A deer hunt following general New Jersey State regulations, including dates and weapons permitted, reduces the density of deer, thus decreasing deer/vehicle collisions and the density of deer ticks (Kirkpatrick and LaBonte 2007, Telford III 2002, Wilson et al. 1988, 1990). Fewer deer ticks may reduce the number of human cases of tick-borne disease. Reduced browsing pressure on plants in hunted areas has allowed plants preferred by deer to rebound. This includes native shrubs, tree seedlings and herbaceous forest understory plants, as well as neighbors' landscape plantings, gardens, and crops. Plants unpalatable to deer, such as many nonnative, invasive plants, find increased competition from native plants released from browsing pressure. Additionally, spread of nonnative, invasive plants through deer consumption and excretion of seeds and fruits may be reduced (Williams and Ward, 2006), which may also increase plant diversity.

There are no direct effects on public safety and little noticeable influence on other recreation opportunities on the refuge. There will be no added cost associated with this alternative, nor any increased economic benefit to local towns.

Disadvantages of the No Action alternative include no new recreational opportunities for small game or bear hunting within New Jersey, and no recreational hunting opportunities for New York hunters. This alternative would not support the State of New Jersey's efforts to control the bear population, or the State of New York's game management objectives. There will be no effect on refuge neighbors in New Jersey. However, New York farmers will continue to see existing or increasing levels of crop depredation from deer that shelter on refuge lands during hunting season.

**Alternative B: Hunting of Game Generally Following State Regulations, with Some Restrictions (Preferred Alternative)**

This is the Service's preferred alternative. This alternative supports Wallkill River NWR's approved CCP. Hunting would be allowed for deer, migratory birds, bear, and small game as stipulated by New Jersey and New York's annual regulations (as applied respectively to refuge lands). Several restrictions would limit wildlife and social disturbances. Restrictions common to both states include the permitted use of dogs for waterfowl and woodcock only, and a prohibition on the use of dogs during upland game and big game hunting. Night hunting of upland game is also prohibited. These restrictions are in place both to protect both refuge resources and to mitigate social conflicts with non-hunters and refuge neighbors. Dogs may yield significant disturbance to non-target wildlife, and hunting may represent potential conflict with bog turtle management, especially where dogs may be used to flush upland game from shrubby habitats where hunters would not desire to go. Dogs represent a potential predator for bog turtles, and human disturbance has been shown to cause local extinction of turtle populations when wilderness areas are opened to human recreation (Garber and Burger 1995). In order to prevent conflicts in bog turtle habitats, the refuge will prohibit the use of dogs for anything other than waterfowl and woodcock hunting (waterfowl habitats are not likely to be suitable for bog turtles, and the use of retrieval dogs for this purpose represents little threat). Were the use of dogs to be allowed, the long and linear nature of the refuge, and its close interspersions with private properties, would produce a high likelihood that dogs may frequently venture off-refuge onto private properties and yield trespass issues for owners attempting to retrieve them. Night hunting will be prohibited to limit wildlife disturbance and to ensure consistency with existing refuge policies, which close the refuge to public access from sunset to sunrise. These restrictions (in addition to their biological justification) will ensure consistency with existing refuge policies and limit disturbance to neighbors from dogs.

Additional restrictions within the State of New Jersey include a restriction on the hunting of woodchuck prior to July 15, and to rimfire-only rifles. The woodchuck hunting season coincides with the nesting and breeding seasons of birds, and the date restriction resolves this potential disturbance conflict with grassland nesting birds. The limitation of rimfire-only rifles in woodchuck hunting limits the potential for conflict and disturbance to refuge neighbors and non-hunting visitors, and increases safety for private property owners living adjacent to huntable refuge lands.

Additional restrictions within the State of New York include no Sunday hunting; no hunting of reptiles and amphibians; and no falconry hunting. Sunday hunting will be prohibited so as to

facilitate consistency across the entire refuge (New Jersey law prohibits Sunday hunting). The prohibitions of amphibian and turtle hunting, and of hunting with falcons, will facilitate consistency across the entire refuge (New Jersey has no analogous game laws), limit disturbance to wildlife occurring within or near the refuge's impoundments (proximate to New York lands), and limit disturbance to nongame, nontarget wildlife.

There would be minimal additive effects on threatened and endangered species beyond current conditions. Bog turtles are most often found in boggy, open habitats where there is little cover for wild game and which are difficult for people to walk through. Thus, it is unlikely that either individual bears or New York hunters in pursuit of them will venture into bog turtle habitat. Where potential exists for impacts to accrue, we will minimize disturbance by implementing area closures or no-dog restrictions such that bog turtles are not impacted by hunt activities.

Effects on species of concern will be largely equivalent to current conditions, wherein hunting is allowed on most refuge lands within New Jersey. The onset of firearms season would occur slightly earlier, with the mid-August start of crow season, early September start of the coyote and fox season, and the late September start of squirrel and rabbit seasons. This could potentially extend the period of disturbance from gunshot or hunter travel to long-distance migratory species such as warblers and neotropical migrants. However, demand for these seasons is expected to be so minimal (given the declining popularity of small game hunting and the refuge's restrictions against the use of dogs and night-hunting) as to produce no noticeable impact to these species. With the possible exception of bear, hunting is not likely to result in a decrease of newly added game populations on the refuge (see Cumulative Effects Analysis).

Neighbors would hear slightly more gunshots over a longer span of time under this alternative, resulting from additional firearm hunting seasons for small game species; it is not expected that the increase would be noticeable. New York neighbors would hear gunshot from newly opened refuge hunting areas, but this is expected to be commensurate with ongoing hunting activity on nearby private lands. There may be slightly more traffic to and from hunting access points. Safety zones around public areas will minimize user conflict between hunters and other recreational visitors. This alternative will preserve one day a week (Sunday) for refuge visitors to enjoy wildlife-dependent recreation without potential disturbance or interference from hunting activities.

It is not anticipated that opening New York lands or adding small game and bear hunting to New Jersey lands will produce a significant change in the number or density of hunters currently utilizing refuge hunt areas. At this level, we do not anticipate impact to refuge resources.

Costs of administering the hunt (estimated at \$60,000) would be greater than those in alternative A, due to increased duration and complexity of the hunt. Revenues generated by permit fees may increase slightly. Economic benefits to the surrounding area would be slightly greater than those generated by alternative A, because more hunters, more seasons, and additional lands would be involved.

### **Alternative C: Hunting of All Game as Allowed by New Jersey and New York Regulations, Respectively**

Under this alternative, refuge lands would be open to hunting as per New Jersey and New York's respective hunting regulations. Permanent no-hunting areas would be maintained at the Liberty Loop impoundments and Owens Station Crossing. In both New York and New Jersey, dogs could be used for the hunting of waterfowl, upland game, and turkey. Night hunting of upland game would be allowed. Disadvantages of the permitted activities (common to both states) under this alternative include increased disturbance to both resting and breeding wildlife (including the federally threatened bog turtle and the New Jersey-listed wood turtle) and to refuge neighbors resulting from hunt activities that permit night hunting and the use of dogs for small game and turkey hunting. Disturbance to the federally threatened bog turtle would be significantly increased as a result of the permitted use of dogs for small game hunting. Though hunters are unlikely to travel through bog turtle habitats themselves, they are likely to use dogs to flush game from the wet, shrubby areas that may be utilized by this species. Hence, the use of dogs for upland game hunting would very likely put dogs in habitats utilized by federally threatened bog turtles, risking incidental take. This poses an unacceptable risk given the refuge's responsibility for protecting this trust species. This alternative would produce significantly more effects on other species of concern such as migratory, wintering and breeding birds. The use of dogs for small game hunting (in which dogs are allowed to run free to flush game) would significantly increase wildlife disturbance for the duration of the hunt season. The permission of night hunting for furbearing species such as coyote, fox, opossum, and raccoon would extend these possible disturbances across a 24-hour period during these seasons (September through the end of February). Affected populations include 56 species of birds listed as endangered, threatened, or special concern in New Jersey and 29 species listed in New York. Neighbors could also experience significant disturbance as a result of dogs chasing small and furbearing game during both the day and night. The long and linear nature of the refuge, and its close interspersed with private properties, would produce a high likelihood that dogs may frequently venture off-refuge onto private properties and yield trespass issues for owners attempting to retrieve them.

In New Jersey, there would be no restrictions on woodchuck hunting on the refuge. Raccoons could be hunted until sunrise on Sundays. The permission of the full woodchuck season (from March through the end of September) would yield direct impacts on sensitive grassland breeding birds during nesting season, and presents additional safety concerns. The permissible hunting of woodchuck with rifle, combined with the length of the woodchuck season (nearly year-round), may endanger visitors utilizing the open trails of the refuge. The overnight hunting of raccoons into early Sunday mornings could interfere with early-morning birdwatching opportunities on the one day a week that is otherwise free of hunting activities.

In New York, hunting of reptiles and amphibians and falconry hunting would be allowed as per the State's small game regulations. Sunday hunting would be allowed. Additional disadvantages of these permissions within New York lands include increased disturbance to resting and breeding wildlife. The permission of Sunday hunting on New York but not New Jersey lands (as State regulations provide) would increase the complexity of law enforcement

and would also eliminate the one day a week that the non-hunting public is able to enjoy refuge recreation without encountering hunters or the sound of gunshot on New York refuge lands. The permitted hunting of frogs and turtles in New York could result in disturbance to and take of the federally threatened bog turtle and other species. The potential take of bog turtles is not acceptable given our responsibility in managing for this trust species. Additionally, the proximity of the refuge impoundments to New York lands (in which frog and turtle collecting would be allowed) raises concern over the disturbance that would accrue to migratory and nesting waterfowl should frog and turtle hunting be allowed. Falconry hunting (as permitted by New York regulations), when considered against the proximity of New York lands to the permanent no-hunting area around the Liberty Loop impoundments, could incur significant disturbance to migratory waterfowl during the falconry season (October through March). This poses an unacceptable level of disturbance, given the proximity to the impoundments. With the possible exception of bear and deer in New York, hunting is not likely to result in a decrease of newly huntable game populations on the refuge (see Cumulative Effects Analysis for details). The refuge will monitor these populations to ensure that no cumulative impact to game populations occurs, and will modify area openings and/or limit the number of permits issued as needed through the annual refuge regulations to ensure healthy populations.

Costs of administering the hunt (estimated at \$75,000) would be greater than those in alternative B. These additional costs would result from the increased complexity of law enforcement and administration of a hunt season that includes night hunting, inconsistent Sunday hunting, and which extends throughout most of the year. We would expect no noticeable increase in revenues beyond alternative B generated by permit fees or economic benefits to the surrounding area resulting from the inclusion of night hunting, permitted use of dogs for all game, or extension to the full hunt season.

**Comparison of the Consequences of the Alternatives**

Table 1 provides a brief summary and comparison of anticipated effects from implementing the alternatives on the concerns and opportunities identified to date. The No Action alternative would be the most simple to implement, but would limit recreational opportunities, would prevent the use of hunting to mitigate existing deer-related crop depredation in New York, and would not support the States of New Jersey or New York in meeting their bear management objectives. Alternative C would resolve these concerns, but would present disturbance and safety concerns for refuge wildlife and visitors. Alternative B would provide the greatest hunting opportunities while being consistent with the refuge’s management objectives.

**Table 1:** Summary comparison of consequences by alternative considered (score -3 to 3). Each alternative is evaluated for its effects on identified concerns or opportunities. Higher scores address the concern more effectively. A score of zero reflects no effect.

Concern or Opportunity	Alternative
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	No Action (Current Conditions)	Alternative B – Hunting of Game Generally Following State Regulations, with Some Restrictions (Preferred)	Alternative C – Hunting of All Game as Allowed by New Jersey and New York Regulations, Respectively
Provide hunting opportunities consistent with State regulations	+1	+2	+3
Increase hunting recreation opportunities	0	+1	+2
Impacts on other recreational uses	0	0	-1
Damage or disturbance to plants and wildlife including endangered species and species of concern	0	0	-3
Promote and restore ecological health of vegetative communities	+2	+2	+2
Reduce incidence of tick borne disease, decrease deer/vehicle collisions, and reduce damage to residents' landscape plantings and crops	+2	+3	+3
Engender public support	0	-1	-3
Monetary cost	0	-1	-2
Economic benefit	0	+1	+1
Public safety issues	0	0	-2
Impact on refuge neighbors	0	0	-3
<b>TOTALS</b>	<b>5</b>	<b>7</b>	<b>-3</b>

### **Cumulative Effects Analysis of the Proposed Action**

A cumulative impact is defined as an impact on the environment that results from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future action regardless of what agency (Federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (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 resources. They can also accumulate over the course of time, from actions in the past, present, and the future. Sometimes different actions counterbalance one another, partially canceling 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.

#### *Impacts to Habitat*

No impacts to habitat are expected from the implementation of any of the alternatives. Under alternatives B and C there may be minor additional trampling of plants and soils by hunters walking off of established trails, but this is not expected to result in a measurable increase over current conditions.

#### *Impacts to Non-game Migratory Birds*

Minimal to no impacts are expected from the implementation of alternatives A or B. Effects on non-game migratory birds under alternative B will be largely equivalent to current conditions, wherein hunting is allowed on most refuge lands within New Jersey. The addition of small game hunting in New Jersey could potentially extend the period of disturbance by gunshot or hunter travel to long-distance migratory species such as warblers and neotropical migrants; and the opening of New York lands to hunting could extend the boundary within which these hunting-related disturbances occur. However, demand for these additional small game and bear hunting opportunities is expected to be so minimal (especially given that night hunting will be prohibited) as to produce no noticeable impact to migratory species.

Significantly more disturbances to non-game migratory birds would be expected under alternative C. Non-game migratory birds and breeding may be disturbed by the use of dogs for small game hunting and the permitted occurrence of night-hunting for furbearers (which also involves dogs). In both these cases, dogs running free in pursuit of game are highly likely to disturb non-game migratory birds as they rest and feed during the migratory and non-breeding seasons. Breeding birds may be disturbed by hunter travel and gunshot resulting from the pursuit of woodchuck following the March 1 season opener and throughout the breeding season.

Within New York lands, under alternative C migratory and wintering waterfowl and waterbirds that are resting and feeding within the permanent no-hunting area at Liberty Loop impoundments may be disturbed by the use of falcons for small game hunting on adjacent properties between October 1 and March 31. This poses an unacceptable level of disturbance, given that a primary purpose of the refuge is to "...conserve and enhance populations of...black ducks and other waterfowl...and marsh and water birds."

#### *Impacts to Resident Nongame Wildlife*

Minimal to no impacts are expected from the implementation of alternatives A or B. Demand resulting from the additional hunting opportunities under alternative B is expected to be so minimal as to present no anticipated impacts to nongame wildlife.

Alternative C would result in increased disturbance and take of nongame wildlife such as amphibians, turtles and snakes, as well as disturbance to other wildlife in the pursuit of the game. This additional disturbance would result from the permitted harvest of frogs and turtles in New

York, and from dogs running free in pursuit of game, and the significant likelihood that the dogs may be distracted by and harass non-target species encountered therein. The early portion of the rabbit and squirrel seasons in particular coincide with fall, when these reptiles and amphibians may still be active and when hatchlings or young may have recently emerged. Falcons may also pursue non-game species encountered during the hunt. Listed species potentially encountered include the federally threatened bog turtle. Further, the New York small game season permits the harvest of frogs and snapping turtles between June 15 and September 30 (the breeding season), thus there is potential for accidental take of the federally threatened bog turtle under this alternative.

### *Impacts to Game Species*

Additional game species subject to harvest pressure under alternative B include bear, quail, coyote, fox, crow, grouse, opossum, raccoon, pheasant, chukar, rabbit/hare/jackrabbit, squirrel, and woodchuck. New York lands would be opened to all of the above, as well as to deer, turkey, bobcat, weasel, and skunk. With the possible exception of bear and deer in New York, harvest mortality is not a cause of population decline for the game species added under this alternative. For these species only, alternatives A and B may result in population controls deemed desirable by the States. By managing all game populations consistent with each State's annual regulations, populations will be managed consistent with the States' respective recovery, conservation, and management targets and cumulative impacts are highly unlikely. However, populations will be monitored and refuge hunt regulations will be modified accordingly if needed to limit impacts.

Under alternative C, the use of dogs for upland game hunting may result in disturbance and harassment of game species that are not currently in-season, such as deer and turkey. Night hunting of furbearers with the use of dogs may also result in such harassment of non-target game, which would be particularly disruptive for diurnal (day active) species.

The New Jersey Division of Fish and Wildlife does not put their wildlife management plans (with the exception of bear) in writing or make them available to the public. As such, no State-level information is available upon which to evaluate the size, health, or impact of game populations on other wildlife and/or habitat. Where State-level harvest data is available for New Jersey, it is presented below. However, as the State's annual harvest regulations are based on their best available internal information, we do not anticipate that hunting within these regulations will be problematic for the health or sustainability of wildlife populations.

### White-tailed Deer

#### New Jersey

The refuge has been open to deer hunting since 1993, and over the last 9 years has averaged 335 permit sales per year. The refuge falls within New Jersey's Deer Management Zone (DMZ) 2. The State does not have any available information on the state of deer browse or forest health for this DMZ that might serve as an indication of population size. Over the last 5 years, annual averages of 3,445 permits were sold for DMZ 2 resulting in the harvest of approximately 2,285 deer per year. On average, 72 deer were reported to the State as being harvested from the refuge over each of the last 5 years (Stanko pers. comm. 2014). This is just 3 percent of the DMZ's

annual take, and a tiny fraction of the Statewide harvest. Therefore, we do not estimate that continued use of deer hunting opportunities as they have been offered in the past will detrimentally affect the statewide deer population.

#### New York

Deer population objectives in New York are socially driven and not solely ecologically based (Clarke pers. comm.) The NYSDEC established these objectives on a 5-year cycle, based on public input and assessment of deer population indices, harvest trends and deer impacts. Forest condition is an effective metric for indicating the ecological impacts of deer on habitat, and evaluating the appropriateness of deer density in a given area. The NYSDEC uses browse impact and regeneration success to inform recommendations for deer population change on an ecological basis. Browse impact surveys in wildlife management unit (WMU) 3M have shown a clear lack of forest regeneration for all tree species, including less preferred species like American beech and black cherry (Clarke 2012, unpublished data). The NYSDEC manages deer populations largely by manipulating the mortality rates of adult female deer through regulated hunting. This is accomplished through the issuance of Deer Management Permits (DMP's, or antlerless deer tags) available to hunters (South Zone only), and regulation of the special bow and muzzleloader seasons (North Zone only) to manipulate female harvest. In WMU 3M, hunting accounts for more than 70 percent of mortality, followed by vehicle collisions and winter kill (Clarke pers. comm. 2012). In 2013, a total of 8,367 deer were harvested from WMU 3M, averaging 11.2 deer per square mile; a total of 1,123 were harvested from the nearby town of Warwick (closest to refuge lands) (NYSDEC 2013a). We estimate that opening New York lands to hunting may result in the sale of 20 additional permits and the harvest of 15 deer. When compared to the total number of deer harvested from WMU 3M, it is apparent there are sufficient numbers of deer to allow a hunt and still sustain a viable population within the refuge and around the State.

#### Black Bear

##### New Jersey

The State's Bear Management Zones define areas where bears should be managed at various densities consistent with land use. The State's 1997 Black Bear Management Policy recommended managing bears at a density of 1 bear per 2.5 square miles. Zone 2, where the refuge is located, has an average forest cover of 43 percent and is designated as good bear habitat. The bear density within this zone is estimated at 1.6 bears per square mile, four times the recommended density. (Vreeland 2010). In 2009, the State estimated the number of bears falling within Zones 1 through 4 at 3,438 animals.

In 2003, New Jersey held its first black bear hunt in more than 30 years, resulting in the harvest of 328 bear during a one-week season (7,000 permits were issued). In 2005, a second bear hunt resulted in the harvest of 280 bears (4,000 permits issued). Bear hunts in 2010 through 2012 yielded 592, 469, and 287 bears respectively (information was not available on the number of permits issued). While Sussex County always produces the largest number of harvested bear Statewide, Area 2 does not consistently produce the largest harvest of the Bear Management

Zones. For years in which data was available (2005, 2011, and 2012), Area 2 produced 19.5 percent, 29.6 percent, and 34.1 percent of the State's harvest respectively.

Though the refuge does not conduct surveys or research to quantify bear use, bear and their signs are commonly observed. The refuge's compatibility determination (CD) states that the refuge could provide habitat for 20 to 22 bears. However, based on revised estimates found within the State's 2010 Black Bear Management Plan (New Jersey Department of Environmental Protection [NJDEP], 2010), this number is more likely to be about 13 bears (8 square miles with 1.6 bears per square mile). The CD also states an anticipated refuge harvest of 4 to 7 bears, but these numbers may be similarly inflated. The refuge is routinely asked about bear hunting; however, the refuge doesn't provide great bear habitat, and it is unlikely that bear hunters will seek out the refuge as a hunting destination. It is more likely that refuge hunters will purchase a bear permit just in case opportunity arises during other hunting pursuits such as deer and turkey. Hence, we estimate that perhaps 20 bear permits will be sold annually. Based on the information provided in the CD and the State's 2010 Management Plan, we do not anticipate that a public bear hunt will be detrimental to the sustainability of refuge or State bear populations.

#### New York

New York manages its black bear population through Adaptive Impact Management, a planning framework which focuses on stakeholder-identified desirable impacts of management as the basis for setting fundamental objectives of management (NYSDEC 2007). This framework results in stakeholder-informed changes to the State's black bear feeding and harvest regulations, reflected in New York's annually issued Hunting and Trapping Digest.

The bear population within southeast New York has been increasing steadily since the 1980's and currently numbers about 1,700 animals (Merchant pers. comm., 2013). Harvests have increased during that time as well, and since 2009, between 20 and 27 bear have been harvested annually from the town of Warwick. In 2013, a total of 62 bear were harvested from WMU 3M; 24 were taken from the town of Warwick (NYSDEC 2013b). A total of 160 acres would be opened to bear hunting in New York; we estimate that 1 to 2 bear might be taken annually from this area. A harvest this size would not produce a measurable effect on the regional population. However, it would assist the State in meeting their management objectives.

#### Turkey

##### New Jersey

The refuge has been open to turkey hunting since 1997, and over the last 7 years, has averaged 83 permit sales per year. The refuge falls within New Jersey's Turkey Area 5. The State reports that over the last 5 years, an average of 151 turkeys have been taken annually from this zone; on average, 61 birds were reported to the State as being harvested from the refuge over each of the last 5 years (McBride pers. comm. 2014). The permit quota for Area 5 from 2013 to 2014 has been 325 permits per week; however, less than 150 individuals have expressed interest in hunting this area (McBride pers. comm. 2014). Therefore, we do not estimate that continued use of turkey hunting opportunities as they have been offered in the past will detrimentally affect the statewide turkey population.

## New York

Wild turkeys were abundant and widely distributed throughout New York at the time of European settlement. By the mid-1840s, excessive logging and intensive farming, coupled with unregulated market and subsistence hunting, had extirpated or reduced turkey populations to extremely low levels (NYSDEC 2005). By 1909, no records of wild turkey could be found in New York (Eaton 1990). After the Civil War, many New York farms were abandoned as farming shifted to better land in western states. Reversion of those farm fields to forest helped create suitable forested habitat for turkeys; in the late 1940s, the species expanded from Pennsylvania into parts of southwestern New York (NYSDEC 2005). From 1952 to 1959, the State undertook a failed effort to release game farm turkeys throughout New York; however, the birds did not exhibit adequate wildness to avoid predation and could not survive. Beginning in 1959, the State began trapping wild turkeys from southwestern New York and releasing them in suitable habitats. The State has characterized this effort as an “unqualified success” (NYSDEC 2005).

Turkey populations are now established Statewide; over the last 5 years, an average of 26,200 turkey were taken in spring and 8,800 harvested in fall (NYSDEC 2014a, b). The State utilizes a number of methods to estimate and monitor turkey populations, including hunter surveys, reported harvests, sighting surveys, bow hunter sighting logs, and additional monitoring methods. The calculated (estimated) spring harvest in Orange County for 2013 was 461 turkey; fall (2012) take was 207 turkey (NYSDEC 2014a,b); estimates for WMU 3M were not available. The New York lands to be opened to turkey hunting are largely open fields and wetlands, and do not provide much in the way of turkey’s preferred forested habitats; we anticipate that fewer than 5 turkey would be harvested annually. This number would represent just a fraction of the County total and would have no impact on the Statewide population.

### Migratory Birds

Waterfowl populations throughout the United States are managed through an administrative process known as flyways, of which there are four (Pacific, Central, Mississippi, and Atlantic). The review of the policies, processes and procedures for waterfowl hunting are covered in a number of documents.

National Environmental Policy Act (NEPA) considerations by the Service for hunted migratory game bird species are addressed by the programmatic document, “Final Supplemental Environmental Impact Statement: Issuance of Annual Regulations Permitting the Sport Hunting of Migratory Birds (fses 88-14),” filed with the Environmental Protection Agency on June 9, 1988. The Service published a Notice of Availability in the Federal Register on June 16, 1988 (53 FR 22582), and the Record of Decision on August 18, 1988 (534 FR 31341). Annual NEPA considerations for waterfowl hunting frameworks are covered under a separate EA and Finding of No Significant Impact. Further, in a notice published in the September 8, 2005, Federal Register (70 FR 53776); the Service announced its intent to develop a new Supplemental Environmental Impact Statement for the migratory bird hunting program. Public scoping meetings were held in the spring of 2006, as announced in a March 9, 2006, Federal Register notice (71 FR 12216).

Because the Migratory Bird Treaty Act stipulates that all hunting seasons for migratory game birds are closed unless specifically opened by the Secretary of the Interior, the Service annually promulgates regulations (50 CFR Part 20) establishing the Migratory Bird Hunting Frameworks. The frameworks are essentially permissive in that hunting of migratory birds would not be permitted without them. Thus, in effect, Federal annual regulations both allow and limit the hunting of migratory birds.

The Migratory Bird Hunting Frameworks provide season dates, bag limits, and other options for the States to select that should result in the level of harvest determined to be appropriate based upon Service-prepared annual biological assessments detailing the status of migratory game bird populations. In North America, the process for establishing waterfowl hunting regulations is conducted annually. In the United States, the process involves a number of scheduled meetings (Flyway Study Committees, Flyway Councils, Service Regulations Committee, etc.), in which information regarding the status of waterfowl populations and their habitats is presented to individuals within the agencies responsible for setting hunting regulations. In addition, public hearings are held and the proposed regulations are published in the Federal Register to allow public comment.

For waterfowl, these annual assessments include the Breeding Population and Habitat Survey, which is conducted throughout portions of the United States and Canada, and is used to establish a Waterfowl Population Status Report annually. In addition, the number of waterfowl hunters and resulting harvest are closely monitored through both the Harvest Information Program (HIP) and Parts Survey (Wing Bee). Since 1995, such information has been used to support the adaptive harvest management (AHM) process for setting duck-hunting regulations. Under AHM, a number of decision-making protocols render the choice (package) of pre-determined regulations (appropriate levels of harvest) which comprise the framework offered to the States that year. The States then select season dates, bag limits, shooting hours, and other options from the Atlantic Flyway package. Their selections can be more restrictive, but cannot be more liberal than AHM allows. Thus, the level of hunting opportunity afforded each State increases or decreases each year in accordance with the annual status of waterfowl populations.

Each national wildlife refuge considers the cumulative impacts to hunted migratory species through the Migratory Bird Frameworks published annually in the Service's regulations on Migratory Bird Hunting. Season dates and bag limits for national wildlife refuges open to hunting are never longer or larger than the State regulations. In fact, based upon the findings of an EA developed when a refuge opens a new hunting activity, season dates, and bag limits, and other aspects of a hunt may be more restrictive than the State allows.

#### New Jersey

Over the last 5 years for which data are available, the average estimated annual New Jersey duck harvest was 60,060; Canada goose harvest was 35,580; and woodcock harvest was estimated at 2,760 (Klimstra et al. 2013). The average annual number of duck, goose, and woodcock hunters respectively over the same period was approximately 5,960; 4,340; and 980 (Klimstra et al.

2013). Estimates from the USFWS Harvest Information Program indicated that the average seasonal harvest in New Jersey was 9.46 ducks, 9.02 geese, and 2.86 woodcock per active hunter (Klimstra et al. 2013). The refuge has been open to migratory game bird hunting since 1997, and over the last 7 years has averaged 116 permit sales per year; internal refuge observations suggest that perhaps 15 percent of migratory bird permits sold are for hunters strictly interested in woodcock. Based on these numbers, we anticipate that an annual average of 937 ducks, 893 geese, and 44 woodcock may be harvested from permit sales for New Jersey refuge lands. This level of harvest will produce a negligible effect on Statewide or regional populations.

#### New York

Over the last 5 years for which data are available, the average estimated annual New York duck harvest was 200,500; Canada goose harvest was 145,100; and woodcock harvest was estimated at 9,940 (Klimstra et al. 2013). The average annual number of duck, goose and woodcock hunters respectively over the same period was approximately 19,180; 16,900; and 4,400 (Klimstra et al. 2013). The New York lands that would be opened to hunting (160 acres) provide minimal waterfowl habitat for the majority of the year but do provide good woodcock habitat. Significant numbers of migratory waterfowl can be found here only when spring snowmelt and rains flood the fields, which does not occur every year. Small ditches may hold water through most of the year but support small numbers of waterfowl due to their size. Mallard and Canada goose would be the only likely nesting species. Small numbers of migratory and wintering fowl may be found mixed in with large flocks of Canada geese that overfly the area as they move between fallow farm fields to the north and the impoundments to the south. Opportunities for waterfowl hunting would primarily be limited to these fly overs and the open waters on the adjacent Wallkill River; conditions are more favorable for woodcock hunting. Estimates from the USFWS Harvest Information Program indicated that the average seasonal harvest in New York was 9.78 ducks, 8.74 geese, and 2.26 woodcock per active hunter (Klimstra et al. 2013). Given the acreage to be opened, we estimate that perhaps 5 additional migratory bird hunting permits might be sold for these lands (perhaps 4 sold to waterfowl hunters and 1 to woodcock hunters). Based on these numbers, we anticipate that perhaps 40 ducks, 36 geese, and 1 to 2 woodcock may be harvested from 5 additional permit sales for New York lands. This level of harvest will produce a negligible effect on statewide or regional populations.

#### Small Game

##### New Jersey

The State does not publish management plans for small game species. Harvests are managed via bag limits for each of these species, though the number of permits issued annually is not reported. Small game firearm harvest estimates are derived from New Jersey Firearm Harvest Surveys on a biannual basis. From 2011 to 2012, estimated Statewide harvests for small game species were 44,451 for rabbit; 34,011 for squirrel; 16,447 for woodchuck; 1,588 for raccoon; 1,527 for fox; 70 for coyote; and 517 for opossum (NJDFW 2012a). Game bird harvests from 2011 to 2012 were estimated at 24,782 crow and 2,335 grouse (NJDFW 2012b). Small game hunting is declining in popularity, as measured by numbers of hunters, and thus we expect little hunter demand and expect minimal impact from this activity (USFWS, 2010). The refuge's prohibition against night hunting when most furbearer hunting occurs (coyote, fox, raccoon,

opossum) is likely to further dampen hunter interest in the activity. Based on these trends, we anticipate that perhaps 20 small game permits would be sold annually, resulting in the harvest of perhaps 25 rabbits, 25 squirrels, and 10 woodchucks. Grouse are rarely seen on the refuge and we anticipate that few grouse hunters would seek the refuge as a hunting destination; few to none are likely to be harvested. Furbearer hunting on the refuge is likely to be limited to the incidental take of furbearer species encountered during outings for other game such as deer and turkey, and will likely be limited to single-digit harvest of raccoon, fox, coyote, and possum. These harvest levels represent just a tiny fraction of the Statewide annual harvests and would have no impact on populations.

#### New York

The State does not publish management plans for small game species. Harvests are managed via bag limits for each of these species, though the number of permits issued annually is not reported. Over the last 5 years, estimated annual hunting participation (number of hunters) from Zone C (includes WMUs 3F, 3J, 3M, 3N, 3P, 4B, 4J, 4K, 4S, 4T, and 4Y) was 15,686 for crow, 26,844 for rabbit, 966 for varying hare, 48,923 for squirrel, 10,457 for grouse, and 19,444 for pheasant (Schiavone pers. comm. 2014). For those same years, estimated annual harvests from Zone C were 3,527 for crow, 8,909 for rabbit, 1,391 for varying hare, 8,778 for squirrel, 7,795 for grouse, and 6,597 for pheasant (Schiavone pers. comm. 2014). Average annual furbearer harvests for the same zone and time period were 3,827 raccoon, 1,163 red fox, 680 gray fox, and 6,761 coyote. These numbers result in an average per-hunter harvest of 4.5 crow, 3.0 rabbit, 0.7 hare, 5.6 squirrel, 1.3 grouse, and 2.3 pheasant per season; and 3.8 raccoon, 0.6 red fox, 0.4 gray fox, and 0.8 coyote per season. Small game hunting is declining in popularity, as measured by numbers of hunters, and thus we expect little hunter demand and expect minimal impact from this activity (USFWS, 2010). Based on these trends, we anticipate that perhaps 3 small game permits would be sold for New York lands, resulting in the harvest of perhaps 13 crow, 9 rabbit, 0 hare, and 17 squirrel per year. Grouse are rarely seen on the refuge and we anticipate that few grouse hunters would seek the refuge as a hunting destination; few to none are likely to be harvested. Furbearer hunting on the refuge is likely to be limited to the incidental take of furbearer species encountered during outings for other game such as deer and turkey, and will likely be limited to single-digit harvest of raccoon, fox, coyote, and possum. These harvest levels represent just a tiny fraction of the statewide annual harvests and would have no impact on populations.

#### *Impacts to Threatened and Endangered Species*

Alternatives A and B are not likely to impact threatened and endangered species. Fall and winter represent periods of low or no activity for bog turtles, minimizing the likelihood that they would be encountered by hunters. Secondly, bog turtles are most often found in boggy, open habitats where there is little cover for wild game and which are difficult for people to walk through. Thus, it is unlikely that hunters will venture into bog turtle habitat. Under alternatives A and B, area closures where potential exists for impacts to accrue would minimize any possible conflict with this species.

Under alternative C, disturbance to the federally threatened bog turtle would be significantly increased as a result of the permitted use of dogs for small game hunting. Though hunters are unlikely to travel through bog turtle habitats themselves, they are likely to use dogs to flush game from the wet, shrubby areas that may be utilized by this species. Hence, the use of dogs for upland game hunting would very likely put dogs in habitats utilized by federally threatened bog turtles, risking incidental take. This poses an unacceptable risk given the refuge's responsibility for protecting this trust species.

#### *Impacts to Refuge Environment and Community*

Under alternative A, there would be no change in the refuge environment and community. There would be a slight impact to the physical environment related to increased off-trail foot traffic under alternatives B and C which would cause some minor effects on soils and plants from trampling. None of the alternatives would have an impact on air quality or water quality. Alternative B would not impact solitude in neighboring lands due to the fact that hunting is an existing use within the valley. There would be no cutting of vegetation or use of spikes or nails in trees allowed; thus no physical harm to plants except from walking would occur. It is expected that alternative B will cause minimal impact on the human community. Neighbors may hear slightly more gunshot, though the increase is not likely to be noticeable compared to current conditions. Hunters will bring revenue to the town through purchase of food, gas, supplies, and hotel stays.

Alternative C is likely to produce disturbance to refuge neighbors as a result of dogs chasing small and furbearing game during both the day and night. The long and linear nature of the refuge, and its close interspersions with private properties, would yield a high likelihood that dogs may frequently venture off-refuge onto private properties and yield trespass issues for owners attempting to retrieve them. It also results in a very high likelihood that dogs in pursuit of game would be heard by multiple surrounding neighbors whenever they are in use.

#### *Impacts to Wildlife-Dependent Recreation*

For the duration of the hunt under alternatives A and B, public use trails and parking areas will be surrounded by safety zones that permit hunter traffic but prohibit hunting activities. Signs will go up in the parking lots and kiosks informing the public of the hunt. No impacts to wildlife-dependent recreation are expected. Under alternatives B and C, additional recreational opportunities will be provided to the hunting public.

Under alternative C, refuge visitors would lose Sundays as a day in which they can expect to visit the refuge without the potential for disturbance by hunting activities. Refuge visitors may hear the running of dogs in pursuit of small game, or may experience declines in the quality of wildlife observation resulting from wildlife disturbances caused by such pursuit.

## **Chapter 6: CONSULTATION AND COORDINATION WITH OTHERS**

The following entities are being consulted in preparation of this EA:

New Jersey Division of Fish and Wildlife  
Trenton, New Jersey

New York State Department of Environmental Conservation  
Bureau of Wildlife – Region 3  
21 South Putt Corners Road  
New Paltz, New York 12561-1696

United States Fish and Wildlife Service  
Ecological Services Division  
New York and New Jersey Field Offices

Haudenosaunee Tribes (9)  
Cayuga Nation  
Oneida Indian Nation  
Oneida Nation of Wisconsin  
Onondaga Nation  
St. Regis Mohawk Tribe  
Seneca-Cayuga Tribe of Oklahoma  
Seneca Nation of Indians  
Tonawanda Seneca Nation  
Tuscarora Nation

Algonkian Tribes (2)  
Shinnecock Indian Nation  
The Stockbridge Munsee Band of the Mohican Nation

Delaware (2)  
Delaware Tribe of Indians  
Delaware Nation of Oklahoma

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**Wallkill River National Wildlife Refuge  
Hunt Plan**

**August 4, 2014**

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

**Wallkill River NWR  
1547 Route 565  
Sussex, NJ 07461**

Submitted By:  
Project Leader

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

Concurrence:  
Refuge  
Supervisor

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

Approved:  
Regional Chief,  
National Wildlife  
Refuge System

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

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## **WALLKILL RIVER NATIONAL WILDLIFE REFUGE HUNT PLAN**

### **I. Introduction**

Wallkill River National Wildlife Refuge (NWR, refuge) was established by the Federal Property and Administrative Service Act of 1949 (40 U.S.C. 471-535), as amended; Fish and Wildlife Coordination Act of 1934 (16 U.S.C. 661-666c), as amended; Fish and Wildlife Act of 1956 (16 U.S.C. 742a-742j Stat. 1119), as amended; the Act of May 19, 1948, Public Law 80-537 (16 U.S.C. 667b-667d; 62 Stat. 240), as amended; and The National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended. Refuge lands have also been acquired under the authority of the Emergency Wetlands Resources Act of 1986 (16 U.S.C. 3901(b)), the Migratory Bird Conservation Act (16 U.S.C. 715d), and the Fish and Wildlife Act of 1956 (16 U.S.C. 742f(a)(4)). Lands may also be acquired under the authority of the Refuge Recreation Act (16 U.S.C. 460K-1) and the Endangered Species Act (16 U.S.C. 1534).

In order to meet specific refuge and other broader U.S. Fish and Wildlife Service (Service) directives, the following purposes were established for Wallkill River NWR:

“...preserve and enhance the refuge’s lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations;”

“...conserve and enhance populations of fish, wildlife, and plants within the refuge, including populations of black ducks and other waterfowl, raptors, passerines, and marsh and water birds;”

“...protect and enhance the water quality of aquatic habitats within the refuge;”

“...fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats;” and,

“...provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation (104 Stat. 2955).”

Wallkill River NWR was established in 1990, becoming part of the National Wildlife Refuge System (NWRS). The mission of the NWRS is to “administer a national network of lands and waters for the conservation, management and where appropriate, restoration of fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (National Wildlife Refuge System Improvement Act of 1997). The act requires that refuges restore and maintain the integrity, diversity, and environmental health necessary to achieve this mission and the purposes established for each refuge. To date, the refuge protects approximately 6,000 acres along the Wallkill River and Papakating Creek and includes land in both New Jersey and New York.

The refuge was established to conserve and enhance populations of wildlife and their habitats, to protect and enhance water quality, and to provide opportunities for wildlife-dependent recreation and research. This is accomplished through management of the refuge's habitats, which include mixed bottomland hardwood forest, open fields, and a mosaic of wetlands including wet meadows, freshwater marshes, red maple swamps, and fens. Together these provide habitat for forest-dwelling and grassland birds, migrating waterfowl, wintering raptors, and endangered species. More than 250 species of birds occur on the refuge, including 26 species of waterfowl, 22 species of raptors, and 27 species of shorebirds. Also residing within the refuge are approximately 40 species of mammals, 40 species of herpetofauna, and a great diversity of fish, invertebrates, and plants. In addition to the Indiana bat (a federally endangered species) and the bog turtle (a federally threatened species), the refuge hosts 66 species identified by New Jersey and 14 identified by New York as threatened, endangered, or of special concern. The North American Waterfowl Management Plan identifies the Wallkill River bottomlands as a priority focus area for waterfowl management within New Jersey.

Public hunts at Wallkill River NWR began in 1993 with the opening of white-tailed deer hunting; migratory game bird and wild turkey hunting began in 1997. Refuge hunts provide visitors with additional recreational opportunities where hunting on public lands is limited and where posting of private lands further restricts access. Hunters frequently comment on the high quality of the hunting experience at the refuge. The current hunt plan reflects a need to expand hunting opportunities to lands recently acquired (specifically to alleviate crop damages on neighboring properties), and to make our hunt program more consistent with the regulations of New Jersey and New York States. The last hunt plan was completed in 2004 and approved bear hunting; however, the Service determined that a bear hunt should not be opened until completion of the refuge's Comprehensive Conservation Plan (CCP) (approved in 2009). The CCP calls for continuing the deer, turkey, and migratory bird hunts on existing refuge lands; for opening the refuge to bear hunting in accordance with New Jersey State regulations; and for opening Service-owned land in the expansion area to public hunting when appropriate conditions exist. Therefore, this plan is being updated to include the following expanded hunting opportunities for the public:

1. Hunting will be opened on portions of the refuge falling within the State of New York, largely consistent with State regulations.
2. Small game and bear hunting will be opened on portions of the refuge falling within the State of New Jersey.

## **II. Conformance with Statutory Authorities**

The Refuge Recreation Act of 1962 (16 U.S.C. 460K) authorizes the Secretary of the Interior to administer refuges, hatcheries, and other conservation areas for recreational use. The Refuge Recreation Act requires (1) that any recreational use permitted will not interfere with the primary purpose for which the area was established; and (2) that funds are available for the development, operation, and maintenance of the permitted forms of recreation.

Fundamental to the management of lands within the NWRS is the NWRS Improvement Act of 1997 (Public Law 105-57) (Improvement Act), an amendment to the NWRS Administration Act of 1966. The Improvement Act of 1997 provided a mission for the NWRS and clear standards for its management, use, planning, and growth. The Improvement Act of 1997 recognized that wildlife-dependent recreational uses involving hunting, fishing, wildlife observation and photography, and environmental education and interpretation, when determined to be compatible with the mission of the NWRS and purposes of the refuge, are legitimate and appropriate public uses of the NWRS. Compatible wildlife-dependent recreational uses are the priority general public uses of the NWRS and shall receive priority consideration in planning and management. Hunting as specified in this plan is a wildlife-dependent recreational use and the law states that as such, it “shall receive priority consideration in national wildlife refuge planning and management.” The Secretary of Interior may permit hunting on a refuge if it is determined that the use is compatible. The hunting program would not materially interfere with or detract from the fulfillment of the purposes of the refuge or the mission of the NWRS.

Recreational hunting authorized by the regulations should not interfere with the primary purpose for which Wallkill River NWR was established. This determination is based upon the completion of a Compatibility Determination (CD) (Section D).

Hunters at Wallkill River NWR have purchased on average 326 deer permits, 110 migratory bird permits, and 75 turkey permits over each of the last 5 years resulting in an estimated 4,300 hunting visits per year. Permit sales produce approximately \$8,000 in revenue each year, which is reinvested in the refuge’s public use programs and facilities. It is estimated that the hunt program’s annual cost is \$50,000. This amount reflects staff costs, hunt-related materials, maintenance of parking areas and signs, and administration of hunt permits. Due to efficiencies created by use of a third-party vendor to sell hunt permits, no increase is expected with the addition of new game species and lands.

### **III. Statement of Objectives**

The objectives of a hunting program on Wallkill River NWR are to provide:

1. The public with hunt opportunities on public lands consistent with State regulations;
2. Biological diversity by preserving the natural diversity and variety of biotic communities, especially with regard to abundant deer populations;
3. Neighbors with considerate management of the refuge’s wildlife populations so as to limit crop and other financial damages; and
4. A high-quality recreational experience for hunters, especially youth and disabled persons.

### **IV. Assessment**

#### **A. Are wildlife populations present in numbers sufficient to sustain optimum population levels for priority refuge objectives other than hunting?**

The New Jersey Division of Fish and Wildlife (NJDFW) does not put their wildlife management plans (with the exception of bear) in writing or make them available to the public. As such, no

State-level information is available upon which to evaluate the size, health, or impact of game populations on other wildlife and/or habitat. Where State-level harvest data is available for New Jersey, it is presented below. However, as the State's annual harvest regulations are based on their best available internal information, we do not anticipate that hunting within these regulations will be problematic for the health or sustainability of wildlife populations.

### **White-tailed deer**

The refuge falls within New Jersey's Deer Management Zone (DMZ) 2 and within New York's Wildlife Management Unit (WMU) 3M. This hunting plan proposes no changes to the hunting of white-tailed deer within New Jersey lands, but proposes to open New York lands to hunting. The refuge has been open to white-tailed deer hunting in New Jersey since 1993, and over the last 9 years has averaged 335 permit sales per year.

#### *New Jersey*

Over the last 5 years, an average of 3,445 permits were sold annually for DMZ 2 resulting in the harvest of approximately 2,285 deer per year. On average, 72 deer were reported to the State as being harvested from the refuge over each of the last 5 years (Stanko pers. comm. 2014). This is just 3 percent of the DMZ's annual take (though the refuge occupies 6.3% of the DMZ's geographic area), and is a tiny fraction of the Statewide harvest. The State does not have any available information on the state of deer browse or forest health for this DMZ that might serve as an indication of population size.

#### *New York*

Deer hunting is a traditional part of New York's outdoor heritage and continues to be an important source of food and recreation. It is also an important tool for managing deer populations across the State. Access to huntable land has decreased significantly in New York, largely through increased posting of private lands which reduces hunting opportunities, hunter activity and deer management efficacy (New York State Department of Environmental Conservation [NYSDEC], 2011). This has consequently resulted in increased demand for hunting on public lands. The State's deer management plan calls for land managers to be involved in efforts to enhance access, particularly as it relates to increased effectiveness for deer management.

Specific issues of concern that the State of New York has regarding overabundance of deer are crop damage, deer-vehicle collisions, and impacts on forest ecosystems. The State is divided into two main Deer Management Zones (North and South, wherein WMU 3M falls), which are further divided into 92 wildlife management units (WMU). Habitat quality and quantity for deer differs across these WMU's as a result of varying land uses, human population densities, forest types, soil characteristics, climate conditions, and other factors. As a result, deer population densities, survival and productivity, and developmental characteristics also vary, such that deer management has historically been implemented at the WMU level. The NYSDEC's deer management goals are to manage deer with consideration of ecological impacts, human land uses, recreation and public safety.

The NYSDEC manages deer populations largely by manipulating the mortality rates of adult female deer through regulated hunting. This is accomplished through the issuance of Deer

Management Permits (DMP's, or antlerless deer tags) available to hunters (South Zone only), and regulation of the special bow and muzzleloader seasons (North Zone only) to manipulate female harvest. In WMU 3M, hunting accounts for more than 70 percent of mortality, followed by vehicle collisions and winter kill (Clarke pers. comm. 2012). In 2013, a total of 8,367 deer were harvested from WMU 3M, averaging 11.2 deer per square mile; a total of 1,123 were harvested from the nearby town of Warwick (closest to refuge lands) (NYSDEC 2013a).

Deer population objectives in New York are socially driven and not solely ecologically based (Clarke pers. comm.) The NYSDEC established these objectives on a 5-year cycle, based on public input and assessment of deer population indices, harvest trends and deer impacts. These objectives, combined with biological knowledge of individual species and refuge habitats, will be used to evaluate and regulate hunting on the refuge. If populations, habitat, or hunter success rates adversely impact refuge resources, modifications to the hunt program will be made. Refer to the Wallkill River NWR Hunting Plan Environmental Assessment (EA) for a thorough discussion of refuge habitats that support deer populations.

Forest condition is an effective metric for indicating the ecological impacts of deer on habitat, and evaluating the appropriateness of deer density in a given area. The NYSDEC uses browse impact and regeneration success to inform recommendations for deer population change on an ecological basis. Browse impact surveys in WMU 3M have shown a clear lack of forest regeneration for all tree species, including the less preferred species like American beech and black cherry (Clarke 2012, unpublished data).

Neighboring farms have reported increased and unsustainable crop damage since the refuge's 2011 acquisition of the Winding Waters tract in Pine Island, New York. This is likely due to the temporary suspension of hunting on that parcel, and the improvement of forage there resulting from the restoration of native grasses and forbs.

We estimate that opening these New York lands to hunting may result in the sale of 20 additional permits and the harvest of 15 deer. When compared to the total number of deer harvested from WMU 3M and given the above factors, it is apparent there are sufficient numbers of deer to allow a hunt and still sustain a viable population within the refuge and around the State.

### **Black bear**

The refuge falls within New Jersey's Bear Management Zone 2 and within New York's WMU 3M. Bear hunting was first approved within the refuge's 2004 Hunting Plan and again within the refuge's 2009 CCP.

Anticipated impacts of the refuge bear hunt are included within the refuge's 2009 CD for black bear hunting.

### *New Jersey*

The refuge's 2009 CD pre-dates the State's Comprehensive Black Bear Management Policy. Hence additional details are included below.

The State's Bear Management Zones define areas where bears should be managed at various densities consistent with land use. The State's 1997 Black Bear Management Policy recommended managing bears at a density of 1 bear per 2.5 square miles. Zone 2, where the refuge is located, has an average forest cover of 43 percent and is designated as good bear habitat. The bear density within this zone is estimated at 1.6 bears per square mile, four times the recommended density. (Vreeland 2010). In 2009, the State estimated the number of bears falling within Zones 1 through 4 at 3,438 animals.

In 2003, New Jersey held its first black bear hunt in more than 30 years, resulting in the harvest of 328 bear during a one-week season (7,000 permits were issued). In 2005, a second bear hunt resulted in the harvest of 280 bears (4,000 permits issued). Bear hunts in 2010 through 2012 yielded 592, 469, and 287 bears respectively (information was not available on the number of permits issued). While Sussex County always produces the largest number of harvested bear Statewide, Area 2 does not consistently produce the largest harvest of the Bear Management Zones. For years in which data was available (2005, 2011, and 2012), Area 2 produced 19.5 percent, 29.6 percent, and 34.1 percent of the State's harvest respectively.

Though the refuge does not conduct surveys or research to quantify bear use, bear and their signs are commonly observed. The refuge's CD states that the refuge could provide habitat for 20 to 22 bears. However, based on revised estimates found within the State's 2010 Black Bear Management Plan (New Jersey Department of Environmental Protection [NJDEP], 2010), this number is more likely to be about 13 bears (8 square miles with 1.6 bears per square mile). The CD also states an anticipated refuge harvest of 4 to 7 bears, but these numbers may be similarly inflated. The refuge is routinely asked about bear hunting; however, the refuge doesn't provide great bear habitat, and it is unlikely that bear hunters will seek out the refuge as a hunting destination. It is more likely that refuge hunters will purchase a bear permit just in case opportunity arises during other hunting pursuits such as deer and turkey. Hence, we estimate that perhaps 20 bear permits will be sold annually. Based on the information provided in the CD and the State's 2010 Management Plan, we do not anticipate that a public bear hunt will be detrimental to the sustainability of refuge or State bear populations.

#### *New York*

New York manages its black bear population through Adaptive Impact Management, a planning framework which focuses on stakeholder-identified desirable impacts of management as the basis for setting fundamental objectives of management (NYSDEC 2007). This framework results in stakeholder-informed changes to the State's black bear feeding and harvest regulations, reflected in New York's annually issued Hunting and Trapping Digest.

The bear population within southeast New York has been increasing steadily since the 1980's and currently numbers about 1,700 animals (Merchant pers. comm., 2013). Harvests have increased during that time as well, and since 2009 between 20 and 27 bear have been harvested annually from the town of Warwick. In 2013, a total of 62 bear were harvested from WMU 3M; 24 were taken from the town of Warwick (NYSDEC 2013b). A total of 160 acres would be opened to bear hunting in New York; we estimate that 1 to 2 bears might be taken annually from this area. A harvest this size would not produce a measurable effect on the regional population. However, it would assist the State in meeting their management objectives.

## **Migratory Game Birds**

Migratory game bird harvest regulations are set annually by the Service's Migratory Birds Division and then administered by each State. Similarly, harvest estimates are procured by the Migratory Birds Division and are estimated at a Statewide level; localized harvest estimates are unavailable.

### *New Jersey*

Migratory game bird hunting, as measured by permit sales, is the second most popular hunting pursuit on the refuge. From 2011 to 2012, 30 percent of permit sales were for migratory birds. This hunting plan proposes no changes to the hunting of migratory birds within New Jersey lands. The refuge has been open to migratory game bird hunting since 1997, and over the last 7 years, has averaged 116 permit sales per year. Internal refuge observations suggest that perhaps 15 percent of migratory bird permits sold are for hunters strictly interested in woodcock.

Over the last 5 years for which data are available, the average estimated annual New Jersey duck harvest was 60,060; Canada goose harvest was 35,580; and woodcock harvest was estimated at 2760 (Klimstra et al. 2013). Over the same time period, the average seasonal harvest per active hunter in New Jersey was 9.46 ducks, 9.02 geese, and 2.86 woodcock (Klimstra et al. 2013). Thus we estimate that each year, on average 937 ducks, 893 geese, and 49 woodcock may be harvested from New Jersey lands. This level of harvest produces a negligible effect on Statewide or regional populations.

### *New York*

Seventy-three species of waterbirds have been documented on the refuge, including 24 species of waterfowl. Breeding waterfowl include the Canada goose, wood duck, American black duck, mallard, hooded merganser, and common merganser; other breeding waterbirds include bitterns, herons, rails, the spotted sandpiper, and the American woodcock. New York lands that would be opened to hunting (160 acres) provide minimal waterfowl habitat for the majority of the year but do provide good woodcock habitat. Significant numbers of migratory waterfowl can be found here only when spring snowmelt and rains flood the fields, which does not occur every year. Small ditches may hold water through most of the year but support small numbers of waterfowl due to their size. Mallard and Canada goose would be the only likely nesting species. Small numbers of migratory and wintering fowl may be found mixed in with large flocks of Canada geese that overfly the area as they move between fallow farm fields to the north and the impoundments to the south. Opportunities for waterfowl hunting would primarily be limited to these fly overs and the open waters on the adjacent Wallkill River; conditions are more favorable for woodcock hunting. We estimate that perhaps 5 additional migratory bird hunting permits might be sold for these lands; internal refuge observations suggest that perhaps 15 percent of migratory bird permits sold are for hunters strictly interested in woodcock. Hence we speculate that perhaps 4 permits would be sold to waterfowl hunters and 1 to woodcock hunters.

Over the last 5 years for which data are available, the average estimated annual New York duck harvest was 200,500; Canada goose harvest was 145,100; and woodcock harvest was estimated at 9,940 (Klimstra et al. 2013). Over the same time period the average seasonal harvest per active hunter in New York was 9.78 ducks, 8.74 geese, and 2.26 woodcock (Klimstra et al.

2013). Thus we anticipate that perhaps 40 ducks, 36 geese, and 1 to 2 woodcock may be harvested from 5 additional permit sales for New York lands. This level of harvest will produce a negligible effect on Statewide or regional populations.

## **Turkey**

### *New Jersey*

This hunting plan proposes no changes to the hunting of turkey within New Jersey lands. The refuge has been open to turkey hunting since 1997, and over the last 7 years has averaged 83 permit sales per year. On average, 61 turkeys were reported to the State as being harvested from the refuge over each of the last 5 years (McBride pers. comm. 2014). The refuge falls within New Jersey's Turkey Area 5.

### *New York*

Wild turkeys were abundant and widely distributed throughout New York at the time of European settlement. By the mid-1840s, excessive logging and intensive farming, coupled with unregulated market and subsistence hunting, had extirpated or reduced turkey populations to extremely low levels (NYSDEC 2005). By 1909, no records of wild turkey could be found in New York (Eaton 1990). After the Civil War, many New York farms were abandoned as farming shifted to better land in more western states. Reversion of those farm fields to forest helped create suitable forested habitat for turkeys; in the late 1940s, the species expanded from Pennsylvania into parts of southwestern New York (NYSDEC 2005). From 1952 to 1959, the State undertook a failed effort to release game farm turkeys throughout New York; however, the birds did not exhibit adequate wildness to avoid predation and could not survive. Beginning in 1959, the State began trapping wild turkeys from southwestern New York and releasing them in suitable habitats. The State has characterized this effort as an "unqualified success" (NYSDEC 2005).

Turkey populations are now established Statewide; over the last 5 years, an average of 26,200 turkeys were taken in spring and 8,800 harvested in fall (NYSDEC 2014a, b). The State utilizes a number of methods to estimate and monitor turkey populations, including hunter surveys, reported harvests, sighting surveys, bow hunter sighting logs, and additional monitoring methods. The calculated (estimated) spring harvest in Orange County for 2013 was 461 turkeys; fall (2012) take was 207 turkeys (NYSDEC 2014a, b); estimates for WMU 3M were not available. The New York lands to be opened to turkey hunting are largely open fields and wetlands, and do not provide much in the way of turkey's preferred forested habitats; we anticipate that fewer than 5 turkeys would be harvested annually. This number would represent just a fraction of the County total and would have no impact on the Statewide population.

## **Small Game**

### *New Jersey*

This hunting plan proposes to open New Jersey portions of the refuge to the hunting of small game (to include coyote, fox, crow, ruffed grouse, opossum, raccoon, pheasant, chukar, rabbit/hare/jackrabbit, gray squirrel, woodchuck, and woodcock). The refuge proposes to include small game in order to promote consistency with State regulations, and to create additional opportunities for novice hunters who often get their start through small game seasons.

The refuge will not stock pheasant, quail, or chukar or allow the use of dogs (woodcock excepted, see Biological Conflicts), which is likely to dampen hunter interest.

The State does not publish management plans for small game species. Harvests are managed via bag limits for each of these species, though the number of permits issued annually is not reported. Small game firearm harvest estimates are derived from New Jersey Firearm Harvest Surveys on a biannual basis. From 2011 to 2012, estimated Statewide harvests for small game species were 44,451 for rabbit; 34,011 for squirrel; 16,447 for woodchuck; 1,588 for raccoon; 1,527 for fox; 70 for coyote; and 517 for opossum (NJDFW 2012a). Game bird harvests from 2011 to 2012 were estimated at 24,782 crow and 2,335 grouse (NJDFW 2012b). Small game hunting is declining in popularity, as measured by numbers of hunters, and thus we expect little hunter demand and expect minimal impact from this activity (USFWS, 2010). The refuge's prohibition against night hunting when most furbearer hunting occurs (coyote, fox, raccoon, opossum; see Biological Conflicts) is likely to further dampen hunter interest in the activity. Based on these trends, we anticipate that perhaps 20 small game permits would be sold annually, resulting in the harvest of perhaps 25 rabbits, 25 squirrels, and 10 woodchucks. Grouse are rarely seen on the refuge and we anticipate that few grouse hunters would seek the refuge as a hunting destination; few to none are likely to be harvested. Furbearer hunting on the refuge is likely to be limited to the incidental take of furbearer species encountered during outings for other game such as deer and turkey, and will likely be limited to single-digit harvest of raccoon, fox, coyote, and possum. These harvest levels represent just a tiny fraction of the statewide annual harvests and would have no impact on populations.

#### *New York*

This hunting plan proposes to open New York lands to the hunting of small game (to include rabbit/hare, gray/black/fox squirrel, pheasant, bobwhite quail, ruffed grouse, crow, red/gray fox, coyote, bobcat, raccoon, skunk, mink, weasel, and opossum). Hunting of frogs and snapping turtles will be prohibited. The refuge will not stock pheasant or quail or allow the use of dogs, which is likely to dampen hunter interest. The refuge will also prohibit night hunting when most furbearer hunting occurs (see Biological Conflicts) and will prohibit recreational trapping, which is likely to dampen most hunter interest in the activity. Thus demand for small game permits is expected to be minimal, especially as demand for small game hunting is declining (USFWS, 2010).

The State does not publish management plans for small game species. Harvests are managed via bag limits for each of these species, though the number of permits issued annually is not reported. Over the last 5 years, estimated annual hunting participation (number of hunters) from Zone C (includes WMUs 3F, 3J, 3M, 3N, 3P, 4B, 4J, 4K, 4S, 4T, and 4Y) was 15,686 for crow, 26,844 for rabbit, 966 for varying hare, 48,923 for squirrel, 10,457 for grouse, and 19,444 for pheasant (Schiavone pers. comm. 2014). For those same years, estimated annual harvests from Zone C were 3,527 for crow, 8,909 for rabbit, 1,391 for varying hare, 8,778 for squirrel, 7,795 for grouse, and 6,597 for pheasant (Schiavone pers. comm. 2014). Average annual furbearer harvests for the same zone and time period were 3,827 raccoon, 1,163 red fox, 680 gray fox, and 6,761 coyote. These numbers result in an average per-hunter harvest of 4.5 crow, 3.0 rabbit, 0.7 hare, 5.6 squirrel, 1.3 grouse, and 2.30 pheasant per season; and 3.8 raccoon, 0.6 red fox, 0.4 gray fox, and 0.8 coyote per season. Small game hunting is declining in popularity, as measured

by numbers of hunters, and thus we expect little hunter demand and expect minimal impact from this activity (USFWS, 2010). Based on these trends, we anticipate that perhaps 3 small game permits would be sold for New York lands, resulting in the harvest of perhaps 13 crows, 9 rabbits, 0 hare, and 17 squirrels per year. Grouse are rarely seen on the refuge and we anticipate that few grouse hunters would seek the refuge as a hunting destination; few to none are likely to be harvested. Furbearer hunting on the refuge is likely to be limited to the incidental take of furbearer species encountered during outings for other game such as deer and turkey, and will likely be limited to single-digit harvest of raccoon, fox, coyote, and possum. These harvest levels represent just a tiny fraction of the statewide annual harvests and would have no impact on populations.

#### **B. Is there competition for habitat between target species and other wildlife?**

The refuge has not directly studied habitat competition between the target species and other wildlife. Competition between game species and other wildlife and their habitats is not considered a limiting factor. However, population management of white-tailed deer is expected to reduce browse pressure on native understory plant species, including shrubs and trees that provide habitat for migratory birds and other wildlife. Thus, control of white-tailed deer should improve habitat for other species of wildlife.

#### **C. Are there unacceptable levels of predation by target species on other wildlife?**

Predation levels by game species on other refuge wildlife have not been measured. Raccoons, opossum, fox, and coyote are potential predators of bog turtles and bird populations; however, there is no information at this time to suggest that they are imparting unacceptable levels of predation upon trust species.

### **V. Description of Hunting Program**

#### **A. Areas of the refuge that support populations of the target species.**

The refuge includes mixed bottomland hardwood forest, open fields, and a mosaic of wetlands that support a diversity of wildlife species (including game and nongame) which are important contributors to the overall diversity of Wallkill River NWR. Conservation of migratory birds is often considered the overall connecting theme of the NWRs. Wallkill River NWR was established primarily to conserve and enhance populations of wildlife (including migratory birds) and their habitats, to protect and enhance water quality, and to provide opportunities for wildlife-dependent recreation and research. The refuge has documented more than 250 species of birds, 40 species of mammals, 40 species of herpetofauna, and a great diversity of fish, invertebrates, and plants.

Game species may be found throughout the refuge's varied habitats. Waterfowl concentrate along the valley's bottomlands and in the impoundments, particularly during migration. Bear may be found along the refuge's ridges and upland forests, and deer and turkey may be found throughout the refuge's forests and fields. Fields and shrub habitats provide ample habitat for a variety of small game species.

## **B. Areas to be opened to hunting.**

The Wallkill River NWR hunting program is designed to provide compatible public hunting opportunities that support refuge objectives, while minimizing conflicts with non-hunting user groups. The hunt area is comprised of riparian corridors, old fields, scrub-shrub meadows, forests, and wetlands. A permanent no-hunting area is maintained in the 335-acre Liberty Marsh complex.

Deer, turkey, bear, and small game hunting would be permitted in the entirety of the refuge, with the exception of the 335-acre Liberty Marsh complex, the 117-acre Owens Station site (open for disabled hunters only), and the 188-acre Owens Station Crossing site. Migratory bird hunting is open in the same areas, but with additional exclusions along the Wood Duck trail (342 acres), Armstrong tract (330 acres), and 100 acres adjacent to the Liberty Marsh complex. See attached maps:

*Figure 1 – Deer, Bear, Turkey, Small Game Hunt Areas, Wallkill River NWR*

*Figure 2 – Migratory Bird Hunt Areas, Wallkill River WNR*

## **C. Species to be taken, hunting periods, hunting access**

Hunting seasons will be set annually by the NJDFW and the NYSDEC as stipulated within their respective Hunting and Trapping Digests/guides, and will be reiterated in the refuge's annual regulations which may contain further restrictions.

Hunting dates on Wallkill River NWR will be similar to those found on other public and private lands found in New Jersey and New York. General hunting provisions including seasons, licenses, safety courses, species, and bag limits are established within the regulations of the New Jersey Hunting and Trapping Digest and the New York Hunting and Trapping guide. The Wallkill River NWR hunt may be slightly more restrictive (see Section VI, Measures Taken to Avoid Conflicts) to assure compatibility with other refuge purposes and visitors.

While permitted by NYSDEC regulations, Sunday hunting will be prohibited throughout the refuge. This provides consistency across refuge lands, since the majority of the hunt area lies in New Jersey (where Sunday hunting is prohibited). This restriction also reserves one day a week for non-hunters to pursue other wildlife-dependent uses without simultaneous use by refuge hunters.

The Service will make a reasonable effort to allow hunters access to all portions of the refuge. The intention is to provide safe, quality hunting opportunities that consider the welfare of the refuge wildlife resources. Access points will be delineated on the annual refuge hunt maps.

The refuge will adopt youth hunts as stipulated within the respective annual Hunting and Trapping Digests/guides. Accommodations will be made to provide opportunities for hunters with disabilities, who may hunt within a special hunting restrictions area (access for disabled hunters only) at 119 Owens Station Road in New Jersey.

#### **D. Justification for the permit, if one is required**

Applications for refuge hunting permits will be available 5 weeks prior to the beginning of each respective season. Permit applications are handled by a partner and can be found online at [wallkillriverpermits.com](http://wallkillriverpermits.com). Hunters may also apply by phone or in person at the Wallkill River NWR office (though in both cases the web site will be used for permit purchase).

A refuge hunting permit, OMB forms 3-2354 and/or 3-2356, is required. Permit fees help to defray the costs of administering the hunt program. Numbers of hunters are controlled via the number of permits issued by the refuge. Local, in-state, and out-of-state hunters are eligible to apply so long as they have met the requirements for (and obtained) a New Jersey and/or New York hunt license.

Permits will be issued for deer, bear, turkey, migratory birds (to include ducks, mergansers, coots, geese, doves, woodcock, snipe, rails, moorhens, and gallinules), and small game (to include crow, grouse, opossum, raccoon, coyote, fox, pheasant, chukar, rabbit/hare/jackrabbit, squirrel, woodchuck, and quail [New York Only]). Permits are \$30 each and cover the period April 1 to March 31. Combination (all game) permits are \$75 each. Discounts are available for those with Interagency Annual, Access, or Senior Passes (\$17.50 per individual permit, \$40 per combination permit); there is no fee for youth hunters. Any hunter wishing to utilize the refuge must obtain the proper refuge permit or permits.

Harvested animals will be reported by hunters to the NJDFW or NYSDEC per the respective State's regulations. The refuge will not operate harvest stations.

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

Wallkill River NWR hunt opportunities are designed to align as closely as possible with State regulations so as to maximize coordination and cooperation in the management of game populations. State wildlife management agencies and game managers were consulted in the development of this plan, and have willingly shared harvest, permit sales, and other data as necessary to support the development of this document.

#### **F. Law Enforcement**

Enforcement of refuge violations normally associated with management of a national wildlife refuge is the responsibility of commissioned Federal Wildlife Officers (FWO). Special Agents and State game wardens also assist the Wallkill River NWR FWO.

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

- Refuge and hunt area boundaries will be clearly posted;
- The refuge will provide a brochure that shows hunt areas;

- Wallkill River NWR law enforcement staff will randomly check hunters for compliance with Federal and State Laws, as well as refuge-specific regulations pertinent to hunting, including compatibility stipulations;
- Wallkill River NWR law enforcement staff will coordinate with NJDFW, NYSDEC, and other law enforcement agencies; and
- Hunt-related information will be made available at the Wallkill River NWR office and web site.

Procedures for obtaining law enforcement assistance are based on legal jurisdiction, pending where the incident occurred. The Wallkill River NWR law enforcement officer has met with local law enforcement agencies in the counties that contain refuge units to develop good working relationships and coordinate appropriate strategies.

### **G. Funding and Staffing Requirements**

Costs associated with administering the hunt program total approximately \$50,000. This amount is based on salaries for administrative and law enforcement personnel, creation and distribution of hunting information, permit fee administration, transportation, monitoring, signing, and other miscellaneous expenses. If the Service's required administrative involvement increases, the cost will have to be reevaluated to ensure a hunt compatible with refuge objectives and purposes can be conducted. Efficiencies created by the use of a third-party vendor to coordinate permit sales offset additional costs incurred by the addition of new lands and species to the existing hunt program. It is anticipated that funding in the future will continue to be sufficient to support the hunting program at Wallkill River NWR.

## **VI. Measures Taken to Avoid Conflicts with Other Management Objectives**

### **A. Biological Conflicts**

Hunting opportunities provided on Wallkill River NWR will be designed to result in minimal disturbance to trust resources. Minimizing disturbance factors and potential impacts are a primary consideration in season and regulation development.

Several hunting seasons overlap with the fall migration (mid-August to mid-November) of many bird species. Hunters can have similar disturbance effects on birds as birdwatchers and hikers, which may directly change the behavior of birds. This altered behavior may change foraging patterns (Skagen et al. 1991), increase distraction displays, or cause birds to leave, or completely avoid the disturbed areas (Burger et al. 1995). Additionally, the higher level of vigilance required reduces the time available for foraging, which places increased stress on adults trying to find food and may affect their survival (Marcum 2005). Some activities permitted by the game regulations of New Jersey and New York could result in unacceptable disturbance to refuge wildlife. The refuge hunting program limits disturbance to these species by prohibiting falconry hunting, the take of reptiles and amphibians, and the use of retrieval dogs for upland game (woodcock excepted); limiting the number of dogs per waterfowl hunting party to no more than two; prohibiting night hunting (when most furbearer hunting takes place); and restricting woodchuck hunting prior to July 15. Based on these prohibitions, and given the refuge's prior

experience with deer, migratory bird and turkey hunting, we do not expect more than a few hunters to be in any one area at a time and hence disturbance effects should be minimal. Further explanation follows.

Migratory and wintering waterfowl and waterbirds that are resting and feeding within the permanent no-hunting area at Liberty Loop impoundments may be disturbed by the use of falcons for small game hunting on adjacent properties, as allowed by New York regulations. Falconry hunting, when considered against the proximity of New York lands to the impoundments, could incur significant disturbance to migratory waterfowl during the falconry season (October 1 through March 31). This poses an unacceptable level of disturbance, given that a primary purpose of the refuge is to "...conserve and enhance populations of...black ducks and other waterfowl...and marsh and water birds." Similarly, night hunting of furbearers with the use of dogs may also result in such harassment of non-target game, which would be particularly disruptive for diurnal (day active) species.

New York's small game regulations permit amphibian and turtle hunting; New Jersey has no analogous game laws. To facilitate consistency of regulations across the entire refuge, and to limit disturbance and take of these nongame wildlife, the take of amphibians and turtles will be prohibited within New York lands. These activities, if allowed, would result in increased disturbance and take of nongame wildlife such as amphibians, turtles and snakes, as well as disturbance to other wildlife in the pursuit of these species. Further, the New York small game season permits the harvest of frogs and snapping turtles between June 15 and September 30, which includes at least a portion of the breeding season for many of these species. Listed species potentially encountered include the federally threatened bog turtle and the New Jersey State-threatened wood turtle, the latter of which could easily be mistaken for the snapping turtle. Prohibition of amphibian and reptile harvests will thus eliminate these conflicts.

Hunting may represent potential conflict with bog turtle management, especially where dogs may be used to flush upland game from shrubby habitats where hunters wouldn't desire to go. Dogs represent a potential predator for bog turtles, and human disturbance has been shown to cause local extinction of turtle populations when wilderness areas are opened to human recreation (Garber and Burger 1995). In order to prevent conflicts in bog turtle habitats, the refuge will prohibit the use of dogs for anything other than waterfowl and woodcock hunting (waterfowl habitats are not likely to be suitable for bog turtles, and the use of retrieval dogs for this purpose represents little threat.) With this conflict eliminated, we expect no other conflicts with bog turtle management resulting from hunting.

The woodchuck hunting season coincides with the nesting and breeding seasons of birds; however, the refuge will prohibit woodchuck hunting prior to July 15 to avoid this conflict. Hence, no adverse effects to nesting birds are expected.

There would be few to no effects on the federally endangered Indiana bat, which is nocturnal and roosts in dead and dying trees during the day; it is unlikely that daytime hunter travel would cause any disturbance to the species (the same is true of other bat species of special concern occurring within the area).

None of the other hunting seasons are expected to have an adverse effect on biological resources. If, in the future, adverse effects are detected, the refuge will limit hunting opportunities or make other changes as needed to protect refuge resources.

## **B. Public Use Conflicts**

For the duration of the hunt period, trails and public use areas will be surrounded by no-hunting zones to ensure visitor safety. Signage will go up at refuge kiosks and information will be placed on the refuge Web site to inform the public of the hunt. Sunday hunting (prohibited in New Jersey) will be prohibited on New York lands; this ensures consistency across the refuge and preserves one day a week for refuge visitors to enjoy wildlife-dependent recreation without potential disturbance or interference from hunting activities. Night hunting will be prohibited, as will the use of dogs for small game hunting (woodcock excepted). These restrictions (in addition to their biological justification) will ensure consistency with existing refuge policies (which close the refuge to public access from sunset to sunrise), limit disturbance to neighbors resulting from dogs chasing small and furbearing game during both the day and night, and limit the prospect of dogs venturing off-refuge onto private properties and yielding trespass issues for owners attempting to retrieve them.

The woodchuck season will limit allowable weapons to rimfire-only rifles. The use of high-powered, center-fire rifles as permitted by New Jersey's small game regulations is inconsistent with the refuge's safety concerns for neighbors and non-hunting visitors. The rimfire-only restriction will limit the potential for conflict and disturbance to these user groups.

Public uses are designed in such a manner as to complement refuge objectives and minimize potential conflict. Opportunities for other wildlife-dependent recreation will continue to exist and include wildlife observation, photography, environmental education and interpretation, and fishing. If unforeseen conflicts arise, the refuge manager may either further restrict hunting or limit other public uses during the hunting season to ensure public safety and provide a climate for productive coexistence of visitor uses. If further action is required to solve conflicting use problems, equal consideration will be given to the various wildlife-dependent recreational uses allowed on the refuge.

It is not expected that hunting will impact any cultural resources.

## **C. Administrative Conflicts**

No administrative conflicts are known to occur with hunting activities. For many years, the refuge has planned and provided for hunting opportunities. Refuge management sets priorities, allowing staff sufficient time to administer the hunting program. Currently, the refuge hosts a federal wildlife officer, a park ranger, and a biologist, all of whom assist with various aspects of the hunt. Additional assistance is sought from other refuges, local special agents, or State game wardens, when deemed necessary.

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

Listed below are refuge-specific regulations that pertain to Wallkill River NWR as of the date of this plan. These regulations may be modified as conditions change or if refuge expansion continues/occurs.

### **A. Refuge-Specific Hunting Regulations**

#### *New Jersey*

**Migratory Game Bird Hunting.** We allow hunting of migratory birds on designated areas of the refuge in accordance with State of New Jersey regulations and subject to the following conditions:

1. We require hunters to submit a Migratory Bird Hunt Application/Permit (information taken from OMB-approved FWS Form 3-2357) to hunt on the refuge. We require hunters to possess a signed refuge hunt permit (name and address only) at all times while scouting and hunting on the refuge. We charge a fee for all hunters except youth age 16 and younger.
2. We issue one companion permit (no personal information) at no charge to each hunter. We allow companions to observe and/or call but not to shoot a firearm or bow. Companion and hunters must set up in the same location.
3. We provide hunters with hunt maps and parking permits (name only) which they must clearly display in their vehicle. Hunters who park on the refuge must park in identified hunt parking areas.
4. We provide a designated hunting area at 119 Owens Station Road, Vernon, New Jersey, for the exclusive use of physically challenged individuals who have produced evidence of the New Jersey Permit to Shoot or Hunt from a Stationary Vehicle and possess a signed, disabled hunter refuge permit.
5. We prohibit the use of all-terrain vehicles (ATVs) on the refuge.
6. We require hunters to wear, in a conspicuous manner, a minimum of 400 square inches (2,600 cm<sup>2</sup>) of solid-color, hunter-orange clothing or material on the head, chest, and back, except when hunting ducks and geese.
7. We prohibit hunters using or erecting permanent or pit blinds.
8. We require hunters to remove all hunting blind material, boats, and decoys from the refuge at the end of each hunting season (see § 27.93 of CFR chapter 32.57).
9. We allow pre-hunt scouting; however, we prohibit the use of dogs during scouting.
10. We limit the number of dogs per hunting party to no more than 2 dogs.

11. We allow hunters to enter the refuge 2 hours before shooting time, and they must leave no later than 2 hours after the end of shooting time.

**Upland Game Hunting.** We allow hunting of coyote, fox, crow, ruffed grouse, opossum, raccoon, pheasant, chukar, rabbit/hare/jackrabbit, squirrel, and woodchuck on designated areas of the refuge in accordance with State of New Jersey regulations and subject to the following conditions:

1. We require hunters to submit a Big Game Hunt Application/Permit (information taken from OMB-approved FWS Form 3-2356) to hunt on the refuge. We require hunters to possess a signed refuge hunt permit (name and address only) at all times while scouting and hunting on the refuge. We charge a fee for all hunters except youth age 16 and younger.
2. Conditions A3-A6, and A11 apply.
3. We prohibit scouting.
4. We prohibit the use of dogs during hunting.
5. We prohibit baiting on refuge lands (see § 32.2(h)).
6. We prohibit night hunting.
7. We prohibit woodchuck hunting prior to July 15; only rimfire rifles are allowed to harvest woodchuck.

**Big Game Hunting.** We allow hunting of white-tailed deer, bear, and wild turkey on designated areas of the refuge in accordance with State of New Jersey regulations and subject to the following conditions:

1. Conditions A3-A5, A9, A11, B1, B4, and B5 apply.
2. We require firearm hunters to wear, in a conspicuous manner, a minimum of 400 square inches (2,600 cm<sup>2</sup>) of solid-color, hunter-orange clothing or material on the head, chest, and back. Bow hunters must meet the same requirements when firearm season is also open. We do not require turkey hunters to wear orange at any time.
3. We allow pre-hunt scouting.
4. We require hunters to remove all stands and other hunting material from the refuge at the end of each hunting season (see § 27.93 of CFR chapter 32.57).
5. We prohibit deer drives.

*New York*

**Migratory Game Bird Hunting.** We allow hunting of migratory birds on designated areas of the

refuge in accordance with State of New York regulations and subject to the following conditions:

1. We require hunters to submit a Migratory Bird Hunt Application/Permit (information taken from OMB-approved FWS Form 3-2357) to hunt on the refuge. We require hunters to possess a signed refuge hunt permit (name and address only) at all times while scouting and hunting on the refuge. We charge a fee for all hunters except youth age 16 and younger.
2. We issue one companion permit (no personal information) at no charge to each hunter. We allow companions to observe and/or call but not to shoot a firearm or bow. Companion and hunters must set up in the same location.
3. We provide hunters with hunt maps and parking permits (name only) which they must clearly display in their vehicle. Hunters who park on the refuge must park in identified hunt parking areas.
4. We prohibit the use of all-terrain vehicles (ATVs) on the refuge.
5. We require hunters to wear, in a conspicuous manner, a minimum of 400 square inches (2,600 cm<sup>2</sup>) of solid-color, hunter-orange clothing or material on the head, chest, and back, except when hunting ducks and geese.
6. We prohibit hunters using or erecting permanent or pit blinds.
7. We require hunters to remove all hunting blind material, boats, and decoys from the refuge at the end of each hunting season (see § 27.93 of CFR chapter 32.57).
8. We allow pre-hunt scouting; however, we prohibit the use of dogs during scouting.
9. We limit the number of dogs per hunting party to no more than 2 dogs.
10. We allow hunters to enter the refuge 2 hours before shooting time, and they must leave no later than 2 hours after the end of shooting time.
11. We prohibit Sunday hunting.

Upland Game Hunting. We allow hunting of rabbit/hare, gray/black/fox squirrel, pheasant, bobwhite quail, ruffed grouse, crow, red/gray fox, coyote, bobcat, raccoon, skunk, mink, weasel, and opossum on designated areas of the refuge in accordance with State of New York regulations and subject to the following conditions:

1. We require hunters to submit a Big Game Hunt Application/Permit (information taken from OMB-approved FWS Form 3-2356) to hunt on the refuge. We require hunters to possess a signed refuge hunt permit (name and address only) at all times while scouting and hunting on the refuge. We charge a fee for all hunters except youth age 16 and younger.
2. Conditions A3-A5, A10, and A11 apply.

3. We prohibit scouting.
4. We prohibit the use of dogs during hunting.
5. We prohibit baiting on refuge lands (see § 32.2(h)).
6. We prohibit night hunting.
7. We prohibit hunting of reptiles and amphibians.
8. We prohibit falconry hunting.

**Big Game Hunting.** We allow hunting of white-tailed deer, bear, and wild turkey on designated areas of the refuge in accordance with State of New York regulations and subject to the following conditions:

1. Conditions A3-A4, A8, A10-A11, B1, B4 and B5 apply.
2. We require firearm hunters to wear, in a conspicuous manner, a minimum of 400 square inches (2,600 cm<sup>2</sup>) of solid-color, hunter-orange clothing or material on the head, chest and back. Bow hunters must meet the same requirements when firearm season is also open. We do not require turkey hunters to wear orange at any time.
3. We allow pre-hunt scouting.
4. We require hunters to remove all stands and other hunting material from the refuge at the end of each hunting season (see § 27.93 of CFR chapter 32.57).
5. We prohibit deer drives.

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

Hunting has been allowed on Wallkill River NWR for more than 20 years and little negative public reaction is expected for deer, turkey, migratory bird, or small game hunting. Public comments received during the CCP (2009) indicated that bear hunting may draw some criticism from the public.

#### **C. Hunter Application and Registration Procedures (if applicable)**

Information regarding refuge hunting opportunities is listed below, but can also be accessed on the Wallkill River NWR web site: [www.fws.gov/refuge/Wallkill\\_River](http://www.fws.gov/refuge/Wallkill_River). Annual permits are good for the period April 1 through March 31 of the following calendar year.

Hunters may apply for permits using the on-line service of a third-party vendor, must have a valid New Jersey or New York hunt license, and will be asked to provide information taken from

OMB-approved forms. Hunters may also apply over the phone or in-person at the refuge headquarters, though in each case the sale will be completed through the web site. Online payment methods include credit card, PayPal, and eCheck; upon completion of purchase, the permit holder may print the applicable permit(s), map(s) and regulations. Payment may also be made by check or money order; in this case, the permit and applicable maps and regulations will be mailed to the permit holder upon receipt of payment. Customers with questions may call refuge headquarters.

#### **D. Description of Hunter Selection Process**

In the 20 years that Wallkill River NWR has been open to public hunting, there has never been a need to limit permit sales in order to protect refuge resources. All eligible hunters who apply are provided permits.

Upon issuance of each permit and to aid in orientation, hunters will receive a refuge hunt map (by game species) and refuge-specific regulations. Relevant information will also be posted on refuge kiosks and on the refuge Web site. Maps will clearly show refuge trails, public use areas, open areas, parking areas and local roads. Participants in the hunting program will be able to access the refuge year-round to acquaint themselves with refuge trails and access points. Hunters can address questions to refuge the visiting public of the timing of hunting seasons will be posted at access points and kiosks.

#### **E. Media Selection for Announcing and Publicizing the Hunting Program**

The refuge maintains a mailing list, for news release purposes, of local newspapers, radio, and web sites. Special announcements and articles may be released in conjunction with hunting seasons. In addition, information about the hunt will be available at Wallkill River NWR headquarters or on the Wallkill River NWR web site.

#### **F. General Requirements**

General information regarding hunting and other wildlife-dependent public uses can be obtained at Wallkill River NWR headquarters at 1547 Route 565, Sussex, New Jersey 07461 or by calling 973-702-7266. Dates, forms, hunting unit directions, maps, applications, and permit requirements about the hunt will be available on the station web site at: [www.fws.gov/refuge/Wallkill\\_River](http://www.fws.gov/refuge/Wallkill_River).

#### **G. Hunter Requirements**

1. **Equipment** - The refuge will permit the use of legal sporting arms, including shotguns (muzzle-loading shotguns also allowed) in accordance with State regulations. Non-toxic shotgun ammunition is required for all migratory game bird hunting.
2. **License and Permits** - While hunting or scouting, all hunters MUST carry a valid New Jersey or New York hunting permit, a signed refuge hunting permit, and any other zone permits

or hunting privileges as required by State laws respective to the game or location in which they are hunting.

3. **Reporting Harvest** - Hunters must take harvested game to State operated check stations or report their harvest via phone or internet as required by State regulations respective to the game or location in which they are hunting.

4. **Hunter Orange** - Hunters must wear in a conspicuous manner solid fluorescent orange as required by game-specific regulations issued with the annual refuge permit. Small game hunters, woodcock hunters, and deer/bear hunters hunting during any active firearm season, must wear in a conspicuous manner on head chest and back a minimum of 400 square inches of solid fluorescent orange clothing.

5. **Trail markers** - All marking tape, reflective pins, or other materials used to mark trails must be removed at the end of the hunt day. The use of paint is prohibited.

6. **Parking** - Hunters must park in designated refuge hunt parking areas only. Blocking gates, roads, and buildings will result in a fine.

### **VIII. Compatibility Determination**

Hunting and all associated program activities proposed in this plan are expected to be found compatible with purposes of the refuge.

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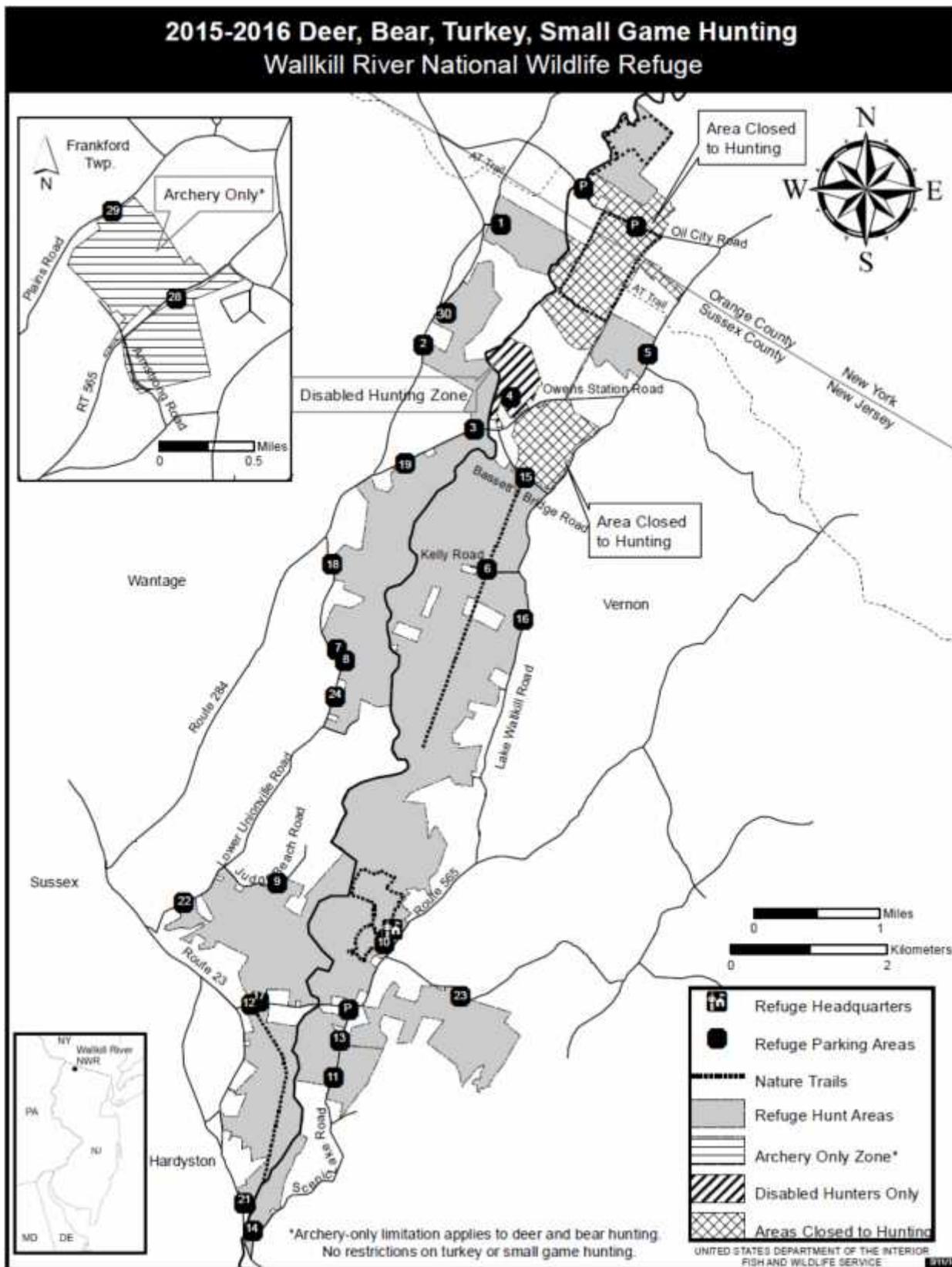


Figure 1. Refuge lands open to deer, bear, turkey, small game hunting.

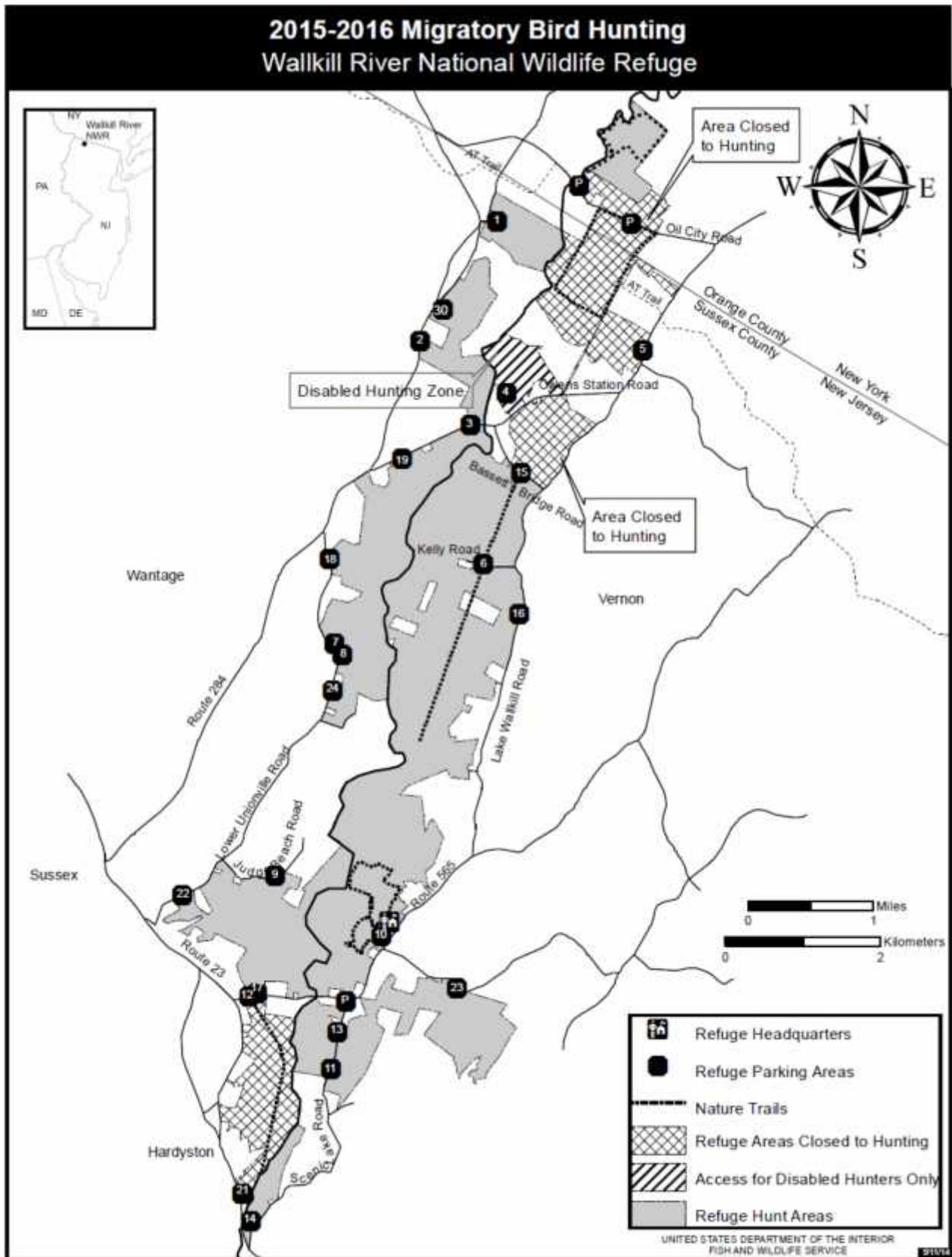


Figure 2. Refuge lands open to migratory bird hunting.

**Compatibility Determination  
Wallkill River National Wildlife Refuge**

**Use:** Hunting

**Refuge name:** Wallkill River National Wildlife Refuge

**Establishing and Acquisition Authorities, and Purposes:**

Each national wildlife refuge is established under specific legislation or administrative authority. Similarly, each refuge has one or more specific legal purposes for which it was established. The establishing legislation or authority and the purposes for Wallkill River National Wildlife Refuge (NWR, refuge) are:

*“...preserve and enhance the refuge’s lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations;”*

*“...conserve and enhance populations of fish, wildlife, and plants within the refuge, including populations of black ducks and other waterfowl, raptors, passerines, and marsh and water birds;”*

*“...protect and enhance the water quality of aquatic habitats within the refuge;”*

*“...fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats;” and,*

*“...provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation (104 Stat. 2955).”*

**National Wildlife Refuge System Mission:**

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

**Description of Use:**

*What is the use?*

This compatibility determination (CD) serves as our evaluation of hunting on lands that have been acquired by the U.S. Fish and Wildlife Service (Service) at Wallkill River NWR.

Hunting activities covered under this CD are consistent with New Jersey Division of Wildlife (NJDFW) and New York State Department of Environmental Conservation (NYSDEC) laws and regulations, and include white-tailed deer, black bear, turkey, migratory game birds, small game, and furbearer species.

*Is the use a priority public uses?*

Yes, hunting has been identified as a priority, wildlife-dependent public use by the NWRS Improvement Act of 1997 (Refuge Improvement Act, P.L. 105-57).

*Where would the use be conducted?*

Wallkill River NWR would add small game and bear hunting opportunities on New Jersey lands that have been open to deer, turkey, and migratory bird hunting since the 1990s. We would also open deer, turkey, migratory bird, bear, and small game hunting opportunities on New York lands that have not previously been open to hunting. The use would be allowed on portions of refuge-owned parcels that are posted, are of sufficient size and/or distance from safety zones such as roads and occupied buildings, do not risk damage to sensitive habitats or species, and that have safe public access points.

*When would the use be conducted?*

The refuge would be open to hunting year-round, but most hunting activities would be concentrated within the period between September 1 and February 28. In general, refuges are open from sunrise to sunset for these activities. Hunting activities would occur during seasons and times established by the NJDFW and NYSDEC.

*How would the use be conducted?*

All hunting will comply with State and Federal regulations. Hunters will be required to obtain a refuge permit c/o Wallkill River NWR headquarters. There will be a fee for the permit; each participant will be provided information regarding safety requirements and general refuge regulations, map showing access points/entrances, and permit. The number of permitted hunters may be restricted to ensure safety and minimize impacts to wildlife populations and other priority public uses. Hunters will be required to report harvest data per NJDFW or NYSDEC requirements, respectively. Safety zones around public use areas such as trails and parking lots will minimize user conflicts between hunters and other recreational visitors. Specific hunting regulations and procedures will be described in the Hunt Plan and in the annual refuge regulations. The refuge hunt program will be reviewed annually to ensure management goals are achieved and that the program is providing a safe, high-quality hunting experience for participants.

*Why is the use being proposed?*

This use is identified as a priority use by the Refuge Improvement Act of 1997. Implementing a hunting program will provide additional wildlife-dependent recreational opportunities. Allowing this activity, which is a historic use within the valley, will encourage family-oriented outdoor recreation and support the tradition of hunting in a manner consistent with the States' management recommendations for each respective game species.

Deer populations within the valley currently exceed carrying capacity, such that native plants, understory species, and forest regeneration are heavily impacted by the heavy browse pressure exerted by deer. The decrease of species and structural diversity in refuge plant communities yields degraded habitat for a wide diversity of refuge wildlife. A hunt program will help the refuge to achieve the biological objective of reducing the density of white-tailed deer to improve habitat structure and diversity. Further, providing an opportunity to hunt at the refuge promotes stewardship of our natural resources and increases public appreciation and support for the refuge.

Deer, migratory game bird and turkey hunting opportunities exist within the refuge's existing hunt program and will be continued. The refuge proposes to add bear and small game hunting in order to promote consistency with State regulations, and to create additional opportunities for novice hunters who often get their start through small game seasons.

**Availability of Resources:**

The hunt program at Wallkill River NWR will require the following staff and financial resources, to be provided c/o the Wallkill River NWR Complex.

Biology (planning, monitoring, reporting) (0.25 FTE)	\$ 12,000
Law Enforcement (0.25 FTE)	\$ 12,000
Maintenance (parking areas, signs) (0.10 FTE)	\$ 5,000
Administration (permits, public relations)	
-Administrator (0.4 FTE)	\$ 12,000
-Refuge Manager (0.05 FTE)	\$ 4,000
Materials	<u>\$ 5,000</u>
<b>TOTAL</b>	<b>\$ 50,000</b>

The financial and staff resources necessary to provide and administer this use at its current level and at the level described in the Feasibility Study and Environmental Assessment are now available, and we expect them to continue in the future subject to the availability of appropriated funds.

*Offsetting revenues:* We anticipate that gross revenues from permit fees may produce up to \$8,000 annually. The refuge receives 80 percent of this amount under the Regional recreation fee program.

**Anticipated Impacts of Proposed Actions:**

*Short-term Impacts:*

Deer, migratory bird, and turkey hunting currently exist on the refuge, and may also occur on private properties directly adjacent to the refuge. As a result of these ongoing and proposed hunt activities, direct mortality to hunted species would occur. Some wounding of animals may occur as well. In all cases, the refuge would seek to provide a quality hunt experience while minimizing negative impacts to refuge resources. Foot travel associated with these hunting activities could potentially result in vegetation trampling. However, these impacts are expected to be minimal.

The activity of hunters could disturb some wildlife species. Hunters driving or walking in or adjacent to wildlife habitat and gunfire from hunting can result in behavioral responses by other resident wildlife. The permitted activity will cause minor disturbances of limited duration, and the effects are likely to be minimal.

Hunting may interfere with existing priority public uses such as wildlife observation and trail walking. Generally, many of these non-hunting activities do not occur frequently during the colder months. These conflicts are temporary and short-term. Safety zones surrounding public use areas such as trails and parking lots would ensure that impacts to these activities will be minimal.

Deer:

Refuge habitats exhibit browse damage and reduced biological integrity resulting from a deer herd that exceeds the “carrying capacity” (*simplistically defined as the number of individuals an environment can support without significant negative impacts to the given organism and its environment*). Hunting is the most feasible management tool available to the refuge to affect the deer population.

Bear:

Increasing human development and the coincident increase of the bear population has resulted in an increase in bear-human conflicts in New Jersey and New York resulting from a bear population that exceeds the “carrying capacity”. Hunting is the most feasible management tool available to the refuge to affect the bear population.

Other game species:

Hunting for all other species is offered to provide recreational opportunity rather than to manage the populations (as with deer and bear). A detailed analysis of expected hunting effort and potential harvest has been completed through an environmental assessment (EA) and is summarized below. The inclusion of permanent no-hunting zones and management of the hunt concurrent with State-issued game regulations will ensure that game populations will not be impacted by refuge hunting activities.

*Long-term Impacts: (for game species)*

Harvest of any game species depends on factors such as: population number of animals, condition of habitat, number and experience level of hunters, type of weapon allowed, length of season, and weather conditions. If yearly monitoring surveys, staff observations, or future research data indicate dramatic changes in populations, the refuge may further limit or increase the deer (or other) hunts by changing the number of days or the number of hunters, or by administratively closing areas included in this CD. For reasons stated above and below, there will not be any long-term impacts to game species.

*Cumulative Impacts:*

Deer:

New Jersey

The refuge has been open to deer hunting since 1993, and over the last 9 years has averaged 335 permit sales per year. The refuge falls within and accounts for 6.3% of New Jersey's Deer Management Zone (DMZ) 2. The State does not have any available information on the state of deer browse or forest health for this DMZ that might serve as an indication of population size. Over the last 5 years, annual averages of 3,445 permits were sold for DMZ 2 resulting in the harvest of approximately 2,285 deer per year. On average, 72 deer were reported to the State as being harvested from the refuge over each of the last 5 years (Stanko pers. comm. 2014). This is just 3 percent of the DMZ's annual take, and a tiny fraction of the Statewide harvest. Therefore, we do not estimate that continued use of deer hunting opportunities as they have been offered in the past will detrimentally affect the Statewide deer population.

New York

Deer population objectives in New York are socially driven and not solely ecologically based (Clarke pers. comm.) The NYSDEC established these objectives on a 5-year cycle, based on public input and assessment of deer population indices, harvest trends, and deer impacts. Forest condition is an effective metric for indicating the ecological impacts of deer on habitat, and evaluating the appropriateness of deer density in a given area. The NYSDEC uses browse impact and regeneration success to inform recommendations for deer population change on an ecological basis. Browse impact surveys in wildlife management unit (WMU) 3M (in which Wallkill River NWR falls) have shown a clear lack of forest regeneration for all tree species, including the less preferred species like American beech and black cherry (Clarke 2012, unpublished data). The NYSDEC manages deer populations largely by manipulating the mortality rates of adult female deer through regulated hunting. This is accomplished through the issuance of Deer Management Permits (DMP's, or antlerless deer tags) available to hunters (South Zone only), and regulation of the special bow and muzzleloader seasons (North Zone only) to manipulate female harvest. In WMU 3M, hunting accounts for more than 70 percent of mortality, followed by vehicle collisions and winter kill (Clarke pers. comm. 2012). In 2013, a total of 8,367 deer were harvested from WMU 3M, averaging 11.2 deer per square mile; a total of 1,123 were harvested from the nearby town of Warwick (closest to refuge lands) (NYSDEC 2013a). We estimate that opening New York lands to hunting may result in the sale of 20 additional permits and the harvest of 15 deer. When compared to the total number of deer harvested from WMU 3M, it is apparent there are sufficient numbers of deer to allow a hunt and still sustain a viable population within the refuge and around the State.

Bear:

New Jersey

The State's Bear Management Zones define areas where bears should be managed at various densities consistent with land use. The State's 1997 Black Bear Management Policy recommended managing bears at a density of 1 bear per 2.5 square miles. The bear density within Zone 2 (where the refuge is located) is four times the recommended density, or an estimated 1.6 bears per square mile (Vreeland 2010). In 2009, the State estimated the number of bears falling within Zones 1-4 at 3,438 animals.

Though the refuge does not conduct surveys or research to quantify bear use, bear and their signs are commonly observed. Based on estimates found within the State's 2010 Black Bear Management Plan (New Jersey Department of Environmental Protection [NJDEP], 2010), the refuge could provide habitat for about 13 bears (8 square miles with 1.6 bears per square mile). The refuge is routinely asked about bear hunting; however, the refuge doesn't provide great bear habitat, and it is unlikely that bear hunters will seek out the refuge as a hunting destination. It is more likely that refuge hunters will purchase a bear permit just in case opportunity arises during other hunting pursuits such as deer and turkey. Hence, we estimate that perhaps 20 bear permits will be sold annually resulting in an anticipated refuge harvest of 4 to 7 bears. Based on the information provided in the CD and the State's 2010 Management Plan, we do not anticipate that a public bear hunt will be detrimental to the sustainability of refuge or State bear populations.

#### New York

New York manages its black bear population through Adaptive Impact Management, a planning framework which focuses on stakeholder-identified desirable impacts of management as the basis for setting fundamental objectives of management (NYSDEC 2007). This framework results in stakeholder-informed changes to the State's black bear feeding and harvest regulations, reflected in New York's annually issued Hunting and Trapping Digest.

The bear population within southeast New York has been increasing steadily since the 1980s and currently numbers about 1,700 animals (Merchant pers. comm., 2013). Harvests have increased during that time as well, and since 2009 between 20 and 27 bear have been harvested annually from the town of Warwick. In 2013, a total of 62 bear were harvested from WMU 3M; 24 were taken from the town of Warwick (NYSDEC 2013b). A total of 160 acres would be opened to bear hunting in New York; we estimate that 1 to 2 bear might be taken annually from this area. A harvest this size would not produce a measurable effect on the regional population. However, it would assist the State in meeting their management objectives.

#### Turkey:

##### New Jersey

The refuge has been open to turkey hunting since 1997, and over the last 7 years has averaged 83 permit sales per year. The refuge falls within New Jersey's Turkey Area 5. The State reports that over the last 5 years, an average of 151 turkey have been taken annually from this area; on average, 61 birds were reported to the State as being harvested from the refuge over each of the last 5 years (McBride pers. comm. 2014). The permit quota for Area 5 from 2013 to 2014 has been 325 permits per week; however, less than 150 individuals have expressed interest in hunting this area (McBride pers. comm. 2014). Therefore, we do not estimate that continued use of turkey hunting opportunities as they have been offered in the past will detrimentally affect the statewide turkey population.

##### New York

Following near-extirpation of turkey populations by the mid-1840s as a result of intensive farming, unregulated market and subsistence hunting, a State-led effort to trap and relocate wild turkeys in New York has successfully reestablished the population (NYSDEC 2005). Turkey populations are now established Statewide, over the last 5 years, an average of 26,200 turkeys were taken in spring and 8,800 harvested in fall (NYSDEC 2014a, b). The State utilizes a number of methods to estimate and monitor

turkey populations, including hunter surveys, reported harvests, sighting surveys, bow hunter sighting logs, and additional monitoring methods. The calculated (estimated) spring harvest in Orange County for 2013 was 461 turkey; fall (2012) take was 207 turkey (NYSDEC 2014a,b); estimates for WMU 3M were not available. The New York lands to be opened to turkey hunting are largely open fields and wetlands, and do not provide much in the way of turkey's preferred forested habitats; we anticipate that fewer than 5 turkey would be harvested annually. This number would represent just a fraction of the County total and would have no impact on the Statewide population.

#### Migratory birds:

Each national wildlife refuge considers the cumulative impacts to hunted migratory species through the Migratory Bird Frameworks published annually in the Service's regulations on Migratory Bird Hunting. Season dates and bag limits for national wildlife refuges open to hunting are never longer or larger than the State regulations. In fact, based upon the findings of an EA developed when a refuge opens a new hunting activity, season dates, and bag limits, and other aspects of a hunt may be more restrictive than the State allows. Based on estimates from the USFWS Harvest Information Program (Klimstra et al. 2013), we anticipate that an annual average of 937 ducks, 893 geese, and 44 woodcock may be harvested from permit sales for New Jersey refuge lands. This represents 0.01 percent of the Statewide waterfowl harvest, 0.01 percent of the woodcock harvest, and 0.02 percent of the goose harvest in 2012 (Klimstra et al. 2013). Based on New York estimates from the USFWS Harvest Information Program (Klimstra et al. 2013), we anticipate that an annual average of 40 ducks, 36 geese, and 1 to 2 woodcock may be harvested from permit sales for New York lands. Hence, the impact of refuge hunting is negligible on Statewide or regional populations.

#### Small game:

##### New Jersey

The State does not publish management plans for small game species. Harvests are managed via bag limits for each of these species, though the number of permits issued annually is not reported. Small game firearm harvest estimates are derived from New Jersey Firearm Harvest Surveys on a biannual basis. From 2011 to 2012, estimated Statewide harvests for small game species were 44,451 for rabbit; 34,011 for squirrel; 16,447 for woodchuck; 1,588 for raccoon; 1,527 for fox; 70 for coyote; and 517 for opossum (NJDFW 2012a). Game bird harvests from 2011 to 2012 were estimated at 24,782 crow and 2,335 grouse (NJDFW 2012b). Small game hunting is declining in popularity, as measured by numbers of hunters, and thus we expect little hunter demand and expect minimal impact from this activity (USFWS, 2010). The refuge's prohibition against night hunting when most furbearer hunting occurs (coyote, fox, raccoon, opossum) is likely to further dampen hunter interest in the activity. Based on these trends, we anticipate that perhaps 20 small game permits would be sold annually, resulting in the harvest of perhaps 25 rabbits, 25 squirrels, and 10 woodchucks. Grouse are rarely seen on the refuge and we anticipate that few grouse hunters would seek the refuge as a hunting destination; few to none are likely to be harvested. Furbearer hunting on the refuge is likely to be limited to the incidental take of furbearer species encountered during outings for other game such as deer and turkey, and will likely be limited to single-digit harvest of raccoon, fox, coyote, and possum. These harvest levels represent just a tiny fraction of the Statewide annual harvests and would have no impact on populations.

##### New York

The State does not publish management plans for small game species. Harvests are managed via bag limits for each of these species, though the number of permits issued annually is not reported. Over the last 5 years, estimated annual hunting participation (number of hunters) from Zone C (includes WMUs 3F, 3J, 3M, 3N, 3P, 4B, 4J, 4K, 4S, 4T, and 4Y) was 15,686 for crow, 26,844 for rabbit, 966 for varying hare, 48,923 for squirrel, 10,457 for grouse, and 19,444 for pheasant (Schiavone pers. comm. 2014). For those same years, estimated annual harvests from Zone C were 3,527 for crow, 8,909 for rabbit, 1,391 for varying hare, 8,778 for squirrel, 7,795 for grouse, and 6,597 for pheasant (Schiavone pers. comm. 2014).

Average annual furbearer harvests for the same zone and time period were 3,827 raccoon, 1,163 red fox, 680 gray fox, and 6,761 coyote. These numbers result in an average per-hunter harvest of 4.5 crow, 3.0 rabbit, 0.7 hare, 5.6 squirrel, 1.3 grouse, and 2.30 pheasant per season; and 3.8 raccoon, 0.6 red fox, 0.4 gray fox, and 0.8 coyote per season. Small game hunting is declining in popularity, as measured by numbers of hunters, and thus we expect little hunter demand and expect minimal impact from this activity (USFWS, 2010). Based on these trends, we anticipate that perhaps 3 small game permits would be sold for New York lands, resulting in the harvest of perhaps 13 crows, 9 rabbits, 0 hare, and 17 squirrels per year. Grouse are rarely seen on the refuge and we anticipate that few grouse hunters would seek the refuge as a hunting destination; few to none are likely to be harvested. Furbearer hunting on the refuge is likely to be limited to the incidental take of furbearer species encountered during outings for other game such as deer and turkey, and will likely be limited to single-digit harvest of raccoon, fox, coyote, and possum. These harvest levels represent just a tiny fraction of the statewide annual harvests and would have no impact on populations.

**Public Review and Comment:**

The Draft EA for hunting at Wallkill River NWR, and related documents, will be made available to the public for a 30-day public comment period. Comments will be addressed and incorporated into the final documents.

**Determination:**

- The use is not compatible.
- The use is compatible with the following stipulations:

**Stipulations Necessary to Ensure Compatibility:**

- 1) Ensure that hunting regulations are enforced or followed based on seasons, weapon type, refuge restrictions, etc.
- 2) Any hunt program would need to be carried out in accordance with State laws and Service policy for the protection of refuge resources and safety of participants.
- 3) Dogs, feeders, baiting, campsites, fires (except the use of dogs during waterfowl and woodcock hunting) are prohibited.
- 4) Night hunting is prohibited.
- 5) Gather and review (annually) population survey data in coordination with NJDFW and NYSDEC to ensure potential harvest from hunting would not unacceptably impact target populations.
- 6) Hunting opportunities will be based on the availability of adequate staff and funding, along with interagency coordination, to ensure a quality hunt experience while maintaining sustainable populations.
- 7) Vehicle use by hunters will be prohibited to prevent damage to refuge resources. Access will be by foot only.

At any time, the refuge manager retains the authority to modify or cancel any public uses in order to ensure compatibility with refuge purposes or to ensure the conditions above are met.

**Justification:**

Hunting is an appropriate use of the NWRS when compatible. It is also a priority general public use of the NWRS and increases opportunities for families to experience compatible wildlife-dependent recreation, particularly opportunities for parents and their children to safely engage in traditional outdoor activities as described in the Improvement Act of 1997, and receives enhanced consideration over non-priority uses.

Hunting is not expected to have any significant effects on other refuge/public use management activities because:

1. This use is compatible with the general Service policy regarding the establishment of hunting on national wildlife refuges;
2. This use is compatible with the purposes for which Wallkill River NWR was established;
3. This use does not initiate widespread controversy or litigation;
4. There are no conflicts with local, regional, State, or Federal plans or policies; and
5. Hunting is accepted as an important recreational use of natural resources within the states of New Jersey and New York.

Additionally, hunting provides wildlife-dependant recreation to the public in a region where these opportunities are limited by private land ownership and development. The vast majority of private lands are posted as “No Trespassing” this severely limits hunting opportunities for hunters without the agreement of private landowners. The refuge provides a low cost, safe, and enjoyable option.

It is our conclusion that hunting conducted at Wallkill River NWR is in accordance with the analysis of the EA and stipulations above, and will not “materially interfere with or detract from the fulfillment of the mission of the NWRS or the purpose [for which] the refuge was established” or conflict with any of the other priority public uses, adversely impact other biological resources, or detract from refuge goals, objectives, and refuge management activities as described in the Refuge Improvement Act of 1997.

**Signatures:**

_____	_____
Refuge manager	Date
_____	_____
Regional Chief, Concurrence	Date
Mandatory 15 year Reevaluation	_____
	Date

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