

## Appendix B



USFWS

*A view of the Wallkill River in early fall, as the trees begin to change color.*

# Appropriate Use and Compatibility Determinations

- Introduction
- Findings of Appropriateness
- Compatibility Determinations

# Appropriate Use and Compatibility Determinations

## Introduction

About the Appropriate Refuge Uses Policy . . . . .	B-1
About Compatibility Determinations . . . . .	B-1

## Findings of Appropriateness

Cross-Country Skiing and Snowshoeing to Promote Priority Public Uses . . . . .	B-3
Livestock Grazing for Habitat Management . . . . .	B-5
Motorized and Non-Motorized Boating to Promote Priority Public Uses . . . . .	B-7
Haying for Habitat Management. . . . .	B-9
Mosquito Management according to Service Policy . . . . .	B-13
Research Conducted by Non-Service Personnel. . . . .	B-15
Furbearer Management to Protect Trust Resources. . . . .	B-17
Dog Walking on Liberty Loop Nature Trail. . . . .	B-19

## Compatibility Determinations

Public Hunting for Deer, Turkey and Woodcock. . . . .	B-21
Public Hunting for Migratory Birds. . . . .	B-27
Public Hunting for Black Bear . . . . .	B-33
Public Fishing . . . . .	B-41
Wildlife Observation & Photography and Environmental Education & Interpretation . . . . .	B-47
Cross-Country Skiing and Snowshoeing to Promote Priority Public Uses . . . . .	B-59
Livestock Grazing for Habitat Management . . . . .	B-65
Motorized and Non-Motorized Boating to Promote Priority Public Uses . . . . .	B-73
Haying for Habitat Management. . . . .	B-79
Mosquito Management according to Service Policy . . . . .	B-87
Research Conducted by Non-Service Personnel. . . . .	B-95
Furbearer Management to Protect Trust Resources. . . . .	B-99
Dog Walking on the Liberty Loop Nature Trail . . . . .	B-105

## Introduction

### About the Appropriate Refuge Uses Policy

The policy on appropriate refuge uses describes the initial process the refuge manager follows in first considering whether to allow a proposed use on a refuge. We must find a use appropriate before undertaking its compatibility review. This policy clarifies and expands on the compatibility policy (603 FW 2.10D (1)), which describes when refuge managers should deny a proposed use without determining compatibility. If we find a proposed use inappropriate, we will not allow it, and will not prepare a compatibility determination.

By following the process for finding the appropriateness of a use, we strengthen and fulfill the mission of the Refuge System. By screening out proposed uses not appropriate on the refuge, the refuge manager avoids unnecessary compatibility reviews. Although a refuge use may be both appropriate and compatible, the refuge manager retains the authority to not allow the use or to modify the use. For example, on some occasions, two appropriate and compatible uses may conflict with each other. In those situations, even though both uses are appropriate and compatible, the refuge manager may need to limit or curtail entirely one of the uses to provide the greatest benefit for refuge resources and the public. See the compatibility policy (603 FW 2.11G) for information about resolving those conflicts.

For the proposed uses that we did consider while preparing this CCP, the appropriate use findings are below. If, in the future, there is a request for a refuge use that we did not consider while preparing this CCP, we will apply the procedure in the Appropriate Use policy and make an appropriateness finding without additional public review and comment; however, if we find a proposed use appropriate, we must still determine that it is compatible. The compatibility determination includes an opportunity for public involvement per 603 FW 1 Part 1.9B. See our planning policy (602 FW 1, 3, and 4) for additional details on refuge planning.

### About Compatibility Determinations

The Refuge Improvement Act and its regulations require an affirmative finding by the refuge manager of the compatibility of an activity before we allow it on a national wildlife refuge. We document that finding in a report called a “compatibility determination.” A compatible use is one “that will not materially interfere with or detract from the fulfillment of the mission of the Refuge System or the purposes of the refuge” (Refuge Improvement Act). The Act defines six priority, wildlife-dependent uses that are to receive our enhanced consideration on refuges: hunting, fishing, wildlife observation and photography, and environmental education and interpretation. Those priority uses may be authorized on a refuge when they are compatible and consistent with public safety. When the refuge manager makes the compatibility determination, he or she will insert the required maximum 10-year re-evaluation date for uses other than wildlife-dependent recreational uses, or the 15-year maximum re-evaluation date for wildlife-dependent recreational uses. The refuge manager, however, may re-evaluate the compatibility of a use at any time (603 FW 2, parts 2.11 and 2.12). For example, we may revisit a decision sooner than the mandatory date, or even before we complete the CCP process, if new information reveals unacceptable impacts or incompatibility with refuge purposes.

Moreover, we may not allow all the uses that we have determined compatible. The refuge manager has the discretion to allow or deny any use based on other considerations, such as public safety, policy, or available funding. Nevertheless, all uses that we allow must be determined compatible. Except for the consideration of consistency with state laws and regulations as provided for in subsection (m) of the Act, neither this Act nor the Refuge Recreation Act requires any other determinations or findings by the refuge manager for wildlife-dependent recreation to occur.

Please note that the archaeological and historic structure research the Service conducts does not need a compatibility determination. Archaeological research by non-Service personnel on refuge property will need a compatibility determination. Such projects require an application for an Archaeological Resource Protection Act (ARPA) Permit from our regional historic preservation officer and a Special Use Permit from the refuge manager. The issue of compatibility can be determined at that time.

Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife Refuge

Use: Cross-Country Skiing and Snowshoeing to Promote Priority Public Uses

This exhibit is not required for wildlife-dependent recreational uses, forms of take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision criteria:	YES	NO
(a) Do we have jurisdiction over the uses?	X	
(b) Do the uses comply with applicable laws and regulations (Federal, State, tribal, and local)?	X	
(c) Are the uses consistent with applicable Executive orders and Department and Service policies?	X	
(d) Are the uses consistent with public safety?	X	
(e) Are the uses consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the uses or is this the first time these uses have been proposed?	X	
(g) Are the uses manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(i) Do the uses contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or are the uses beneficial to the refuge's natural or cultural resources?	X	
(j) Can the uses be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D. for description), compatible, wildlife-dependent recreation into the future?	X	

When we do not have jurisdiction over a use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will generally not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes X No     

When the refuge manager finds a use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed uses are:

Not Appropriate      Appropriate X

Refuge Manager: Edward O'Hara

Date: 1/27/09

If found to be Not Appropriate, the refuge supervisor does not need to sign concurrence if the use is a new use. If an existing use is found Not Appropriate outside the CCP process, the refuge supervisor must sign concurrence. If found to be Appropriate, the refuge supervisor must sign concurrence:

Refuge Supervisor: John M. Kennedy

Date: 1-29-09

**A compatibility determination is required before the use may be allowed.**

Justification for a Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife Refuge

Use: Cross-Country Skiing and Snowshoeing to Promote Priority Public Uses

Narrative

Cross-country skiing and snowshoeing facilitate access to refuge trails during the winter months when snow covers the ground, making it more difficult for visitors to walk on trails. Facilitating trail access year round encourages visitors to partake in priority public uses -- such as wildlife observation, wildlife photography and interpretation -- year round. This exposure leads to a better understanding of the National Wildlife Refuge System in general and to the refuge more specifically.

Although cross-country skiing and snowshoeing could potentially cause wildlife disturbances, these uses occur during a time of year when many species are either not present on the refuge or are not as active as during other times of the year. The refuge will make every effort to minimize disturbance to wildlife that do use the refuge at this time of year. Trails will be well-marked or otherwise identifiable to ensure that trail users follow designated trail corridors and therefore avoid impacting adjoining habitats. The refuge will monitor habitats abutting trails to ensure that conditions do not pose adverse effects to wildlife populations and their habitats, especially threatened or endangered species. If certain species of concern are found utilizing habitats near trails, the trails will be closed or rerouted to ensure habitat and wildlife protection.

The refuge will minimize potential conflicts among public uses by using signs and a variety of other media outlets to notify the public of which public uses are allowed on the refuge, when and where they can occur, and how.

Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife Refuge

Use: Livestock Grazing for Habitat Management

This exhibit is not required for wildlife-dependent recreational uses, forms of take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision criteria:	YES	NO
(a) Do we have jurisdiction over the use?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	X	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	X	
(g) Is the use manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	X	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D. for description), compatible, wildlife-dependent recreation into the future?	X	

When we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control it. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we generally will not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes X No    

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

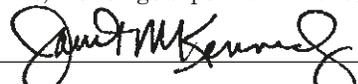
Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate     Appropriate X

Refuge Manager: 

Date: 1/27/09

If found to be Not Appropriate, the refuge supervisor does not need to sign concurrence if the use is a new use.  
If an existing use is found Not Appropriate outside the CCP process, the refuge supervisor must sign concurrence.  
If found to be Appropriate, the refuge supervisor must sign concurrence:

Refuge Supervisor: 

Date: 1-29-09

**A compatibility determination is required before the use may be allowed.**

Justification for a Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife Refuge

Use: Livestock Grazing for Habitat Management

### Narrative

Grazing has been found to improve microtopography in bog turtle habitat. Bog turtle habitat is in an intermediate state of succession, and in some cases is threatened by invasive exotic plants (USFWS 2001). Unless natural processes (flooding by beaver, fire, grazing by wildlife, etc.) set succession back and exotic plants are controlled, the habitat may become less suitable, and eventually unsuitable, for bog turtles. Active management and maintenance, such as grazing, may be required at some sites to replace the natural processes that have been lost and to control exotic plants in order to restore or maintain habitat quality.

By controlling vegetation, grazing may also benefit grassland birds such as horned lark and vesper sparrow that prefer to nest in fields with short, sparse vegetation (Skinner et al. 1984, Herkert 1991, Herkert et al. 1993). Wakeley (1978), Baker and Brooks (1981), and Bechard (1982) demonstrated that tall, dense vegetation impedes the ability of several species of *Buteo* hawks to capture prey. Thus, grazing may also benefit wintering raptors by increasing availability of rodent prey.

### Literature Cited

- Baker, J. A., and R. J. Brooks. 1981. Distribution patterns of raptors in relation to density of meadow voles. *Condor* 83:42-47.
- Bechard, M. J. 1982. Effect of vegetative cover on foraging site selection by Swainson's hawk. *Condor* 84:153-159.
- Herkert, J. R. 1991. Prairie birds of Illinois: population response to two centuries of habitat change. *Illinois Natural History Survey Bulletin* 34:393:399.
- Herkert, J. R., R. E. Szafoni, V. M. Kleen, and J. E. Schwegman. 1993. Habitat establishment, enhancement and management for forest and grassland birds in Illinois. Division of Natural Heritage, Illinois Department of Conservation, Natural Heritage Technical Publication Number 1, Springfield, Illinois, USA.
- Skinner, R. M., T. S. Baskett, and D. M. Blendon. 1984. Bird habitat on Missouri prairies. Missouri Department of Conservation, Terrestrial Series 14, Jefferson City, Missouri, USA.
- U.S. Fish and Wildlife Service. 2001. Bog turtle (*Clemmys mühlenbergii*), northern population recovery plan. Hadley, Massachusetts, USA.
- Wakeley, J. S. 1978. Factors affecting the use of hunting sites by ferruginous hawks. *Condor* 80:316-3.

Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife Refuge

Use: Motorized and Non-Motorized Boating to Promote Priority Public Uses

This exhibit is not required for wildlife-dependent recreational uses, forms of take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision criteria:	YES	NO
(a) Do we have jurisdiction over the use? <i>On refuge ponds and in areas of the Wallkill River above the mean high water line (flooded areas). The refuge also has jurisdiction over boating activities in areas of the river and its tributaries where the refuge holds title.</i>	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	X	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	X	
(g) Is the use manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	X	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D. for description), compatible, wildlife-dependent recreation into the future?	X	

When we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will generally not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes X No \_\_\_\_\_

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate \_\_\_\_\_ Appropriate X

Refuge Manager: Edward J. Hays

Date: 1/27/09

If found to be Not Appropriate, the refuge supervisor does not need to sign concurrence if the use is a new use. If an existing use is found Not Appropriate outside the CCP process, the refuge supervisor must sign concurrence. If found to be Appropriate, the refuge supervisor must sign concurrence:

Refuge Supervisor: John M. Kennedy

Date: 1-29-09

**A compatibility determination is required before the use may be allowed.**

Justification for a Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife Refuge

Use: Motorized and Non-Motorized Boating to Promote Priority Public Uses

Narrative

The refuge has jurisdiction over boating on refuge ponds and in areas of the Wallkill River above the mean high water line (flooded areas). The refuge also has jurisdiction over boating activities in areas of the river and its tributaries where the refuge holds title. Therefore, this Appropriate Use finding applies to those areas.

Although motorized and non-motorized boating are not themselves priority public uses, they facilitate participation in priority wildlife-dependent recreation, including all six of the Refuge System's priority public uses. For example, non-motorized boating will provide a means for hunters and anglers to reach designated areas during regulated seasons. Boating in general increases opportunities for refuge visitors to observe and photograph wildlife.

Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife Refuge

Use: Haying for Habitat Management

This exhibit is not required for wildlife-dependent recreational uses, forms of take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision criteria:	YES	NO
(a) Do we have jurisdiction over the use?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	X	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	X	
(g) Is the use manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	X	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D. for description), compatible, wildlife-dependent recreation into the future?	X	

When we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will generally not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes X No     

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate      Appropriate X

Refuge Manager: Edward J. Hays

Date: 1/27/09

If found to be Not Appropriate, the refuge supervisor does not need to sign concurrence if the use is a new use. If an existing use is found Not Appropriate outside the CCP process, the refuge supervisor must sign concurrence. If found to be Appropriate, the refuge supervisor must sign concurrence:

Refuge Supervisor: Paul M. Keune

Date: 1-29-09

**A compatibility determination is required before the use may be allowed.**

Justification for a Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife Refuge

Use: Haying for Habitat Management

### Narrative

Grassland birds have declined more consistently and over a wider geographic area than any other group of North American birds over the last 30 years (Robbins et al. 1986, Askins 1993, Knopf 1995, Askins 1997, Sauer et al. 1997). As a result, most grassland birds appear on lists of rare and declining species (NYSDEC 1997, Pashley et al. 2000, U.S. NABCI Committee 2000, U.S. Fish and Wildlife Service 2002). Moreover, all of these species can be found at the refuge. However, without active management, refuge grasslands will soon become dominated by invasive species or dense shrubland (Mitchell and Shryer 2000). Without these high-quality early and intermediate successional habitats, the refuge would no longer provide suitable habitat for grassland-dependent birds, wintering raptors or bog turtles.

Haying, combined with mowing, is a useful and effective grassland management technique (USFWS 1982). Mitchell et al. (2000) state that haying and mowing are economic means of controlling the invasion of grasslands by forbs and woody plants. Further, haying is generally a more convenient technique to apply than prescribed fire or grazing. Herkert et al. (1993) recommend rotational haying and mowing as a grassland management alternative with subunits left idle. This strategy may provide a complex of grassland successional stages to meet the respective nesting requirements of diverse species of grassland birds. More specifically, haying and mowing are recommended techniques for managing grasslands used by nesting northern harrier (Berkey et al. 1993, Dechant et al. 2001a), upland sandpiper (Kirsch and Higgins 1976, Dechant et al. 2001b), short-eared owl (Tate 1992, Dechant et al. 2001c), horned lark (Dinkins et al. 2001), grasshopper sparrow (Dechant et al. 2001d, Vickery 1996), Henslow's sparrow (Smith 1992, Herkert 2001), vesper sparrow (Camp and Best 1993, Dechant et al. 2001e), savannah sparrow (Swanson 2001), bobolink (Bollinger and Gavin 1992, Dechant et al. 2001f), and eastern meadowlark (Lanyon 1995, Hull 2000).

Haying can also be used to manage bog turtle habitat. Bog turtle habitat is in an intermediate state of succession, and in some cases is threatened by invasive exotic plants (USFWS 2001). Unless natural processes (flooding by beaver, fire, grazing by wildlife, etc.) set succession back and exotic plants are controlled, the habitat may become less suitable and, eventually, unsuitable for bog turtles. Active management and maintenance, such as haying and mowing, may be required at some sites to replace the natural processes that have been lost and to control exotic plants to restore or maintain habitat quality.

### Literature Cited

- Askins, R. A. 1993. Population trends in grassland, shrubland, and forest birds in eastern North America. Pages 1-34 in D. M. Power, editor. *Current ornithology*. Volume 11. Plenum Press, New York, New York, USA.
- Askins, R. A. 1997. History of grasslands in the northeastern United States: implications for conservation. Pages 119-136 in P. D. Vickery and P. W. Dunwiddie, editors. *Grasslands of northeastern North America, ecology and conservation of native and agricultural landscapes*. Massachusetts Audubon Society, Lincoln, Massachusetts, USA.
- Berkey, G., R. Crawford, S. Galipeau, D. Johnson, D. Lambeth, and R. Kreil. 1993. A review of wildlife management practices in North Dakota: effects on nongame bird populations and habitats. Report submitted to Region 6, U.S. Fish and Wildlife Service, Denver, Colorado, USA.
- Bollinger, E. K., and T. A. Gavin. 1992. Eastern bobolink populations: ecology and conservation in an agricultural landscape. Pages 497-506 in J. M. Hagan, III and D. W. Johnston, editors. *Ecology and conservation of neotropical migrant landbirds*. Smithsonian Institution Press, Washington, DC, USA.
- Camp, M. and L. B. Best. 1993. Bird abundance and species richness in roadsides adjacent to Iowa row crop fields. *Wildl. Soc. Bull.*, 21:315-325.

- Dechant, J. A., M. L. Sondreal, D. H. Johnson, L. D. Igl, C. M. Goldade, M. P. Nenneman, and B. R. Euliss. 2001a. Effects of management practices on grassland birds: northern harrier. Northern Prairie Wildlife Research Center, Jamestown, North Dakota, USA. Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/literatr/grasbird/harrier/harrier.htm> (Version 17FEB2000).
- Dechant, J. A., M. F. Dinkins, D. H. Johnson, L. D. Igl, C. M. Goldade, B. D. Parkin, and B. R. Euliss. 2001b. Effects of management practices on grassland birds: upland sandpiper. Northern Prairie Wildlife Research Center, Jamestown, North Dakota, USA. Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/literatr/grasbird/upsa/upsa.htm> (Version 17FEB2000).
- Dechant, J. A., M. L. Sondreal, D. H. Johnson, L. D. Igl, C. M. Goldade, M. P. Nenneman, and B. R. Euliss. 2001c. Effects of management practices on grassland birds: short-eared owl. Northern Prairie Wildlife Research Center, Jamestown, North Dakota, USA. Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/literatr/grasbird/shortear/shortear.htm> (Version 17FEB2000).
- Dechant, J. A., M. L. Sondreal, D. H. Johnson, L. D. Igl, C. M. Goldade, M. P. Nenneman, and B. R. Euliss. 2001d. Effects of management practices on grassland birds: grasshopper sparrow. Northern Prairie Wildlife Research Center, Jamestown, North Dakota, USA. Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/literatr/grasbird/grasshop/grasshop.htm> (Version 17FEB2000).
- Dechant, J. A., M. F. Dinkins, D. H. Johnson, L. D. Igl, C. M. Goldade, and B. R. Euliss. 2001e. Effects of management practices on grassland birds: vesper sparrow. Northern Prairie Wildlife Research Center, Jamestown, North Dakota, USA. Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/literatr/grasbird/upsa/upsa.htm> (Version 29FEB2000).
- Dechant, J. A., M. L. Sondreal, D. H. Johnson, L. D. Igl, C. M. Goldade, A. L. Zimmerman, and B. R. Euliss. 2001f. Effects of management practices on grassland birds: bobolink. Northern Prairie Wildlife Research Center, Jamestown, North Dakota, USA. Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/literatr/grasbird/bobo/bobo.htm> (Version 17FEB2000).
- Dinkins, M. F., A. L. Zimmerman, J. A. Dechant, B. D. Parkin, D. H. Johnson, L. D. Igl, C. M. Goldade, and B. R. Euliss. 2001. Effects of management practices on grassland birds: horned lark. Northern Prairie Wildlife Research Center, Jamestown, North Dakota, USA. Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/literatr/grasbird/hola/hola.htm> (Version 16JUN2000).
- Herkert, J. R., R. E. Szafoni, V. M. Kleen, and J. E. Schwegman. 1993. Habitat establishment, enhancement and management for forest and grassland birds in Illinois. Division of Natural Heritage, Illinois Department of Conservation, Natural Heritage Technical Publication Number 1, Springfield, Illinois, USA.
- Herkert, J. R. 2001. Effects of management practices on grassland birds: Henslow's Sparrow. Northern Prairie Wildlife Research Center home page, Jamestown, ND. [www.npwrc.usgs.gov/resource/literatr/grasbird/hesp/hesp.htm](http://www.npwrc.usgs.gov/resource/literatr/grasbird/hesp/hesp.htm) (Version 17FEB2000).
- Hull, S. D. 2000. Effects of management practices on grassland birds: eastern meadowlark. Northern Prairie Wildlife Research Center, Jamestown, North Dakota, USA. Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/literatr/grasbird/fpeame/fpeame.htm> (Version 16JUN2000).
- Kirsch, L. M., and K. F. Higgins. 1976. Upland sandpiper nesting and management in North Dakota. *Wildlife Society Bulletin* 4:16-20.
- Knopf, F. L. 1995. Declining grassland birds. Pages 296-298 in E. T. LaRoe, G. S. Farris, C. E. Puckett, P. D. Doran, and M. J. Mac, editors. *Our living resources: a report to the nation on the distribution, abundance, and health of U.S. plants, animals, and ecosystems*. U.S. National Biological Service, Washington, D.C., USA.
- Lanyon, W. E. 1995. Eastern meadowlark (*Sturnella magna*). In A. Poole and F. Gill editors. *The birds of North America*. Number 160. The Academy of Natural Sciences, Philadelphia, Pennsylvania, USA, and The American Ornithologists' Union, Washington, D.C., USA.

- Mitchell, L. R., C. R. Smith, and R. A. Malecki. 2000. Ecology of grassland breeding birds in the northeastern United States—a literature review with recommendations for management. U.S. Geological Survey, Biological Resources Division and New York Cooperative Fish and Wildlife Research Unit, Department of Natural Resources, Cornell University, Ithaca, New York, USA.
- Mitchell, L., and J. Shryer. 2000. Aids to grassland management planning for Wallkill and Shawangunk Grasslands NWR (draft). Unpublished report on file at Wallkill River National Wildlife Refuge headquarters, Sussex, New Jersey, USA.
- New York State Department of Environmental Conservation. 1997. Endangered, threatened and special concern fish and wildlife species of New York State. New York State Department of Environmental Conservation, Division of Fish, Wildlife and Marine Resources, Delmar, New York, USA.
- Pashley, D. N., C. J. Beardmore, J. A. Fitzgerald, R. P. Ford, W. C. Hunter, M. S. Morrison, K. V. Rosenberg. 2000. Partners In Flight: conservation of the land birds of the United States. American Bird Conservancy, The Plains, Virginia, USA.
- Robbins, C. S., D. Bystrak, and P. H. Geissler. 1986. The Breeding Bird Survey: its first fifteen years, 1965-1979. U.S. Fish and Wildlife Service Resource Publication 157.
- Sauer, J. R., J. E. Hines, G. Gough, I. Thomas, and B. J. Peterjohn. 1997. The North American Breeding Bird Survey results and analysis. Version 96.4. Patuxent Wildlife Research Center, Laurel, Maryland, USA. [Http://www.mbr-pwrc.usgs.gov/bbs/bbs.html](http://www.mbr-pwrc.usgs.gov/bbs/bbs.html) (12/1999).
- Smith, C. R. 1992. Henslow's sparrow, *Ammodramus henslowii*. Pages 315-330 in K. J. Schneider and D. M. Pence, editors. Migratory nongame birds of management concern in the Northeast. U.S. Fish and Wildlife Service, Newton Corner, Massachusetts, USA.
- Swanson, D. A. 2001. Effects of management practices on grassland birds: savannah sparrow. Northern Prairie Wildlife Research Center, Jamestown, North Dakota, USA. Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/literatr/grasbird/savannah/savannah.htm> (Version 17FEB2000).
- Tate, G. R. 1992. Short-eared owl, *Asio flammeus*. Pages 171-189 in K. J. Schneider and D. M. Pence editors. Migratory nongame birds of management concern in the Northeast. U.S. Department of the Interior, Fish and Wildlife Service, Newton Corner, Massachusetts, USA.
- U.S. North American Bird Conservation Initiative Committee. 2000. North American Bird Conservation Initiative; bringing it all together. U.S. Fish and Wildlife Service, Arlington, Virginia, USA.
- U.S. Fish and Wildlife Service. 1982. Refuge Manual: 6 RM 5.6C. Division of Refuges, Arlington, Virginia, USA.
- U.S. Fish and Wildlife Service. 2001. Bog turtle (*Clemmys muhlenbergii*), northern population, recovery plan. Hadley, Massachusetts, USA.
- U.S. Fish and Wildlife Service. 2002. Birds of conservation concern 2002. Division of Migratory Bird Management, Arlington, Virginia, USA.
- Vickery, P. D. 1996. Grasshopper sparrow (*Ammodramus savannarum*). In A. Poole and F. Gill, editors. The birds of North America. Number 239. The Academy of Natural Sciences, Philadelphia, Pennsylvania, USA, and The American Ornithologists' Union, Washington, D.C., USA.

Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife Refuge

Use: Mosquito Management according to Service Policy

This exhibit is not required for wildlife-dependent recreational uses, forms of take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision criteria:	YES	NO
(a) Do we have jurisdiction over the use?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	X	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	X	
(g) Is the use manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	X	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D. for description), compatible, wildlife-dependent recreation into the future?	X	

When we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will generally not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes X No     

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate      Appropriate X

Refuge Manager: Edward O'Hara

Date: 1/27/09

If found to be Not Appropriate, the refuge supervisor does not need to sign concurrence if the use is a new use. If an existing use is found Not Appropriate outside the CCP process, the refuge supervisor must sign concurrence. If found to be Appropriate, the refuge supervisor must sign concurrence:

Refuge Supervisor: Jane M. Kennedy

Date: 1-29-09

**A compatibility determination is required before the use may be allowed.**

Justification for a Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife Refuge

Use: Mosquito Management according to Service Policy

Narrative

As the West Nile virus and other mosquito-borne diseases spread across the country, national wildlife refuges may come under increasing pressure to work with other local and state agencies to manage mosquito populations. In addition to the West Nile virus vectors associated with those mosquito populations, mosquitoes may cause other human or wildlife health concerns including mortality to migratory birds.

On October 15, 2007, the Service published in the Federal Register its “Draft Mosquito and Mosquito-Borne Disease Management Policy Pursuant to the National Wildlife Refuge System Improvement Act of 1997.” Until the draft policy is final, we will follow the “Interim Guidance for Mosquito Management on National Wildlife Refuges,” prepared in spring 2005. This document provides refuges with interim guidance on addressing mosquito-associated health threats in a consistent manner. Like the draft policy, the guidance states that refuges will not conduct mosquito monitoring or control unless it is necessary and compatible to protect the health of a human, wildlife, or domestic animal population. If there is a declared health emergency, the Service will work with local and state mosquito managers to minimize any risks to human health.

Local mosquito control districts in the State of New Jersey often want to implement a full range of mosquito control measures, including pesticide use, on refuge lands. The Service is concerned with the direct and indirect impacts on the mosquitoes and other invertebrates that serve as a vital food source for birds, amphibians and reptiles. In an effort to work cooperatively with local officials and address their concerns, the refuge has issued, annually, a special use permit to the Sussex County Office of Mosquito Control to access the refuge to monitor larval and adult mosquitoes. The refuge, within the confines of policy, regulations and interim guidance, requires that any mosquito control or monitoring have a basis in sound scientific methods when we issue a permit. Dip counts and monitoring of populations are essential parts of any mosquito control program involving refuge lands. The refuge permits the use of larvicides, currently Bti, but not adulticides.

The primary focus of the long-term solution to suppress mosquito populations at the refuge is to restore wetland hydrology in the habitats that produce the greatest abundance of mosquitoes. Fish and other species play a major role in controlling mosquito populations, and the Service often restores wetlands to allow fish to feed on mosquito larvae, which reduces mosquito populations.

Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife Refuge

Use: Research Conducted by Non-Service Personnel

This exhibit is not required for wildlife-dependent recreational uses, forms of take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision criteria:	YES	NO
(a) Do we have jurisdiction over the use?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	X	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	X	
(g) Is the use manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	X	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D. for description), compatible, wildlife-dependent recreation into the future?	X	

When we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will generally not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes X No       

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate        Appropriate X

Refuge Manager: Edward O. Henry

Date: 1/27/09

If found to be Not Appropriate, the refuge supervisor does not need to sign concurrence if the use is a new use. If an existing use is found Not Appropriate outside the CCP process, the refuge supervisor must sign concurrence. If found to be Appropriate, the refuge supervisor must sign concurrence:

Refuge Supervisor: Jane M. Kennedy

Date: 1-29-09

**A compatibility determination is required before the use may be allowed.**

Justification for a Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife Refuge

Use: Research Conducted by Non-Service Personnel

Narrative

The Service encourages and supports research and management studies on refuge lands that will improve and strengthen decisions on managing natural resources. In addition, facilitating research is among the refuge's purposes. The refuge manager encourages and seeks research that clearly relates to approved refuge objectives, improves habitat management, and promotes adaptive management. Priority research addresses information on better managing biological resources (species, habitats, issues) that are important to the Department of Interior, the National Wildlife Refuge System and state fish and game agencies.

Researchers will submit a final report to the refuge upon completing their work. For long-term studies, we may also require interim progress reports. We expect researchers to publish in peer-reviewed publications. All reports, presentations, posters, articles or other publications will acknowledge the Refuge System and the Wallkill River refuge as partners in the research. All posters that involve a Service funding source will adhere to Service graphics standards. We will insert this requirement to ensure that the research community, partners, and the public understand that the research could not have been conducted without the establishment of the refuge, its operational support, and that of the Refuge System.

Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife Refuge

Use: Furbearer Management to Protect Trust Resources

This exhibit is not required for wildlife-dependent recreational uses, forms of take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision criteria:	YES	NO
(a) Do we have jurisdiction over the use?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	X	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	X	
(g) Is the use manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	X	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D. for description), compatible, wildlife-dependent recreation into the future?	X	

When we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will generally not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes X No       

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate        Appropriate X

Refuge Manager: Edwan O'Hany

Date: 1/27/09

If found to be Not Appropriate, the refuge supervisor does not need to sign concurrence if the use is a new use.  
If an existing use is found Not Appropriate outside the CCP process, the refuge supervisor must sign concurrence.  
If found to be Appropriate, the refuge supervisor must sign concurrence:

Refuge Supervisor: Janet M. Kurney

Date: 1-29-09

**A compatibility determination is required before the use may be allowed.**

Justification for a Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife Refuge

Use: Furbearer Management to Protect Trust Resources

Narrative

Furbearer management is conducted on the refuge as a management tool by state-licensed trappers from New York or New Jersey. Since trappers have the potential to profit financially from this use the refuge is required to complete an Appropriate Use and Compatibility Determination.

Furbearer management through trapping is permitted on the refuge in New York and New Jersey. Furbearer management becomes necessary when a furbearer threatens a particular habitat type, such as an impoundment, by burrowing into the dikes and enabling water to flow out of an impoundment. This destroys habitat that the refuge creates and maintains for waterfowl and other species of waterbirds that are mentioned in the refuge's purposes. An example of this is when a beaver builds a dam in an impoundment. The refuge may also conduct furbearer management when there is a nuisance complaint by a private landowner due to beaver activity on the refuge.

Furbearer management is being proposed in part to eliminate or reduce damage to refuge resources caused by overabundant species such as muskrats and beavers. Muskrats feed primarily on aquatic plants. In marsh environments, their feeding and lodge construction can aid wetland managers in obtaining desired amounts of open water and vegetation. In some portions of their range, however, muskrats can become excessively abundant and actually destroy the aquatic vegetation upon which they and other wildlife are dependent (MDC 2004). Damage from beaver induced flooding is also a problem on the refuge as well as on some adjacent private lands. Other species that could be involved in such a program could include fox or coyote, both of which can devastate bird populations. A furbearer management program will be used as a tool to manage habitat and maintain the predator-to-prey balance.

Literature Cited

Missouri Department of Conservation (MDC). 2004. Muskrat and Beaver Management in Wetlands: Planning Ahead for Wildlife Survival.

Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife Refuge

Use: Dog Walking on Liberty Loop Nature Trail

This exhibit is not required for wildlife-dependent recreational uses, forms of take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision criteria:	YES	NO
(a) Do we have jurisdiction over the use?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	X	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	X	
(g) Is the use manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	X	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D. for description), compatible, wildlife-dependent recreation into the future?	X	

When we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will generally not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes X No       

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate        Appropriate X

Refuge Manager: Edward H. Hays

Date: 1/27/09

If found to be Not Appropriate, the refuge supervisor does not need to sign concurrence if the use is a new use. If an existing use is found Not Appropriate outside the CCP process, the refuge supervisor must sign concurrence. If found to be Appropriate, the refuge supervisor must sign concurrence:

Refuge Supervisor: Janet M. Kennedy

Date: 1-29-09

**A compatibility determination is required before the use may be allowed.**

Justification for a Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife Refuge

Use: Dog Walking on Liberty Loop Nature Trail

Narrative

A portion of the Liberty Loop Nature Trail runs concurrent with a portion of the Appalachian Trail (AT). The AT enters the refuge at the Liberty Loop Nature Trail and follows the Liberty Loop Nature Trail for about 1.5 miles. The AT then continues along Oil City Road to where it crosses the Wallkill River, continues northwest on State Line Road, then onto Carnegie Street where it reenters the forest. The AT is a part of America's cultural legacy and the trail is a cultural resource of national significance. The Wallkill River refuge is the only refuge through which the AT runs, and the trail provides an excellent opportunity to educate hikers about the refuge and the National Wildlife Refuge System.

The Appalachian Trail allows dog walking along almost all of its 2,100-mile length, except in some wilderness and backcountry areas. Many people hike most of the AT, or large parts of it, with their dogs. Local residents and other refuge visitors who are not through hikers have historically parked at the Liberty Loop Nature Trail parking lot to walk their dogs on the AT. Since the AT does not connect directly to the refuge parking lot, dog walkers who park at the refuge parking lot have been forced to walk on Oil City Road to access the AT. This poses a public safety hazard as this portion of Oil City Road is a straightaway with no shoulder. Due to the nature of the road, parking on the side of the road to access the AT would also pose a public safety hazard. Another issue is that the AT runs concurrent with the Liberty Loop Nature Trail for about 1.5 miles, after which the refuge trail continues as a loop for about another mile and the AT heads off the refuge to the southeast. Dog walkers have historically been forced to backtrack 1.5 miles on the AT rather than completing the loop trail by walking half that distance to the parking lot. Through the final CCP we will open the entire Liberty Loop Nature Trail to dog walking to permit access to the entire Liberty Loop Nature Trail for dog walkers and to facilitate appreciation for the AT as a cultural resource.

Because the Liberty Loop Nature Trail follows a dike system with limited habitat value, the potential impacts to wildlife and their habitats are minimal. In the Compatibility Determination for this use, located later in this appendix, we nevertheless discuss ways in which we will minimize potential impacts from dog walking. For example, we will require that dogs be leashed and under the owner's control at all times.

## Compatibility Determination

### Use

Public Hunting for Deer, Turkey and Woodcock

### Refuge Name

Wallkill River National Wildlife Refuge

### Establishing and Acquisition Authority

Wallkill River National Wildlife Refuge was first designated administratively by the Service in a decision document on March 9, 1990. Congress later enacted Public Law 101-593, 104 Stat. 2955 on November 16, 1990, to confirm its establishment by special legislation. The Service has acquired lands for the Wallkill River refuge under the following authorities:

1. Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
2. Migratory Bird Conservation Act [16 U.S.C. 715d]
3. Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

We anticipate that the Service will continue to acquire lands under the same authorities that have been used to acquire lands in the the past. Based on the refuge purposes, lands could also be acquired under several other legislative authorities, including but not limited to:

1. Refuge Recreation Act [16 U.S.C. 460K-1]
2. Endangered Species Act [16 U.S.C. 1534]
3. National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

### Refuge Purpose(s)

(1) to preserve and enhance the refuge lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations; (2) to 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; (3) to protect and enhance the water quality of aquatic habitats within the refuge; (4) to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats; and (5) to provide opportunities for compatible scientific research, environmental education, and fish- and wildlife-oriented recreation. 104 Stat. 2955, dated Nov. 16, 1990.

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

“for the development, advancement, management, conservation, and protection of fish and wildlife resources...” 16 U.S.C. 742f(a)(4) “for the benefit of the United States Fish and Wildlife Service, in performing its activities and services.” 16 U.S.C. 742f(b)(1) (Fish and Wildlife Act of 1956)

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

### National Wildlife Refuge System Mission

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

### **Description of Use**

**(a) What is the use? Is it a priority public use? Primary Use:** The primary use is public hunting for deer, turkey and woodcock. (Black bear hunting is covered in a separate compatibility determination.) Hunting is a priority use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57).

*Supporting Uses:* Boating (motorized and non-motorized)

**(b) Where will the use be conducted?** The refuge permits hunting for deer, turkey and woodcock throughout the New Jersey portion of the refuge on Service-owned lands, except where identified as a threat to public safety or wildlife management (map B-1). In particular, hunting is not allowed in the 335-acre Liberty Marsh complex. Annual hunt plans and updated maps will show what areas are closed in any particular year. Currently, the Service does not allow hunting on Service-owned lands in the State of New York; however, with the acquisition of additional lands in that state, the refuge may consider opening those lands to hunting according to State and Service regulations.

**(c) When will the use be conducted?** Hunting for deer, turkey and woodcock will be conducted during New Jersey State seasons for those species, in accordance with federal and state regulations, unless safety or overriding resource concerns would make hunting incompatible. In cooperation with the State of New Jersey, we may adjust hunt season dates and bag limits in the future as needed to achieve balanced wildlife population levels within habitat carrying capacities.

**(d) How will the use be conducted?** We will continue to conduct the use according to state and federal regulations. Federal regulations in 50 CFR pertaining to the National Wildlife Refuge System Administration Act, as well as existing, specific refuge regulations will apply. No change from the existing hunt program for deer, turkey or woodcock is proposed; however, the refuge manager may, upon annual review of the hunting program, impose further restrictions on hunting, recommend that the refuge be closed to hunting, or further liberalize hunting regulations within the limits of state law. We will restrict hunting if it becomes inconsistent with other, higher priority refuge programs or endangers refuge resources or public safety.

Boat access for hunting is available at a number of locations throughout the refuge. Game stocking and night hunting is prohibited.

To minimize visitor conflicts, the refuge may close some trails to the public during the shotgun season for deer.

**(e) Why is this use being proposed?** Hunting is a priority public use defined by The National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997. If compatible, hunting is to receive enhanced consideration over other general public uses in refuge planning and management. In addition, refuge purpose #5 (see above) instructs the refuge to “provide opportunities for fish and wildlife-oriented recreation.” Hunting provides that opportunity. In northwestern New Jersey, where the refuge is located, hunting is an historic, traditional, sustainable activity.

A refuge hunt program also helps cull certain wildlife populations, such as white-tailed deer. An overabundance of deer results in areas of intense browsing that negatively impacts plant communities. Over-browsing also yields vegetation monotypes composed only of the plants that are unpalatable to deer. Over-browsing also causes indirect impacts to refuge fauna. Reducing deer populations improves the forest understory and shrubland’s structural diversity and complexity. Furthermore, providing an opportunity to hunt at the refuge promotes the Service mission.

**Availability of Resources**

The hunt program at Wallkill River refuge will require the following staff and financial resources:

Biology (planning, monitoring, reporting) (.1875 FTE).....	\$9,000
Law Enforcement (.1875 FTE) .....	\$9,000
Maintenance (parking areas, signs) (.075 FTE).....	\$3,750
Administration (permits, public relations)	
- Administrator (.30 FTE).....	\$9,000
- Refuge Manager (.0375 FTE) .....	\$3,000
Materials.....	\$3,750
<b>TOTAL.....</b>	<b>\$37,500</b>

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

**Anticipated Impacts of the Use**

Because the refuge has been open to hunting since 1993, and hunting occurred in the Wallkill area for many decades before the refuge’s creation, we expect no additional impacts. Some disturbance of non-target wildlife species and impacts on vegetation may occur; however, these impacts should be minimal, because hunting pressure is moderate, occurs outside the breeding season, and specific refuge regulations prohibit the use of ATVs and permanent tree stands, the most likely items to damage refuge vegetation. Hunting also helps to keep populations of browsing species such as deer within the habitat’s carrying capacity, thus reducing excessive damage to vegetation caused by over-browsing, and maintaining understory habitat for other species.

Our deer seasons generally consist of these dates: (based on 2006-07 New Jersey state seasons):

Deer:	
Fall Bow	Sept. 9 – Sept. 29
Permit Bow	Oct. 28 – Dec. 23 & Dec. 26 – Dec. 31
Permit Muzzleloader	Nov. 27, 28 & Dec. 11, 12, 16-23, 26-31 & Jan. 1-5
Six Day Firearm	Dec. 4 – 9
Permit Shotgun	Dec. 13-15 & Jan. 6 – 13
Winter Bow	Jan. 1 – 31

There are approximately 163 days open to deer hunting. The refuge issues between 400 and 580 permits each year to deer hunters. The average take of deer each year on the refuge is 70 animals. All deer hunters are required to check their animals at a state-administered check station. State biologists track deer harvests throughout New Jersey, and adjust season and bag limits accordingly. In general, the allowed take is two antlered deer per day with the potential for incentive deer based on hunter performance. The refuge is located in Deer Management Zone #2, where the total deer harvest for 2005–2006 was 2,446 animals. The refuge hunt constitutes a small percentage (2.9%) of the zone’s overall annual harvest, and therefore has little impact on local or regional deer populations.

There are approximately 41 days open to turkey hunting (35 in spring season and 6 in fall season) annually. The seasons are generally:

Spring Turkey	April 16 – May 25
Fall Turkey	Oct. 29 – Nov. 3

By the mid-1800s, turkeys had disappeared from New Jersey due to changing habitat and over-harvesting for food ([http://www.nj.gov/dep/fgw/turkey\\_info.htm](http://www.nj.gov/dep/fgw/turkey_info.htm)). State biologists, in cooperation with the *NJ Chapter of the National Wild Turkey Federation*, reintroduced wild turkeys in 1977 by releasing 22 birds. In 1979, biologists and technicians began to live-trap and relocate birds to establish populations throughout the state. By 1981, the population was able to support a spring hunting season, and in December 1997, a limited fall season began. Wild turkeys now abound throughout the state, wherever there is suitable habitat. The estimated state population is between 20,000 and 23,000, with an annual harvest of more than 3,000 statewide. The refuge sells approximately 130 turkey permits per year, with an average of about 10 turkeys harvested per year, representing only 0.05 percent of the total state population. The allowed take for this species follows New Jersey hunting regulations, which may change. For the 2007-08 season, the limit for turkey was one per day.

Woodcock season is generally set for Oct. 19 – Nov. 11, with approximately 24 days open annually to woodcock hunting. New Jersey has two woodcock hunting zones, north and south of Route 70, respectively. The refuge is in the north zone. Of the 3,794 woodcock taken during the 2005–2006 hunt season, north zone hunters took 65 percent (2,450), south zone hunters took 19 percent (711), and hunters that pursued woodcock in both zones took 17 percent (632). No specific figures are available for how many woodcock came from the refuge. Fewer than 90 hunters participated each year in the refuge’s woodcock hunting seasons 2003-4 and 2006-7. The allowed take for this species follows New Jersey hunting regulations, which may change. For the 2007-2008 season, the limit for woodcock was three per day.

Impacts from hunting may include disturbance of non-target species in the course of tracking prey, trampling of vegetation, possible creation of unauthorized trails by hunters, potential reduction of wildlife observation and photography opportunities, littering and possible vandalism and subsequent erosion. Shotgun noise from hunting could cause some wildlife disturbance as well. However, reduction in the size of the deer herd will benefit deer and other species of wildlife by reducing competition for food, and by increasing the health of the remaining deer herd. Many landowners suffer landscape damage due to deer on a regular basis; transmission of Lyme disease is a major issue with large deer populations; deer starvation can occur when deer populations are high and food supplies dwindle in bad weather; and deer-vehicle collisions become more common and problematic when deer herds are over-populated. Overall, the refuge has not experienced any of the adverse impacts mentioned above and instead expects a beneficial impact to the plants and wildlife of the refuge resulting from control of the deer herd.

### **Public Review and Comment**

This compatibility determination was made available for public review and comment for 66 days as an appendix to the draft Comprehensive Conservation Plan/Environmental Assessment for Wallkill River National Wildlife Refuge.

### **Determination**

Use is not compatible

Use is compatible, with the following stipulations

### **Stipulations Necessary to Ensure Compatibility**

Seasons and bag limits for deer, turkey and woodcock will be managed in accordance with Federal and State regulations to ensure that refuge hunts are compatible with the principles of sound wildlife management and otherwise in the public interest (50 C.F.R. § 32.1.).

Safety zones are set by the state and it is the responsibility of each hunter to be aware of and to follow these regulations.

The refuge’s hunt program will be reviewed annually to ensure management goals are being achieved and to affirm that the hunt program is providing a safe, high-quality hunting experience for participants. Hunt season dates, bag limits and/or number of hunters per day will be adjusted as needed to achieve balanced wildlife population levels within carrying capacities.

The hunt programs for turkey, deer, and woodcock can cause some soil compaction. With hunter density estimated to be an average of one hunter per 1,000 acres per day throughout the hunting season, impacts will be minimal. Refuge regulations will not permit the use of ATVs on the refuge. Vehicles will be confined to existing roads and parking lots.

State regulations help to mitigate user conflicts by requiring that hunters remain a certain distance from roads, trails and buildings. We do not currently find it necessary to close the refuge to any other public uses during the hunt season. If that need did arise, we would issue news releases and post information at the Visitor Contact Station and trail kiosks to notify visitors of closings. During the hunt season, we will make every attempt to provide a law enforcement presence to ensure safety and compliance.

We will allow hunting only in designated areas and only in areas that are large enough to provide adequate accessibility and quality hunting opportunities based on safety and accessibility. We will not allow hunting in sensitive habitats or where it would pose a threat to public safety.

**Justification**

Hunting is a priority public use as defined by The National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997. If compatible, hunting will receive our enhanced consideration over other general public uses in refuge planning and management. It will not cause an undue administrative burden. Annual adjustments can be made in the hunting program to ensure its continued compatibility.

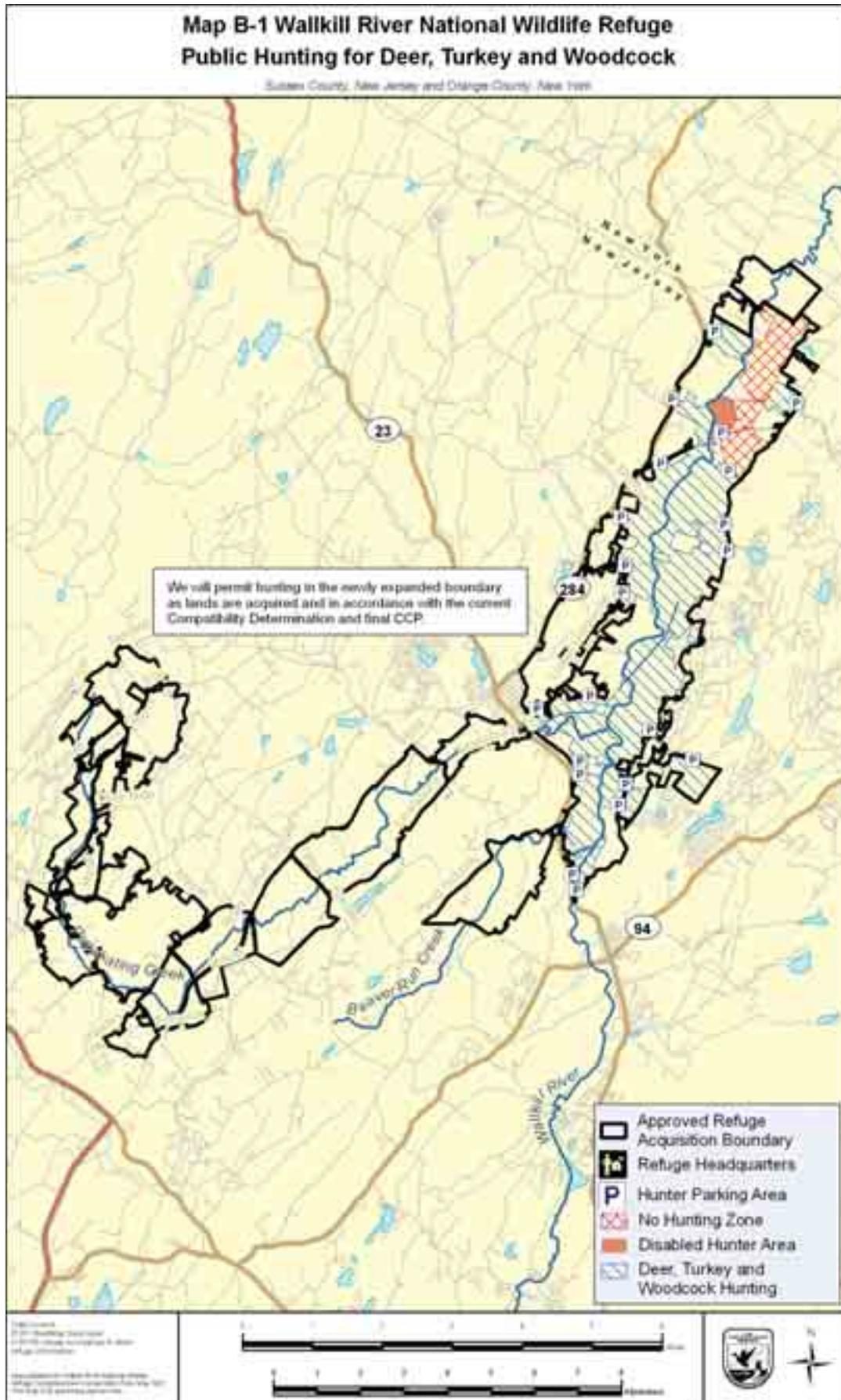
The stipulations discussed above will help minimize the impacts of this use on wildlife and their habitats. These stipulations also help ensure that hunting will not materially interfere with the refuge's mission and purposes. Hunting will contribute to the refuge purposes by promoting healthy populations of game species and woodcock (refuge purposes #1 and #4) and by providing opportunities for scientific research and wildlife-dependent recreation (refuge purpose #5). See page B-30 for a detailed description of refuge purposes.

Project Leader Edwin H. Hays 1/27/09  
(Signature) (Date)

**Concurrence**

Regional Chief Anthony J. Legier 1/29/2009  
(Signature) (Date)

Mandatory 15-year re-evaluation date Jan. 29, 2024  
(Date)



## Compatibility Determination

### Use

Public Hunting for Migratory Birds

### Refuge Name

Wallkill River National Wildlife Refuge

### Establishing and Acquisition Authority

Wallkill River National Wildlife Refuge was first designated administratively by the Service in a decision document on March 9, 1990. Congress later enacted Public Law 101-593, 104 Stat. 2955 on November 16, 1990, to confirm its establishment by special legislation. The Service has acquired lands for the Wallkill River refuge under the following authorities:

1. Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
2. Migratory Bird Conservation Act [16 U.S.C. 715d]
3. Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

We anticipate that the Service will continue to acquire lands under the same authorities that have been used to acquire lands in the past. Based on the refuge purposes, lands could also be acquired under several other legislative authorities, including but not limited to:

1. Refuge Recreation Act [16 U.S.C. 460K-1]
2. Endangered Species Act [16 U.S.C. 1534]
3. National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

### Refuge Purpose(s)

(1) to preserve and enhance the refuge lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations; (2) to 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; (3) to protect and enhance the water quality of aquatic habitats within the refuge; (4) to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats; and (5) to provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation. 104 Stat. 2955, dated Nov. 16, 1990.

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

“for the development, advancement, management, conservation, and protection of fish and wildlife resources...” 16 U.S.C. 742f(a)(4) “for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. ” 16 U.S.C. 742f(b)(1) (Fish and Wildlife Act of 1956)

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

### National Wildlife Refuge System Mission

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

### **Description of Use**

**(a) What is the use? Is it a priority public use?** *Primary Use:* The primary use is public hunting for migratory birds. Hunting is a priority use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57).

*Supporting Uses:* Boating (motorized and non-motorized)

**(b) Where will the use be conducted?** The refuge permits hunting for migratory birds on Service-owned lands in the State of New Jersey, except where identified as a threat to public safety or wildlife management concerns (map B-2). In particular, hunting is not allowed in the 335-acre Liberty Marsh complex. Annual hunt plans and updated maps will show which areas are closed in any particular year. Currently no hunting for migratory birds is allowed on Service-owned lands in the State of New York; however, with the acquisition of additional lands in that state, the refuge may consider opening those lands to hunting, according to state and Service regulations.

**(c) When will the use be conducted?** Hunting will be conducted during New Jersey State seasons for migratory game birds (including waterfowl) and resident geese, in accordance with federal and state regulations, unless safety or overriding resource concerns would make hunting incompatible. In cooperation with the State of New Jersey, we may adjust hunt season dates and bag limits in the future as needed to achieve balanced wildlife population levels within habitat carrying capacities.

**(d) How will the use be conducted?** We will continue to conduct the use according to state and federal regulations. Federal regulations in 50 CFR pertaining to the National Wildlife Refuge System Administration Act, as well as existing, specific refuge regulations will apply (including 50CFR 32.1-32.3). No change from the existing hunt program for migratory birds is proposed. However, the refuge manager may, upon annual review of the hunting program, impose further restrictions on hunting, recommend that the refuge be closed to hunting, or further liberalize hunting regulations within the limits of state law. We will restrict hunting if it becomes inconsistent with other, higher priority refuge programs or endangers refuge resources or public safety.

Boat access for waterfowl hunting is available at a number of locations throughout the refuge. Game stocking and night hunting will be prohibited.

**(e) Why is this use being proposed?** Hunting is a priority public use defined by The National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997. If compatible, hunting for migratory birds is to receive our enhanced consideration over other general public uses in refuge planning and management. In addition, refuge purpose #5 (see above) instructs the refuge to “provide opportunities for fish and wildlife-oriented recreation.” Hunting provides that opportunity. In northwestern New Jersey, where the refuge is located, hunting for migratory birds is an historic, traditional, sustainable activity.

A refuge migratory bird hunt program also helps cull certain wildlife populations, such as Canada geese. An overabundance of geese yields intensive browsing which reduces the availability of important food resources for other waterfowl species. Since geese tend to browse on the tender shoots of new plant growth, over-browsing also has direct negative impacts on plant communities and on the re-vegetation of newly planted or bare soils. Over-browsing also causes indirect impacts to refuge fauna. The decrease of species and structural diversity in refuge plant communities yield degraded habitat for a wide range of refuge wildlife. Further, an over-abundance of geese often results in the excessive addition of fecal material into nearby ponds and lakes, reducing water quality and raising the potential for disease transmission to other wildlife species. Last, providing an opportunity to hunt at the refuge promotes the stewardship of our natural resources and increases public appreciation and support for the refuge.

Migratory game bird hunting helps us achieve refuge purposes and management goals and objectives, as outlined in the final CCP.

**Availability of Resources**

The hunt program at Wallkill River refuge will require the following financial and staff resources:

Biology (planning, monitoring, reporting) (.0625 FTE).....	\$3,000
Law Enforcement (.0625 FTE) .....	\$3,000
Maintenance (parking areas, signs) (.025 FTE).....	\$1,250
Administration (permits, public relations)	
- Administrator (.10 FTE) .....	\$3,000
- Refuge Manager (.0125 FTE) .....	\$1,000
Materials.....	\$1,250
<b>TOTAL.....</b>	<b>\$12,500</b>

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

**Anticipated Impacts of the Use**

Waterfowl species known to breed on the refuge include American black duck, wood duck, hooded merganser, common merganser, mallard, and Canada goose. Many additional species, such as scaup, American widgeon, northern pintail, bufflehead, green-winged teal, ring-necked duck, blue-winged teal and snow goose frequent the refuge during migration. The primary waterfowl species taken by hunters are Canada goose, mallard, American black duck, green-winged teal, wood duck, and hooded merganser.

Our migratory bird permit consists of these species and seasons:

Sept. Canada Goose	Sept. 1 – Sept. 30
Rails and Gallinule	Sept. 1 – Nov. 8
Snipe	Sept. 16 – Dec. 30
Regular Waterfowl	Oct. 14 – Nov. 4, 14 – Dec. 30
Winter Canada Goose	Jan. 22 – Feb. 15

There are approximately 75 days open to goose hunting and 60 days open to duck hunting each year. The refuge issues between 100 and 200 permits each year to waterfowl hunters. The allowed take for these species follows New Jersey hunting regulations, which change every year. However, daily bag limits for the 2007-2008 season are as follows: Canada geese, 15 per day for the September season, 3 per day for the regular season, 5 per day for the special winter season; ducks, 6 per day to include no more than 1 pintail, 1 black duck, 2 wood ducks, 2 redheads, 2 canvasbacks, 4 mallards (not more than 2 hens), 2 scaup and 4 scoters. In addition, 5 mergansers (though no more than 2 hooded mergansers) per day may be taken.

Since the refuge has been open to hunting since 1993, and hunting occurred in the Wallkill area for many decades before the creation of the refuge, we expect no additional impacts. Some disturbance of non-target wildlife species and impacts on vegetation may occur. However, those impacts should be minimal, because hunting pressure is moderate and occurs outside the breeding season. Hunting for migratory birds also helps to keep populations of browsing species within the carrying capacity of the habitat, thus reducing excessive damage to vegetation caused by over-browsing, and maintaining understory habitat and groundcover for other species.

The impacts of allowing hunting may include disturbance of non-target species in the course of tracking prey, trampling of vegetation, possible creation of unauthorized trails by hunters, littering and possible vandalism and subsequent erosion. Shotgun noise from hunting could cause some wildlife disturbance as well.

### **Public Review and Comment**

This compatibility determination was made available for public review and comment for 66 days as an appendix to the draft Comprehensive Conservation Plan/Environmental Assessment for Wallkill River National Wildlife Refuge.

### **Determination**

Use is not compatible

Use is compatible, with the following stipulations

### **Stipulations Necessary to Ensure Compatibility**

**A. Migratory Game Birds.** This includes the take of ducks, geese, mergansers, rails, gallinules, coots, woodcock, and snipe. The take of all other migratory birds will be prohibited.

We manage migratory birds on a flyway basis, and establish refuge hunting regulations in each state based on flyway data. This ensures that refuge hunts are compatible with the principles of sound wildlife management and otherwise in the public interest (50 C.F.R. § 32.1.). Atlantic Flyway and State of New Jersey regulations apply to the migratory bird hunting program at the refuge. Refuge lands in New York State are not open to hunting. Hunting will reduce the number of birds in the flyway, within allowable limits, as determined by federal and state agencies. Hunting and the associated hunter activity will likely cause the direct disturbance of non-target birds, but only for the short-term. Those temporary impacts are mitigated by the presence of adjacent refuge habitats where hunting does not occur, and where birds can feed and rest undisturbed.

By law, no more than 40 percent of refuge lands purchased with Migratory Bird Conservation Commission (Duck Stamp) funds can be open to migratory bird hunting when that refuge is an “inviolate sanctuary.” This refuge is not considered an inviolate sanctuary, but Service Regional Directors retain the authority to institute this policy on all refuges within their responsibility and Region 5 policy is to do so. An exception might be to open more than 40 percent of the refuge to resident Canada goose hunting.

The use of retrieving and/or pointing dogs for migratory game bird hunting will be permitted; however, the dogs must be under the hunter’s control at all times (605 FW 2.6.G). Groups of three or more dogs in the field per hunting party will be prohibited. Each hunter will be limited to 25 non-toxic shells and must use a dog, a boat, or waders to quickly retrieve downed waterfowl. It is unlawful to hunt migratory game birds from a motor boat that is running (50 C.F.R. § 20.21(e)). Permanent and pit blinds will not be allowed. Temporary blinds and boats must be removed at the end of each hunting day.

We will allow hunting only in designated areas and only in areas that are large enough to provide adequate accessibility and quality hunting opportunities. We will not allow hunting in sensitive habitats or where it would pose a threat to public safety.

### **Justification**

Hunting is a priority public use as defined by The National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997. If compatible, hunting is to receive our enhanced consideration over other general public uses in refuge planning and management. It will not cause an undue administrative burden. Annual adjustments can be made in the hunting program to ensure its continued compatibility.

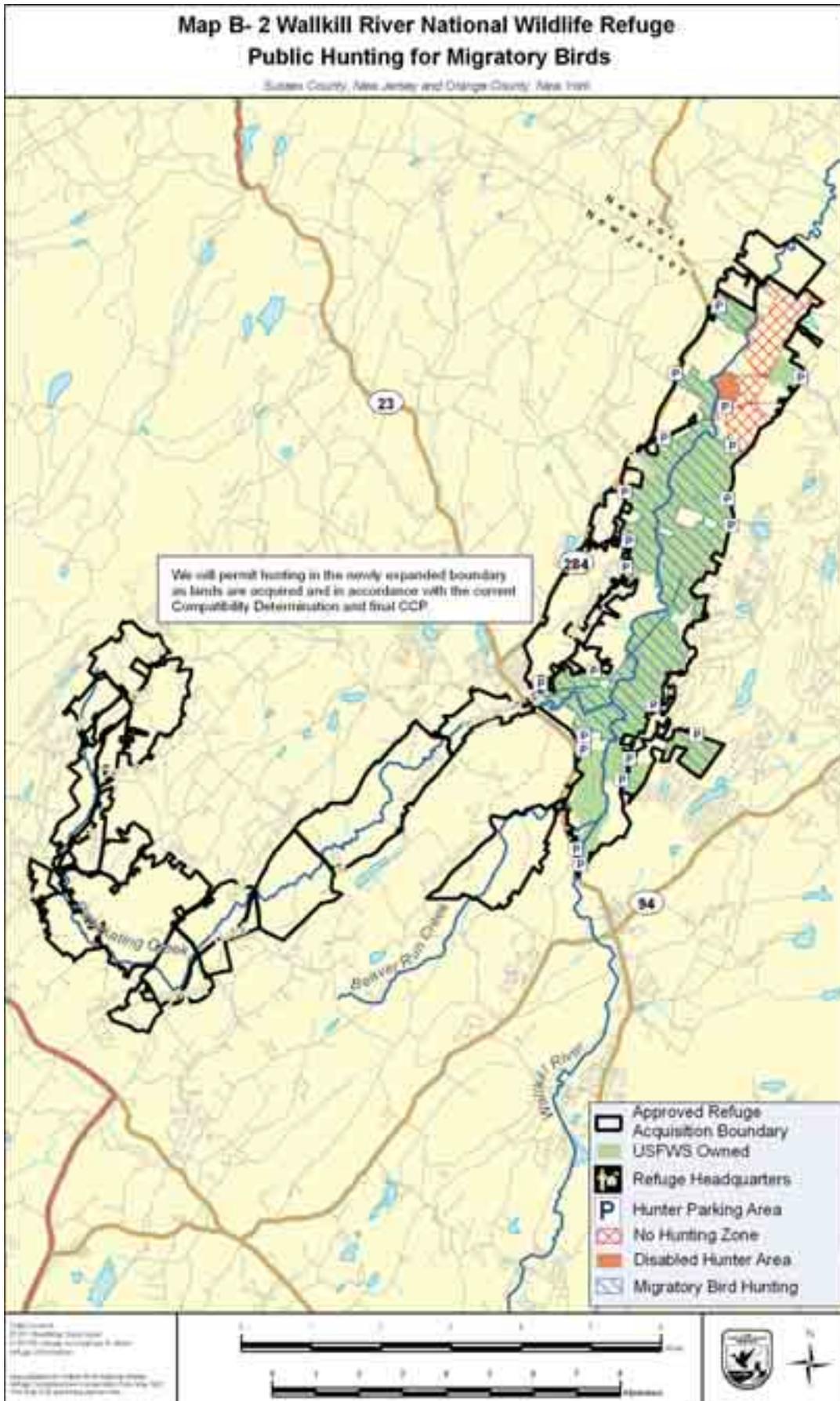
Based on the stipulations above, migratory bird hunting will not materially interfere with or detract from the mission of the Refuge System nor will it diminish the purposes for which the refuge was established. Specifically, the use will promote refuge purposes #1, #2, #4, and #5 by ensuring healthy populations of migratory birds and by preventing habitat destruction from overuse by over-represented species. It also directly promotes priority public uses and supports the Migratory Bird Treaty Act with regard to hunting of migratory birds species.

Project Leader Edwin H. Hays 1/27/09  
(Signature) (Date)

**Concurrence**

Regional Chief Anthony D. Leger 1/29/2009  
(Signature) (Date)

Mandatory 15-year re-evaluation date Jan. 29, 2024  
(Date)



## Compatibility Determination

### Use

Public Hunting for Black Bear

### Refuge Name

Wallkill River National Wildlife Refuge

### Establishing and Acquisition Authority

Wallkill River National Wildlife Refuge was first designated administratively by the Service in a decision document on March 9, 1990. Congress later enacted Public Law 101-593, 104 Stat. 2955 on November 16, 1990, to confirm its establishment by special legislation. The Service has acquired lands for the Wallkill River refuge under the following authorities:

1. Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
2. Migratory Bird Conservation Act [16 U.S.C. 715d]
3. Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

We anticipate that the Service will continue to acquire lands under the same authorities that have been used to acquire lands in the past. Based on the refuge purposes, lands could also be acquired under several other legislative authorities, including but not limited to:

1. Refuge Recreation Act [16 U.S.C. 460K-1]
2. Endangered Species Act [16 U.S.C. 1534]
3. National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

### Refuge Purpose(s)

(1) to preserve and enhance the refuge lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations; (2) to 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; (3) to protect and enhance the water quality of aquatic habitats within the refuge; (4) to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats; and (5) to provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation. 104 Stat. 2955, dated Nov. 16, 1990.

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

“for the development, advancement, management, conservation, and protection of fish and wildlife resources....” 16 U.S.C. 742f(a)(4); “for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. “16 U.S.C. 742f (b)(1) (Fish and Wildlife Act of 1956)

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

### National Wildlife Refuge System Mission

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

### Description of Use

**(a) What is the use? Is it a priority public use?** The use is public hunting for black bear. Hunting is a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57).

**(b) Where will the use be conducted?** In general, the refuge will permit black bear hunting throughout the New Jersey portion of the refuge on Service-owned lands, wherever the refuge currently allows deer hunting (see map B-3). As with deer hunting, no bear hunting will be allowed in the northeast section of the refuge, including Liberty Marsh and the area around the Appalachian Trail. The refuge assesses its hunt program on an annual basis to determine which areas of the refuge will be open or closed to hunting. Annual hunt plans and updated maps will show which areas are closed each year.

**(c) When will the use be conducted?** The refuge will permit bear hunting only when the State of New Jersey is open to bear hunting. Bear hunting will be conducted in accordance with New Jersey State seasons unless safety or overriding resource concerns would make hunting incompatible.

Current Service policy requires that a refuge submit a new hunt package, consistent with 605 FW1 and 605 FW 2.9, if a major change to the hunt program is proposed. A major change is defined for this purpose as a new hunting activity, adding a new species to the program, or opening a new area to hunting. In this case, the major change is adding a new species (bear) to the refuge's hunt program. Therefore, we plan to submit an opening package for bear hunting after the final CCP is approved.

**(d) How will the use be conducted?** Prospective hunters will apply to the refuge for a permit to hunt bear. The refuge will follow New Jersey State regulations for all other aspects of the hunt (i.e., bag limits, shooting times). Consistent with State/Federal regulations, no baiting or pursuit dogs will be allowed on the refuge.

**(e) Why is this use being proposed?** Hunting is a priority public use as defined by The National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997. If compatible, hunting is to receive our enhanced consideration over other general public uses in refuge planning and management. In addition, refuge purpose #5 (see above) instructs the refuge to "provide opportunities for fish and wildlife-oriented recreation." Hunting provides that opportunity.

Since 1953, the New Jersey Division of Fish and Wildlife (DFW) and the Fish and Game Council (Council) have managed black bear as a game animal. Game animal status protected bears from indiscriminate killing, which stabilized the population. Limited hunting was legal in 10 seasons from 1958-1970 and resulted in a harvest of 46 bears. Based upon data gathered through the regulated hunting seasons the bear population status was assessed and the Council closed the bear-hunting season in 1971 (Lund 1980). Since the 1980s the black bear population has increased and its range has expanded due to the protection afforded them by game animal status (NJDEP 2004).

Total bear population estimates for a 580-square-mile sample area in Northwest New Jersey was 1,490 bears, or 2.56 bears/sq. mi., at the start of the 2003 bear-hunting season. DFW biologists determined the 2005 population for the same 580 sq. mile to be 1,606 bears, or 2.76 bears per square mile.

Black bears in New Jersey have adapted to live near people and human development, taking advantage of human-derived food sources and protected habitats. Increasing human development and the coincident increase of the bear population has resulted in an increase in bear-human conflicts. The expanding human habitat/bear habitat interface provides potential for conflict because individual black bears searching for food are encountering humans throughout their home ranges. Further complicating this issue is recent evidence that the home range of a female black bear in prime New Jersey habitat (which encompasses the Wallkill River refuge) has decreased in size from an average of 6.5 square miles documented in the early 1990s, to the current

average of 2 square miles (NJDEP 2004). Cooperative studies conducted between the New Jersey Division of Fisheries and Wildlife (NJDFW), Rutgers University, and East Stroudsburg University is ongoing. Stomach content analysis of female bears indicates that most bears are obtaining forage from human-derived food sources regardless of whether the individual has been classified as a nuisance bear or not. NJDFW research has demonstrated that older females in the 5-10 year old class are consistently producing litter sizes of 2.7 cubs. Studies have also indicated that bears are beginning to reproduce as early as three years of age. Incidents involving bear damage to property and livestock remain high in frequency and severity. The New Jersey DFW Wildlife Control Unit (WCU) received 1,096 complaint calls in 2001 and 1,412 complaint calls in 2002 and 1,308 complaint calls in 2003. These complaints range from raids on garbage bins and birdfeeders to bears attacking humans, entering homes, killing livestock and pets or destroying beehives and agricultural crops. Damage estimates are in excess of \$100,000 annually (NJDEP 2004). In addition, the immigration of New Jersey bears into neighboring Pennsylvania and New York has affected those states. The Pennsylvania Game Commission has opened extended hunting seasons in the wildlife management units that have the highest bear densities and where conflicts have significantly increased. Two of those management units, which abut northwestern New Jersey, accounted for 17 percent of Pennsylvania’s total statewide harvest in 2005 (Penn GC Digest 2006-07.)

The State of New Jersey 1997 Black Bear Management Plan (McConnell et al. 1997) recognized that the cultural carrying capacity had been reached in northern New Jersey and the bear population was large enough to sustain a limited, regulated hunting season. In 2000, the New Jersey Council amended the Game Code to include a three-segment black bear hunting season. The purpose of the hunting season was to reduce the bear population (to 350 bears or 1 bear per 2.5 square miles) in order to reduce the associated bear/human conflicts, including property damage caused by bears.

**Availability of Resources**

We will open the same number of acres to bear hunting as we do for deer hunting. Opening the refuge to bear hunting will be a minimal additional cost to the refuge above what it costs to manage the deer hunt, turkey and migratory bird hunts. The following costs will be required to administer and manage the bear hunt at Wallkill River refuge.

Biologist Review (2-3 days) .....	\$700
1-2 days of law enforcement personnel .....	\$500
Dispensing Information during year .....	\$200
Hunter brochure (design, printing) .....	\$100
Permits/regulations/forms .....	<u>\$1,600</u>
<b>TOTAL.....</b>	<b>\$3,100</b>

The financial and staff resources necessary to provide and administer this use at the level described in the final CCP are now available and we expect them to continue in the future subject to the availability of appropriated funds. The refuge charges \$20 to apply for a permit to help defray the cost of administering hunting on the refuge. The refuge sells an average of 900 permits annually, which means an average revenue stream of about \$15,000, factoring in discounts for senior citizens and under-16 age group. Averages of 700-800 hunters have hunted the refuge over the past three years. Although the refuge will issue separate permits for hunting deer and bear, hunters will not be charged for both.

**Anticipated Impacts of the Use**

The black bear population is an important component of the diversity of wildlife within the refuge. We rely on the states to conduct surveys and review all relevant literature when making determinations on hunting seasons and allowable take. The State takes into consideration many factors in making these decisions. One of the main factors is population size. Factors influencing population size include reproductive potential and food availability. Bears usually breed every two years. Age at first breeding is usually 4 years, and the average litter size is 2.5 (Hellgren and Vaughan 1989a, Elowe and Dodge 1989, and Eiler et al. 1989). Bunnell and Tait (1981) identified that black bear populations exhibiting these characteristics could withstand an annual mortality rate of approximately 20 percent. Black bears are polygamous; adult male bears tend to have larger home

ranges than females, and they tend to overlap the home ranges of the maximum number of breeding females (Rogers 1987). Thus, a reduction in number of males will not adversely affect the reproductive potential of the population. Black bear reproduction and population growth is also strongly associated with nutritional status. Samson and Huot (1995) found that bears in poor condition, as measured by body weight, did not produce young during that year. Elowe and Dodge (1989) and Eiler et al. (1989) found a strong correlation between size of fall mast crop and reproduction. During years of mast failure females either did not breed or resorbed young. Conversely, bears with sufficient food availability and high nutritional status would be expected to have a higher reproductive potential.

Another factor that influences black bear population size is social interactions—territoriality and dispersal of sub-adults. There is conflicting information as to whether or not black bears are territorial (Bunnell and Tait 1981). Elowe and Dodge (1989) found no evidence of territoriality by black bears. However, a number of researchers have found home ranges of black bears to have very little overlap, which would suggest territorial behavior. Young and Ruff (1982) and Rogers (1987) found females to be territorial but not males. Adult bears, especially males, tend to regulate population density by either preying upon younger bears or forcing them to disperse (Bunnell and Tait 1981, Young and Ruff 1982, Lecount 1982).

Hunting technique influences the sex ratio of bear harvest; a greater number of males are taken when bait or hounds are used (Litvaitis and Kane, 1994), but we do not allow bait or hounds when hunting bear on the refuge. The larger home ranges of adult males make them more vulnerable to hunting. Dispersing sub-adult males are generally much more vulnerable to different mortality factors than are resident adults. Hunting season dates can also be used to influence harvest sex ratios because pregnant females den earlier in the fall than males or non-pregnant females (Hellgren and Vaughan 1989b, Schooley et al. 1994). Bear managers therefore have established harvest regulations that often protect females and allow for greater harvest of males.

In 2003, New Jersey held its first black bear hunt in more than 30 years. Seven thousand hunting permits were issued, and 328 bear were harvested during a one-week season. In 2005, the state held a second bear hunt during which 280 bears were harvested, with about 4,000 permits issued. Based on such a success rate (4.7 percent and 7 percent), the refuge, which anticipates issuing about 100 permits, would yield a harvest of 4 to 7 bears. The refuge offers good, but not prime, bear habitat, so it is possible these numbers are slightly higher than the numbers that would actually be taken. In addition, much of the refuge is difficult to access, and the challenge of animal removal could reduce interest, areas hunted and success rates.

At most, the refuge could provide habitat for about 20 to 22 bears (8 square miles with 2.6 bears per square mile). The state aims for a 20 percent reduction in the State's total bear population with a hunt. With the state estimating a bear population of 900 individuals, we expect the refuge hunt and projected success rate will have no major impact on the local, regional, or State population. Furthermore, high bear mobility will mean that any greater number of bears taken on the refuge will likely be replaced by bears from outside the refuge. With typical bear reproduction rates (2-3 cubs per litter In New Jersey), we do not expect this level of hunting to significantly affect the long-term populations either. The result will be a stable population of bears on the refuge. With, at minimum, stable population replacement rates in the surrounding areas, we do not expect impacts on a larger scale either.

We believe that a controlled bear hunt is an important management tool that will help maintain the biological and cultural carrying capacity of the black bear population in and around the Wallkill River refuge. Analysis of the results of the 2003 NJDFW controlled hunt shows that the harvest goals were met and that results can be accurately predicted by the NJDFW. We therefore find that a public bear hunt conducted according to state seasons and bag limits will be compatible with the principles of sound wildlife management and otherwise in the public interest (50 C.F.R. § 32.1.).

### **Public Review and Comment**

This compatibility determination was made available for public review and comment for 66 days as an appendix to the draft CCP/EA for Wallkill River National Wildlife Refuge.

### **Determination**

Use is not compatible

Use is compatible, with the following stipulations

### **Stipulations Necessary to Ensure Compatibility**

The following stipulations are required to ensure compatibility:

- Baiting is prohibited.
- Pursuit hounds are prohibited.

The refuge's hunt program will be managed in accordance with New Jersey State and Federal regulations.

- Each hunter will be issued the list of refuge regulations.
- The hunt program will be reviewed annually to ensure the impacts on the population are sustainable.
- Refuge hunt areas will be buffered to protect neighbors and visitors.
- News releases will be issued, the website updated, and signs posted to inform the public about the bear hunt before and during the event.
- Hunters must possess and carry all required valid State licenses, State and refuge permits.
- Hunters may use only shotguns, 20-gauge or larger, loaded with slugs only. Buckshot may not be used.
- Hunters must wear 400 square inches (2600 square centimeters) of solid-colored, hunter orange clothing or material in a visible manner.
- Hunters may not possess loaded firearms within 50ft (15m) of a refuge road, including roads closed to vehicles.
- Hunters may not shoot onto or across refuge roads, including roads closed to vehicles.

### **Justification**

Hunting is a priority public use as defined by The National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997. If compatible, hunting is to receive our enhanced consideration over other general public uses in refuge planning and management. It will not cause an undue administrative burden. Annual adjustments can be made in the hunting program to ensure its continued compatibility.

Based on population surveys conducted by the state, we determine that the bear population to be harvested is surplus to a balanced conservation program. If conducted according to the stipulations above, bear hunting on the refuge will not materially interfere with or detract from the mission of the Refuge System nor will it diminish the purposes for which the refuge was established. Specifically, the use will promote refuge purposes #1 and #2 by helping to maintain a healthy bear population and therefore conserving and enhancing this species. The use will also promote purpose #5 by providing an opportunity for fish and wildlife-oriented recreation. When implemented in concert with the stipulations above the use will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purposes for which the refuge was established.

Project Leader Edward H. Hays 1/27/09  
(Signature) (Date)

**Concurrence**

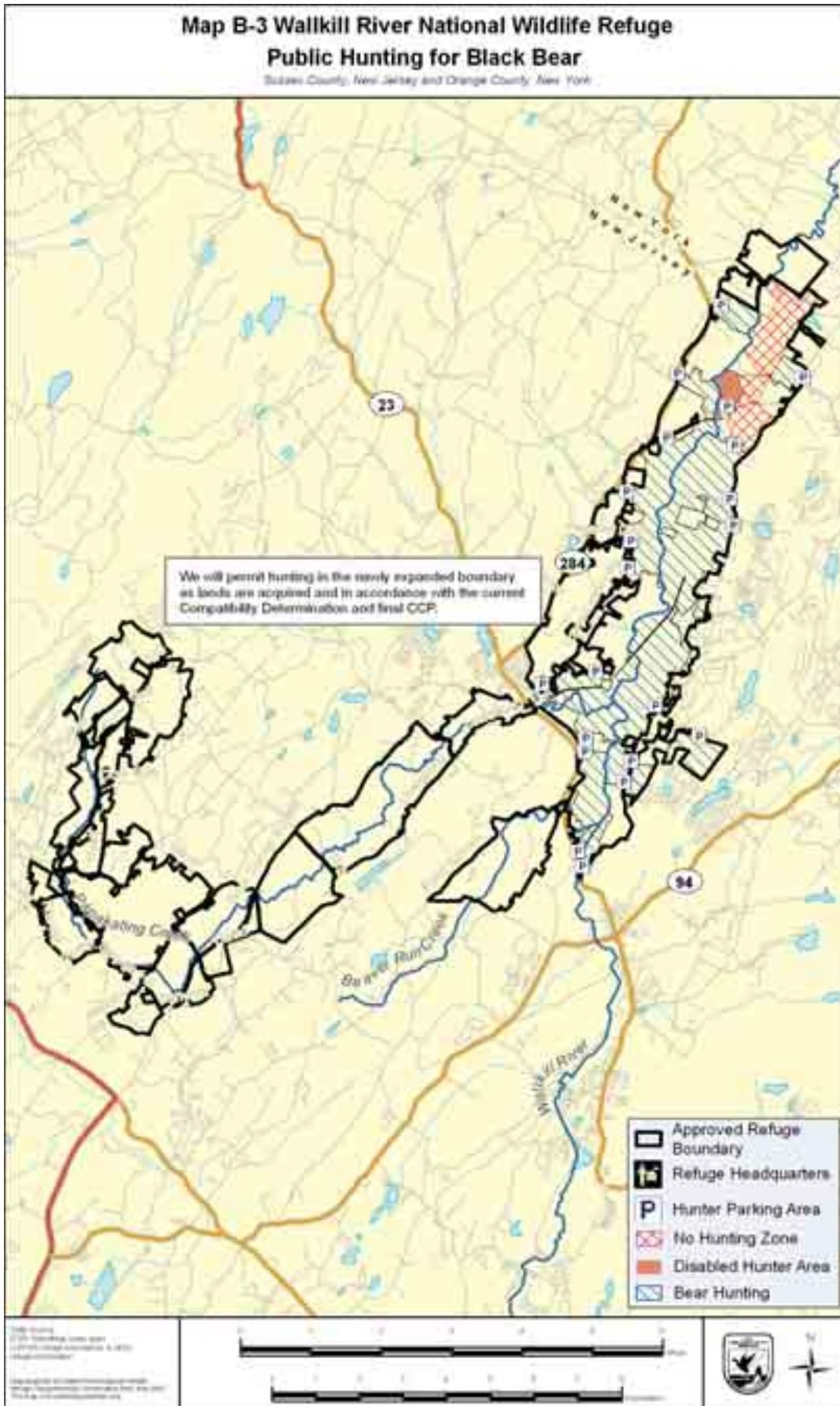
Regional Chief Anthony D. Legg 1/29/2009  
(Signature) (Date)

Mandatory 15-year re-evaluation date JA. 09.2024  
(Date)

**References**

- Begely, S. and D. Glick. 1996. Baited for bear. Newsweek, October 28. P. 59.
- Bunnell, F. L. and D. E. Tait. 1981. Population dynamics of bears-implications. In Fowler, C. W. and T. D. Smith, eds. *Dynamics of Large Mammal Populations*. John Wiley & Sons, N.Y.
- Eiler, J. H., W. G. Wathen, and M. R. Pelton. 1989. Reproduction in black bears in the S. Appalachian Mountains. *J. Wildl. Manage.* 53:353-360.
- Elowe, K. D. and W.E. Dodge. 1989. Factors affecting black bear reproductive success and cub survival. *J. Wildl. Manage.* 53:962-968.
- Elowe, K. D. 1990. Bear hunting with hounds: techniques and effects on bears and the public. East. Workshop Black Bear Res. and Manage. 10:101-109.
- Hellgren, E. C. and M. R. Vaughan. 1989a. Demographic analysis of a black bear population in the Great Dismal Swamp. *J. Wildl. Manage.* 53:969-077.
- Hellgren, E. C. and M. R. Vaughan. 1989b. Denning ecology of black bears in a southeastern wetland. *J. Wildl. Manage.* 53:347-353.
- Lecount, A. E. 1982. Characteristics of a Central Arizona black bear population. *J. Wildl. Manage.* 46:861-868.
- Litvaitis, J. A. and D. M. Kane. 1994. Relationship of hunting technique and hunter selectivity to composition of black bear harvest. *Wildl. Soc. Bull.* 22:604-606.
- Lund, R. C. 1980. New Jersey status report. Proc. 5th East. Black Bear Workshop.

- McConnell, P. A., J. R. Garris, E. Pehek and J. L. Powers. 1997. Black Bear Management Plan. NJ Div. of Fish, Game & Wildlife. 115 pp. Trenton, NJ.
- New Jersey Department of Environmental Protection (NJDEP): Division of Fish and Wildlife. 2004. Black Bear in New Jersey: Status Report 2004.
- Reed, D. J. and D. C. Guynn. 1990. Response of wild turkey hens to bear hunting in Western North Carolina. Proc. Annu. Conf. Southeast. Assoc. Fish and Wildl. Agencies. 44:304-309.
- Rogers, L. L. 1987. Effects of food supply and kinship on social behavior, movements, and population growth of bears in northeastern Minnesota. Wildl. Monogr. 97. 72pp.
- Schooley, R. L., C. R. McLaughlin, G. J. Matula, Jr., and W. B. Krohn. 1994. Denning chronology of female black bears: effects of food, weather, and reproduction. J. Mammal. 75:466-477.
- Samson, C. and J. Huot. 1995. Reproductive biology of female black bears in relation to body mass in early winter. J. Mammal. 76:68-77.
- Young, B. F. and R. L. Ruff. 1982. Population dynamics and movements of black bears in East Central Alberta. J. Wildl. Manage. 46:845-860.



## Compatibility Determination

### Use

Public Fishing

### Refuge Name

Wallkill River National Wildlife Refuge

### Establishing and Acquisition Authority

Wallkill River National Wildlife Refuge was first designated administratively by the Service in a decision document on March 9, 1990. Congress later enacted Public Law 101-593, 104 Stat. 2955 on November 16, 1990, to confirm its establishment by special legislation. The Service has acquired lands for the Wallkill River refuge under the following authorities:

1. Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
2. Migratory Bird Conservation Act [16 U.S.C. 715d]
3. Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

We anticipate that the Service will continue to acquire lands under the same authorities that have been used to acquire lands in the past. Based on the refuge purposes, lands could also be acquired under several other legislative authorities, including but not limited to:

1. Refuge Recreation Act [16 U.S.C. 460K-1]
2. Endangered Species Act [16 U.S.C. 1534]
3. National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

### Refuge Purpose(s)

(1) to preserve and enhance the refuge lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations; (2) to 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; (3) to protect and enhance the water quality of aquatic habitats within the refuge; (4) to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats; and (5) to provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation. 104 Stat. 2955, dated Nov. 16, 1990.

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

“for the development, advancement, management, conservation, and protection of fish and wildlife resources....” 16 U.S.C. 742f(a)(4) “for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. 16 U.S.C. 742f (b)(1) (Fish and Wildlife Act of 1956)

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

### National Wildlife Refuge System Mission

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

### **Description of Proposed Use**

**(a) What is the use? Is it a priority public use?** The use is Public Fishing. Fishing is a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57).

*Supporting Uses:* Boating (motorized and non-motorized)

**(b) Where will the use be conducted?** The refuge will permit fishing on the Wallkill River and the Papakating Creek. The refuge will also permit fishing at Stanley's Pond, located behind (west) of the refuge headquarters at 285 Lake Wallkill Road. There are fishing access points at the Wood Duck Nature Trail, Dagmar Dale Nature Trail, Bassett's Bridge, Oil City Road and on Route 565. Additional access points will be established at County Route 565 and along Lake Wallkill Road (see map B-4).

**(c) When will the use be conducted?** The use will be conducted during the hours and in the seasons specified in the fishing regulations of the states of New Jersey and New York.

**(d) How will the use be conducted?** Public fishing will be conducted according to New York or New Jersey state regulations, depending on where the use is occurring. Fishing will be permitted by rod and reel or hook and line, and bow, per state regulations. Public fishing on the refuge is provided at designated fishing access points. Where there is a public boat launch, anglers can launch a watercraft and fish from a boat. Non-motorized boats and motorized boats can be used, but the refuge's launch access sites do not provide trailer access for boats. Anglers are not required to obtain a refuge permit, but are required to obtain a state fishing license. Unauthorized introductions of both non-native and native fish can disrupt aquatic ecosystems and destroy natural fisheries. No fish of any species may be introduced onto the refuge without appropriate state and refuge permits, including baitfish and eggs.

**(e) Why is this use being proposed?** The use is being proposed by the refuge to promote one of the priority public uses of the Refuge System. Providing opportunities for visitors to fish will promote stewardship of our natural resources and increase public appreciation and support for the refuge. In addition, refuge purpose #5 (see above) instructs the refuge to "provide opportunities for fish and wildlife-oriented recreation." Fishing provides that opportunity.

### **Availability of Resources**

Staff time: 10 hours of LE staff = \$225

Fishing Day event: 160 hours of staff time at \$22 per hour = \$3,520

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

### **Anticipated Impacts of the Use**

Fishing potentially could cause disturbance to wildlife that use the ponds, the river, etc, including waterfowl and shorebirds. Discarded fishing line and other fishing litter could potentially entangle migratory birds or mammals and cause injury and death (Gregory 1991). In addition, litter can affect the visual experience of refuge visitors (Marion and Lime 1986). Law enforcement issues related to fishing include illegal taking of fish, littering, trespassing and fires. However, these impacts have generally not been observed on the refuge.

### **Public Review and Comment**

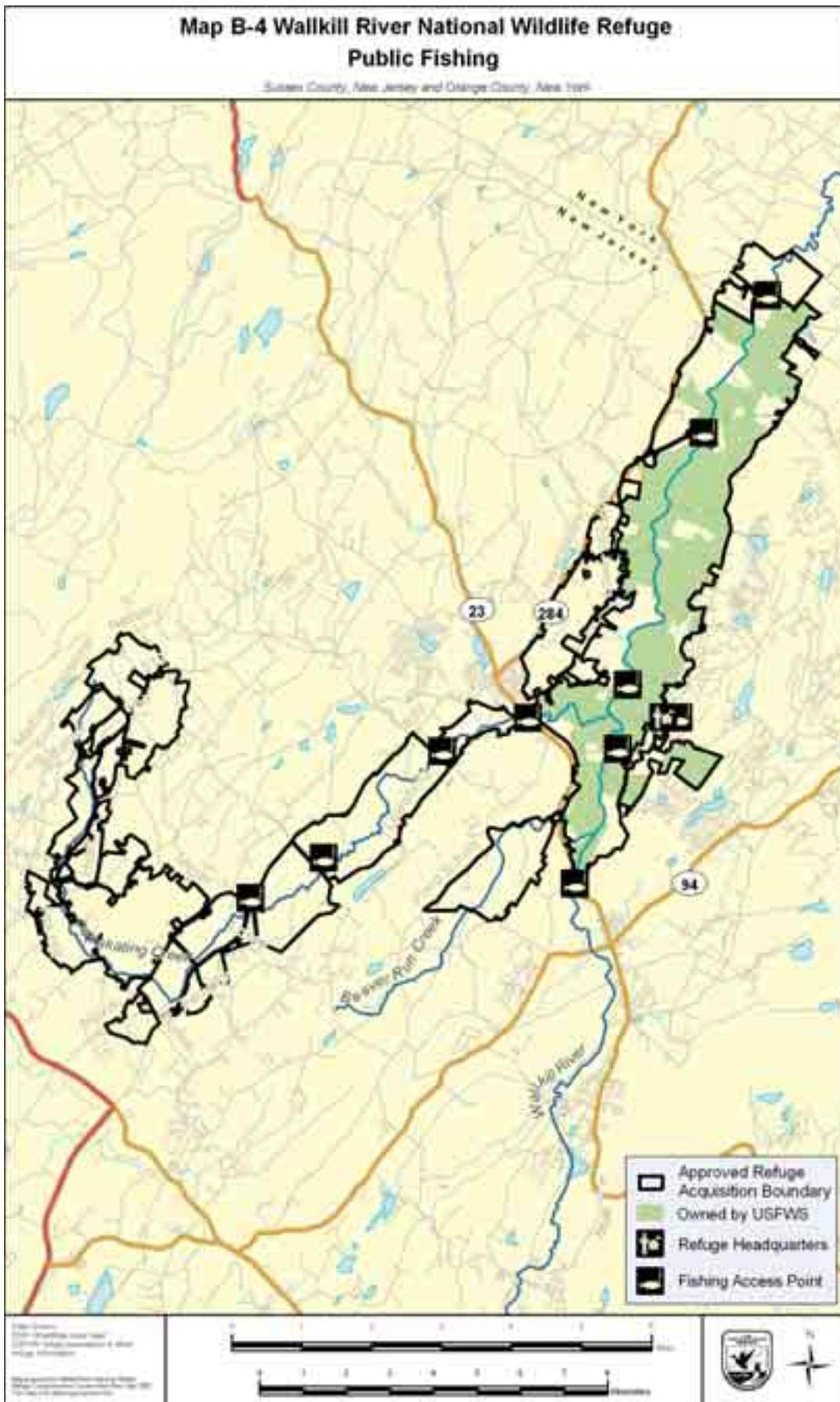
This compatibility determination was made available for public review and comment for 66 days as an appendix to the draft CCP/EA for Wallkill River National Wildlife Refuge.



**References**

Gregory, M. R. 1991. The hazards of persistent marine pollution: drift plastics and conservation islands. *Journal of Royal Society of New Zealand* 21(2):83-100.

Marion, J. L. and D. W. Lime. 1986. Recreational resource impacts: visitor perceptions and management responses. Pages 229-235 in D. L. Kulhavy and R. N. Conner editors. *Wilderness and natural areas in the eastern United States: a management challenge*. Center for Applied Studies, Austin State University, Nacogdoches, Texas, USA.



## Compatibility Determination

### Use

Wildlife Observation & Photography and Environmental Education & Interpretation

### Refuge Name

Wallkill River National Wildlife Refuge

### Establishing and Acquisition Authority

Wallkill River National Wildlife Refuge was first designated administratively by the Service in a decision document on March 9, 1990. Congress later enacted Public Law 101-593, 104 Stat. 2955 on November 16, 1990, to confirm its establishment by special legislation. The Service has acquired lands for the Wallkill River refuge under the following authorities:

1. Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
2. Migratory Bird Conservation Act [16 U.S.C. 715d]
3. Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

We anticipate that the Service will continue to acquire lands in the expansion area under the same authorities that have been used to acquire lands in the past. Based on the refuge purposes, lands could also be acquired under several other legislative authorities, including but not limited to:

1. Refuge Recreation Act [16 U.S.C. 460K-1]
2. Endangered Species Act [16 U.S.C. 1534]
3. National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

### Refuge Purposes

(1) to preserve and enhance the refuge lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations; (2) to 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; (3) to protect and enhance the water quality of aquatic habitats within the refuge; (4) to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats; and (5) to provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation. 104 Stat. 2955, dated Nov. 16, 1990.

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

“for the development, advancement, management, conservation, and protection of fish and wildlife resources...” 16 U.S.C. 742f(a)(4); “for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. “16 U.S.C. 742f (b)(1) (Fish and Wildlife Act of 1956)

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

### National Wildlife Refuge System Mission

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

### Description of Use

**(a) What is the use? Is it a priority public use? Primary Use:** The uses are wildlife observation and photography, environmental education and interpretation. These uses are priority uses of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57).

*Supporting Uses:* Boating (motorized and non-motorized), cross-country skiing, and snowshoeing.

**(b) Where will these uses be conducted?** These uses will be allowed in all Service-owned areas open to the public, including but not limited to the Wallkill River (by boat), kiosks and displays, nature trails (Dagmar Dale, Wood Duck, and Liberty Loop nature trails), river access areas (Oil City Road, Bassett's Bridge, Route 565, southern edge of the refuge), and any additional lands opened to the public through this CCP or other appropriate regulatory documents (see map B-5).

**(c) When will the uses be conducted?** The uses will be conducted year-round during the hours when the refuge is open to the public, which is one hour before official sunrise to one hour after official sunset.

**(d) How will the uses be conducted?** Currently the refuge is open to the public for wildlife observation, photography, environmental education and interpretation. The refuge has facilities for environmental education at its headquarters area. An environmental education program will utilize partnership efforts with organizations such as New Jersey Audubon Society and the Wallkill Watershed Management Group. The refuge will focus on "Teach the Teacher" programs. On a limited basis, the refuge offers interpretive programs.

Wildlife observation and photography occur on individual or group bases on refuge lands open to the public. We allow cross-country skiing and snowshoeing to facilitate these uses. No jogging, horseback riding, bicycling, or motorized vehicles are allowed.

The final CCP for Wallkill River National Wildlife Refuge expands or enhances these four public uses using a variety of strategies including, but not limited to

#### A. Wildlife Observation and Photography

Increase access to refuge lands by

- opening additional refuge lands to the public, including instituting a special-use permit system (fee) for off-trail access to all Service-owned lands (unless specified in the special use permit or on signs) on Sundays from September through March;
- working with abutting landowners to gain access to private lands adjacent to the refuge;
- extending existing refuge trails;
- creating new refuge trails;
- constructing additional boardwalks, barrier-free canoe/kayak access points, and photography blinds.

#### B. Interpretation

- Enhance and expand opportunities for environmental interpretation by:
- Increasing involvement with local youth groups'

- Developing new interpretive materials, including animal and plant checklists, trail guides, self-guided trail pamphlets, roadside/parking lot displays;
- Hiring a Visitor Services Professional;
- Sponsoring a speaker series at the refuge for the public to learn about wildlife and nature;
- Developing a Wallkill River canoe trail, install signs, and prepare trail brochure;
- Conducting guided walks on refuge trails and former Lehigh and New England railroad bed south of Kelly Road.

### C. Environmental Education

- Enhance and expand opportunities for environmental education by:
- Expanding partnerships with organizations such as New Jersey Audubon Society and New Jersey Fish and Wildlife to offer joint environmental education programs for students and teachers;
- Expanding the refuge internship program;
- Providing at least one “Teach the Teacher” workshop each year;
- If complete funding for Owens Station is secured, using that facility as a fully functioning environmental education facility and developing curriculum-based programs;

Implementation of the above strategies will depend on the refuge’s staff and funding levels.

**(e) Why is this use being proposed?** The Refuge System Improvement Act defines wildlife observation and photography, and environmental education and interpretation as priority public uses that, if compatible, are to receive our enhanced consideration over other general public uses. Authorizing these uses will produce better-informed public advocates for Service programs.

In addition, refuge purpose #5 (see above) instructs the refuge to “provide opportunities for fish and wildlife-oriented recreation.” These uses will provide opportunities for visitors to observe and learn about wildlife and wild lands at their own pace in an unstructured environment, and observe wildlife in their natural habitats firsthand. They will provide visitors with compatible educational and recreational opportunities to enjoy refuge resources and gain better understanding and appreciation of fish and wildlife, wild lands ecology, the relationships of plant and animal populations in an ecosystem, and wildlife management. They will enhance public understanding of natural resource management programs and ecological concepts, enable the public to better understand the problems facing our wildlife and wild lands resources, help them realize what effect the public has on wildlife resources, learn about the Service role in conservation, and better understand the biological facts upon which we base Service management programs.

Professional and amateur photographers alike will gain opportunities to photograph wildlife in its natural habitat. Those opportunities will increase the publicity and advocacy of Service programs. These uses will provide wholesome, safe, outdoor recreation in a scenic setting, and entice those who come strictly for recreational enjoyment to participate in the educational facets of our public use program and become advocates for the refuge and the Service.

### Availability of Resources

Environmental education and interpretation and wildlife observation and photography occur through the use of existing staff, resources, and facilities. Existing resources for environmental education and interpretation

include staff, interpretive kiosks and displays, environmental education programs carried out through extensive help of volunteers, displays, and trails. Existing resources for wildlife observation and photography include trails, an observation blind, and an observation platform.

### **Cost Breakdown**

The following list estimates the required costs for the refuge to administer and manage its programs for wildlife observation and photography, environmental education and interpretation. They do not include the costs of new construction, kiosks, and signs. Appendix E presents those costs in a Refuge Operating and Needs data list.

Routine maintenance:	\$17,000 annually; that is the expected cost to maintain the refuge public use facilities including parking areas and restroom maintenance and garbage removal.
Supplies and materials:	\$11,000; that includes interpretative and refuge brochures, wood chips to cover trails, and the maintenance of erosion control structures.
Monitoring:	\$3,500 annually, to be carried out in cooperation with state and local partners.
Law Enforcement:	\$6,000 annually, for a refuge officer.
Administration	\$2,000 annually to offer and process permits.
<b>Total:</b>	<b>\$39,500</b>

The financial and staff resources necessary to provide and administer this use at its current level are now available and we expect them to continue in the future subject to the availability of appropriated funds. As stated in the final CCP, we would need additional resources in order to administer this use at the level described in the final CCP.

### **Anticipated Impacts of the Use**

On-site activities by teachers and students using trails and environmental education sites may impose low-level impacts such as trampling of vegetation, removing vegetation, littering and temporary disturbance to wildlife. In the event of persistent disturbance to habitat or wildlife, the activity will be restricted or discontinued.

Placement of kiosks may affect small areas of vegetation. Kiosks will be placed where minimal disturbance will occur.

Providing additional interpretive and educational brochures as well as increasing involvement with local groups in the area may result in increased knowledge of the refuge and its resources. This awareness and knowledge may improve the willingness of the public to support refuge programs, resources, and compliance with regulations.

We predict that the impacts of wildlife observation and photography uses will be minimal. Possible impacts include disturbing wildlife, removing or trampling of plants, littering, vandalism and entrance into closed areas. There will be some removal of vegetation to place the observation platforms and photography blinds. In the event of persistent disturbance to habitat or wildlife, the activity will be restricted or discontinued. Little energy will be expended by wildlife leaving areas of disturbance.

With the final CCP, we will expand wildlife observation and photography opportunities by opening all Service-owned lands at the refuge to the public, with the exception of the impoundments and any areas noted on the special use permit and by refuge signs. The additional use will occur on Sundays from September to March. Since this use will occur only during the late fall, winter and early spring months, we expect impacts to be minimal because most of the refuge's wildlife are not present or are hibernating at this time of year

and many wildlife habitats are dormant. To reduce any impacts and ensure visitor safety, the area inside the impoundments will remain closed. Open access on Sunday will end by March 31 of each year, which will minimize disturbance to nesting birds. Currently, the refuge issues about 700 hunt permits each year, with each hunter visiting about 15 times. We anticipate issuing no more than 500 permits for wildlife observation and photography Sundays, which means no more than 500 people could visit the refuge on any given Sunday, although typical visitation will be much less. Current refuge visitation on Sundays, which does not require a fee or a permit, is 200 visitors or less. Also, the visitation will be spread around the 4,500 acres of refuge open to the public with each visit not lasting much more than 2 hours, based on typical fall—winter—early spring use. We anticipate most people visiting on a Sunday will spend 90 percent of their time on the old railroad bed that runs for 9 miles through the refuge or on the old roads and trails that run through the refuge. If Sunday visitation were shown to have unacceptable impacts, the number of special use permits offered will be cut back or eliminated.

Skiing and snowshoeing have the potential to impact shorebird, waterfowl, and other migratory bird populations feeding and resting near the trails during certain times of the year.

Human disturbance to migratory birds has been documented in many studies in different locations. Conflicts arise when migratory birds and humans are present in the same areas (Boyle and Samson 1985). The responses of wildlife to human activities include departure from the site (Owen 1973, Burger 1981, Kaiser and Fritzell 1984, Korschen et al 1985, Henson and Grant 1991, Kahl 1991, Klein 1993), the use of sub-optimal habitat (Erwin 1980, Williams and Forbes 1980), altered behavior (Burger 1981, Korschen et al. 1985, Morton et al. 1989, Ward and Stehn 1989, Havera et al. 1992, Klein 1993), and an increase in energy expenditure (Morton et al. 1989, Belanger and Bedard 1990). McNeil et al. (1992) found that many waterfowl species avoid disturbance by feeding at night instead of during the day. Studying the effects of human visitation on water birds at the J.N. “Ding” Darling refuge, Klein (1989) found resident water birds to be less sensitive to disturbance than migrants were; she also found that sensitivity varied according to species and individuals within species. Ardeids were quite tolerant of people but were disturbed as they took terrestrial prey; great blue herons, tricolored herons, great egrets, and little blue herons were observed to be disturbed to the point of flight more than other birds. Kushlan (1978) found that the need of these birds to move frequently while feeding might disrupt interspecific and intraspecific relationships.

In addition, Batten (1977) and Burger (1981) found that wading birds were extremely sensitive to disturbance in the northeastern United States. Klein (1993) in studying water bird response to human disturbance found that, as the intensity of disturbance increased, avoidance response by the birds increased, and found that out-of-vehicle activity was more disruptive than vehicular traffic; Freddy et al. (1986) and Vaske (1983) also found the latter to be true. In regards to waterfowl, Klein (1989) found migratory dabbling ducks to be the most sensitive to disturbance and migrant ducks to be more sensitive when they first arrived, in the late fall, than later in winter. She also found that gulls and sandpipers to be apparently insensitive to human disturbance, with Burger (1981) finding the same to be true for various gull species.

For songbirds, Gutzwiller et al. (1994) found that singing behavior of some species was altered by low levels of human intrusion. Some studies have found that some bird species habituate to repeated intrusion; frequently disturbed individuals of some species have been found to vocalize more aggressively, have higher body masses, or tend to remain in place longer (Cairns and McLaren 1980). Disturbance may affect the reproductive fitness of males by hampering territory defense, male attraction and other reproductive functions of song (Arrese 1987). Disturbance, which leads to reduced singing activity, would make males rely more heavily on physical deterrents in defending territories, which are time- and energy-consuming (Ewald and Carpenter 1978).

Travel routes can disturb wildlife outside the immediate trail corridor (Miller et al. 2001). Miller et al. (1998) found bird abundance and nesting activities (including nest success) increased as distance from a recreational trail increased in both grassland and forested habitats. Bird communities in this study apparently were affected by the presence of recreational trails, where “generalists” (e.g., American robins) were found near trails and “specialist” species (e.g., grasshopper sparrows) were found farther from trails. Nest predation also was found to be greater near trails (Miller et. al 1998).

Disturbance can cause shifts in habitat use, abandonment of habitat and increase energy demands on affected wildlife (Knight and Cole, 1991). Flight in response to disturbance can lower nesting productivity and cause disease and death. Hammitt and Cole (1998) conclude that the frequent presence of humans in “wild land” areas can dramatically change the normal behavior of wildlife mostly through “unintentional harassment.”

Seasonal sensitivities can compound the effect of disturbance on wildlife. Examples include regularly flushing birds during nesting or causing mammals to flee during winter months, thereby consuming large amounts of stored fat reserves. Hammitt and Cole (1998) note that females with young (such as white-tailed deer) are more likely to flee from a disturbance than those without young.

The Delaware Natural Heritage Program, Division of Fish & Wildlife and the Department of Natural Resources and Environmental Control prepared a document on the “The Effects of Recreation on Birds: A Literature Review” which was completed in April of 1999. We refer to the following information from that document.

Several studies have examined the effects of recreationists on birds using shallow-water habitats adjacent to trails and roads through wildlife refuges and coastal habitats in the eastern United States (Burger 1981; Burger 1986; Klein 1993; Burger et al. 1995; Klein et al. 1995; Rodgers & Smith 1995, 1997; Burger & Gochfeld 1998). Overall, the existing research clearly demonstrates that disturbance from recreation activities always have at least temporary effects on the behavior and movement of birds within a habitat or localized area (Burger 1981, 1986; Klein 1993; Burger et al. 1995; Klein et al. 1995; Rodgers & Smith 1997; Burger & Gochfeld 1998). The findings that were reported in these studies are summarized as follows in terms of visitor activity and avian response to disturbance.

- Presence: Birds avoided places where people were present and when visitor activity was high (Burger 1981; Klein et al. 1995; Burger & Gochfeld 1998).
- Distance: Disturbance increased with decreased distance between visitors and birds (Burger 1986), though exact measurements were not reported.
- Approach Angle: Visitors directly approaching birds on foot caused more disturbance than driving by in vehicles, stopping vehicles near the birds, or stopping vehicles and getting out without approaching them (Klein 1993). Direct approaches may also cause greater disturbance than tangential approaches to birds (Burger & Gochfeld 1981; Burger et al. 1995; Knight & Cole 1995a; Rodgers & Smith 1995, 1997).
- Type and Speed of Activity: Joggers and landscapers caused birds to flush more than anglers, clammers, sunbathers, and some pedestrians, possibly because the former groups move quickly (joggers) or create more noise (landscapers). The latter groups tend to move more slowly or stay in one place for longer periods, and thus birds likely perceive these activities as less threatening (Burger 1981, 1986; Burger et al. 1995; Knight and Cole 1995a). Alternatively, birds may tolerate passing by with unabated speed whereas if the activity stops or slacks birds may flush (Burger et al. 1995).
- Noise: Noise caused by visitors resulted in increased levels of disturbance (Burger 1986; Klein 1993; Burger & Gochfeld 1998), though noise was not correlated with visitor group size (Burger & Gochfeld 1998).

### **Public Review and Comment**

This compatibility determination was made available for public review and comment for 66 days as an appendix to the draft CCP/EA for Wallkill River National Wildlife Refuge.

### **Determination**

Use is not compatible

Use is compatible, with the following stipulations

### **Stipulations Necessary to Ensure Compatibility**

Activities will be held in areas where minimal impact will occur. The periodic evaluation of sites and programs will be conducted to assess whether objectives are being met and to prevent site degradation. If evidence of unacceptable adverse impacts appears, the location(s) of activities will be rotated with secondary sites, curtailed or discontinued. Refuge regulations will be posted and enforced. Closed areas will be established, posted and enforced. The known presence of a threatened or endangered species will preclude the use of an area until the Refuge Manager determines otherwise.

Special use permits will be issued to Sunday off-trail users and organizations conducting environmental education or interpretive and/or wildlife observation and photography tours or activities on the refuge. A fee may be charged for the special use permit. The areas used by permit will be closely monitored to evaluate the impacts on the resource. If adverse impacts appear, the activity will be moved to secondary locations, curtailed, or discontinued. Specific conditions may apply, depending on the activity requested, and will be addressed through the special use permit.

Guidelines to ensure the safety of all participants will be issued in writing to the permit holder for the activities and will be reviewed before the activity begins.

Commercial photography is subject to a special use permit and commercial photographers will be charged a fee. The fee is dependent on size, scope and impact of the proposed activity. Additional regulations will apply to commercial photography (see 50 C.F.R. 27.71, 27.73)

All photographers must follow refuge regulations. Photographers in closed areas must follow the conditions outlined in the special use permit, which normally include notification of refuge personnel each time any activities occur in closed areas. Use of a closed area should be restricted to inside blinds to reduce disturbance to wildlife. No baits or scents may be used. At the end of each session, the blind must be removed. The refuge may limit group size, based on the season and location. All litter will be removed daily.

Law enforcement patrol of public use areas should continue to minimize the above-mentioned types of violations.

Cross-country skiing and snow shoeing trails must be monitored to make sure that conditions do not pose adverse effects to wildlife populations and their habitats, especially threatened or endangered species. If such species are found utilizing habitat near trails, the trails will be closed or rerouted to ensure habitat protection.

Potential conflicts with other public uses such as hunting, interpretation, etc. will be minimized by using trailhead signs and other media to inform the visitors about current public use activities.

### **Justification**

Environmental education and interpretation activities generally support refuge purposes and impacts can largely be minimized (Goff et al., 1988). The minor resource impacts attributed to these activities are generally outweighed by the benefits gained by educating present and future generations about refuge resources. Environmental education is a public use management tool used to develop a resource protection ethic within society. While it targets school age children, it is not limited to this group. This tool allows us to educate refuge visitors about endangered and threatened species management, wildlife management and ecological principles and communities. A secondary benefit of environmental education is that it instills an 'ownership' or 'stewardship' ethic in visitors and most likely reduces vandalism, littering and poaching; it also strengthens Service visibility in the local community. Environmental education (outdoor classroom) is listed in the Refuge Manual (U.S. Fish and Wildlife Service, 1985) as the highest priority visitor use throughout the National Wildlife Refuge System.

The majority of visitors to the refuge are there to view the wildlife and upland, wetland, and grassland habitat areas. Some visit to develop an understanding of natural or cultural history. This visitation is in accordance with a wildlife-oriented activity and is an acceptable secondary use. There will be some visitor impacts

from this activity, such as trampling vegetation (Kuss and Hall, 1991) and disturbance to wildlife near trails (Klein, 1989 and Burger, 1981), but the knowledge, appreciation and understanding of management gained by visitors will provide support for the Service. The long-term benefits gained through wildlife observation and photography activities outweigh the impacts listed above.

Environmental education and interpretation and wildlife observation and photography will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purposes for which the refuge was established.

Based on the stipulations above, the benefits of these priority public uses will support all of the Refuge's purpose's to varying degrees. In particular, these uses will directly promote refuge purpose #5 as they provide opportunities for environmental education and other fish- and wildlife-oriented recreation.

Project Leader Edna O'Hara 1/27/09  
(Signature) (Date)

**Concurrence**

Regional Chief Anthony J. Leary 1/29/2009  
(Signature) (Date)

Mandatory 15-year re-evaluation date

Jan. 29, 2024  
(Date)

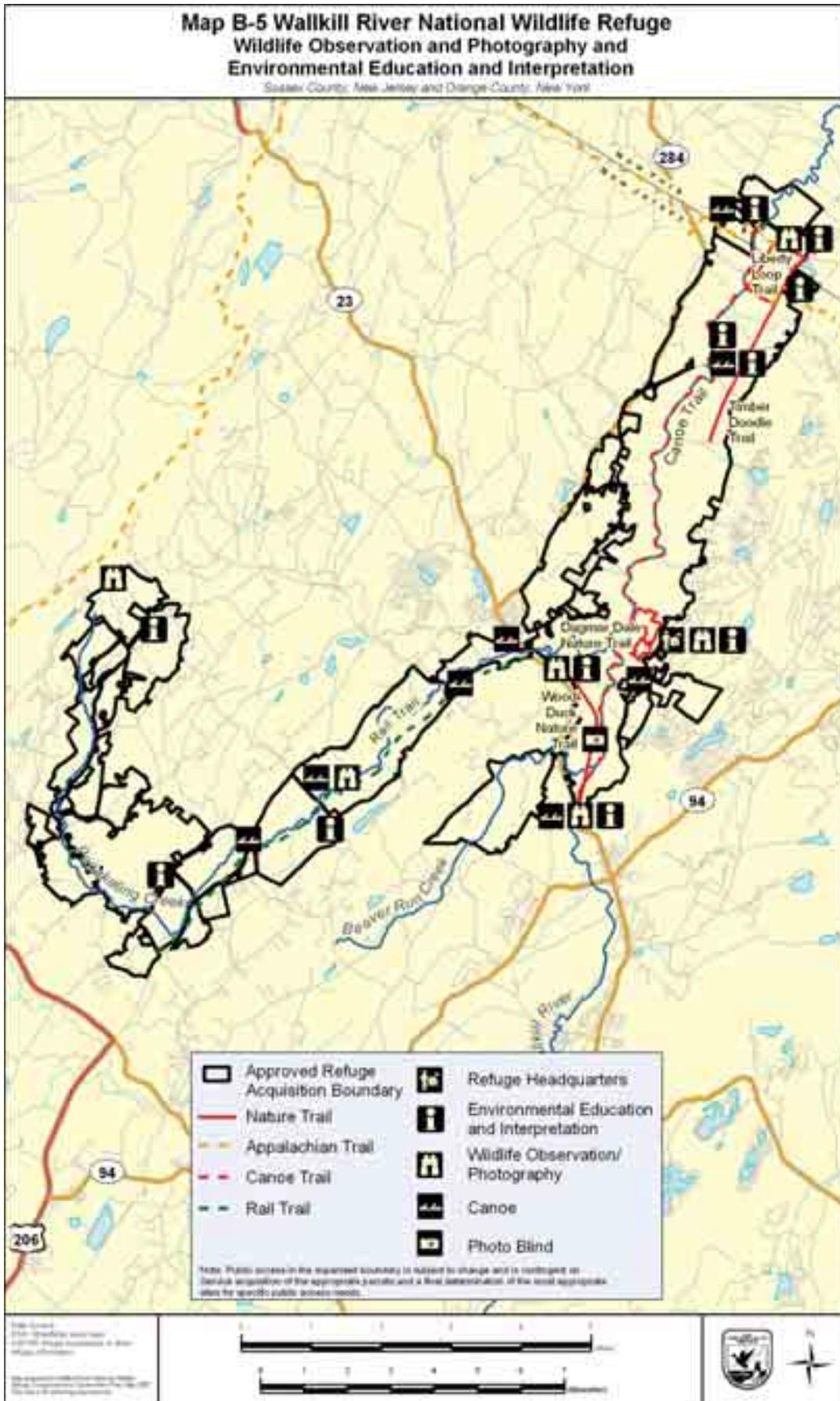
**Literature Cited**

- Arrese, P. 1987. Age, intrusion pressure and defense against floaters by territorial male Song Sparrows. *Anim. Behav.* 35:773-784.
- Batten, L. A. 1977. Sailing on reservoirs and its effects on water birds. *Biol. Conserv.* 11:49-58.
- Belanger, L., and J. Bedard. 1990. Energetic cost of man-induced disturbance to staging snow geese. *J. Wildl. Manage.* 54:36.
- Boyle, S. A., F. B. Samson. 1985. Effects of nonconsumptive recreation on wildlife: A review. *Wildl. Soc. Bull.* 13:110.
- Burger, J. 1981. Effect of human activity on birds at a coastal bay. *Biol. Conserv.* 21:231-241.
- Burger, J. 1986. The effect of human activity on shorebirds in two coastal bays in northeastern United States. *Biological Conservation* 13:123-130.

- Burger, J. 1987. New Jersey Endangered Beach-Nesting Bird Project: 1986 Research. Unpublished report. New Jersey Department of Environmental Protection, New Jersey. 37 pp.
- Burger, J., and M. Gochfeld. 1981. Discrimination of the threat of direct versus tangential approach to the nest by incubating herring and great black-backed gulls. *J. Comparative Physiological Psychology* 95:676-684.
- Burger, J., and M. Gochfeld. 1998. Effects of ecotourists on bird behavior at Loxahatchee National Wildlife Refuge, Florida. *Environmental Conservation* 25:13-21.
- Burger, J., M. Gochfeld, and L. J. Niles. 1995. Ecotourism and birds in coastal New Jersey: Contrasting responses of birds, tourists, and managers. *Environmental Conservation* 22:56-65.
- Cairns, W. E. and I. A. McLaren. 1980. Status of the piping plover on the east coast of North America. *American Birds*. 34:206-208.
- Cullen, R. 1985. Rationing recreational use of public land. *J. Environ. Manage.* 21:213-224.
- Erwin, R. M. 1980. Breeding habitat by colonially nesting water birds in 2 Mid-Atlantic U.S. regions under different regimes of human disturbance. *Biological Conservation*. 18:39-51.
- Erwin, M. R. 1989. Responses to Human Intruders by Birds Nesting in Colonies: Experimental Results and Management Guidelines. *Colonial Waterbirds* 12 (1) :104-108.
- Ewald P. W. & F. L. Carpenter. 1978. Territorial responses to energy manipulations in the Anna hummingbird. *Oecologia* 31: 277-292.
- Freddy, D. J., W. M. Bronaugh, and M. C. Fowler. 1986. Responses of mule deer to disturbance by persons afoot and in snowmobiles. *Wildl. Soc. Bull.* 14:63-68.
- Gutzwiller, K. J., Wiedenmann, R. T., Clements, K. L., and Anderson, S. H. 1994. Effects of human intrusion on song occurrence and singing consistency in subalpine birds. *Auk*. Vol. 111: 28-37.
- Havera, S. P., L. R. Boens, M. M. Georgi, and R. T. Shealy. 1992. Human disturbance of waterfowl on Keokuk Pool, Mississippi River. *Wildl. Soc. Bull.* 20:290-298.
- Hammitt, W. E. and D. N. Cole. 1998. *Wildland Recreation*. John Wiley & Sons, New York, 361pp.
- Henson, P. T., and A. Grant. 1991. The effects of human disturbance on trumpeter swan breeding behavior. *Wildl. Soc. Bull.* 19:248-257.
- Kaiser, M. S. & Fritzell, E. K. 1984. Effects of river recreationists on green-backed heron behavior. *J. Wildl. Manage.* 48, 561-567.
- Kahl, R. 1991. Boating disturbance of canvasbacks during migration at Lake Poygan, Wisconsin. *Wildl. Soc. Bull.* 19:242-248.

- Klein, M. L. 1993. Waterbird behavioral responses to human disturbance. *Wildl. Soc. Bull.* 21:31-39.
- Klein, M. L. 1989. Effects of high levels of Human Visitation on Foraging Waterbirds at J. N. “Ding” Darling NWR, Sanibel, Florida. Final Report to USFWS. 103pp.
- Klein, M. L., S. R. Humphrey, and H. F. Percival. 1995. Effects of ecotourism on distribution of waterbirds in a wildlife refuge. *Conservation Biology* 9:1454-1465.
- Knight, R. L. and D. N. Cole. 1991. Effects of recreational activity on wildlife in wildlands. *Trans. 56<sup>th</sup> N.A. Wildl. & Nat. Res. Conf.* Pages 238-247.
- Knight R. L., and D. N. Cole. 1995. Wildlife responses to recreationists. Pages 51-69 in R. L. Knight and D. N. Cole, editors. *Wildlife and recreationists: coexistence through management and research.* Washington, D.C., Island Press, 372 pp.
- Korschen, C. E., L. S. George, and W. L. Green. 1985. Disturbance of diving ducks by boaters on a Migrational staging area. *Wildl. Soc. Bull.* 13:290-296.
- Kushlan, J. A. 1978. Feeding ecology of wading birds. Pages 249-297 in A. Sprunt IV, J. C. Ogden, and S. Winckler, eds. *Wading Birds.* Nat. Audubon Soc., New York, NY.
- McNeil, R., Drapeau, P., and J. D. Goss-Custard. 1992. The occurrence and adaptive significance of nocturnal habitats in waterfowl. *Biol. Rev.*; 67: 381-419.
- Miller, S. G., R. L. Knight, and C. K. Miller. 2001. Wildlife responses to pedestrians and dogs. *Wildlife Society Bulletin* 29(1): 124-132.
- Miller, S. G., R. L. Knight, and C. K. Miller. 1998. Influence of recreational trails on breeding bird communities. *Ecological Applications* 8:162-169.
- Morton, J. M., A. C. Fowler, and R. L. Kirkpatrick. 1989. Time and energy budgets of American black ducks in winter. *J. Wildl. Manage.* 53:401-410 (also see corrigendum in *J. Wildl. Manage.* 54:683).
- Owen, M. 1973. The management of grassland areas for wintering geese. *Wildfowl.* 24:123-130.
- Pfister, C., B. A. Harrington, and M. Lavine. 1992. The Impact of Human Disturbance on Shorebirds at a Migration Staging Area. *Biological Conservation* 60 (2) :115-126.
- Purdy, K. G., G. R. Goff, D. J. Decker, G. A. Pomerantz, and N. A. Connelly. 1987. *A Guide to Managing Human Activity on National Wildlife Refuges.* Human Dimensions research Unit, Cornell Univ., Ithaca, NY, 34pp.
- Robertson, R. J. and N. J. Flood. 1980. Effects of recreational use of shorelines on breeding bird populations. *Canadian Field-Naturalist* 94 (2) :131-138.
- Rodgers, J. A., and H. T. Smith. 1995. Set-back distances to protect nesting bird colonies from human disturbance in Florida. *Conservation Biology* 9:89-99.

- Rodgers, J. A., and H. T. Smith. 1997. Buffer zone distances to protect foraging and loafing waterbirds from human disturbance in Florida. *Wildlife Society Bulletin* 25:139-145.
- U.S. Fish and Wildlife Service. 1994. Compatibility Determination (Collection of Berries, fruit, ground pine, nuts). Erie National Wildlife Refuge. Unpublished. In Refuge files.
- U.S. Fish and Wildlife Service. 1990. Public Use Management Plan. Erie National Wildlife Refuge. Unpublished. In Refuge files.
- Vaske, J. J., A. R. Graefe, and F. R. Kuss. 1983. Recreation impacts: a synthesis of ecological and social research. *Trans. N. Amer. Wildl. N.*
- Ward, D. H., and R. A. Stehn. 1989. Response of brant and other geese to aircraft disturbance at Izembek Lagoon, Alaska. U.S. Fish and Wildlife Service, Alaska Fish and Wildlife Research Center. Final report to the Minerals Management Service. Anchorage, Alaska. 193 pp.
- Williams, G. J., and E. Forbes. 1980. The habitat and dietary preferences of dark-bellied brant geese and widgeon in relation to agricultural management. *Wildfowl*. 31:151-157.
- Whittaker, D. and Knight, R. 1998. Understanding wildlife responses to humans. *Wildlife Society Bulletin* 26(3): 312-317.



## Compatibility Determination

### Use

Cross-Country Skiing and Snowshoeing to Promote Priority Public Uses

### Refuge Name

Wallkill River National Wildlife Refuge

### Establishing and Acquisition Authority

Wallkill River National Wildlife Refuge was first designated administratively by the Service in a decision document on March 9, 1990. Congress later enacted Public Law 101-593, 104 Stat. 2955 on November 16, 1990, to confirm its establishment by special legislation. The Service has acquired lands for the Wallkill River refuge under the following authorities:

1. Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
2. Migratory Bird Conservation Act [16 U.S.C. 715d]
3. Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

We anticipate that the Service will continue to acquire lands under the same authorities that have been used to acquire lands in the past. Based on the refuge purposes lands also could be acquired under several other legislative authorities, including but not limited to:

1. Refuge Recreation Act [16 U.S.C. 460K-1]
2. Endangered Species Act [16 U.S.C. 1534]
3. National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

### Refuge Purposes

(1) to preserve and enhance the refuge lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations; (2) to 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; (3) to protect and enhance the water quality of aquatic habitats within the refuge; (4) to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats; and (5) to provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation. 104 Stat. 2955, dated Nov. 16, 1990.

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

“for the development, advancement, management, conservation, and protection of fish and wildlife resources....” 16 U.S.C. 742f(a)(4) “for the benefit of the United States Fish and Wildlife Service, in performing its activities and services.” 16 U.S.C. 742f (b)(1) (Fish and Wildlife Act of 1956)

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

### National Wildlife Refuge System Mission

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

### **Description of Use**

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

The uses are cross-country skiing and snowshoeing. These are not priority public uses within the National Wildlife Refuge System.

#### **(b) Where will the uses be conducted?**

The uses will be conducted on the Wood Duck Nature Trail (as extended by this CCP), Liberty Loop Nature Trail (as extended by this CCP) and Dagmar Dale Nature Trail.

#### **(c) When will the uses be conducted?**

The uses will be allowed when adequate snow is present in the fall, winter and spring.

Uses may be restricted during the late fall and winter when the refuge has wildlife-dependent recreational activities, like deer hunting, in progress. This will help eliminate user conflicts and ensure visitor safety.

#### **(d) How will the uses be conducted?**

The uses are self-regulating with signs indicating appropriate routes of travel. The trails are not groomed, so skiers will be required to cut their own trail when there is new fallen snow.

#### **(e) Why is this use being proposed?**

While skiing and snowshoeing may not be priority public uses, these activities expose participants to the refuge and the Refuge System. Often cross-country skiers on the refuge engage in some of the priority public uses such as wildlife observation and photography. This exposure may lead to a better understanding of the importance of the Refuge System to the American people. The aforementioned activities have occurred on the refuge for a number of years. The activities are managed in accordance with the Public Use Management Plan dated 2/20/90, and are currently covered by a compatibility determination signed 8/12/94, which found the activities to be compatible with the Refuge's mission.

### **Availability of Resources**

Cross-country skiing and/or snowshoeing do not require any additional staffing or funding resources.

### **Anticipated Impacts of Use**

Cross-country skiing and snowshoeing have the potential to impact shorebird, waterfowl, and other migratory bird populations feeding and resting near the trails during certain times of the year.

Human disturbance to migratory birds has been documented in many studies in different locations. Conflicts arise when migratory birds and humans are present in the same areas (Boyle and Samson 1985). The responses of wildlife to human activities include departure from the site (Owen 1973, Burger 1981, Kaiser and Fritzell 1984, Korschen et al 1985, Henson and Grant 1991, Kahl 1991, Klein 1993), the use of sub-optimal habitat (Erwin 1980, Williams and Forbes 1980), altered behavior (Burger 1981, Korschen et al. 1985, Morton et al. 1989, Ward and Stehn 1989, Havera et al. 1992, Klein 1993), and an increase in energy expenditure (Morton et al. 1989, Belanger and Bedard 1990). McNeal et al. (1992) found that many waterfowl species avoid disturbance by feeding at night instead of during the day. Studying the effects of human visitation on water birds at the J.N. "Ding" Darling refuge, Klein (1989) found resident water birds to be less sensitive to disturbance than migrants were; she also found that sensitivity varied according to species and individuals within species. Ardeids were quite tolerant of people but were disturbed as they took terrestrial prey; great blue herons, tricolored herons, great egrets, and little blue herons were observed to be disturbed to the point of flight more than other birds. Kushlan (1978) found that the need of these birds to move frequently while feeding might disrupt interspecific and intraspecific relationships. In addition, Batten (1977) and Burger (1981) found that wading birds were extremely sensitive to disturbance in the northeastern United States. Klein (1993), in studying water bird response to human disturbance, found that as the intensity of the disturbance increased, the avoidance response by the birds increased, and found out-of-vehicle activity to be more disruptive than vehicular traffic; Freddy et al. (1986) and

Vaske (1983) also found the latter to be true. In regards to waterfowl, Klein (1989) found migratory dabbling ducks to be the most sensitive to disturbance and migrant ducks to be more sensitive when they first arrived, in the late fall, than later in winter. She also found gulls and sandpipers to be apparently insensitive to human disturbance, with Burger (1981) finding the same to be true for various gull species.

For songbirds, Gutzwiller et al. (1994) found that singing behavior of some species was altered by low levels of human intrusion. Some studies have found that some bird species habituate to repeated intrusion; frequently disturbed individuals of some species have been found to vocalize more aggressively, have higher body masses, or tend to remain in place longer (Cairns and McLaren 1980). Disturbance may affect the reproductive fitness of males by hampering territory defense, male attraction and other reproductive functions of song (Arrese 1987). Disturbance, which leads to reduced singing activity, would make males rely more heavily on physical deterrents in defending territories, which are time and energy consuming (Ewald and Carpenter 1978).

Travel routes can disturb wildlife outside the immediate trail corridor (Miller et al. 2001). Miller et al. (1998) found bird abundance and nesting activities (including nest success) increased as distance from a recreational trail increased in both grassland and forested habitats. Bird communities in this study were apparently affected by the presence of recreational trails, where “generalists” (American robins) were found near trails and “specialist” species (i.e. grasshopper sparrows) were found farther from trails. Nest predation was also found to be greater near trails (Miller et. al 1998).

Disturbance can cause shifts in habitat use, abandonment of habitat and increase energy demands on affected wildlife (Knight and Cole, 1991). Flight in response to disturbance can lower nesting productivity and cause disease and death. Hammitt and Cole (1998) conclude that the frequent presence of humans in “wild land” areas can dramatically change the normal behavior of wildlife mostly through “unintentional harassment.”

Seasonal sensitivities can compound the effect of disturbance on wildlife. Examples include regularly flushing birds during nesting or causing mammals to flee during winter months, thereby consuming large amounts of stored fat reserves. Hammitt and Cole (1998) note that females with young (such as white-tailed deer) are more likely to flee from a disturbance than those without young.

**Public Review and Comment**

This compatibility determination was made available for public review and comment for 66 days as an appendix to the draft CCP/EA for Wallkill River National Wildlife Refuge.

**Determination (Check one below)**

- Use is Not Compatible
- Use is Compatible with Following Stipulations

**Stipulations Necessary to Ensure Compatibility**

Although cross-country skiing and snowshoeing could potentially cause wildlife disturbances, these uses occur during a time of year when many species are either not present on the refuge or are not as active as other times of the year. The refuge will make every effort to minimize disturbance to wildlife that do use the refuge at this time of year. Trails will be monitored to make sure that conditions do not pose adverse effects to wildlife populations and their habitats, especially threatened or endangered species. If such species are found utilizing habitats near trails, the trails would be closed or rerouted to ensure habitat and wildlife protection.

Potential conflicts with other public uses such as hunting, interpretation, etc. will be minimized by using trailhead signs and other media to inform the visitors about current public use activities.

**Justification**

The Service and the National Wildlife Refuge System maintain goals of providing opportunities to view wildlife. Cross-country skiing and snowshoeing provide additional opportunities for wildlife-viewing, thus contributing to refuge purpose #5. It is likely that users may take the time to learn more about the refuge and become supporters of the National Wildlife Refuge System.

The stipulations expressed above will prevent or minimize any impacts to refuge purposes #1, #2, and #4. The use is not anticipated to have any impact on refuge purpose #3.

In determining compatibility, the cumulative effects of all public uses on trails are considered. Due to the limitations put on these activities, the seasonal timing, and the historically low use, disturbance from skiers and snowshoers is not expected to greatly increase the disturbance to wildlife. We can therefore conclude that cross-country skiing and snowshoeing will not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purposes of the refuge.

Project Leader Edwin H. Hays 1/27/09  
(Signature) (Date)

**Concurrence**

Regional Chief Anthony J. Legier 1/29/2009  
(Signature) (Date)

Mandatory 10 year re-evaluation date Jan. 29, 2019  
(Date)

**Literature Cited**

Arcese, P. 1987. Age, intrusion pressure and defense against floaters by territorial male Song Sparrows. *Anim. Behav.* 35:773-784.

Batten, L. A. 1977. Sailing on reservoirs and its effects on water birds. *Biol. Conserv.* 11:49-58.

Belanger, L., and J. Bedard. 1990. Energetic cost of man-induced disturbance to staging snow geese. *J. Wildl. Manage.* 54:36.

Boyle, S. A., F. B. Samson. 1985. Effects of nonconsumptive recreation on wildlife: A review. *Wildl. Soc. Bull.* 13:110.

Burger, J. 1987. New Jersey Endangered Beach-Nesting Bird Project: 1986 Research. Unpublished report. New Jersey Department of Environmental Protection, New Jersey. 37 pp.

Cairns, W. E. and I. A. McLaren. 1980. Status of the piping plover on the east coast of North America. *American Birds.* 34:206-208.

- Cullen, R. 1985. Rationing recreational use of public land. *J. Environ. Manage.* 21:213-224.
- Erwin, R. M. 1980. Breeding habitat by colonially nesting water birds in 2 Mid-Atlantic U.S. regions under different regimes of human disturbance. *Biological Conservation.* 18:39-51.
- Erwin, M. R. 1989. Responses to Human Intruders by Birds Nesting in Colonies: Experimental Results and Management Guidelines. *Colonial Waterbirds* 12 (1) :104-108.
- Ewald P. W. & F. L. Carpenter (1978) Territorial responses to energy manipulations in the Anna hummingbird. *Oecologia* 31: 277-292.
- Freddy, D. J., W. M. Bronaugh, and M. C. Fowler. 1986. Responses of mule deer to disturbance by persons afoot and in snowmobiles. *Wildl. Soc. Bull.* 14:63-68.
- Gutzwiller, K. J., Wiedenmann, R. T., Clements, K. L., and Anderson, S. H. 1994. Effects of human intrusion on song occurrence and singing consistency in subalpine birds. *Auk.* Vol. 111: 28-37.
- Havera, S. P., L. R. Boens, M. M. Georgi, and R. T. Shealy. 1992. Human disturbance of waterfowl on Keokuk Pool, Mississippi River. *Wildl. Soc. Bull.* 20:290-298.
- Hammitt, W. E. and D. N. Cole. 1998. *Wildland Recreation.* John Wiley & Sons, New York, 361pp.
- Henson, P. T., and A. Grant. 1991. The effects of human disturbance on trumpeter swan breeding behavior. *Wildl. Soc. Bull.* 19:248-257.
- Kaiser, M. S. & Fritzell, E. K. 1984. Effects of river recreationists on green-backed heron behavior. *J. Wildl. Manage.* 48, 561-567.
- Kahl, R. 1991. Boating disturbance of canvasbacks during migration at Lake Poygan, Wisconsin. *Wildl. Soc. Bull.* 19:242-248.
- Klein, M. L. 1989. Effects of high levels of Human Visitation on Foraging Waterbirds at J. N. "Ding" Darling NWR, Sanibel, Florida. Final Report to USFWS. 103pp.
- Knight, R. L. and D. N. Cole. 1991. Effects of recreational activity on wildlife in wildlands. *Trans. 56<sup>th</sup> N.A. Wildl. & Nat. Res. Conf.* Pages 238-247.
- Knight R. L., and D. N. Cole. 1995. Wildlife responses to recreationists. Pages 51-69 in R. L. Knight and D. N. Cole, editors. *Wildlife and recreationists: coexistence through management and research.* Washington, D.C., Island Press. Knight, R. L., and K. J. Gutzwiller eds. 1995. *Wildlife and recreationalists: coexistence through management and research.* Island Press, Washington, D.C. 372 pp.
- Korschen, C. E., L. S. George, and W. L. Green. 1985. Disturbance of diving ducks by boaters on a Migrational staging area. *Wildl. Soc. Bull.* 13:290-296.
- Kushlan, J. A. 1978. Feeding ecology of wading birds. Pages 249-297 in A. Sprunt IV, J. C. Ogden, and S. Winckler, eds. *Wading Birds.* Nat. Audubon Soc., New York, NY.
- McNeil, Raymond; Drapeau, Pierre; Goss-Custard, John D. The occurrence and adaptive significance of nocturnal habitats in waterfowl. *Biol. Rev.* ; 1992; 67: 381-419.
- Miller, S. G., R. L. Knight, and C. K. Miller. 2001. Wildlife responses to pedestrians and dogs. *Wildlife Society Bulletin* 29(1): 124-132.

- Miller, S. G., R. L. Knight, and C. K. Miller. 1998. Influence of recreational trails on breeding bird communities. *Ecological Applications* 8:162-169.
- Morton, J. M., A. C. Fowler, and R. L. Kirkpatrick. 1989. Time and energy budgets of American black ducks in winter. *J. Wildl. Manage.* 53:401-410 (also see corrigendum in *J. Wildl. Manage.* 54:683).
- Owen, M. 1973. The management of grassland areas for wintering geese. *Wildfowl.* 24:123-130.
- Pfister, C., B. A. Harrington, and M. Lavine. 1992. The Impact of Human Disturbance on Shorebirds at a Migration Staging Area. *Biological Conservation* 60 (2) :115-126.
- Purdy, K. G., G. R. Goff, D. J. Decker, G. A. Pomerantz, and N. A. Connelly. 1987. A Guide to Managing Human Activity on National Wildlife Refuges. Human Dimensions research Unit, Cornell Univ., Ithaca, NY, 34pp.
- Robertson, R. J. and N. J. Flood. 1980. Effects of Recreational Use of Shorelines on Breeding Bird Populations. *Canadian Field-Naturalist* 94 (2) :131-138.
- U.S. Fish and Wildlife Service. 1994. Compatibility Determination (Collection of Berries, fruit, ground pine, nuts). Erie National Wildlife Refuge. Unpublished. In Refuge files.
- U.S. Fish and Wildlife Service. 1990. Public Use Management Plan. Erie National Wildlife Refuge. Unpublished. In Refuge files.
- Vaske, J. J., A. R. Graefe, and F. R. Kuss. 1983. Recreation impacts: a synthesis of ecological and social research. *Trans. N. Amer. Wildl. N.*
- Ward, D. H., and R. A. Stehn. 1989. Response of brant and other geese to aircraft disturbance at Izembek Lagoon, Alaska. U.S. Fish and Wildlife Service, Alaska Fish and Wildlife Research Center. Final report to the Minerals Management Service. Anchorage, Alaska. 193 pp.
- Williams, G. J., and E. Forbes. 1980. The habitat and dietary preferences of dark-bellied brant geese and widgeon in relation to agricultural management. *Wildfowl.* 31:151-157.

## Compatibility Determination

### Use

Livestock Grazing for Habitat Management

### Refuge Name

Wallkill River National Wildlife Refuge

### Establishing and Acquisition Authority

Wallkill River National Wildlife Refuge was first designated administratively by the Service in a decision document on March 9, 1990. Congress later enacted Public Law 101-593, 104 Stat. 2955 on November 16, 1990, to confirm its establishment by special legislation. The Service has acquired lands for the Wallkill River refuge under the following authorities:

1. Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
2. Migratory Bird Conservation Act [16 U.S.C. 715d]
3. Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

We anticipate that the Service will continue to acquire lands under the same authorities that have been used to acquire lands in the past.. Based on the refuge purposes, lands could also be acquired under several other legislative authorities, including but not limited to:

1. Refuge Recreation Act [16 U.S.C. 460K-1]
2. Endangered Species Act [16 U.S.C. 1534]
3. National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

### Refuge Purpose(s)

(1) to preserve and enhance the refuge lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations; (2) to 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; (3) to protect and enhance the water quality of aquatic habitats within the refuge; (4) to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats; and (5) to provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation. 104 Stat. 2955, dated Nov. 16, 1990.

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

“for the development, advancement, management, conservation, and protection of fish and wildlife resources...” (16 U.S.C. 742f(a)(4)) “for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. “16 U.S.C. 742f (b)(1) (Fish and Wildlife Act of 1956)

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

### National Wildlife Refuge System Mission

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

**Description of Use**

**(a) What is the use? Is it a priority public use?** The use is livestock grazing for habitat management. Livestock grazing is not a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). This use is considered a management activity but because grazing is a controversial activity on some refuges, particularly in the western part of the country, we are doing a compatibility determination on it.

**(b) Where will the use be conducted?** The use will be conducted to manage grassland, wet meadow, and shrubland habitat types on the refuge. The refuge will write a habitat management plan that will state specifically where livestock grazing will be used to manage certain habitat types. The refuge typically allows grazing on three to five sites, totaling about 20 acres.

**(c) When will the use be conducted?** Typically in the growing season which is late March through early October.

**(d) How will the use be conducted?** Through cooperative agreements and special use permits, we will work with livestock owners to graze refuge lands for specific periods throughout the growing season. The program includes provisions for fencing the animals, maintenance of the fence and care of the animals by the permittee. The animals will be delivered and removed by the permittee.

**(e) Why is this use being proposed?** The use is being proposed to control vegetation, improve microtopography in bog turtle habitat, and maintain grasslands for grassland-dependent birds and wintering raptors.

**Availability of Resources**

A grazing program will create minor staff costs from biological monitoring, law enforcement, and administration. Additional equipment, such as temporary fencing, may be required from the Service. Cooperators may be required to provide, install, and remove temporary fencing and transport livestock. A permit fee may be required. Of the costs listed below, which reflect our current total operations costs associated with managing the refuge, approximately 5 percent will be dedicated to managing a grazing program.

Staff costs: 0.05 GS 11 FTE .....	\$3,000
Vehicle fuel: (\$4.00/gal) (1 gal/trip) (50 trips).....	\$200
Equipment, facility use/replacement: vehicles, mowers, hand tools, fencing .....	\$2,000
<b>TOTAL.....</b>	<b>\$5,200</b>

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

**Anticipated Impacts of the Use**

Grassland birds have declined more consistently and over a wider geographic area than any other group of North American birds over the last 30 years (Robbins et al. 1986, Askins 1993, Knopf 1995, Askins 1997, Sauer et al. 1997). As a result, most grassland birds appear on lists of rare and declining species (NYSDEC 1997, Pashley et al. 2000, U.S. NABCI Committee 2000, U.S. Fish and Wildlife Service 2002). Moreover, all of these species can be found at the refuge. Without active management, refuge grasslands soon will become dominated by purple loosestrife or dense shrub land (Mitchell and Shryer 2000). Consequently, the refuge would no longer provide suitable habitat for grassland-dependent birds.

With proper timing, stocking rate, and frequency, grazing can be used to achieve wildlife objectives (U.S. Fish and Wildlife Service 1982). Mitchell et al. (2000) describe several benefits of grazing for managing habitat for

breeding grassland birds. These benefits include reduced thatch accumulation, increased structural complexity, and suppressed plant succession. Smith (1997), states that grazing is a cost-effective means of suppressing plant succession, which benefits grassland birds. Herkert et al. (1993) recommend rotational grazing as a means to provide a structural mosaic of grasslands to meet the respective nesting requirements of each grassland bird species.

Light to moderate grazing is beneficial to several grassland birds (Bollinger 1991, Jones and Vickery 1997), particularly those that prefer to nest in fields with short, sparse to intermediate height and density vegetation (Mitchell et al. 2000). These species include upland sandpiper, grasshopper sparrow, savannah sparrow, eastern meadowlark, and bobolink (Herkert et al. 1993). Kirsch and Higgins (1976) indicate that periodic light grazing may be desirable for the long-term maintenance of suitable upland sandpiper habitat and for maintaining the best ecological condition of grasslands. Dechant et al. (2001a) recommend moderate rotational grazing as a means of providing optimal nesting habitat for upland sandpipers. Vickery (1996) states that light-to-moderate grazing is beneficial to grasshopper sparrows in the Northeast. Light to moderate grazing is recommended as a management technique for grasslands used by nesting short-eared owl (Dechant et al. 2001b) and bobolink (Dechant et al. 2001c). Swanson (2001) recommends light grazing as a technique to create medium height and density vegetation preferred by nesting savannah sparrows.

Intensive grazing may benefit grassland birds that nest in fields with the shortest, sparsest vegetation, including horned lark and vesper sparrow (Skinner et al. 1984, Herkert 1991, Herkert et al. 1993). Wakeley (1978), Baker and Brooks (1981), and Bechard (1982) demonstrated that tall, dense vegetation impedes the ability of several species of *Buteo* hawks to capture prey. Thus, higher stocking rates may also benefit wintering raptors by increasing availability of rodent prey.

Nest trampling, however, may be an important consideration when choosing grazing as a management tool for refuge grasslands. Smith (1992) mentions this potential threat to Henslow's sparrows breeding in areas grazed by cattle. Livestock trampling has damaged upland sandpiper nests (Ailes 1980).

Bog turtle habitat is in an intermediate state of succession, and in some cases is threatened by invasive exotic plants (USFWS 2001). Unless succession is set back by natural processes (flooding by beaver, fire, grazing by wildlife, etc.) and exotic plants are controlled, the habitat may become less suitable, and eventually unsuitable, for bog turtles. Active management and maintenance, such as grazing, may be required at some sites to replace the natural processes that have been lost and to control exotic plants in order to restore or maintain habitat quality. Goats, sheep and cattle have been found to eradicate invasive species effectively in bog turtle habitat (Tesauro 2001). When grazing in bog turtle habitat, cows in particular trampled and compacted several years' worth of litter, broke up rhizomes, and created perfect hollow-hummock topography. Often, the place to look for bog turtles in cow pastures is in cow footprints. Tesauro's article makes no mention of any negative impacts on bog turtles from grazing.

### **Public Review and Comment**

This compatibility determination was made available for public review and comment for 66 days as an appendix to the draft Comprehensive Conservation Plan for Wallkill River National Wildlife Refuge.

### **Determination**

Use is not compatible

Use is compatible, with the following stipulations

**Stipulations Necessary to Ensure Compatibility**

To avoid overgrazing and excessive trampling, the refuge will attempt to use cattle on sites larger than one acre and goats and sheep on smaller sites. To reduce nest trampling, grazing activities will not be initiated in sensitive areas on the refuge until most grassland birds have fledged young (typically after July 15 in northern New Jersey).

Intensive grazing throughout the refuge would yield vegetation too denuded to provide habitat for grassland birds that nest in tall, dense vegetation, including northern harrier, short-eared owl (Duebbert and Lokemoen 1977), and Henslow’s sparrow (Smith 1992). This grazing regime would also be detrimental to wintering short-eared owls and northern harriers at the refuge that rely on thick, herbaceous vegetation to roost (Kahl and Holcomb, U.S. Fish and Wildlife Service 2003, personal observation). High stocking rates would similarly affect grassland birds that nest in intermediate height and density vegetation, including upland sandpiper, grasshopper sparrow, savannah sparrow, eastern meadowlark, and bobolink. Grassland areas will be managed as a complex and grazed rotationally to provide heterogeneous grassland structure. This strategy will maximize the potential to provide habitat for the greatest diversity and abundance of grassland bird species.

Cows will be kept out of waterbodies to reduce erosion, siltation, and pollution.

**Justification**

Implemented with the stipulations listed above, livestock grazing for habitat management will contribute to the purposes of the refuge by maintaining and enhancing the habitat for grassland-dependent migratory birds, wintering raptors and bog turtles. Livestock grazing also contributes to the mission of the Refuge System, by supporting refuge purposes #1, #3 and #5 through habitat enhancement and management provided by the use. Refuge purposes #2 and #4 will likely not be impacted by this use. Any negative impacts associated with grazing are discussed in the anticipated impacts section and addressed in the stipulations section in order to minimize any effect they may have on trust resources. Therefore, it is the determination of the Service that livestock grazing habitat management is a compatible use of the Wallkill River refuge.

Project Leader Edvan O'Hara 1/27/09  
(Signature) (Date)

**Concurrence**

Regional Chief Anthony D. Legier 1/29/2009  
(Signature) (Date)

Mandatory 10-year re-evaluation date Jan. 29, 2024  
(Date)

**References**

Ailes, I. W. 1980. Breeding biology and habitat use of the upland sandpiper in central Wisconsin. Passenger Pigeon 42:53-63.

- Askins, R. A. 1993. Population trends in grassland, shrubland, and forest birds in eastern North America. Pages 1-34 *in* D. M. Power, editor. Current ornithology. Volume 11. Plenum Press, New York, New York, USA.
- Askins, R. A. 1997. History of grasslands in the northeastern United States: implications for conservation. Pages 119-136 *in* P. D. Vickery and P. W. Dunwiddie, editors. Grasslands of northeastern North America, ecology and conservation of native and agricultural landscapes. Massachusetts Audubon Society, Lincoln, Massachusetts, USA.
- Baker, J. A., and R. J. Brooks. 1981. Distribution patterns of raptors in relation to density of meadow voles. *Condor* 83:42-47.
- Bechard, M. J. 1982. Effect of vegetative cover on foraging site selection by Swainson's hawk. *Condor* 84:153-159.
- Bollinger, E. K. 1991. Conservation of grassland birds in agricultural areas. Pages 279-287 *in* D.J. Decker, M.E. Krasny, G.R. Goff, C.R. Smith, and D.W. Gross, editors. Challenges in the conservation of biological resources: a practitioners guide. Westview Press, Boulder, Colorado, USA.
- Dechant, J. A., M. L. Sondreal, D. H. Johnson, L. D. Igl, C. M. Goldade, M. P. Nenneman, and B. R. Euliss. 2001. Effects of management practices on grassland birds: northern harrier. Northern Prairie Wildlife Research Center, Jamestown, North Dakota, USA. Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/literatr/grasbird/harrier/harrier.htm> (Version 17FEB2000).
- Dechant, J. A., M. L. Sondreal, D. H. Johnson, L. D. Igl, C. M. Goldade, M. P. Nenneman, and B. R. Euliss. 2001. Effects of management practices on grassland birds: short-eared owl. Northern Prairie Wildlife Research Center, Jamestown, North Dakota, USA. Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/literatr/grasbird/shortear/shortear.htm> (Version 17FEB2000).
- Dechant, J. A., M. L. Sondreal, D. H. Johnson, L. D. Igl, C. M. Goldade, M. P. Nenneman, and B. R. Euliss. 2001. Effects of management practices on grassland birds: grasshopper sparrow. Northern Prairie Wildlife Research Center, Jamestown, North Dakota, USA. Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/literatr/grasbird/grasshop/grasshop.htm> (Version 17FEB2000).
- Dechant, J. A., M. L. Sondreal, D. H. Johnson, L. D. Igl, C. M. Goldade, A. L. Zimmerman, and B. R. Euliss. 2001. Effects of management practices on grassland birds: bobolink. Northern Prairie Wildlife Research Center, Jamestown, North Dakota, USA. Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/literatr/grasbird/bobo/bobo.htm> (Version 17FEB2000).
- Duebbert, H. F., and J. T. Lokemoen. 1977. Upland nesting of American bitterns, marsh hawks, and short-eared owls. *Prairie Naturalist* 9:33-40.
- Euliss. 2001. Effects of management practices on grassland birds: upland sandpiper. Northern Prairie Wildlife Research Center, Jamestown, ND. Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/literatr/grasbird/upsa/upsa.htm> (Version 17FEB2000).
- Herkert, J. R. 1991. Prairie birds of Illinois: population response to two centuries of habitat change. *Illinois Natural History Survey Bulletin* 34:393:399.

- Herkert, J. R., R. E. Szafoni, V. M. Kleen, and J. E. Schwegman. 1993. Habitat establishment, enhancement and management for forest and grassland birds in Illinois. Division of Natural Heritage, Illinois Department of Conservation, Natural Heritage Technical Publication Number 1, Springfield, Illinois, USA.
- Jones, A. L. and P. D. Vickery. 1997. Distribution and population status of grassland birds in Massachusetts. Pages 187-199 in P. D. Vickery and P. W. Dunwiddie editors. Grasslands of northeastern North America, ecology and conservation of native and agricultural landscapes. Massachusetts Audubon Society, Lincoln, Massachusetts, USA.
- Kirsch, L. M., and K. F. Higgins. 1976. Upland sandpiper nesting and management in North Dakota. Wildlife Society Bulletin 4:16-20.
- Knopf, F. L. 1995. Declining grassland birds. Pages 296-298 in E. T. LaRoe, G. S. Farris, C. E. Puckett, P. D. Doran, and M. J. Mac, editors. Our living resources: a report to the nation on the distribution, abundance, and health of U.S. plants, animals, and ecosystems. U.S. National Biological Service, Washington, D.C., USA.
- Mitchell, L., and J. Shryer. 2000. Aids to grassland management planning for Wallkill and Shawangunk Grasslands NWR (draft). Unpublished report on file at Wallkill River National Wildlife Refuge headquarters, Sussex, New Jersey, USA.
- Mitchell, L. R., C. R. Smith, and R. A. Malecki. 2000. Ecology of grassland breeding birds in the northeastern United States—a literature review with recommendations for management. U.S. Geological Survey, Biological Resources Division and New York Cooperative Fish and Wildlife Research Unit, Department of Natural Resources, Cornell University, Ithaca, New York, USA.
- New York State Department of Environmental Conservation. 1997. Endangered, threatened and special concern fish and wildlife species of New York State. New York State Department of Environmental Conservation, Division of Fish, Wildlife and Marine Resources, Delmar, New York, USA.
- Pashley, D. N., C. J. Beardmore, J. A. Fitzgerald, R. P. Ford, W. C. Hunter, M. S. Morrison, K. V. Rosenberg. 2000. Partners In Flight: conservation of the landbirds of the United States. American Bird Conservancy, The Plains, Virginia, USA.
- Robbins, C. S., D. Bystrak, and P. H. Geissler. 1986. The Breeding Bird Survey: its first fifteen years, 1965-1979. U.S. Fish and Wildlife Service Resource Publication 157.
- Sauer, J. R., J. E. Hines, G. Gough, I. Thomas, and B. J. Peterjohn. 1997. The North American Breeding Bird Survey results and analysis. Version 96.4. Patuxent Wildlife Research Center, Laurel, Maryland, USA. <http://www.mbr-pwrc.usgs.gov/bbs/bbs.html> (12/1999).
- Skinner, R. M., T. S. Baskett, and D. M. Blendon. 1984. Bird habitat on Missouri prairies. Missouri Department of Conservation, Terrestrial Series 14, Jefferson City, Missouri, USA.
- Swanson, D. A. 2001. Effects of management practices on grassland birds: savannah sparrow. Northern Prairie Wildlife Research Center, Jamestown, North Dakota, USA. Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/literatr/grasbird/savannah/savannah.htm> (Version 17FEB2000).

Tesauro, Jason. Spring 2001. *Conservation Biology in Practice*. Vol. 2. No. 2.

U.S. Fish and Wildlife Service. 1982. Refuge Manual: 6 RM 5.6A. Division of Refuges, Arlington, Virginia, USA.

U.S. Fish and Wildlife Service. 2001. Bog turtle (*Clemmys muhlenbergii*), northern population, recovery plan. Hadley, Massachusetts, USA.

Vickery, P. D. 1996. Grasshopper sparrow (*Ammodramus savannarum*). In A. Poole and F. Gill, editors. The birds of North America. Number 239. The Academy of Natural Sciences, Philadelphia, Pennsylvania, USA, and The American Ornithologists' Union, Washington, D.C., USA.

Wakeley, J. S. 1978. Factors affecting the use of hunting sites by ferruginous hawks. *Condor* 80:316-3.

## Compatibility Determination

### Use

Motorized and Non-Motorized Boating to Promote Priority Public Uses

### Refuge Name

Wallkill River National Wildlife Refuge

### Establishing and Acquisition Authority

Wallkill River National Wildlife Refuge was first designated administratively by the Service in a decision document on March 9, 1990. Congress later enacted Public Law 101-593, 104 Stat. 2955 on November 16, 1990, to confirm its establishment by special legislation. The Service has acquired lands for the Wallkill River refuge under the following authorities:

1. Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
2. Migratory Bird Conservation Act [16 U.S.C. 715d]
3. Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

We anticipate that the Service will continue to acquire lands under the same authorities that have been used to acquire lands in the past. Based on the refuge purposes, however, lands could be acquired under several other legislative authorities, including but not limited to:

1. Refuge Recreation Act [16 U.S.C. 460K-1]
2. Endangered Species Act [16 U.S.C. 1534]
3. National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

### Refuge Purposes

(1) to preserve and enhance the refuge lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations; (2) to 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; (3) to protect and enhance the water quality of aquatic habitats within the refuge; (4) to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats; and (5) to provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation. 104 Stat. 2955, dated Nov. 16, 1990.

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

“for the development, advancement, management, conservation, and protection of fish and wildlife resources...” 16 U.S.C. 742f(a)(4) “for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. “16 U.S.C. 742f (b)(1) (Fish and Wildlife Act of 1956)

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

### National Wildlife Refuge System Mission

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

**Description of Use**

**(a) What is the use? Is it a priority public use?** The uses are motorized and non-motorized boating. Motorized and non-motorized boating are not priority public uses of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). Although these uses are not priority public uses, they facilitate participation in a variety of priority wildlife-dependent activities, including fishing, hunting, environmental education and interpretation, and wildlife observation and photography.

**(b) Where will the use be conducted?** Boat launch sites can be accessed on Route 565, Bassett’s Bridge and on Oil City Road. With the final CCP, we will provide an additional boat launch site on County Route 565.

Motorized and non-motorized boating will occur only along the Walkkill River and areas accessible from the river during flooded stages. Boating will not be permitted on refuge ponds or other bodies of water except for the purposes of game retrieval during hunt seasons (see map B-6).

**(c) When will the use be conducted?** Motorized and non-motorized boating will be allowed year-round. As the refuge does not own the entire river, the refuge cannot limit boating activities on certain portions of the river within the refuge. The presence of endangered species could result in limitations on areas of the river or its tributaries owned by the refuge.

**(d) How will the use be conducted?** The refuge offers three boat access areas: Oil City Road, Bassett’s Bridge and Route 565. As stated above, we propose through the final CCP to add one additional boat access site on County Route 565. The refuge will offer parking at or near each of these three sites. Additional boat access points are available north and south of the refuge.

**(e) Why is this use being proposed?** These uses will increase refuge visitors’ opportunities for wildlife observation and wildlife photography. Non-motorized boating, more specifically, will provide a means for hunters and anglers to reach designated areas during regulated seasons. While motorized and non-motorized boating may not be a priority public use, they will facilitate participation in priority wildlife-dependent recreation including all six of the National Wildlife Refuge System’s priority public use activities.

**Availability of Resources**

In addition to the physical infrastructure related to boating (see section (b)), financial and staff resources are needed as follows:

Maintenance and seasonal demand of three boat launch sites	40 hours
Habitat maintenance along the river at boat launch sites	20 hours
Patrol to ensure regulatory compliance	20 hours
Administration of visitor use of boats and boat ramps on the refuge	<u>10 hours</u>
Total Hours (.04 FTE).....	90 hours

90 hours (.04FTE) .....	\$2,700
Materials and fuel associated with ramp maintenance .....	<u>\$250</u>
<b>TOTAL.....</b>	<b>\$2,950</b>

The financial and staff resources necessary to provide and administer this use at its current level and at the level described in the final CCP are now available and we expect them to be available in the future.

### **Anticipated Impacts of the Use**

The use of motorized and non-motorized watercraft at Wallkill River refuge will be monitored to ensure the activity will not have an adverse impact on wildlife habitat, or the management of migratory birds and other wildlife species. There is potential for wildlife disturbance due to noise of boat motors, proximity of boats to wildlife, speed of boats, and time of operation. However, these disturbances generally do not occur on the Wallkill River because it is too narrow and shallow for high-speed boats. Maintenance activities on the river to improve navigability could disturb wildlife habitats and nursery habitats for fish, but this would only be a temporary and minor disturbance. Litter from inappropriate use could impact the quality of the visitor experience and in some cases threaten wildlife and wildlife habitats. Bank erosion and vegetation damage are possible at boat launch sites. We have generally not observed these disturbances at the refuge and do not anticipate experiencing them as a result of this use.

### **Public Review and Comment**

As part of the CCP process for the refuge, this compatibility determination underwent extensive public review, including a comment period of 66 days following the release of the draft CCP/EA.

### **Determination**

Use is not compatible

Use is compatible, with the following stipulations

### **Stipulations Necessary to Ensure Compatibility**

The Code of Federal Regulations (CFR) allows refuge managers to authorize the use of watercraft in national wildlife refuges. The use of motorized watercraft could adversely affect waterfowl and resident wildlife if guidelines are not in place to ensure operation to minimize such impacts.

We have the responsibility of ensuring that all of the activities that take place within the refuge occur in a manner that is consistent with the purposes of the refuge. As such, we will review all of the areas of the rivers within and adjacent to the refuge and determine the maximum allowable speed. Because the river is small, curvy and can be clogged with navigational hazards, in no case will the speed limit exceed 25 miles per hour. We will review additional speed restrictions imposed by the towns that border or encompass the rivers and will respect any speed limits that are in place.

All of the provisions of 50 CFR §27.31 and 27.32 will be imposed as well. Included in this section is the requirement that “No operator or person in charge of any boat shall operate or knowingly permit any other person to operate a boat in a reckless manner, or in a manner so as to endanger or be likely to endanger any person, property or wildlife.”

Boaters will use only established trails and other areas open to the public and not venture into closed areas. All boats can be launched only from designated launch sites.

To reduce the risk of introducing invasive species, boaters will be required to clear aquatic vegetation and animals from their boats before and after landing.

### **Justification**

The National Wildlife Refuge System Improvement Act of 1997 (P.L. 105-57) identifies six legitimate and appropriate uses of wildlife refuges: environmental education and interpretation, hunting, fishing, and wildlife observation and public recreational photography. These priority public uses are dependent upon healthy wildlife populations. Where these uses are determined to be compatible, they are to receive enhanced consideration over other recreational uses in planning and management. Boating is to be used only as a means to facilitate the priority public uses identified above.

Compatibility Determination – Motorized and Non-Motorized Boating to Promote Priority Public Uses

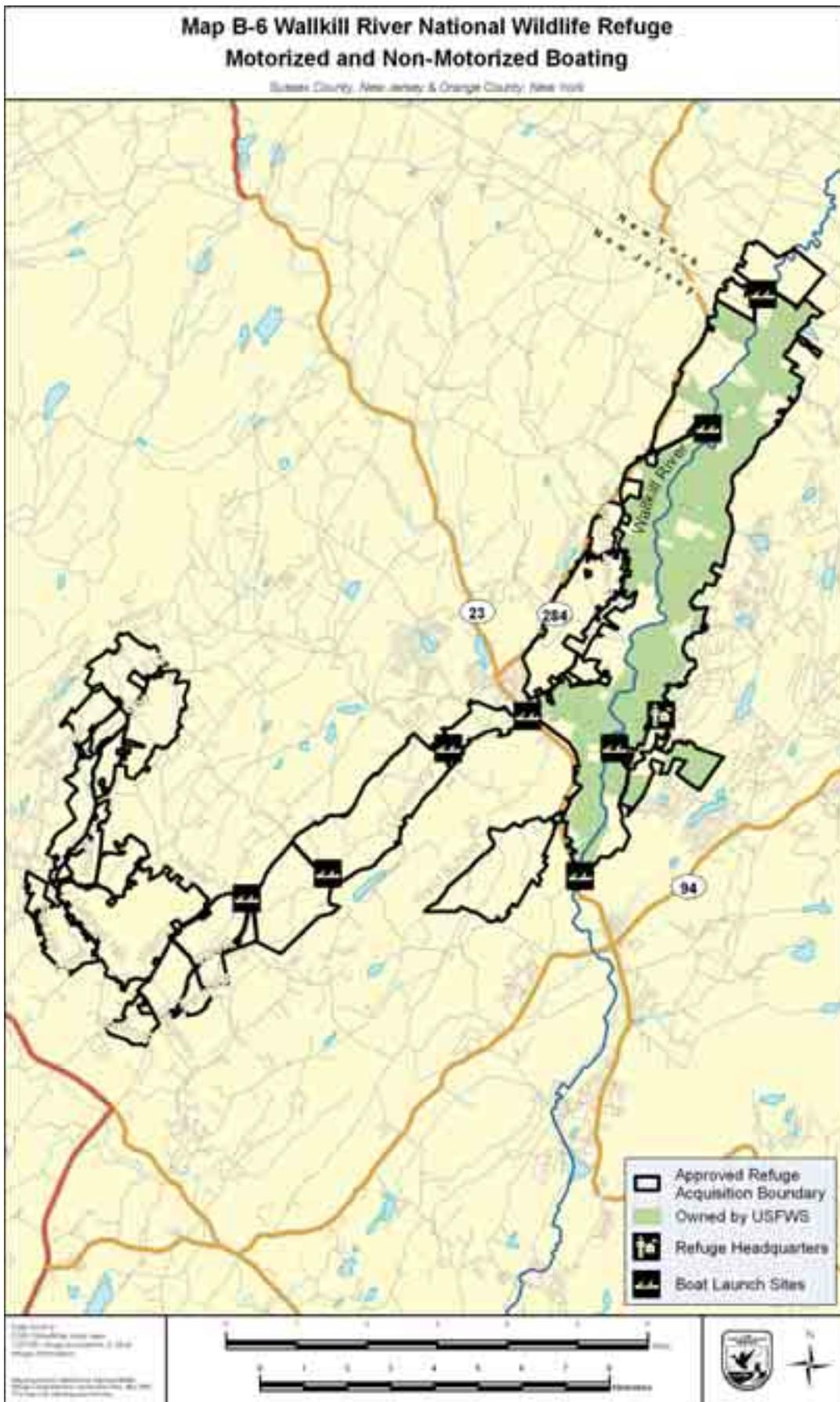
Boating on areas of the Wallkill River where the refuge has jurisdiction will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purposes for which the refuge was established. By applying the stipulations in the above section, this activity will contribute to refuge purposes #3 and #5 by fostering an appreciation for water quality and aquatic habitats and by supporting opportunities for priority public uses. The use will not materially impact refuge purposes #1 and #4. Any disturbance to waterfowl (refuge purpose #2) will be minimal and offset by the contributions made by the activity toward refuge purposes #3 and #5.

Project Leader Edwin H. Hays 1/27/09  
(Signature) (Date)

**Concurrence**

Regional Chief Anthony J. Legi 1/29/2009  
(Signature) (Date)

Mandatory 10-year re-evaluation date Jan. 29, 2019  
(Date)



## Compatibility Determination

### Use

Haying for Habitat Management

### Refuge Name

Wallkill River National Wildlife Refuge

### Establishing and Acquisition Authority

Wallkill River National Wildlife Refuge was first designated administratively by the Service in a decision document on March 9, 1990. Congress later enacted Public Law 101-593, 104 Stat. 2955 on November 16, 1990, to confirm its establishment by special legislation. The Service has acquired lands for the Wallkill River refuge under the following authorities:

1. Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
2. Migratory Bird Conservation Act [16 U.S.C. 715d]
3. Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

We anticipate that the Service will continue to acquire lands under the same authorities that have been used to acquire lands in the past. Based on the refuge purposes, lands could also be acquired under several other legislative authorities, including but not limited to:

1. Refuge Recreation Act [16 U.S.C. 460K-1]
2. Endangered Species Act [16 U.S.C. 1534]
3. National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

### Refuge Purposes

(1) to preserve and enhance the refuge lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations; (2) to 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; (3) to protect and enhance the water quality of aquatic habitats within the refuge; (4) to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats; and (5) to provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation. 104 Stat. 2955, dated Nov. 16, 1990.

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

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

“for the development, advancement, management, conservation, and protection of fish and wildlife resources.... 16 U.S.C. 742f(a)(4); for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. “ 16 U.S.C. 742f(b)(1) (Fish and Wildlife Act of 1956).

### National Wildlife Refuge System Mission

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

## **Description of Use**

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

The use is haying, for the purpose of grassland habitat management. The removal of baled grass from the refuge for use by private parties constitutes an economic use governed by 50 C.F.R §29.1. Pursuant to those regulations, we must determine, among other things, that the use be compatible with and contributes to the refuge purposes or the mission of the National Wildlife Refuge System. In this document, we make positive findings in both those regards. However, we note that, should the refuge elect to conduct mowing activities on its own or through a contractor -- as opposed to issuing special use permits to private parties that include hay removal -- such activities would constitute a management action for which no compatibility determination is required.

The National Wildlife Refuge System identifies hunting, fishing, wildlife observation and photography, and environmental education and interpretation as the six priority recreational public uses. Therefore, haying for grassland habitat management is not a priority public use of the Refuge System under the National Wildlife Refuge System Administrative Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997.

Haying is the cutting and processing (typically baling) of grasses and forbs, with subsequent removal to an off-refuge location. Third parties will conduct haying on grasslands owned by the refuge. Haying an area is usually conducted as a single event in any one year, but may be repeated periodically to remove undesirable grasses and forbs, remove accumulated plant biomass, remove or reduce woody vegetation; or provide a desired vegetative condition. Haying is a technique that can be effective in maintaining and managing grasslands and open fields for a variety of nesting and migratory birds, and maintaining wetlands that serve as habitat for rare species, in accordance with refuge goals and objectives. As a result, this use contributes to the mission of the Walkkill River National Wildlife Refuge.

### **(b) Where will the use be conducted?**

The use will be conducted to manage grassland, wet meadow, and shrub land habitat types on the refuge. Haying will be allowed in fields at the discretion of the refuge manager in the exercise of sound professional judgment. We will annually evaluate the condition of each field and determine whether mowing is necessary to meet habitat and wildlife objectives set forth in our Habitat Management Plan. The refuge will hay between 250 and 450 acres of grassland per year (see map 1). That represents approximately 5 percent to 8 percent of the refuge.

### **(c) When will the use be conducted?**

Haying will be conducted after July 15 through October 31. That time-of-year restriction allows the young of grassland-nesting birds to mature to flight stage before haying starts.

### **(d) How will the use be conducted?**

On an annual basis, individuals will be authorized to cut hay via special use permit issued by the refuge manager. The terms of the permit will ensure compatibility through application and implementation of Service policy and refuge-specific stipulations.

Currently, refuge grasslands and open fields are mowed or hayed every 1 to 3 years, depending on weather and field conditions, local farmers' need for the hay, and refuge wildlife and habitat management goals. Its frequency and intensity will be determined by what is needed to suppress broadleaf and woody plant invasion and develop a mosaic of grassland vegetation in fields where open grassland is desired.

There is no selection process for haying permittees on the Walkkill River refuge, due to a general lack of interest by local farmers. In addition, due to the dryness of the grass, the hay harvested is of poor quality and has little or no market value. Instead, local farmers who ask to hay fields are issued a permit. The haying permittee is not required to pay for the permit; however, the refuge may request up to 5 bales of hay per year from the permittee for on-refuge use.

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

This compatibility determination proposes to permit haying as a technique to manage grasslands for grassland-dependent birds, wintering raptors and bog turtles. The use is a cost-effective and biologically sound method of managing these early successional habitats.

Grassland birds have declined more consistently and over a wider geographic area than any other group of North American birds over the last 30 years (Robbins et al. 1986, Askins 1993, Knopf 1995, Askins 1997, Sauer et al. 1997). As a result, most grassland birds appear on lists of rare and declining species (NYSDEC 1997, Pashley et al. 2000, U.S. NABCI Committee 2000, U.S. Fish and Wildlife Service 2002). Moreover, all of those species can be found at the refuge.

However, without active management, refuge grasslands soon will become dominated by purple loosestrife or dense shrub land (Mitchell and Shryer 2000). Without these high-quality early and intermediate successional habitats, the refuge would no longer provide suitable habitat for grassland-dependent birds, wintering raptors or bog turtles.

Haying combined with mowing is a useful and effective grassland management technique (U.S. Fish and Wildlife Service 1982). Mitchell et al. (2000) state that haying and mowing are economic means of controlling invasion of grasslands by forbs and woody plants. Further, haying is generally a more convenient technique to apply than prescribed fire or grazing. Herkert et al. (1993) recommend rotational haying and mowing as a grassland management alternative with subunits left idle. That strategy may provide a complex of grassland successional stages to meet the respective nesting requirements of a diversity of grassland bird species.

More specifically, haying and mowing are recommended techniques for managing grasslands used by nesting northern harrier (Berkey et al. 1993, Dechant et al. 2001a), upland sandpiper (Kirsch and Higgins 1976, Dechant et al. 2001b), short-eared owl (Tate 1992, Dechant et al. 2001c), horned lark (Dinkins et al. 2001), grasshopper sparrow (Dechant et al. 2001d, Vickery 1996), Henslow’s sparrow (Smith 1992, Herkert 2001), vesper sparrow (Camp and Best 1993, Dechant et al. 2001e), savannah sparrow (Swanson 2001), bobolink (Bollinger and Gavin 1992, Dechant et al. 2001e), and eastern meadowlark (Lanyon 1995, Hull 2000).

Bog turtle habitat is in an intermediate state of succession and, in some cases, is threatened by invasive exotic plants (USFWS 2001). Unless succession is set back by natural processes (e.g., flooding by beaver, fire, grazing by wildlife) and exotic plants are controlled, the habitat may become less suitable and, eventually, unsuitable for bog turtles. Active management and maintenance, such as haying and mowing, may be required at some sites to replace the natural processes that have been lost and to control exotic plants to restore or maintain habitat quality.

**Availability of Resources**

A haying program will create minor staff costs for biological monitoring, law enforcement, and administration. No additional equipment, facilities, or improvements will be required from the Service. Cooperators will be required to use their own equipment. A permit fee may be required. The amount of that fee will be based on the level of demand from cooperators and the value of the hay.

Staff costs	\$3,600	0.08 GS 11 FTE
Vehicle fuel	\$ 450	(\$4.00/gal) (2.5 gal/trip) (50 trips)
Equipment, facility use/replacement	\$ 500	vehicles, mowers, hand tools
<b>TOTAL</b>	<b>\$4,550</b>	

The financial and staff resources necessary to provide and administer this use at its current level and at the level described in the final CCP are now available and we expect them to be available in the future.

### **Anticipated Impacts of the Use**

Haying will result in short-term disturbances and long-term benefits to both resident and migratory wildlife using the refuge. Short-term impacts will include the disturbance and displacement of some wildlife by equipment operation. Haying activities will also result in short-term loss of habitat for species using those areas for nesting, feeding, or resting. That will be partially mitigated by limiting all cutting and haying until after July 15, when most grassland nesting birds have fledged.

Haying or mowing should be avoided during the early nesting season to avoid the destruction of the nests, eggs, and young of breeding grassland birds, including northern harrier (Berkey et al. 1993, Dechant et al. 2001a), upland sandpiper (Lokemoen and Beiser 1997, Dechant et al. 2001b), short-eared owl (Tate 1992), grasshopper sparrow (Dechant et al. 2001d, Vickery 1996), Henslow's sparrow (Smith 1992, Herkert 2001), vesper sparrow (Bryan and Best 1994, Dechant et al. 2001e), savannah sparrow (Dale et al. 1997, Swanson 2001), bobolink (Bollinger and Gavin 1992, Dechant et al. 2001e), and eastern meadowlark (Granfors et al. 1996, Hull 2000).

Other short-term impacts will be noise and exhaust fumes generated by the tractors and associated farm equipment; however, this is not a major impact. The resulting habitat will improve conditions for most of the species adversely affected by the short-term negative impacts.

We use haying to improve potential (but not active) bog turtle habitats on the refuge. We do not currently allow haying on the one active bog turtle site on the refuge, and no haying would occur on any active bog turtle site until it has been confirmed that the bog turtles have left the area for the season.

A managed haying and mowing program will have positive impacts to the refuge's grassland habitat and wildlife. Haying suppresses the invasion of grasslands by perennial forbs and shrubs. Consequently, grass-dominated plant communities are maintained. Further, rotational haying will help to develop a mosaic of grassland vegetation. In conjunction with a native grassland restoration program, the refuge will have higher quality grassland habitats. Diverse, native-dominated grasslands provide habitat for a greater diversity and abundance of grassland birds, wintering raptors and bog turtles.

### **Public Review and Comment**

This compatibility determination was made available for public review and comment for 66 days as an appendix to the draft CCP/EA for Wallkill River National Wildlife Refuge.

### **Determination** (check one below)

Use is Not Compatible

Use is Compatible with the following stipulations

### **Stipulations Necessary to Ensure Compatibility**

- Haying and mowing (brush cutting) will generally occur between July 15—October 31.
- Permittees haying/mowing more than one property must:
  - 1) Finish one property before starting the next property.
  - 2) Remove ALL farm vehicles/equipment and bales of hay before starting the next property.
- Permittee must remove all bales of hay.
- Permittees must remove ALL farm vehicles/equipment and bales of hay from the refuge no later than October 31 of each year.

- Permittee is responsible for providing and maintaining the necessary equipment. The U.S. Government will not be liable for damage to any privately owned equipment. The U.S. Government will not provide any equipment for permittee use.
- Permittee must ensure that all individuals assisting in the haying, baling, and transportation of hay from the refuge understand and comply with refuge regulations.
- All farm vehicles and equipment used on the refuge will comply with OSHA required protective equipment in FWM Part 241, “Safety Operations,” Chapter 2, “Motorized Vehicles and Equipment.”
- Permittee recognizes that heated equipment could ignite surrounding grasses and will take precautions to prevent wildfires. Refueling of vehicles will only occur in parking areas along public roads or in refuge parking lots.
- Permittee will not bring firearms onto refuge property.
- Permittee will immediately notify the refuge manager of any emergency incidents, property damage, personal injuries, or trespass by other individuals. Permittee will comply with all rules and regulations. Any questions or concerns must be discussed with the refuge manager before permittee takes any unauthorized action. Ignorance is not acceptable as an excuse for noncompliance.
- Permittee will notify the refuge manager no later than 2 days after completing haying/mowing for the season. Permittee should also report opportunities to improve the mowing program and any concerns encountered during mowing operations.
- Gate keys must be returned within one week after project completion.
- The U.S. Government will not be liable for any injury or loss to the permittee or any of the permittee’s assistants. Each special use permit will include a standard indemnity/hold harmless clause as approved by the solicitor.
- Permittee will comply with all state and local authorities

### **Justification**

Haying and mowing will contribute to the purposes of the refuge by maintaining and enhancing habitat for grassland-dependent migratory birds, wintering raptors and bog turtles for which the refuge was established. Haying for the grassland habitat management program also contributes to the mission of the refuge system, by implementing the following goals of the refuge system’s strategic plan: 1. Provide healthy fish, wildlife and plant populations, 3. Maintain productive habitats, and 5. Provide quality environments. In addition, haying for habitat management will support refuge purposes #1 and #2 by improving early successional habitats. Indirectly, it will also support refuge purpose #4 through increased migratory bird populations. Refuge purposes #3 and #5 will not be materially impacted by this use. Based on the analysis above, and consistent with our governing regulations and the stipulations listed above, we conclude that haying for habitat management is a compatible use for the Wallkill River National Wildlife Refuge.

Project Leader Edwin H. Hays 1/27/09  
(Signature) (Date)

**Concurrence**

Regional Chief Anthony D. Legen 1/29/2009  
(Signature) (Date)

Mandatory 10-year re-evaluation date Jan. 29, 2019  
(Date)

**Literature Cited**

- Askins, R. A. 1993. Population trends in grassland, shrubland, and forest birds in eastern North America. Pages 1-34 in D. M. Power, editor. Current ornithology. Volume 11. Plenum Press, New York, New York, USA.
- Askins, R. A. 1997. History of grasslands in the northeastern United States: implications for conservation. Pages 119-136 in P. D. Vickery and P. W. Dunwiddie, editors. Grasslands of northeastern North America, ecology and conservation of native and agricultural landscapes. Massachusetts Audubon Society, Lincoln, Massachusetts, USA.
- Berkey, G., R. Crawford, S. Galipeau, D. Johnson, D. Lambeth, and R. Kreil. 1993. A review of wildlife management practices in North Dakota: effects on nongame bird populations and habitats. Report submitted to Region 6, U.S. Fish and Wildlife Service, Denver, Colorado, USA.
- Bollinger, E. K., and T. A. Gavin. 1992. Eastern bobolink populations: ecology and conservation in an agricultural landscape. Pages 497-506 in J. M. Hagan, III and D. W. Johnston, editors. Ecology and conservation of neotropical migrant landbirds. Smithsonian Institution Press, Washington, DC, USA.
- Dechant, J. A., M. F. Dinkins, D. H. Johnson, L. D. Igl, C. M. Goldade, B. D. Parkin, and B. R. Euliss. 2001. Effects of management practices on grassland birds: upland sandpiper. Northern Prairie Wildlife Research Center, Jamestown, North Dakota, USA. Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/literatr/grasbird/upsa/upsa.htm> (Version 17FEB2000).
- Dechant, J. A., M. F. Dinkins, D. H. Johnson, L. D. Igl, C. M. Goldade, and B. R. Euliss. 2001. Effects of management practices on grassland birds: vesper sparrow. Northern Prairie Wildlife Research Center, Jamestown, North Dakota, USA. Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/literatr/grasbird/upsa/upsa.htm> (Version 29FEB2000).
- Dechant, J. A., M. L. Sondreal, D. H. Johnson, L. D. Igl, C. M. Goldade, M. P. Nenneman, and B. R. Euliss. 2001. Effects of management practices on grassland birds: northern harrier. Northern Prairie Wildlife Research Center, Jamestown, North Dakota, USA. Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/literatr/grasbird/harrier/harrier.htm> (Version 17FEB2000).

- Dechant, J. A., M. L. Sondreal, D. H. Johnson, L. D. Igl, C. M. Goldade, M. P. Nenneman, and B. R. Euliss. 2001. Effects of management practices on grassland birds: short-eared owl. Northern Prairie Wildlife Research Center, Jamestown, North Dakota, USA. Northern Prairie Wildlife Research Center Home Page. <http://www.npwr.usgs.gov/resource/literatr/grasbird/shortear/shortear.htm> (Version 17FEB2000).
- Dechant, J. A., M. L. Sondreal, D. H. Johnson, L. D. Igl, C. M. Goldade, M. P. Nenneman, and B. R. Euliss. 2001. Effects of management practices on grassland birds: grasshopper sparrow. Northern Prairie Wildlife Research Center, Jamestown, North Dakota, USA. Northern Prairie Wildlife Research Center Home Page. <http://www.npwr.usgs.gov/resource/literatr/grasbird/grasshop/grasshop.htm> (Version 17FEB2000).
- Dechant, J. A., M. L. Sondreal, D. H. Johnson, L. D. Igl, C. M. Goldade, A. L. Zimmerman, and B. R. Euliss. 2001. Effects of management practices on grassland birds: bobolink. Northern Prairie Wildlife Research Center, Jamestown, North Dakota, USA. Northern Prairie Wildlife Research Center Home Page. <http://www.npwr.usgs.gov/resource/literatr/grasbird/bobo/bobo.htm> (Version 17FEB2000).
- Dinkins, M. F., A. L. Zimmerman, J. A. Dechant, B. D. Parkin, D. H. Johnson, L. D. Igl, C. M. Goldade, and B. R. Euliss. 2001. Effects of management practices on grassland birds: horned lark. Northern Prairie Wildlife Research Center, Jamestown, North Dakota, USA. Northern Prairie Wildlife Research Center Home Page. <http://www.npwr.usgs.gov/resource/literatr/grasbird/hola/hola.htm> (Version 16JUN2000).
- Granfors, D. A., K. E. Church, and L. M. Smith. 1996. Eastern meadowlark nesting in rangelands and Conservation Reserve Program fields in Kansas. *Journal of Field Ornithology* 67:222-235.
- Herkert, J. R., R. E. Szafoni, V. M. Kleen, and J. E. Schwegman. 1993. Habitat establishment, enhancement and management for forest and grassland birds in Illinois. Division of Natural Heritage, Illinois Department of Conservation, Natural Heritage Technical Publication Number 1, Springfield, Illinois, USA.
- Hull, S. D. 2000. Effects of management practices on grassland birds: eastern meadowlark. Northern Prairie Wildlife Research Center, Jamestown, North Dakota, USA. Northern Prairie Wildlife Research Center Home Page. <http://www.npwr.usgs.gov/resource/literatr/grasbird/fpeame/fpeame.htm> (Version 16JUN2000).
- Kirsch, L. M., and K. F. Higgins. 1976. Upland sandpiper nesting and management in North Dakota. *Wildlife Society Bulletin* 4:16-20.
- Knopf, F. L. 1995. Declining grassland birds. Pages 296-298 in E. T. LaRoe, G. S. Farris, C. E. Puckett, P. D. Doran, and M. J. Mac, editors. *Our living resources: a report to the nation on the distribution, abundance, and health of U.S. plants, animals, and ecosystems*. U.S. National Biological Service, Washington, D.C., USA.
- Lanyon, W. E. 1995. Eastern meadowlark (*Sturnella magna*). In A. Poole and F. Gill editors. *The birds of North America*. Number 160. The Academy of Natural Sciences, Philadelphia, Pennsylvania, USA, and The American Ornithologists' Union, Washington, D.C., USA.
- Lokemoen, J. T., and J. A. Beiser. 1997. Bird use and nesting in conventional, minimum-tillage, and organic cropland. *Journal of Wildlife Management* 61:644-655.
- Mitchell, L. R., C. R. Smith, and R. A. Malecki. 2000. Ecology of grassland breeding birds in the northeastern United States—a literature review with recommendations for management. U.S. Geological Survey, Biological Resources Division and New York Cooperative Fish and Wildlife Research Unit, Department of Natural Resources, Cornell University, Ithaca, New York, USA.
- Mitchell, L., and J. Shryer. 2000. Aids to grassland management planning for Wallkill and Shawangunk Grasslands NWR (draft). Unpublished report on file at Wallkill River National Wildlife Refuge headquarters, Sussex, New Jersey, USA.

- New York State Department of Environmental Conservation. 1997. Endangered, threatened and special concern fish and wildlife species of New York State. New York State Department of Environmental Conservation, Division of Fish, Wildlife and Marine Resources, Delmar, New York, USA.
- Pashley, D. N., C. J. Beardmore, J. A. Fitzgerald, R. P. Ford, W. C. Hunter, M. S. Morrison, K. V. Rosenberg. 2000. Partners In Flight: conservation of the landbirds of the United States. American Bird Conservancy, The Plains, Virginia, USA.
- Robbins, C. S., D. Bystrak, and P. H. Geissler. 1986. The Breeding Bird Survey: its first fifteen years, 1965-1979. U.S. Fish and Wildlife Service Resource Publication 157.
- Sauer, J. R., J. E. Hines, G. Gough, I. Thomas, and B. J. Peterjohn. 1997. The North American Breeding Bird Survey results and analysis. Version 96.4. Patuxent Wildlife Research Center, Laurel, Maryland, USA. <http://www.mbr-pwrc.usgs.gov/bbs/bbs.html> (12/1999).
- Smith, C. R. 1992. Henslow's sparrow, *Ammodramus henslowii*. Pages 315-330 in K. J. Schneider and D. M. Pence, editors. Migratory nongame birds of management concern in the Northeast. U.S. Fish and Wildlife Service, Newton Corner, Massachusetts, USA.
- Tate, G. R. 1992. Short-eared owl, *Asio flammeus*. Pages 171-189 in K. J. Schneider and D. M. Pence editors. Migratory nongame birds of management concern in the Northeast. U.S. Department of the Interior, Fish and Wildlife Service, Newton Corner, Massachusetts, USA.
- U.S. North American Bird Conservation Initiative Committee. 2000. North American Bird Conservation Initiative; bringing it all together. U.S. Fish and Wildlife Service, Arlington, Virginia, USA.
- U.S. Fish and Wildlife Service. 1982. Refuge Manual: 6 RM 5.6C. Division of Refuges, Arlington, Virginia, USA.
- U.S. Fish and Wildlife Service. 2001. Bog turtle (*Clemmys muhlenbergii*), northern population, recovery plan. Hadley, Massachusetts, USA.
- U.S. Fish and Wildlife Service. 2002. Birds of conservation concern 2002. Division of Migratory Bird Management, Arlington, Virginia, USA.
- Vickery, P. D. 1996. Grasshopper sparrow (*Ammodramus savannarum*). In A. Poole and F. Gill, editors. The birds of North America. Number 239. The Academy of Natural Sciences, Philadelphia, Pennsylvania, USA, and The American Ornithologists' Union, Washington, D.C., USA.

## Compatibility Determination

### Use

Mosquito Management according to Service Policy

### Refuge Name

Wallkill River National Wildlife Refuge

### Establishing and Acquisition Authority

Wallkill River National Wildlife Refuge was first designated administratively by the Service in a decision document on March 9, 1990. Congress later enacted Public Law 101-593, 104 Stat. 2955 on November 16, 1990, to confirm its establishment by special legislation. The Service has acquired lands for the Wallkill River refuge under the following authorities:

1. Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
2. Migratory Bird Conservation Act [16 U.S.C. 715d]
3. Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

We anticipate that the Service will continue to acquire lands under the same authorities that have been used to acquire lands in the past. Based on the refuge purposes, lands could also be acquired under several other legislative authorities, including but not limited to:

1. Refuge Recreation Act [16 U.S.C. 460K-1]
2. Endangered Species Act [16 U.S.C. 1534]
3. National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

### Refuge Purposes

(1) to preserve and enhance the refuge lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations; (2) to 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; (3) to protect and enhance the water quality of aquatic habitats within the refuge; (4) to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats; and (5) to provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation. 104 Stat. 2955, dated Nov. 16, 1990.

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

“for the development, advancement, management, conservation, and protection of fish and wildlife resources....” 16 U.S.C. 742f (a)(4) “for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. ” 16 U.S.C. 742f (b)(1) (Fish and Wildlife Act of 1956)

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

### National Wildlife Refuge System Mission

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

### **Description of Use**

**(a) What is the use? Is it a priority public use?** The use is mosquito surveillance and, if warranted, larval mosquito management. Mosquito management is not a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57).

**(b) Where will the use be conducted?** The use will occur in areas specified in a refuge-issued special use permit, as needed to protect human health and wildlife and domestic animal safety from mosquito-borne disease.

**(c) When will the use be conducted?** Mosquito control will occur only as needed, and on an irregular and short-term basis when it is necessary to protect the health and safety of humans, wildlife, or domestic animals.

Surveillance activities associated with this use will be conducted from April through October under the conditions of this compatibility determination, a mosquito management plan and a special use permit, all in accordance with the Interim Guidance for Mosquito Management on national wildlife refuges. Some mosquito control activities could occur throughout the mosquito/fly season.

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

On October 15, 2007, the Service published in the Federal Register its “Draft Mosquito and Mosquito-Borne Disease Management Policy Pursuant to the National Wildlife Refuge System Improvement Act of 1997.” Until the draft policy is finalized, we will follow the “Interim Guidance for Mosquito Management on National Wildlife Refuges,” prepared in spring 2005. This document provides refuges with interim guidance on addressing mosquito-associated health threats in a consistent manner. Like the draft policy, the guidance states that refuges will not conduct mosquito monitoring or control unless it is necessary and compatible to protect the health of a human, wildlife, or domestic animal population. If there is a declared health emergency, the Service will work with local and state mosquito managers to minimize any risks to human health.

Mosquito monitoring and control on the refuge will be managed under a mosquito management plan. This plan will provide the specifics on how and when the refuge will allow monitoring and, if necessary, control of mosquitoes on refuge-owned lands. All mosquito related activities will be carried out by state or county agencies, typically the Sussex County Office of Mosquito Control (Division).

The Division is responsible for monitoring larval and adult mosquitoes on the refuge. The purpose of monitoring is to detect changes in mosquito populations that indicate an increased risk to human or wildlife health. In addition, adult mosquitoes collected from the refuge can be tested for the presence of pathogens. The Division will monitor mosquito populations from April through October. Additional details and restrictions on monitoring within refuge boundaries will be described in an annual special use permit issued to the Division.

The goal of mosquito management at Walkkill River refuge is to identify low-level health threats and allow compatible treatment to avoid emergency situations. Because there is a documented history of mosquito-borne diseases in this area, the refuge will almost invariably need to monitor mosquitoes on an annual basis. The refuge will develop a mosquito management plan that will use predetermined threat levels to decide when and how to treat mosquitoes. This management plan is being designed by the Service to ensure that there will be no significant adverse impacts on the refuge’s wildlife and habitats. Additional details and restrictions on treating mosquito populations within refuge boundaries will be described in an annual special use permit issued to the Division. Treatment regimens may vary annually, depending on the current conditions of disease presence and mosquito abundance. The refuge will generally treat mosquitoes with the pesticide *Bacillus thuringiensis israelensis*.

A health emergency indicates an imminent risk of serious human disease or death, or an imminent risk to populations of wildlife. A health emergency represents the highest level of mosquito-associated health threats.

Health emergencies will be determined by the Sussex County Health Department and documented with local and current mosquito population and disease monitoring data.

The long-term solution for suppressing mosquito populations at the refuge is to restore the wetland hydrology in the habitats that produce the greatest abundance of mosquitoes. Fish and other aquatic species play a major role in controlling mosquito populations, and the Service often restores wetlands in such a way that it allows fish to feed on mosquito larvae, which then reduces mosquito populations.

Mosquito control will be applied using hand and aerial dispersal. Except in cases of officially determined health emergencies, any method we use to manage mosquito populations within the refuge will conform to applicable Federal laws such as the Endangered Species Act. Habitat management and pesticide uses for mosquito control will consider the integrity of non-target populations and communities. They will also be consistent with integrated pest management strategies and with existing pest management policies of the Department of the Interior and the Service.

State/local public health or mosquito control agencies will conduct surveillance and will carry out methods including dip samples, light/CO<sub>2</sub> traps, and landing rates. *Bacillus thurigiensis* will be applied following the limitations included in the product EPA label, an annual Fish and Wildlife Service pesticide use permit, and an annual refuge special use permit.

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

There are four mosquito-borne viral diseases historically or currently endemic/enzootic in New Jersey: Eastern Equine Encephalitis (EEE), St. Louis Encephalitis (SLE), West Nile Virus (WNV), and La Crosse Encephalitis (LAC). All are zoonotic diseases maintained in wildlife that only secondarily affect humans. The most serious of these for humans is EEE, although it is fortunately relatively rare. As of 2008, the most recent human activity in New Jersey was in 2003, when 3 cases were identified in the southern half of the state. However, a few mosquitoes test positive for the EEE virus almost every year in New Jersey, indicating that the virus is being maintained within the wildlife cycle.

Sussex County Health Department has determined that there are endemic mosquito-borne diseases in the vicinity of the Refuge. The major mosquito-borne disease of concern at Wallkill River refuge is West Nile Virus. Since its discovery in North America in 1999, WNV has spread across the continent, and is considered endemic/enzootic throughout most of the continental U.S. Identification of WNV infected mosquitoes in Sussex County nearly every year since 2000 indicates that the virus is locally maintained within the wildlife cycle.

The mosquito species of primary concern at Wallkill NWR are *Aedes vexans* and *Aedes (Ochlerotatus) trivittatus*. These are floodwater species that breed in rain-filled pools during the late spring and summer. *Aedes vexans* has been implicated as a bridge vector in the transmission of both EEE and WNV. The vectoring capacity of *Aedes (Ochlerotatus) trivittatus* is less known, although it has been found on occasion to carry WNV. However, because this latter species is almost always found in association with *Aedes vexans*, it is not possible to manage it separately.

Due to the historic presence of the viral diseases mentioned above, and the species of mosquitoes present on the refuge, it is necessary to annually monitor and sometimes even treat mosquito populations in order to try to avoid a human health emergency.

**Availability of Resources**

Any spraying will be conducted by the county or state. Refuge resources will be dedicated to monitoring, communication with the public, and preparing special use permits. No matter what decision is made relative to mosquito spraying, some refuge staff resources will be used to address the issue of spraying on the refuge.

Meetings and Consultations with County Mosquito Control Commission	10 hours
Special Use Permit Preparation	15 hours
Communications with the media	15 hours
Communications with elected officials	5 hours
Communications with local residents	10 hours
Monitoring of spraying activities	<u>25 hours</u>
Total Hours (.04 FTE).....	80 hours

**TOTAL (80 hours (.04FTE) @ \$30/hour) .....\$2,400**

The financial and staff resources necessary to provide and administer this use at its current level and at the level described in the final CCP are now available and we expect them to be available in the future.

**Anticipated Impacts of the Use**

For purposes of this discussion, mosquitoes will be divided into those that develop in ephemeral water bodies and those that develop in permanent to semi-permanent water, since the refuge has both types of habitats.

*Mosquito Larvae*

Mosquitos in ephemeral water bodies have evolved to lay eggs in dry or moist areas that will flood later. In these unpredictably flooded habitats such as summer flood pools and storm-flooded salt marshes, there are few predators that have been identified to rely principally on mosquito larvae as a source of food. The unreliable nature of mosquito larvae as prey in these habitats prevents the development of any close predator-prey relationship unless the predator shares diapausing strategies similar to those of floodwater mosquitoes. The only predators in these habitats that rely on mosquito larvae for prey are other mosquitoes. Although there are few predators that specialize on mosquito larvae in these habitats, generalist predators such as beetles (larvae and adults), backswimmers, and some odonates (damselflies and dragonflies) will take advantage of the temporary abundance of mosquitoes if the timing of arrival into the habitats coincides with the presence of mosquito larvae.

Some ephemeral aquatic habitats, however, have flooding regimes that are more predictable. In at least two of these habitats, vernal pools and treeholes, we see the development of very close predator-prey relationships with mosquito larvae. The predictable abundance of mosquitoes and general paucity of other potential prey species during the early spring in these pools has probably contributed to this specialization. Other predators in vernal pools will feed opportunistically on mosquito larvae.

Mosquitoes that colonize permanent to semi-permanent bodies of water lay eggs on the surface. In many natural bodies of water, the larvae of these species must develop in the presence of an oftentimes-diverse invertebrate predator community. The co-occurrence of mosquito larvae and predatory invertebrates is more predictable in these habitats, but the diversity of other potential prey species may preclude the development of specialized predator-prey relationships. Although many of the predators in these habitats can be considered generalists with regard to prey consumption, experimental evidence suggests that mosquito larvae, when available, are a preferred prey of some species (Helgen 1989; Urabe et al. 1990; Robert and Venkatesan 1997; Safurabi and Madani 1999).

*Mosquito Adults*

Like other aquatic insects with terrestrial adult stages, mosquitoes provide a link between aquatic and terrestrial ecosystems as they convert detritus and aquatic microbial biomass into flying insect biomass. Most adult mosquitoes are relatively short lived. Vertebrate predators include insectivorous birds and bats (Zinn and Humphrey 1981), although mosquitoes often account for only a small percentage of the total biomass consumed. Consumption of mosquitoes by the Indiana bat, *Myotis sodalis*, for example, accounted for up to 6.6 percent of the total diet (Kurta and Whitaker 1998).

As was the case with mosquito larvae, there are apparently few if any predators that specialize on adult mosquitoes. This is probably the result of the unpredictable nature of mosquito emergence. The apparent absence of any specialized predator-prey relationships among adult mosquitoes and predators, however, does not necessarily discount the contribution of mosquitoes to the diet of a wide variety of generalized predators. However, a short-term, localized reduction in adult mosquitoes probably has little effect on the predator community, as these organisms will readily switch to alternate prey (Jensen et al. 1999, Davis and Peterson 2008). The effects of long-term, widespread reduction of adult mosquito populations, especially using broad-spectrum insecticides, has not been studied.

#### *Other Ecological Role of Mosquitoes*

Mosquito larvae may feed by one or more of several different mechanisms. They may filter-feed, graze microbial biofilms, or even shred detritus (Merritt et al. 1992). In this sense, mosquitoes are a component of a functioning wetland ecosystem, processing detritus and aquatic microbes, and eventually providing a link between aquatic and terrestrial systems when they emerge.

The impact of reducing the density of mosquitoes in aquatic or terrestrial systems has not been studied. Generalist predators probably switch to alternate prey, which in turn may be impacted by the increased predation. The few specialist predators of mosquito larvae may be impacted the greatest due to the lack of alternate prey and/or the inability of such predators to uncouple from a closely evolved predator-prey relationship.

#### *Bacillus thuringiensis var. israelensis (Bti).*

Like other varieties of the natural soil bacterium known as *Bacillus thuringiensis* (Bt), Bti is a stomach poison that must be ingested by the larval form of the insect in order to be effective. Bt contains crystalline structures containing protein endotoxins that are activated in the alkaline conditions of an insect's gut. These toxins attach to specific receptor sites on the gut wall and, when activated, destroy the lining of the gut and eventually kill the insect. The toxicity of Bt to an insect is directly related to the specificity of the toxin and the receptor sites. Without the proper receptor sites, the Bt will simply pass harmlessly through the insect's gut. Bti is specific only to certain primitive dipterans (flies), particularly mosquitoes, black flies, and some chironomid midges. Bti is not known to be directly toxic to nondipteran insects.

The issue of Bti concentration is important with regard to impacts on nontarget organisms. Of particular concern is the potential for Bti to kill midge larvae (family Chironomidae). Chironomid (non-biting midge) larvae are often the most abundant aquatic insect in wetland environments and form a significant portion of the food base for other wildlife (Batzer et al. 1993; Cooper and Anderson 1996; Cox et al. 1998). Laboratory and field studies have shown that Bti is toxic to some larval chironomids, but many factors, such as temperature, water depth, aquatic vegetation and suspended organic matter, may act to reduce its toxicity to chironomids in the environment (Charbonneau et al. 1994; Merritt et al. 1989). Negative impacts on chironomid density/biomass could have deleterious effects on wetland/wildlife food webs and could also lower biodiversity.

There is ample documentation that Bti can kill certain species of chironomids, particularly in the subfamily Chironominae. The effects of a single application of Bti are difficult to predict because of documented differences in toxicity due to formulation, potency, application rate, and timing. There is only one (Hershey et al. 1998; Niemi et al. 1999) published study that examined the long-term, nontarget effects of Bti. In this study conducted in Minnesota, 27 wetlands were sampled for macroinvertebrates over a 6-year period. It appears from this study that any effects would most likely occur within the aquatic communities, as no effects were observed on the bird community (Niemi et al. 1999). In judging the potential for adverse ecological effects of Bti applications, one should consider the non-target aquatic organisms of concern that would be impacted from the potential loss of both mosquito and chironomid larvae. The refuge's mosquito management plan will apply this scientific information for creating the refuge's thresholds for treatment, types of control, and application plans.

**Public Review and Comment**

This compatibility determination was made available for public review and comment for 66 days as an appendix to the draft CCP/EA for Wallkill River National Wildlife Refuge.

**Determination**

Use is not compatible

Use is compatible, with the following stipulations

**Stipulations Necessary to Ensure Compatibility**

The refuge will abide by the following national guidance:

- Refuges will not conduct mosquito monitoring or control unless it is necessary and compatible to protect the health of a human, wildlife, or domestic animal population. If there is a declared health emergency, the Service will work with local and state mosquito managers to minimize any risks to human health.
- Refuges may use compatible non-pesticide options to manage mosquito populations that represent persistent threats to health.
- Refuges will collaborate with Federal, State, or local public health authorities and vector control agencies to identify refuge-specific health threat categories. These categories will represent increasing levels of health risks, and will be based on monitoring data.
- Management decisions for mosquito control will be based on meeting or exceeding predetermined mosquito abundance or disease threshold levels that delimit threat categories.
- In the case of officially determined mosquito-borne disease emergencies, we will follow the guidelines described in this document and in the refuge’s mosquito management plan. Monitoring data are still required to ensure that intervention measures are necessary.
- All pesticide treatments will follow Service and Department of the Interior pest management and pesticide policies. In an emergency, the pesticide approval process can be expedited.
- Refuges must comply with Federal statutes and Service policies by completing the appropriate documentation prior to mosquito management activities taking place.

In addition to the above stipulations, copies of monitoring data and lab results will be made available to the refuge manager on a weekly basis or as soon as they are available. Dip counts and enumeration of numbers by species will be required prior to each application of Bti.

The refuge manager will be contacted at least one day in advance of each application of Bti so that, at his or her discretion, the manager may accompany the applicators during work on the refuge or may delay application for the protection of refuge resources existent at any particular time. The refuge manager, in consultation with the public health authorities and Service personnel, may authorize application of Bti in instances where there are found West Nile Virus positive mosquitoes, eastern equine encephalitis positive mosquitoes, or West Nile Virus positive birds, all of which would indicate there is a potential risk to public health.

Application of Bti will be, where feasible, by hand spraying a liquid formulation or hand dispersal of a granular formulation of Bti. Application will be performed by trained personnel, and will be in strict conformance with the product label.

Application of Bti will be limited to the areas shown on the special use permit map and in accordance with the mosquito management plan

This Compatibility Determination may be rescinded at any time based on future Fish and Wildlife Service Policy determinations or upon review of scientific studies of the effects of Bti on the environment or non-target organisms.

**Justification**

Due to the historic or current presence of endemic/enzootic viral diseases in New Jersey, and the species of mosquitoes present on the refuge, it is necessary to annually monitor and sometimes even treat mosquito populations on the refuge. As noted above, predators that feed on mosquito or midge larvae, or adult mosquitoes, are not considered specialists and will often vary their prey base depending on availability. Therefore we expect only minimal impact to species that prey on mosquito/midge larvae or mosquito adults.

Based on the stipulations above, allowing mosquito monitoring and control within the Wallkill River refuge will not materially interfere with or detract from the mission of the refuge system or the purposes for which the refuge was established. This compatibility determination will allow the refuge to protect human and animal health while not materially impacting refuge purposes #1, #2 beyond the reductions in larval mosquito and midge populations during documented periods of high mosquito populations. Refuge purpose #3 will also not be materially impacted as Bti is not known to be harmful to water quality. Refuge purposes #4 and #5 would likely see limited benefit from this activity as West Nile Virus is a threat to migratory birds and people and a reduction in the spread of this disease would benefit both refuge purposes.

Project Leader Edvan O'Hara (Signature) 1/27/09 (Date)

**Concurrence**

Regional Chief Anthony D. Lejeune (Signature) 1/29/2009 (Date)

Mandatory 10-year re-evaluation date Jan. 29, 2019 (Date)

**Literature Cited**

Batzer, D. P., M. McGee, V. H. Resh, and R. R. Smith. 1993. Characteristics of invertebrates consumed by mallards and prey response to wetland flooding schedules. Wetlands 13: 41-49.

- Boisvert, M. and J. Boisvert. 2000. Effects of *Bacillus thuringiensis* var. *israelensis* on target and non-target organisms: a review of laboratory and field experiments. *Biocontrol Science and Technology* 10:517-561.
- Charbonneau, C. S., R. D. Drobney, and C. F. Rabeni. 1994. Effects of *Bacillus thuringiensis* var. *israelensis* on nontarget benthic organisms in a lentic habitat and factors affecting the efficacy of the larvicide. *Environmental Toxicology and Chemistry* 13: 267-279.
- Cooper, C. B. and S. H. Anderson. 1996. Significance of invertebrate abundance to dabbling duck brood use of created wetlands. *Wetlands* 16: 557-563.
- Cox, R. J., M. A. Hanson, C. C. Roy, N. J. Euliss, D. H. Johnson, and M. G. Butler. 1998. Mallard duckling growth and survival in relation to aquatic invertebrates. *Journal of Wildlife Management* 62: 124-133.
- Davis, R. S. and R. K. D. Peterson. 2008. Effects of single and multiple applications of mosquito insecticides on nontarget arthropods. *Journal of the American Mosquito Control Association* 24: 270-280.
- Helgen, J. C. 1989. Larval mosquitoes as vulnerable prey: *Chaoborus* predation. *Canadian Journal of Fisheries and Aquatic Sciences* 46: 1642-1650.
- Hershey, A. E., A. R. Lima, G. J. Niemi, and R. R. Regal. 1998. Effects of *Bacillus thuringiensis israelensis* (Bti) and methoprene on non-target macroinvertebrates in Minnesota wetlands. *Ecological Applications* 8:41-60.
- Jensen, T., S. P. Lawler, and D. A. Dritz. 1999. Effects of ultra-low volume pyrethrin, malathion, and permethrin on nontarget invertebrates, sentinel mosquitoes, and mosquitofish in seasonally impounded wetlands. *Journal of the American Mosquito Control Association* 15: 330-338.
- Kurta, A. and J. J. Whitaker. 1998. Diet of the Endangered Indiana Bat (*Myotis sodalis*) on the Northern Edge of Its Range. *American Midland Naturalist* 140: 280-286.
- Merritt, R. W., R. H. Dadd, and E. D. Walker. 1992. Feeding behavior, natural food, and nutritional relationships of larval mosquitoes. *Annual Review of Entomology* 37: 349-376.
- Merritt, R. W., E. D. Walker, M. A. Wilzbach, K. W. Cummins, and W. T. Morgan. 1989. A broad evaluation of Bti for black fly (Diptera:Simuliidae) control in a Michigan River: efficacy, carry and non-target effects on invertebrates and fish. *Journal of the American Mosquito Control Association* 5:397-414.
- Niemi, G. J., A. E. Hershey, L. Shannon, J. M. Hanowski, A. Lima, R. P. Axler, and R. R. Regal. 1999. Ecological effects of mosquito control on zooplankton, insects, and birds. *Environmental Toxicology and Chemistry* 18: 549-559.
- Robert, N. and P. Venkatesan. 1997. Prey preference and predatory efficiency of the water bug, *Diplonychus indicus* Venk. & Rao (Hemiptera: Belostomatidae), an effective biocontrol agent for mosquitoes. *Journal of Entomological Research* 21: 267-272.
- Safurabi, S. and J. I. Madani. 1999. Prey preference of an aquatic beetle *Dineutes indicus* Aube (Coleoptera: Gyrimidae). *Journal of Ecobiology* 11: 237-240.
- Urabe, K., T. Ikemoto, and S. Takei. 1990. Studies on *Sympetrum frequens* (Odonata: Libellulidae) nymphs as natural enemies of the mosquito larvae, *Anopheles sinensis*, in rice fields. 4. Prey-predator relationship in the rice field areas. *Japanese Journal of Sanitary Zoology* 41: 265-272.
- Zinn, T. L. and S. R. Humphrey. 1981. Seasonal food resources and prey selection of the southeastern brown bat (*Myotis austroriparius*) in Florida. *Florida Scientist* 44: 81-90.

## Compatibility Determination

### Use

Research Conducted by Non-Service Personnel

### Refuge Name

Wallkill River National Wildlife Refuge

### Establishing and Acquisition Authority

Wallkill River National Wildlife Refuge was first designated administratively by the Service in a decision document on March 9, 1990. Congress later enacted Public Law 101-593, 104 Stat. 2955 on November 16, 1990, to confirm its establishment by special legislation. The Service has acquired lands for the Wallkill River refuge under the following authorities:

1. Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
2. Migratory Bird Conservation Act [16 U.S.C. 715d]
3. Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

We anticipate that the Service will continue to acquire lands under the same authorities that have been used to acquire lands in the past. Based on the refuge purposes, lands could also be acquired under several other legislative authorities, including but not limited to:

1. Refuge Recreation Act [16 U.S.C. 460K-1]
2. Endangered Species Act [16 U.S.C. 1534]
3. National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

### Refuge Purposes

(1) to preserve and enhance the refuge lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations; (2) to 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; (3) to protect and enhance the water quality of aquatic habitats within the refuge; (4) to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats; and (5) to provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation. 104 Stat. 2955, dated Nov. 16, 1990.

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

“for the development, advancement, management, conservation, and protection of fish and wildlife resources....” 16 U.S.C. 742f(a)(4) “for the benefit of the United States Fish and Wildlife Service, in performing its activities and services.” 16 U.S.C. 742f (b)(1) (Fish and Wildlife Act of 1956)

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

### National Wildlife Refuge System Mission

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

**Description of Use**

**(a) What is the use? Is it a priority public use?** The use is research conducted by non-Service personnel. Research conducted by non-Service personnel is not a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57).

**(b) Where will the use be conducted?** The location of the research will vary depending on the individual research project that is being conducted. The entire refuge is open and available for scientific research. An individual research project is usually limited to a particular habitat type, plant or wildlife species. On occasion research projects will encompass an assemblage of habitat types, plants or wildlife, or may span more than one refuge or include lands outside the refuge. The research location will be limited to those areas of the refuge that are necessary to conduct the research project.

**(c) When will the use be conducted?** The timing of the research will depend entirely on the individual research project's approved design. Scientific research will be allowed to occur on the refuge throughout the year. An individual research project could be short-term in design, requiring one or two visits over the course of a few days. Other research projects could be multiple year studies that require daily visits to the study site. The timing of each individual research project will be limited to the minimum required to complete the project. If a research project occurs during the refuge hunting season, special precautions will be required and enforced to ensure the researchers' health and safety.

**(d) How will the use be conducted?** The methods of the research will depend entirely on the individual research project that is conducted. The methods and study design of each research project will be reviewed and scrutinized before it will be allowed to occur on the refuge. No research project will be allowed if it does not have an approved scientific method, if it negatively affects endangered species, migratory birds, grassland birds or wintering raptors, or if it compromises public health and safety.

**(e) Why is this use being proposed?** Research by non-Service personnel is conducted by colleges, universities, federal, state, and local agencies, non-governmental organizations, and qualified members of the public to further the understanding of the natural environment and to improve the management of the refuge's natural resources. Much of the information generated by the research is applicable to management on and near the refuge. Research is also part of the refuge purpose #5.

The Service will encourage and support research and management studies on refuge lands that will improve and strengthen natural resource management decisions. The refuge manager will encourage and seek research relative to approved refuge objectives that clearly improves land management and promotes adaptive management. Priority research addresses information that is important to agencies of the Department of Interior, the U.S. Fish and Wildlife Service, the National Wildlife Refuge System, state fish and game agencies and other agencies that are responsible for managing natural resources.

The refuge will also consider research for other purposes that may not be directly related to refuge-specific objectives, but contribute to the broader enhancement, protection, use, preservation and management of native populations of fish, wildlife and plants, and their natural diversity within the region or flyway. These proposals must comply with the Service's governing laws, regulations and policies.

The refuge will maintain a list of research needs that will be provided to prospective researchers or organizations upon request. Refuge support of research directly related to refuge objectives may take the form of funding, in-kind services such as housing or use of other facilities, direct staff assistance with the project in the form of data collection, provision of historical records, conducting management treatments, or other assistance as appropriate.

**Availability of Resources**

The bulk of the cost for research is incurred in staff time to review research proposals, coordinate with researchers and write special use permits. In some cases, a research project may only require one day of staff time to write a special use permit. In other cases, a research project may take an accumulation of weeks, as the refuge biologist must coordinate with students and advisors and accompany researchers on site visits. The refuge biologist spends an average of seven weeks a year working full time on research projects conducted by outside researchers and providing the support they need to conduct their work on a national wildlife refuge. At an hourly wage of approximately \$25 (for a GS 9/11), this adds up to about \$7,000 annually for resources spent on outside research. In addition, the refuge manager must meet with perspective researchers, coordinate research efforts and deal with any administrative requirements.

Biologist staff time to oversee non-USFWS research (.13 FTE) .....	\$7,000
Refuge Manager time (.02 FTE).....	\$1,500
Fuel and equipment to visit/monitor research efforts (20 trips) .....	\$400
<b>Total</b> .....	<b>\$8,900</b>

The financial and staff resources necessary to provide and administer this use at its current level and at the level described in the final CCP are now available and we expect them to be available in the future.

**Anticipated Impacts of the Use**

The Service encourages approved research to further the understanding of the natural resources. Research by other than Service personnel adds greatly to the information base for refuge managers to make proper decisions. Disturbance to wildlife and vegetation by researchers could occur through observation, mist-netting, banding, and accessing the study area by foot or vehicle. It is possible that direct mortality could result as a by-product of research activities. Mist-netting, for example, can cause stress, especially when birds are captured, banded and weighed. There have been occasional mortalities to these birds, namely when predators such as raccoons and cats reach the netted birds before researchers do.

Minimal impact will occur when research projects that are previously approved are carried out according to the stipulations stated in the special use permit issued for each project. Overall, however, allowing well-designed and properly reviewed research to be conducted by non-Service personnel is likely to have very little impact on refuge wildlife populations. If the research project is conducted with professionalism and integrity, potential adverse impacts are likely to be outweighed by the knowledge gained about an entire species, habitat or public use.

**Public Review and Comment**

As part of the CCP process for the Wallkill River National Wildlife Refuge, this compatibility determination underwent extensive public review, including a comment period of 66 days following the release of the draft CCP/EA.

**Determination**

Use is not compatible

Use is compatible, with the following stipulations

**Stipulations Necessary to Ensure Compatibility**

All researchers will be required to submit a detailed research proposal following Service Policy (FWS Refuge Manual Chapter 4 Section 6). The refuge must be given at least 45 days to review and decide whether to approve proposals before initiation of research. If collection of wildlife is involved, the refuge must be given 60 days to review and decide whether to approve the proposal. The Service cannot guarantee that it will review or approve proposals not submitted within these timeframes. Proposals will be prioritized and approved based on need, benefit, compatibility, and funding required.

Special use permits (SUPs) will be issued for all research conducted by non-Service personnel. The SUP will list all conditions that are necessary to ensure compatibility. The special use permits will also identify a schedule for periodic progress reports and the submittal of a final report or scientific paper. The regional refuge biologists, other Service divisions, and state agencies will be asked to review and comment on proposals.

All researchers will be required to obtain appropriate state and Federal permits.

Any research project may be terminated at any time for non-compliance with the conditions of the SUP, or modified, redesigned, relocated or terminated upon determination by the refuge manager that the project is causing unanticipated adverse impacts to wildlife, wildlife habitat, approved priority public uses, or other refuge management activities.

All work with endangered species will require the proper permits from Federal or state government.

**Justification**

The Service encourages approved research to further understanding of refuge natural resources. Research by non-Service personnel, guided by the stipulations listed above, adds greatly to the information base for refuge managers to make proper decisions. This use will contribute directly to refuge purpose #5 and will indirectly support refuge purposes #1, #2, #3 and #4. While some research activities may cause minimal disturbance to wildlife or result in the loss of specific individuals, this impact to refuge purpose #1 or #2 will be more than offset by the value of the research to managers and future generations. Research conducted by non-Service personnel will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purposes for which the refuge was established.

Project Leader Edwin O. Hays 1/27/09  
(Signature) (Date)

**Concurrence**

Regional Chief Anthony D. Lejer 1/29/2009  
(Signature) (Date)

Mandatory 10-year re-evaluation date Jan. 29, 2019  
(Date)

## Compatibility Determination

### Use

Furbearer Management to Protect Trust Resources

### Refuge Name

Wallkill River National Wildlife Refuge

### Establishing and Acquisition Authority

Wallkill River National Wildlife Refuge was first designated administratively by the Service in a decision document on March 9, 1990. Congress later enacted Public Law 101-593, 104 Stat. 2955 on November 16, 1990, to confirm its establishment by special legislation. The Service has acquired lands for the Wallkill River refuge under the following authorities:

1. Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
2. Migratory Bird Conservation Act [16 U.S.C. 715d]
3. Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

We anticipate that the Service will continue to acquire lands in the expansion area under the same authorities that have been used to acquire lands in the past.. Based on the refuge purposes, lands could also be acquired under several other legislative authorities, including but not limited to:

1. Refuge Recreation Act [16 U.S.C. 460K-1]
2. Endangered Species Act [16 U.S.C. 1534]
3. National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

### Refuge Purposes

(1) to preserve and enhance the refuge lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations; (2) to 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; (3) to protect and enhance the water quality of aquatic habitats within the refuge; (4) to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats; and (5) to provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation. 104 Stat. 2955, dated Nov. 16, 1990.

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

“for the development, advancement, management, conservation, and protection of fish and wildlife resources....” 16 U.S.C. 742f(a)(4) “for the benefit of the United States Fish and Wildlife Service, in performing its activities and services.” 16 U.S.C. 742f(b)(1) (Fish and Wildlife Act of 1956)

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

### National Wildlife Refuge System Mission

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

### **Description of Use**

**(a) What is the use? Is it a priority public use?** The use is furbearer management as an economic use. Furbearer management is employed on the refuge as a management tool, yet since the refuge could use state (New York and New Jersey) licensed trappers to carry out this activity, and trappers could keep the furs, this constitutes an economic use. Furbearer management is not a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57).

**(b) Where will the use be conducted?** Furbearer management through trapping is an allowable practice in New York and New Jersey, and will be conducted only in locations where it will accomplish refuge goals and objectives. Refuge law enforcement will ensure that trappers on the refuge comply with refuge regulations and, to the extent possible, with state regulations. Designating trapping zones and limiting the number of trappers in each zone may help prevent conflicts between trappers. In addition, designating trapping zones will allow the refuge to either concentrate or reduce trapping management needs. Designating locations where specific trappers are permitted on the refuge will facilitate the enforcement of refuge and state regulations.

**(c) When will the use be conducted?** When possible, furbearer management will be conducted in accordance with the New York and New Jersey state seasons, yet as a refuge management tool this use may be conducted outside of state seasons. New York furbearer management seasons run generally from October through February, while New Jersey furbearer management seasons generally run from November through March.

**(d) How will the use be conducted?** Refuge-owned lands in New York and New Jersey will be open to furbearer management for the following species: beaver, muskrat, fox, coyote, coydog and woodchuck. The refuge will offer a special use permit (50 C.F.R. Sec. 31.16) to trappers selected to conduct this management activity.

Furbearer management on refuge-owned lands will be conducted according to New York and New Jersey state regulations and any applicable refuge regulations, which will be detailed in a special use permit. The refuge will generally only allow furbearer management during state seasons. The refuge manager reserves the authority to regulate the numbers of target species taken in any one location.

We can only authorize this use if we find that it is compatible and it contributes to the refuge purposes or the System mission (50 C.F.R. Sec. 29.1), if we find there is a surplus wildlife population needing control (50 C.F.R. Sections 31.1 and 31.2(f)) and if we issue a permit (50 C.F.R. Sec 31.16). The refuge will determine on an annual basis whether furbearer management is necessary to support its goals and objectives.

**(e) Why is this use being proposed?** This use is being proposed in part to eliminate or reduce damage to refuge resources caused by overabundant species such as muskrats, beavers, foxes, coyotes, and woodchucks. Muskrats feed primarily on aquatic plants. In marsh environments, their feeding and lodge construction can aid wetland managers in obtaining desired amounts of open water and vegetation. In some portions of their range, however, muskrats can become excessively abundant and actually destroy the aquatic vegetation upon which they and other wildlife are dependent (MDC 2004). Woodchucks can tunnel into and under structures, therefore causing damage to refuge resources and infrastructure. Damage from beaver induced flooding is also a problem on the refuge as well as on some adjacent private lands. Populations of breeding birds can be devastated by foxes or coyotes. A furbearer management program will be used as a tool to maintain habitat and keep the predator-to-prey balance.

Refuge trappers typically have a stake in proper habitat and wildlife conservation and protection of the ecological integrity of the refuge so they can continue trapping. Accordingly, they are valuable assets for the refuge manager in providing on-site reports concerning the fundamental status of habitat, wildlife, and refuge conditions.

As a management tool, trapping also embodies public utilization of a renewable natural resource. Furbearers are considered a renewable natural resource with cultural and economic values (Andelt et al 1999, Boggess et al. 1990 Northeast Furbearer Resources Technical Committee 1996, Payne 1980). Several human dimension studies have documented trapper profiles, cultural aspects of trapping, and the socioeconomic role of trapping in the United States (Andelt et al. 1999, Boggess et al. 1990, Daigle et al. 1998, Gentile 1987). In addition to protecting refuge habitats and species, a regulated trapping program on the refuge could also foster the appreciation of wildlife and nature, wildlife observation, environmental education, a greater understanding of ecological relationships, stewardship of natural resources, and inter-generational passage of the methodologies of renewable resource use. Trapping is an activity in which family members and friends often participate and share joint experiences that broaden appreciation of natural resources and ecological awareness (Daigle et al. 1998).

### **Availability of Resources**

In most years, the need to utilize a trapping program is not expected to be needed. The financial resources necessary to provide and administer this use at its current level are now available, and we expect them to be available the future. A wildlife biologist will be required to evaluate furbearer activity and potential and current affects refuge resources. The biologist will also evaluate trapper data and compile trapping reports. An administrative assistant will process SUPs and enter trapping data into a database. A refuge law enforcement officer will be required to check refuge trappers and ensure compliance with state and refuge regulations.

We estimate below the annual costs associated with administering the furbearer management program on the refuge.

Refuge Biologist (GS 11) (recommendations, surveys, data analysis): 1 week/yr = \$2,000

Law Enforcement Officer (GS 9) (trapper compliance): 6 days = \$3,000

Administrative Assistant (GS 5) (office administration, permit issuance): 1 week/yr = \$900

**Total = \$5,900**

### **Anticipated Impacts of the Use**

The impacts of furbearer management on the purposes of the refuge and mission of the Refuge System can be either direct or indirect, and may have negative, neutral, or positive impacts on refuge resources. Due to the management role of trapping on the refuge, which will involve the taking of limited individuals in specific areas, few impacts to populations are anticipated. In most years, we expect no trapping will be needed on the refuge.

Indirect impacts may include displacing migratory birds during the pair bonding/nesting season or the destruction of nests by trampling. We will attempt to mitigate these impacts by authorizing trapping outside the nesting/breeding season. Direct impacts may include the catch of target and non-target species that are predators on migratory birds or nests. Due to the temporal separation of trapping activities and breeding wildlife using the refuge, indirect impacts on those resources by trappers will be negligible. Trappers using the refuge in early March may disturb individual early nesting waterfowl on occasion, and cause their temporary displacement from specific, limited areas. Those impacts are occasional, temporary, and isolated to small geographic areas.

When considering impacts on refuge purposes, the impacts of the furbearer management program obviously include those on the furbearer populations themselves. Trapping harvests and removes individuals of the species. Yet state natural resources agencies indicate that, with exceptions, furbearer populations are stable or increasing. The anticipated direct impacts of trapping on wildlife will be a reduction of furbearer population in those areas where surplus furbearers exist. The removal of excess furbearers from those areas will maintain furbearer populations at levels compatible with the habitat and with refuge objectives, minimize furbearer damage to facilities and wildlife habitat, minimize competition with or interaction among wildlife populations and species that conflict with refuge objectives, and minimize threats of disease to wildlife and humans.

Non-target species, such as feral cats, stray dogs, raccoons, or opossum, could be taken through this trapping program. None of these species are federal listed, nor are they a species of concern. We may require trappers to check their traps daily or to use humane traps to mitigate impacts to non-target species. Traps will be set specifically around areas of targeted species activity to reduce the risk of taking species other than targeted species. The experience of the trappers and the selection of the appropriate trap size will also reduce non-target captures (Northeast Furbearer Resources Technical Committee 1996, Boggess et. al 1990).

A national program operated under the guidance of the Fur Resources Technical Subcommittee of the International Association of Fish and Wildlife Agencies (IAFWA 1998) systematically improves the welfare of animals in trapping through trap testing and the development of “Best Management Practices (BMPs) for Trapping Furbearers in the United States.” The refuge will cooperate with and contribute to the development and implementation of those BMPs by practicing an integrated, comprehensive approach to furbearer management, wherever and whenever possible.

### **Public Review and Comment**

This compatibility determination was made available for public review and comment for 66 days as an appendix to the draft CCP/EA for Wallkill River National Wildlife Refuge.

### **Determination**

Use is not compatible

Use is compatible, with the following stipulations

### **Stipulations Necessary to Ensure Compatibility**

We will provide any necessary guidance to trappers on proper trapping techniques to avoid incidental take as much as possible.

Adequate controls exist in the form of state laws to safeguard refuge furbearer populations. To ensure a safe, humane, and sound trapping program, the following special permit conditions will be required:

- Permittees must comply with all conditions outlined on the reverse side of the standard Fish and Wildlife Service Trapping Permit, Exhibit 1 in Chapter 7, Section 15 of the Refuge Manual (U.S. Fish and Wildlife Service 1985).
- Permittees must comply with all applicable state regulations. Trapping units will conform to state borders.
- Permittees must trap only their own units. One helper is allowed. The helper must also be listed on the permit and have all applicable state licenses. The helper may trap the unit without the permittee only if prior approval is granted to the permittee by the refuge manager.
- Fur animals authorized to be taken on the refuge may be taken only with traps permitted under state regulations. Traps shall be set where traps or trapped furbearers are not visible from public highways, overlooks, or other visitor facilities.
- Permittees must visit and inspect each of the traps in their trap line at least once every 24 hours. Traps may not be checked between one hour after sunset and one-half hour before sunrise of the following day.

- Permittees may cut small trees or brush on the refuge for use only as trap stakes. Cutting is prohibited along public roads and trails or near visitor facilities.
- Permittees must release non-target species that are uninjured immediately and report the species and number to the refuge manager or designee within 24 hours. Permittees must turn over to the refuge manager or designee within 24 hours non-target species injured or killed through trapping activities.
- Boats may not be used as a part of trapping activities unless specified as a part of a special use permit.
- Ingress to and egress from assigned trapping units assigned shall be only by routes of travel approved by the refuge manager.
- Permittees shall, no later than 10 days after the last day of the refuge trapping season, submit to the refuge manager a trapping report on which the number of each species of animals taken on the refuge is correctly stated. Refuge staff will provide each permittee a blank report card for this purpose.
- The Fish and Wildlife Service assumes no responsibility in case of theft of equipment or of trapped animals.

**Justification**

Furbearer management through trapping on the refuge is a useful tool for maintaining the balance between furbearers and habitat. As stated in the Anticipated Impacts section, populations of trapped animals will not be reduced beyond a local scale. High populations of predators can decrease the nesting success of ground-nesting migratory birds, thus compromising one purpose of the refuge. Some furbearer populations can also create problems for refuge structures. Furbearer populations, with local exceptions, are stable or increasing on refuge lands. When implemented with stipulations listed above, the furbearer management program on the refuge will not have any appreciable negative impacts on furbearer populations, and the use will be conducted to support refuge management goals. Furbearer management will support healthy refuge habitats and contribute directly to refuge purposes #1 and #2. The use will indirectly support refuge purpose #3. It will not impact refuge purpose #4 or #5. Any individual loss of animals, which would negatively impact refuge purpose #2 will be more than offset by the benefits of accomplishing refuge purposes #1 and #2.

Project Leader Edwin O'Hara 1/27/09  
(Signature) (Date)

**Concurrence**

Regional Chief Anthony J. Sejer 1/29/2009  
(Signature) (Date)

Mandatory 10-year re-evaluation date Jan. 29, 2019  
(Date)

**Literature Cited**

- Andelt, W. F. R. L. Phillips, R. H. Schmidt, and R. B. Gill. Trapping furbearers: an overview of the biological and social issues surrounding a public controversy. *Wildlife Society Bulletin* 27(1): 53-64.
- Bogges, E. K., G. R. Batcheller, R. G. Linscombe, J. W. Greer, M. Novak, S. B. Linhart, D. W. Erickson, A. W. Todd, D. C. Juve, and D. A. Wade. 1990. Traps, trapping, and furbearer management. *Wildlife Society Technical Review* 90-1, The Wildlife Society, Bethesda, Maryland.
- Daigle, J. J., R. M. Muth, R. R. Zwick, and R. J. Glass. 1998. Sociocultural dimensions of trapping: a factor analytical study of trappers in six northeastern states. *Wildlife Society Bulletin* 26:614-625.
- International Association of Fish and Wildlife Agencies. 1998. Best Management Practices for trapping furbearers in the United States. International Association of Fish and Wildlife Agencies, Washington, D.C.
- Missouri Department of Conservation (MDC). 2004. Muskrat and Beaver Management in Wetlands: Planning Ahead for Wildlife Survival.
- Northeast Furbearer Resources Technical Committee. 1996. Trapping and furbearer management: perspectives from the Northeast. 33pp.
- Payne, N. F. 1980. Furbearer management and trapping. *Wildlife Society Bulletin* 8:345-348.

## Compatibility Determination

### Use

Dog Walking on the Liberty Loop Nature Trail

### Refuge Name

Wallkill River National Wildlife Refuge

### Establishing and Acquisition Authority

Wallkill River National Wildlife Refuge was first designated administratively by the Service in a decision document on March 9, 1990. Congress later enacted Public Law 101-593, 104 Stat. 2955 on November 16, 1990, to confirm its establishment by special legislation. The Service has acquired lands for the Wallkill River refuge under the following authorities:

1. Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
2. Migratory Bird Conservation Act [16 U.S.C. 715d]
3. Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

We anticipate that the Service will continue to acquire lands under the same authorities that have been used to acquire lands in the past. Based on the refuge purposes, lands could also be acquired under several other legislative authorities, including but not limited to:

1. Refuge Recreation Act [16 U.S.C. 460K-1]
2. Endangered Species Act [16 U.S.C. 1534]
3. National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

### Refuge Purposes

(1) to preserve and enhance the refuge lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations; (2) to 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; (3) to protect and enhance the water quality of aquatic habitats within the refuge; (4) to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats; and (5) to provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation. 104 Stat. 2955, dated Nov. 16, 1990.

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

“for the development, advancement, management, conservation, and protection of fish and wildlife resources....” 16 U.S.C. 742f(a)(4) “for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. ” 16 U.S.C. 742f(b)(1) (Fish and Wildlife Act of 1956)

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

### National Wildlife Refuge System Mission

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

### **Description of Use**

**(a) What is the use? Is it a priority public use?** The use is dog walking. Dog walking is not a priority public use of National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57).

**(b) Where will the use be conducted?** Dog walking will be permitted on the Liberty Loop Nature Trail only (see map B-7). The 2.5-mile Liberty Loop Nature Trail coincides with 1.5 miles of the Appalachian Trail (AT). Dog walking has always been permitted on the AT where it passes through the refuge, but previously has not been permitted on the rest of the Liberty Loop Nature Trail. The trail system at Liberty Loop is located atop low habitat value dike perimeter trail outlining the Liberty Loop impoundments. Refuge staff uses these dikes as maintenance roads for the impoundments. With only a 6-foot leash, dogs will not be able to access any sensitive areas or disturb birds or other species except on the dike, where fewer interactions are likely to occur.

**(c) When will the use be conducted?** Dog walking will be allowed throughout the entire year.

**(d) How will the use be conducted?** Dog walkers will be allowed to walk their dogs only when the dog is attached to a 6-foot (or less) lead and the dog walker is in control of the lead. All dog walkers with properly leashed dogs are restricted to the Liberty Loop Nature Trail at all times. Dog owners will be required to pick up after their dogs.

**(e) Why is this use being proposed?** A portion of the Liberty Loop Nature Trail runs concurrent with a portion of the Appalachian Trail (AT). The AT enters the refuge at the Liberty Loop Nature Trail and follows the Liberty Loop Nature Trail for about 1.5 miles. The AT then continues along Oil City Road to where it crosses the Wallkill River, continues northwest on State Line Road, then onto Carnegie Street where it reenters the forest. The AT is a part of America's cultural legacy and the trail is a cultural resource of national significance. The Wallkill River refuge is the only refuge through which the AT runs, and the trail provides an excellent opportunity to educate hikers about the refuge and the National Wildlife Refuge System.

The Appalachian Trail allows dog walking along almost all of its 2,100-mile length, except in some wilderness and backcountry areas. Many people hike the entire AT, or large parts of it, with their dogs. Local residents and other refuge visitors who are not through hikers have historically parked at the Liberty Loop Nature Trail parking lot to walk their dogs on the AT. Since the AT does not connect directly to the refuge parking lot, dog walkers who park at the refuge parking lot have been forced to walk on Oil City Road to access the AT. This poses a public safety hazard as this portion of Oil City Road is a straightaway with no shoulder. Due to the nature of the road, parking on the side of the road to access the AT would also pose a public safety hazard. Another issue is that the AT runs concurrent with the Liberty Loop Nature Trail for only about 1.5 miles, after which the refuge trail continues in a loop for about another mile and the AT heads off the refuge to the southeast. Dog walkers have historically been forced to backtrack 1.5 miles on the AT rather than completing the loop trail by walking half that distance to the parking lot. This final CCP permits dog walking on the entire Liberty Loop Nature Trail to avoid confusion and to facilitate appreciation for the AT as a cultural resource.

### **Availability of Resources**

Except for changing signs explaining the new regulations, no additional costs will be involved. Monitoring of the site for compliance will continue, but will not require additional resources beyond those already necessary to patrol the area for compliance with current regulations relating to dog walking and other activities at Liberty Loop. The financial and staff resources necessary to provide and administer this use at its current level and at the level described in the final CCP are now available and we expect them to be available in the future.

### Anticipated Impacts of the Use

Because the Liberty Loop Nature Trail follows a dike system with limited habitat value, the potential impacts to wildlife and their habitats are minimal.

The presence of dogs may flush incubating birds from nests (Yalden and Yalden 1990), disrupt breeding displays (Baydack 1986), disrupt foraging activity in shorebirds (Hoopes 1993), and disturb roosting activity in ducks (Keller 1991). Many of these authors indicated that people with dogs on a leash and loose dogs provoked the most pronounced disturbance reactions from their study animals. The greatest stress reaction results from unanticipated disturbance. Animals show greater flight response to humans moving unpredictably than to humans following a distinct path (Gabrielsen and Smith 1995). Despite thousands of years of domestication, dogs still maintain instincts to hunt and chase. The appropriate stimulus can trigger those instincts. Dogs that are unleashed or not under the control of their owners may disturb or threaten the lives of some wildlife. In effect, off-leash dogs increase the radius of human recreational influence or disturbance beyond what it will be in the absence of a dog.

The role of dogs in wildlife diseases is poorly understood. However, dogs host endo- and ecto-parasites, and can contract diseases from or transmit diseases to wild animals. In addition, dog waste is known to transmit diseases that may threaten the health of some wildlife and other domesticated animals. Domestic dogs potentially can introduce various diseases and transport parasites into wildlife habitats (Sime 1999).

### Public Review and Comment

This compatibility determination was made available for public review and comment for 66 days as an appendix to the draft Comprehensive Conservation Plan for Wallkill River National Wildlife Refuge.

### Determination

Use is not compatible

Use is compatible, with the following stipulations

### Stipulations Necessary to Ensure Compatibility

Only leashed dogs will be allowed on the refuge. The leash will be no more than six feet long. Dog walkers will be required to maintain control of their animal while on the refuge, thereby reducing the potential and severity of impacts to wildlife.

- Dog walkers must pick up after their dog(s) and remove the feces from the refuge.
- Agency and public awareness will be increased through interpretive/educational materials about responsible pet ownership in the context of wildlife disturbance during all outdoor recreational pursuits. Information will also address the potential role of domestic dogs in disease transmission to wildlife and vice versa in educational materials; information should include endo- and ecto-parasites.
- Refuge staff and volunteers will monitor uses to ensure compatibility, refine user estimates, and evaluate compliance. Potential conflicts between user groups will also be evaluated.
- If a high number of reports of negative dog-wildlife interactions on the Liberty Loop Nature Trail are reported, the refuge will reassess the use.
- If a high number of off-leash incidents are documented, we may consider eliminating dog walking from the refuge altogether.

Restricting dog walking to the established trail will reduce the potential disturbance of wildlife.

**Justification**

We predict the stipulations (listed above) will negate or minimize any dog-related wildlife impacts as discussed in the potential impacts section. Dogs will be under the direct control of their owners at all times while on the refuge. This should minimize any potential impacts that could result from the use. We will require all dogs to be on leashes of 6 feet or less, which would prevent dogs from interacting with wildlife in the impoundment areas. The trail system at Liberty Loop is located atop low habitat value dike/road perimeter trail outlining the Liberty Loop impoundments. With only a 6-foot leash, dogs will not be able to access any sensitive areas or disturb birds or other species except on the dike, where fewer interactions are likely to occur. To date, no negative dog-wildlife interactions have been reported from the sections of the AT where dogs are allowed.

Dog walking will add to the number of people partaking in wildlife observation, contributing to refuge purpose #5. As a result of the stipulations imposed, this use is expected to result in only minimal impacts to refuge purposes #2 and #4. The impacts will be limited to the low quality habitat atop the Liberty Loop Nature Trail only. The use is not expected to have any impact on refuge purposes #1 or #3. Limiting leashed dog walking to the Liberty Loop Nature Trail will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purposes for which the refuge was established.

Project Leader Edwin D. Hays 1/27/09  
(Signature) (Date)

**Concurrence**

Regional Chief Anthony D. Leger 1/29/2009  
(Signature) (Date)

Mandatory 10-year re-evaluation date Jan. 29, 2019  
(Date)

**Literature Cited**

Baydack, R. K. 1986. Sharp-tailed grouse response to lek disturbance in the Carberry Sand Hills of Manitoba. Colorado State University, Fort Collins, Colorado.

Gabrielson, G. W. and E. N. Smith. 1995. Physiological responses of wildlife to disturbance. Pages 95-107 in R. L. Knight and K. J. Gutzwiller, ed. Wildlife and Recreationists: coexistence through management and research. Island Press, Washington, D.C. 372pp.

Hoopes, E. M. 1993. Relationships between human recreation and piping plover foraging ecology and chick survival. Thesis, University of Massachusetts, Amherst, Massachusetts.

Keller, V. 1991. Effects of human disturbance on eider ducklings *Somateria mollissima* in an estuarine habitat in Scotland. Biological Conservation 58:213-228.

Sime, C. A. 1999. Domestic Dogs in Wildlife Habitats. Pp. 8.1-8.17 in G. Joslin and H. Youmans, coordinators. Effects of recreation on Rocky Mountain wildlife: A Review for Montana. Committee on Effects of Recreation on Wildlife, Montana Chapter of The Wildlife Society.

Yalden, P. E., and D. Yalden. 1990. Recreational disturbance of breeding golden plovers (*Pluvialis apricarius*). Biological Conservation 51:243-262.

