

Appendix C.



USFWS

Trail Sign

Findings of Appropriateness and Compatibility Determinations

- Wildlife Observation, Photography, Environmental Education, and Interpretation
- Public Hunting
- Public Fishing
- Hiking, Biking, Jogging, and Cross-country Skiing
- Horseback Riding
- Production of Educational Films and Conducting Photography Workshops
- Wildlife Research
- Primitive Camping for Boy and Girl Scouts and 4-H Groups
- Dog Training for Waterfowl Hunting Purposes
- Dog Walking
- Search and Rescue Training for Canine Teams
- U.S. Secret Service Training Exercises at the National Wildlife Visitor Center
- Baltimore Gas and Electric Powerline Right-of-Way
- Toro Energy Underground Gas Right-of-Way
- Potomac Electric Power Company Powerline Right-of-Way

COMPATIBILITY DETERMINATION

USES:

Wildlife Observation, Photography, Environmental Education, and Interpretation

REFUGE NAME:

Patuxent Research Refuge

ESTABLISHING AND ACQUISITION AUTHORITIES:

Executive Order 7514, dated December 16, 1936; Executive Order 11724, dated June 27, 1973; 16 U.S.C. 715d, Migratory Bird Conservation Act of 1929; 16 U.S.C. 1534; 16 U.S.C. 667b, dated May 19, 1948 - An Act Authorizing the Transfer of Certain Real Property for Wildlife or other purposes; and Public Law 101-519 Sec. 126, 104 Stat. 2247, dated November 5, 1990.

REFUGE PURPOSES:

1. "...as a wildlife experiment and research refuge" – Executive Order 7514, dated December 16, 1936
2. "...recreation, conservation, wildlife preservation, and related scientific and educational activities" – Executive Order 11724, dated June 27, 1973
3. "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds" – 16 U.S.C. 715d, dated February 18, 1929 (Migratory Bird Conservation Act)
4. "...to conserve fish, wildlife and plants, including those which are listed as endangered species or threatened species – 16 U.S.C. 1534, dated December 28, 1973 (Endangered Species Act)
5. "...particular value in carrying out the national migratory bird management program." – 16 U.S.C. 667b, dated May 19, 1948 (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes)
6. "... (b) The Secretary of the Interior shall administer the property transferred pursuant to subsection (a) consistent with wildlife conservation purposes and shall provide for the continued use of the property by Federal agencies to the extent such agencies are using it on the date of the enactment of this Act." – Public Law 101-519 Sec. 216, 104 Stat. 2247, dated November 5, 1990 (Defense Appropriation Act – including transfer of the North Tract from Fort Meade).

NATIONAL WILDLIFE REFUGE SYSTEM MISSION:

"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." 16 U.S.C. 668dd(a)(2) (National Wildlife Refuge System Improvement Act of 1997)

DESCRIPTION OF USES:

What are the uses? Are they priority public uses?

The uses are wildlife observation, photography, environmental education, and interpretation. Wildlife observation, photography, environmental education, and interpretation are priority public uses of the National Wildlife Refuge System (Refuge System) under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), and the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57).

Where would the uses be conducted?

Wildlife observation, photography, environmental education, and interpretation will be allowed to occur on designated roads, trails, viewing areas, exploration areas, and visitor contact facilities throughout the refuge. The National Wildlife Visitor Center (NWVC) and education pavilion on the South Tract; the Visitor Contact Station, environmental education building, and wildlife observation tower on the North Tract; and the immediate surroundings of these facilities on both the North and South Tracts are primary areas for interpretation and education programs. However, trail areas and education sites along trails and a tram tour route are also used for education and interpretation as well as for wildlife observation, photography, nature art, and interpretation. A schoolyard habitat and nature exploration site on the South Tract provide and facilitate opportunities for these uses, as do the scout camp sites on the North Tract. The exact locations where wildlife observation, photography, and nature art will occur; or where particular educational workshops, interpretive programs, activities, or events will be allowed to occur, are at the discretion of the refuge manager.

In addition to the above, wildlife observation, photography, environmental education, and interpretation may also occur on the following trails on the North Tract: South Road (1.7 miles), Wild Turkey Way (3.6 miles), Sweetgum Lane (1.6 miles), Whip-poor-will Way (1.8 miles), Kingfisher Road (0.5 miles), Pine Trail (.75 miles), trail around Lake Allen (1.5 miles), trail around Rieve's Pond (.5 miles), Telegraph Road Trail (2.5 miles), Little Patuxent River Trail (.75 miles), Forest Habitats Nature Trail (2.5 miles), trail around Cattail Pond (.5 miles), New Marsh Trail (.75 miles), Vernal Pool Trail (1.25 miles) and Loop Trail (.3 miles). And on the South Tract: Goose Pond Trail (.2 miles), Cash Lake Trail (1.4 miles), Laurel Trail (.4 miles), Valley Trail (.6 miles), Telegraph Road Trail (~2.5 miles), Wildlife Viewing Area Trail (2.5 miles), and Fire Road Trail (.9 miles).

The North Tract's Wildlife Loop (8 miles) and NWVC entrance and exit road (2 miles) are available for automobile-based wildlife observation.

When would the uses be conducted?

Wildlife observation, photography, environmental education, and interpretation will be allowed on the refuge daily, year-round, unless a conflict with a management activity or an extenuating circumstance necessitates deviating from these procedures. Closures for Federal holidays, snow and ice storms, or other events affecting human safety; or for nesting season and other sensitive times of the year, are examples of times when these uses will be temporarily suspended. Most educational and interpretive programs and opportunities to view and photograph wildlife occur during normal operating hours. However, early morning and evening programs and opportunities will be facilitated to support these activities. Closures related to the hunt season do occur and are

tailored to eliminate multiple user conflict.

How would the uses be conducted?

Wildlife observation, photography, and environmental education and interpretation will be facilitated by the strategies found in the Comprehensive Conservation Plan (CCP) for Patuxent Refuge.

Environmental education and interpretation will be conducted by way of personal presentations by staff and volunteers, teachers, and other youth leaders, and at special events and displays both on and off the refuge. Educational and interpretive information will also be provided via signage and printed information, exhibits, and audiovisual presentations. Wildlife observation and photography are typically self-conducted, but may be facilitated through the availability of trails, viewing areas, a self-guided auto tour route, and informational materials. Wildlife observation programs such as bird walks, night hikes, and owl prowls are frequently given. Binoculars and viewing scopes are provided in designated areas and binoculars are available for loan in educational “packs” that families or individuals may borrow. The refuge also periodically sponsors educational classes in nature photography and promotes photography and art through regular wildlife photography and art exhibits at the NWVC. Automobile-based wildlife observation will be conducted primarily on the North Tract’s Wildlife Loop Trail, which is approximately 8 miles of road specifically designed to support wildlife-dependent recreation such as wildlife observation and photography. We will also provide virtual or no-impact geocaching opportunities. Virtual geocaching provides coordinates to areas where impacts will not affect wildlife or habitats, such as the NWVC or Schoolyard Habitat. Visitors may be guided to a particular exhibit or area of the Schoolyard Habitat where they will have the opportunity to view wildlife or learn about habitat management. Guidance on rules and regulations are provided online, in refuge literature, and through social media.

A new observation tower on the North Tract overlooking the Wildlife Viewing Area will support wildlife observation and photography. The current observation tower, an old shooting range tower, provides poor observation opportunities due to its location.

A new nature exploration area on the South Tract, just off of the Cash Lake and Goose Pond Trail heads, will provide new wildlife observation and photography opportunities, as well as support interpretive activities. The nature exploration area will seek to facilitate unstructured “free play” and instill a sense of wonder for natural resources in young and old alike.

In addition to strategies listed in the CCP, refuge staff perform the following:

- On-site evaluations to resolve public use issues
- Monitoring and evaluating impacts
- Maintaining boundaries and signs
- Meeting with interested public
- Recruiting volunteers
- Preparing and presenting interpretive and educational programs
- Maintaining trails and viewing areas
- Revising leaflets and developing new information materials
- Installing and updating kiosks

- Developing needed signage
- Organizing and conducting refuge events
- Conducting regularly scheduled public programs
- Displaying off-site exhibits at local events
- Developing relationships with media
- Providing law enforcement and responding immediately to public inquiries

Why are these uses being proposed?

Wildlife observation, wildlife photography, environmental education, and interpretation are priority public uses as defined by the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57), and if compatible with the individual refuge purposes and the Refuge System mission, are to receive enhanced consideration over other general public uses.

These uses are conducted to provide compatible educational and recreational opportunities for visitors to enjoy the resource and to gain understanding and appreciation for fish and wildlife, ecology, and the relationships of plant and animal populations within various ecosystems, and to better understand wildlife management. These uses will provide opportunities for visitors to observe and learn about wildlife and refuge lands at their own pace in an unstructured environment and to observe wildlife habitats firsthand. These uses will also enhance the public’s understanding of natural resource management and ecological concepts that will enable the public to better understand the problems facing our natural resources, to realize what effect the public has on natural resources, to learn about the Service’s role in conservation, to better understand the biological facts upon which Service management programs are based, and to gain an appreciation as to why wildlife and wildlands are important. It is anticipated that participation in these uses will produce a more informed public, with an enhanced stewardship ethic and enhanced support and advocacy for the Service and for natural resources.

AVAILABILITY OF RESOURCES:

Sufficient refuge resources in terms of personnel and budget are available to administer wildlife observation, photography, environmental education, and interpretation.

Cost Breakdown

The following is the list of costs to the refuge required to administer and manage the refuge programs for wildlife observation and photography and environmental education and interpretation.

Identifier	Cost
Administration/management to facilitate activity, this includes staff/law enforcement	\$220,000/yr
Maintenance of buildings, roadways, trails and parking areas	\$220,000/yr
Supplies and support	\$110,000/yr
Operating costs	\$275,000/yr
Total Costs	\$825,000/yr

After review of the refuge budget, there are sufficient funds to sustain this activity.

ANTICIPATED IMPACTS OF THE USES:

Wildlife observation, photography, environmental education, and interpretation can produce positive or negative impacts to the wildlife resource. A positive effect of public involvement in these priority public uses will be a better appreciation for and more complete understanding of the wildlife, habitats, and issues associated with Mid-Atlantic ecosystems. This can translate into personal stewardship and more widespread and stronger support for the refuge, the Refuge System, and the U.S. Fish and Wildlife Service (Service).

The presence of people on refuge trails and roads can lead to displacement of animals from trails, although disturbance usually is a negligible influence on large mammal distributions and movements (Purdy et al. 1987, Boyle and Samson 1985). The effects on other forms of wildlife appear to be short-term with the exception of breeding bird communities. A study by Miller, Knight, and Miller (1998) indicates that species composition and nest predation was altered adjacent to trails in both forested and grassland habitats. It appears that species composition changes are due to the presence of humans and not the trail or roadway itself. On the other hand, nest predation does appear to be a function of the trail which allows access to mammalian nest predators (Miller, Knight, and Miller 1998). With respect to Patuxent Research Refuge, we anticipate that similar impacts will occur here as well, particularly in high visitor use areas. Negative influences may be amplified during breeding seasons, especially to ground nesting birds and amphibians that may be crossing trails. Disturbance to forest birds at Patuxent Research Refuge is complex and involves many factors. Important factors include the height and density of vegetation; topography; behavioral differences in species for ground nesting birds, low nesting birds, or foraging birds; and species response to human behaviors. Vegetation density and topography can obscure line of sight for birds. Some birds are more tolerant than others with respect to human proximity, while some birds are more apt to flee than others, (e.g., wood ducks).

Another example of potential harm to wildlife that is specific to Patuxent Research Refuge pertains to the box turtle. While it is difficult to interpret species response to human presence, we do know that human presence on roads and trails may lead to injury or death to turtles from vehicles, dog attacks, trampling, or being handled or removed by people.

With regard to amphibian populations at Patuxent Research Refuge, in early spring, particularly during rains, breeding amphibians are on the move from wintering ranges to breeding areas and may cross roads or trails. This increases the risk of injury or death from vehicles or trampling. However, amphibian movement usually occurs at night when visitor use is minimal to none. Direct impacts on wildlife in the form of disturbance can be expected wherever humans have access to an area, and the degree may vary depending on the habitat type. In general, human presence disturbs most wildlife, which typically results in a temporary displacement without long-term effects on individuals or populations. Some species, such as wood thrush, will avoid areas frequented by people, such as developed trails and buildings. Other species, particularly highly social species such as eastern tufted titmouse, Carolina chickadee, or Carolina wren, seem unaffected or even drawn to a human presence. When visitors approach too closely to nests, they may cause the adult bird to flush exposing the eggs to weather events or predators. Provided that

visitor use is confined to trails, disturbance during the breeding season will be limited to the trail area. The extent of this disturbance on either side of the trail also depends on visibility, determined by the density of vegetation through which the trail is laid. Various studies have shown that the edge effect related is variable and conservation design recommendations related to public use areas vary from 50 meters (164 feet) (Paton 1994) to about 90 meters (300 feet) (Robbins et al. 1989, Brittingham and Temple 1983, Jones et al. 2000). Since the trails do not occur in the highest quality habitat and visitors are confined to trails, we anticipate that impacts will be minimal.

The refuge will continue management strategies of educating trail and roadway users how of their activities affect wildlife and how to modify their use to minimize impacts on wildlife. Portions of trails and roadways are closed seasonally to reduce human disturbance to wintering and nesting waterfowl and, based on volunteer and staff observations, has proven effective.

The use of trails and gravel roads could lead to soil compaction, exposure of tree roots, and the modification of plant species 3 to 6 feet on either side of the trail which is a function of soil compaction, invasive species, and direct trampling of plants (Kuss 1986). The refuge will continue its management practices of the use of boardwalks, woodchips, erosion control, and user education to protect plant species and habitats along trails and roadways. Visitors are restricted to the public use trails, which are located on the North and South Tracts. Restricting visitors to these trails concentrates use to areas that can be routinely maintained to ensure a quality visitor use experience while also minimizing impacts to vegetation. The implementation of boardwalks and use of woodchips along trails has reduced impacts to vegetation and reduced soil erosion along trails. Potential conflict with priority public uses will be minimized by using trail head signs and other media to inform the various users about current public uses. Some trail and roadway use will be restricted during the refuge-specific hunting seasons, primarily during shotgun season.

People and vehicles can be vectors for invasive plants when seeds or other propagules are moved from one area to another. Once established, invasives can out-compete native plants, thereby altering habitats and indirectly impacting wildlife. The threat of invasive plant establishment will always be an issue requiring annual monitoring and, when necessary, treatment. Staff will work to eradicate invasives and educate the visiting public.

These uses will have no impacts to water quality, because individuals are limited to the trail system. The majority of the trails are set back from the water. In the instances where the trails are adjacent to water, pollutants and sediments are unlikely to be introduced to the waterbodies by individuals using the trails.

PUBLIC REVIEW AND COMMENT:

As part of the comprehensive conservation planning process for Patuxent Research Refuge, this compatibility determination underwent extensive public review, including a comment period of 45 days following the release of the draft CCP/Environmental Assessment. We did not receive any comments specific to this compatibility determination.

DETERMINATION (CHECK ONE BELOW):

- Use is not compatible
 Use is compatible with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

Refuge staff and volunteers take several measures to minimize impacts to wildlife and habitats which include, but are not limited to:

- Provide seasonal closures (i.e., for safety purposes, wintering or nesting needs).
- Ensure that Central Tract, approximately 2,500 acres, is closed to public use.
- Restrict visitor use to public use trails and roadways.
- Provide information about proper etiquette and the effects of human impacts on habitat and wildlife resources in refuge publications, flyers, and routinely scheduled public programs.
- Maintain a regular law enforcement presence to ensure compliance with regulations and area closures, and discourage vandalism.
- Monitor public trails for signs of deterioration and disturbance to wildlife and habitat.

JUSTIFICATION:

Wildlife observation, photography, environmental education, and interpretation are priority wildlife-dependent uses for the Refuge System through which the public can develop an appreciation for fish and wildlife (Executive Order 12996, March 25, 1996, and the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57)). These uses do not adversely impact the refuge's research purpose since large portions of the refuge are closed to the visiting public. The Central Tract portion of the refuge is set aside specifically to support research. At the scales and level of current visitor use, wildlife and habitats are not appreciably negatively affected by these uses, based on professional judgment and the consistently high biodiversity observed on the refuge. Therefore, no significant adverse effects from wildlife observation, photography, and environmental education or interpretation are anticipated.

The Service's policy is to provide expanded opportunities for these uses when compatible and consistent with sound fish and wildlife management and ensure that they receive enhanced attention during planning and management. As listed in the purposes section of this compatibility determination, the refuge was established and subsequently land was acquired for a total of six purposes. Wildlife observation, photography, environmental education, and interpretation will not materially interfere with or detract from the research purpose of the refuge, because wildlife research does not generally occur in the vicinity of the locations that these uses occur and impacts will be minimal. These uses will not materially interfere with or detract from the two purposes related to wildlife conservation, because disturbance to wildlife will be short term and the trails that are used for these activities do not occur in core habitat areas. These uses will not materially interfere with or detract from the two purposes related to migratory bird conservation, because these uses are allowed in areas that are generally not in the vicinity of migratory waterfowl or land bird habitat. Finally, wildlife observation, photography,

environmental education, and interpretation will not materially interfere with or detract from the endangered species purpose, because there are no federally listed threatened or endangered species that occur on the refuge. These activities will not materially interfere with or detract from the mission of the Service, because providing these wildlife-dependent recreational opportunities is a focus of the Refuge System.

SIGNATURE:

REFUGE MANAGER:

Brad Knudson 6/11/13
(signature and date)

CONCURRENCE:

REGIONAL CHIEF:

Scott B. Kuhn 8/19/2013
(signature and date)

MANDATORY 15-YEAR REEVALUATION DATE: 2028

REFERENCES:

Brittingham, M.D. and A. Temple. 1983. Have cowbirds caused forest songbirds to decline? *BioScience* 33:31-35.

Jones, C., J. McCann, S. McConville. 2000. A guide to conservation of forest interior dwelling birds in the Chesapeake Bay critical area. Critical Area Commission for the Chesapeake and Atlantic Coastal Bays.

Kuss, F. 1986. A review of major factors influencing plant responses to recreation impacts. *Environmental Management* 10:638-665.

Miller, S.G., R.L. Knight, and C.K. Miller. 1998. Influence of recreational trails on breeding bird communities. *Ecological Applications* 8(1):162-169.

Paton, P.W.C. 1994. The effect of edge on avian nest success: how strong is the evidence? *Conservation Biology* 8(1):17-26.

Purdy, Goff, Decker, Pomerantz, Connelly. 1987. A guide to managing human activity on a national wildlife refuge. New York Cooperative Fish and Wildlife Research Unit.

Robbins, C.S., D.K. Dawson, and B.A. Dowell. 1989. Habitat area requirements of breeding forest birds of the Middle Atlantic States. Wildlife Monograph No. 103. Wildlife Society, Blacksburg, VA.

COMPATIBILITY DETERMINATION

USE:

Public Hunting

REFUGE NAME:

Patuxent Research Refuge

ESTABLISHING AND ACQUISITION AUTHORITIES:

Executive Order 7514, dated December 16, 1936; Executive Order 11724, dated June 27, 1973; 16 U.S.C. 715d, Migratory Bird Conservation Act of 1929; 16 U.S.C. 1534; 16 U.S.C. 667b, dated May 19, 1948 - An Act Authorizing the Transfer of Certain Real Property for Wildlife or other purposes; and Public Law 101-519 Sec. 126, 104 Stat. 2247, dated November 5, 1990.

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6. "... (b) The Secretary of the Interior shall administer the property transferred pursuant to subsection (a) consistent with wildlife conservation purposes and shall provide for the continued use of the property by Federal agencies to the extent such agencies are using it on the date of the enactment of this Act." – Public Law 101-519 Sec. 216, 104 Stat. 2247, dated November 5, 1990 (Defense Appropriation Act – including transfer of the North Tract from Fort Meade).

NATIONAL WILDLIFE REFUGE SYSTEM MISSION:

"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." 16 U.S.C. 668dd(a)(2) (National Wildlife Refuge System Improvement Act of 1997)

DESCRIPTION OF USE:

Public hunting is one of the six wildlife-dependent public recreational uses identified for priority consideration under the National Wildlife Refuge System Improvement Act of 1997 (Improvement Act). The Improvement Act defines wildlife-dependent recreational use as, “A use of a refuge involving hunting, fishing, wildlife observation and photography, and environmental education and interpretation.” The Improvement Act states that, when compatible with the National Wildlife Refuge System (Refuge System) mission to protect wildlife habitat and the specific refuge purposes, the six wildlife-dependent recreational uses are appropriate and legitimate uses of the Refuge System and are the priority general public uses of the Refuge System.

What is the use? Is it a priority public use?

Public hunting is defined as the act or sport of pursuing game for harvest. Hunting is a priority public use of the Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 6688dd-6688ee) and the Improvement Act. Hunting has occurred on a portion of the refuge since 1991.

Where would the use be conducted?

Patuxent Research Refuge has three large sub-units known as North Tract, Central Tract, and South Tract. Public hunting is allowed on all three tracts with certain restrictions. Designated hunting zones are available on all tracts (Attachment A – Hunting Control Maps).

When would the use be conducted?

Public hunting is conducted in accordance with the State of Maryland’s big game, upland game, and migratory bird hunting seasons; and in accordance with Federal, State, and refuge-specific regulations (50 CFR 32.39). Hunting generally occurs from September through January. A lottery-style spring turkey hunt will be held mid-April through May. Special, out-of-season, deer shotgun and bow harvest authorization is obtained from the Maryland Department of Natural Resources annually for controlled hunts on the Central Tract to maintain deer populations at or below carrying capacity, to protect habitat, and wildlife health.

How would the use be conducted?

Public hunting is conducted in accordance with State and Federal regulations. Federal regulations contained in 50 CFR (Sub-chapter C, Parts 25-35) pertaining to the National Wildlife Refuge System Administration Act, as well as existing refuge-specific regulations, will apply. No change from the existing hunting program is proposed. The hunt program is operated through partnership with the Meade Natural Heritage Association (MNHA), a cooperating association. The refuge manager may, upon review of the hunting program, impose further restrictions on hunting activity, open or close certain seasons or areas, or amend the conduct of the hunt if hunting becomes inconsistent with other higher priority refuge programs or endangers refuge resources or public safety.

After completing the required weapon qualifications and purchasing a hunting permit from MNHA, hunters check-in at the Hunting Control Station (HCS) on the North Tract and select an open zone for hunting.

All harvested animals are checked through HCS and biological data is recorded. All hunters must check out through HCS when they are finished hunting for the day.

North Tract: Some hunting zones may be closed due to shooting range activity.

Shotgun, muzzleloader, and bow seasons are allowed for deer hunting. Upland game (gray squirrel and eastern cottontail rabbit), migratory game bird (mourning dove, Canada goose, and ducks), and wild turkey seasons are only permitted on the North Tract. Open meadow, river, water impoundments, and hunting blinds are available for waterfowl hunters.

Central Tract: Deer hunting occurs in the refuge headquarters area and M-R areas. These hunts occur by lottery and are for shotgun and bow only during special, controlled harvest dates.

Designated tree stand sites are mandatory for the refuge headquarters area lottery hunts. Deer hunting by bow is available on Schafer Farm during specified dates.

South Tract: Shotgun, muzzleloader, and bow deer seasons are allowed in designated zones during specified dates.

Why is the use being proposed?

Public hunting on the refuge accommodates one of the priority public uses of the Refuge System. Public hunting is used to manage wildlife populations for the protection of wildlife habitat and health and, in some instances, to protect habitat for research.

Hunting is critical to regulating and maintaining populations of deer at the carrying capacity of the habitat, thus reducing excessive damage to vegetation caused by over-browsing, maintaining understory habitat for other species, and maintaining habitat integrity for current and future wildlife related research.

Table C-1: Number of Hunter Visits Refugewide and Wildlife Harvested

	Hunter Visits	Deer	Waterfowl	Migratory Bird	Small Game
2010-2011	6,718	272	192	7	76
2011-2012	5,294	247	201	59	75

AVAILABILITY OF RESOURCES:

Public hunting occurs as a refuge-regulated hunting program full-time over a 5-month period, and requires significant staff time. Costs associated with administration of this use include:

Identifier	Cost
Administration/management to facilitate activity, this includes staff/law enforcement	\$100,000/yr
Maintenance of buildings, roadways, trails, and parking areas; this includes operation of equipment	\$93,500/yr
Supplies and support	\$66,000/yr
Operating cost	\$132,000/yr
Total Costs	\$391,500/yr

Important to note: MNHA provides approximately 1,800 hours of volunteer time to manage hunting. We do not anticipate this volunteer base to stop or subside. MNHA permit fees help to fund the hiring of hunt control managers.

After review of the refuge budget, there are sufficient funds to sustain this activity.

ANTICIPATED IMPACTS OF THE USE:

Effects on Target Species Populations

The refuge hunt program will not impair local or regional populations of deer. The use of hunting for deer as a management tool prevents over-browsing of vegetation directly benefitting the health and quality of deer populations (in addition to other non-target species). In addition, the refuge check station documents any indication of disease or possible signs of wildlife overpopulation (e.g., starvation).

For all hunted species, we follow the state seasons and bag limits, which are set for sustainable harvest levels for the state. In addition, total days of hunting opportunities on the refuge for small game and waterfowl are less than the state season. Harvest levels of gray squirrels were 85 in 2012-2013, 75 in 2011-2012, and 75 in 2010-2011. Mourning dove harvest was 65 in 2012-2013, 59 in 2011-2012, and only 7 in 2010-2012. This is a fraction of the likely populations on a 12,800- acre forested refuge. We have observed large numbers of squirrels and have not observed a decrease in the population.

Similarly, waterfowl harvest levels are small, with Canada geese (mostly resident), mallards, and wood ducks being the most common waterfowl hunted. Harvest numbers for these species from 2010 – 2013 are 224 Canada geese, 87 mallards, and 205 wood ducks during the same three-year period. Waterbird surveys are conducted weekly at the refuge on certain impoundments and water bodies. Survey data for the years 1997-2011 provide total counts of waterbird species per impoundment. Per year averages for each species are 40,500 Canada geese; 3,644 mallards; and 5,060 wood ducks.

While we conduct no formal surveys on the refuge to estimate populations of small game, we do invest resources in estimating the refuge deer population, since an unmanaged deer population can have a severe ecological impact on habitats. Deer were over-hunted in Maryland in the beginning of the 20th century, which led to various efforts to increase the population throughout the 1930s and 1950s, such as creating refugia to protect deer, importing deer, or limiting the take of antlerless deer (conserves does) through a permit system. At the same time, deer habitat was improving, formerly cleared agricultural land was slowly regenerating to forest. By the mid 1980's deer populations had expanded enough to cause conflicts with growing human populations. The antlerless permit system was discontinued in the 1990's and Maryland has been promoting strategies to control the population growth.

Maryland's population reconstruction models indicate that Maryland's deer population has been reduced overall since 1998. The population increased from an estimated 246,000 deer in 1998 to a high of nearly 295,000 individuals in 2002 before declining to 229,000 in 2008. Liberal seasons and bag limits enacted for antlerless deer, as prescribed in the 1998 plan, have successfully stabilized and/or reduced deer populations in many areas. In Region B of Maryland

(Central and Southern areas), where habitat quality is considered good, the population has ranged from about 205,000 to 195,000 over a ten-year period (1998-2008)(MD White-tailed Deer Plan 2008), and at about 182,500 in 2012 (Eyler, MD DNR 2013). Maryland has 9,707 square miles of land area (figure includes unsuitable deer habitat too, such as developed areas) (<http://quickfacts.census.gov/qfd/states/24000.html>, accessed 16April2013). This equates to about 20 deer per square mile. The Virginia Department of Game and Inland Fisheries recommends a carrying capacity for deer at 25 deer per square mile (VDGIF 2006), while the Maryland White-tailed Deer Management Plan 2009-2018 references a maximum of 20 deer per square mile to limit habitat damage and human conflicts (MD DNR 2009). Across Pennsylvania, a deer density ranging from 10 to 40 deer per square mile is recommended to ensure adequate forest regeneration (NPS 2009).

The harvest for the North Tract in 2012-2013 season was 197 deer, and ranged from 135 to 185 per year since 2007. Obtaining good estimates upon which to pin harvest levels is difficult and has limitations. However, an acceptable formula would be buck harvest times two (assumes that $\frac{1}{2}$ the bucks in the population were harvested), plus does (based on doe to buck ratio), plus fawns ($\frac{1}{2}$ of does)(Eyler, MD DNR 2013). So, for 2012-2013 on North Tract, this would be 120 bucks + 156 does + 78 fawns, or 354 deer. This total, divided by 11.785 square miles, produces 30.03 deer per square mile.

Other metrics obtained at the deer check-in station besides harvest totals may provide indirect evidence of growing, declining, or stable population, such as doe to buck ratios, fawn to doe ratios, and percent lactation. Doe to buck ratios ranged from 1.62, 1.42, and 1.42 in the past three years (2010-2013). The ratio throughout white tailed deer range is generally from 3 or 2 does to 1 buck (Eyler, MD DNR 2013). Fawn to doe ratios were 1.62, 2.15, and 1.73 for the same 3-year period, and this is an unacceptability high ratio. Throughout the white tailed deer range, this ratio should also be 1:1 for population stability. Lactation percentages among harvested does was 29, 27 and 17 for 2010-2013. Since this information is collected in the fall and winter, does are reproducing outside of the normal season. This can happen when does outnumber bucks and remain unbred. The does will continue to cycle every 30 days until bred, and this creates an increasing population. This lactation data is more reliable than the doe to buck ratio or fawn to doe ratio for estimating abundance because we impose the 15" rule on hunters, which forces a bias toward more does and fawns being harvested.

Health metrics collected from harvest data, such as beam spread, diameter, weights, suggest a fairly health herd and adequate food resources. However, the refuge habitat may be paying the price for this. That the refuge deer population is abundant is also suggested by frequent sightings of groups of deer, pervasive sign throughout the forest and other habitats, and poorly developed understory in the forests.

Effects on Wildlife

Disturbance to non-hunted wildlife is minimized by controlling hunter density in each hunting zone to approximately one hunter per 20 acres of hunted habitat; thus, hunters are dispersed in low densities, which provides for hunting safety and a quality hunt program. Hunting units are rarely filled to capacity except during opening days of a new season. Disturbance to vegetation is minimized by not allowing permanent tree stands and restricting vehicle access to open

roadways only. No all terrain vehicle (ATV) use is allowed, except for disabled hunters with appropriate documentation. Hunting areas are designed consistent with public safety but hunters have the potential to encounter unexploded ordnance (UXO); therefore, hunters must sign a UXO waiver before purchasing a hunting permit.

Direct impacts on wildlife in the form of disturbance can be expected wherever humans have access to an area, and the degree may vary depending on the habitat type. In general, human presence disturbs most wildlife, which typically results in a temporary displacement without long-term effects on individuals or populations. The responses of wildlife to human activities include avoidance or departure from the site (Owen 1973, Burger 1981, Kaiser and Fritzell 1984, Korschen et al. 1985, Kahl 1991, Klein 1993, Whittaker and Knight 1998), the use of sub-optimal habitat (Erwin 1980, Williams and Forbes 1980), altered behavior or habituation (Burger 1981, Korschen et al. 1985, Morton et al. 1989, Ward and Stehn 1989, Havera et al. 1992, Klein 1993, Whittaker and Knight 1998), attraction (Whittaker and Knight 1998), and an increase in energy expenditure (Morton et al. 1989, Belanger and Bedard 1990). Some species, such as wood thrush, will avoid areas frequented by people, such as developed trails and buildings, while other species, particularly highly social species such as eastern tufted titmouse, Carolina chickadee, or Carolina wren, seem unaffected or even drawn to a human presence. When visitors approach too closely to nests, they may cause the adult bird to flush exposing the eggs to weather events or predators. Disturbance can have other effects including shifts in habitat use, abandonment of habitat, and increased energy demands on affected wildlife (Knight and Cole 1991). Because hunter use is not confined to trails, disturbance during the breeding season may occur to early ground-nesting birds (e.g., woodcock, ovenbird).

Disturbance to breeding birds attempting to establish and settle into nest territories, nest-building and incubating is more likely to result from off-trail visitor use, such as will occur for turkey hunting during the spring gobbler season, particularly for low-elevation or ground nesting birds. Overall, direct effects from hunting during the spring should be greatly reduced at Patuxent, because the use is fairly dispersed, confined to limited areas on tracts opened to public use, and large areas remain undisturbed. Direct effects to breeding landbirds from consumptive visitor activities are mitigated by observing time of year restrictions, limiting the frequency, duration and number of locations.

Due to its seasonal nature, public hunting may limit researchers' access to parts of the refuge during certain periods during the year (primarily during fall and winter). Generally white-tailed deer hunting has less impact in this regard than wild turkey hunting which takes place in the spring. However, a narrow window of opportunity is provided for turkey hunting to minimize any potential conflicts. The Central Tract portion of the refuge is set aside specifically to support research during throughout the year. At the scales and level of current hunting opportunities, wildlife may be temporarily disturbed but habitats and biodiversity may benefit over the long term. With the land acquisition from Fort Meade we continued public hunting for deer, migratory waterfowl, upland game birds, and small game on the North Tract (Obrecht 1992). Before a hunting program for deer was implemented, browse-lines were clearly visible along woodland edges, and throughout the forest interior deer browse and other sign were readily noticeable from casual observations. One management concern is that ungulate populations generally overshoot the ultimate carrying capacity of the habitat before an equilibrium is reached (McCullough

1982). White-tailed deer are more prone to habitat alteration during this process than many other species due to their high reproductive potential (McCullough 1982, McCullough 1997), with substantial impact on the vegetation. Deer foraging habits and preferences can change plant composition and structure over time (Russell and Fowler 1999, Augustine and Jordan 1998, Brown and Parker 1997, Van Deelen et al. 1996, Porter 1991) and such alterations have subsequent impacts on other wildlife, such as songbird species richness and abundance (DeCalesta 1994). This impact is magnified when other factors, such as mild weather, alternative food sources, and reduced annual mortality allow populations to quickly increase in numbers. This results in severe degradation of habitat which can easily be observed on many of the protected lands in the area as evidenced by the distinct browse lines and virtual lack of forest understory.

Effects on Vegetation

With respect to public deer hunts, both direct benefits and impacts have been realized. On the benefits side, keeping the deer population in check has shown a positive response by vegetation in experimental exclosures (Augustine and Frelich 1998, McCullough 1982). Deer browse lines are visible along some forest edges on certain tracts of the refuge, particularly on the Central and South Tracts where hunting is more limited than on the North Tract. Signs of deer such as browse, rubbings, trails, droppings, rooting through leaf litter, and tracks are visible throughout the refuge and very few locations contain the woodland wildflowers that one would expect in the area including columbine, trillium, bloodroot, and spring beauty. In this situation, no hunting or no culling of deer would have lasting effect on sensitive vegetation and may set back resiliency for many years depending on the 'shelf life' of seeds in the seed bank and in the long run would have potential negative impacts on the songbird community (Allombert et al. 2005).

The intensity of grazing by deer on woody browse in forest fragments is inversely proportionate to the availability of field forbs (Augustine and Jordan 1998). Pastures and old fields are vulnerable to overgrazing when deer densities are high because they contain more abundant and higher quality forage, especially in spring and summer (Johnson et al. 1995). Cumulative effects of grazing over successive years may result in reduced plant reproduction and growth (Augustine and Frelich 1998) and height (Anderson 1994), which places sensitive plants at risk of extirpation (Augustine and Frelich 1998). Also, species richness and abundance of shrubs and herbaceous vegetation was shown to decline when deer densities reach between 4 to 8 deer/km² (deCalesta and Stout 1997). Browse damage takes years to recover and often, by the time it is noticed, it is past the time when deer population reduction should have been initiated. Regeneration may be further retarded by the invasion of exotic species and where there is mature forest with a predominantly closed canopy. We have not seen such prominent browse lines in recent years since the hunt program was implemented on Central Tract.

In the more mature forests of the refuge, shade tolerant species such as American holly, American beech, paw paw, spicebush, mountain laurel, witch hazel, hornbeam, box elder, rhododendron, high-bush blueberry, dogwood, and in sunnier areas, cedar, form a noticeable mid- and under-story beneath the canopy. This feature is highly desirable from a management perspective, as it provides structural and species diversity in vegetation and provides greater food and cover resources for migratory and residential birds and other wildlife. Also of concern to refuge management is the continued recruitment of large, upper story tree species, such as oak,

ash, cherry, maple, beech, or pines, upon which we rely to provide nest and roost sites for migratory and resident landbirds, food sources for native insects, roost and forage for forest bats, and the recruitment of desirable forbs and grasses for grassland restoration.

Hunter trampling of vegetation is undetectable due to the high acreage-to-hunter ratio, limited number of hunt days, sparsity of understory vegetation, and time of year (dormant season). Plant species vary in their resistance to trampling, leading to changes in plant communities. In general, plant diversity has been shown to increase with slight use and to decrease as use intensifies (Liddle 1997). Plant recovery in the Mid-Atlantic Coastal Plain is relatively rapid compared to wilderness areas located in alpine, arctic, and desert ecosystems where abiotic factors limit plant growth. Plant recovery from trampling damage in these areas can take many years and may never occur (Newsome et al. 2002). Because deer are everywhere all the time and hunters are present on a limited number of days and only during the dormant season, deer impacts to vegetation far outweigh trampling of vegetation by deer hunters.

Spring turkey hunts are more likely to directly impact native vegetation, depending on the time of year, length of season, number of hunters, and extent of hunt locations. Spring turkey season is also when spring ephemerals are in bloom and are most vulnerable to trampling. However, given the scope of hunting locations, this has not proven to be a problem.

Waterfowl hunts may pose direct impacts on vegetation from foot traffic and use of dogs for retrieval. Portions of, or whole plants, can be torn, sometimes by the roots. Accidental introduction of invasive plants, pathogens, or exotic invertebrates could be a direct adverse impact. Given the range and varying degrees of invasive species found on the refuge, it is hard to determine what uses most contribute to invasive species populations. Inventory and monitoring aid in controlling levels of invasive species spread. However, uncontrolled growth of resident Canada geese may potentially have a greater impact on vegetation. This may be an even greater concern where the refuge desires to manage habitat for breeding grassland birds. In this case, hunting opportunities for Canada geese aid in curbing these impacts.

Effects on Soils

Recreation impacts to soils from trampling indirectly affects vegetation by loosening the soil's surface layers and compacting the underlying layers. Coupled with a loss of plant cover, this leads to increased soil erosion (Hammit 1986). Trampling also decreases the abundance and diversity of soil organisms such as microbes, earthworms, arthropods, snails, and slugs, which often play a major role in nutrient cycling (Liddle 1997). However, damage to soil and subsequent impacts to vegetation have been undetectable on the refuge. This is likely due to the high acreage to hunter ratio and the fact that hunters, when going off-trail, tend to follow existing deer trails. There is more trampling of vegetation in the forests and fields of the refuge by deer than by hunters, as evidenced by the many deer paths.

Effects on Water Quality

We do not anticipate negative impacts to water quality as a result of public hunting.

Effects on Other Wildlife-dependent, Recreational Uses

Other wildlife-dependent, priority public uses are restricted during the 5-month public hunting season. In order to minimize conflict between hunters and other user groups, the refuge has subdivided Area Y on North Tract to clearly show hunted areas versus a publicly accessible trail. The refuge also has two trails in the Wildlife Viewing Area, which is closed to hunting, for other priority, wildlife-dependent public uses to be administered in conjunction with hunting. With the exception of shotgun season, all other trails will remain open to other users during the hunting season.

The following information relates to site-specific hunting and potential impacts.

North Tract

Public hunting had occurred on the 8,100-acre North Tract for over 30 years prior to its transfer to the refuge in 1991. Department of Defense firing range activity is restricted during the hunting seasons. The ranges close on Fridays and Saturdays during deer bow season, waterfowl and other small game seasons, and during the entire 2-week shotgun deer season. This helps maximize the deer harvest.

Central Tract

Deer hunting has occurred on the Central Tract since 1998 in a very controlled fashion. Refuge headquarters and U.S. Geological Survey's Patuxent Wildlife Research Center (PWRC) are located on Central Tract. The PWRC's laboratories, research facilities, and captive populations of migratory birds (including the endangered whooping crane) demand that hunter disturbance from access and noise be strictly minimized.

1. Refuge headquarters and M-R Areas. These deer hunts are by lottery only. Headquarters hunts are controlled deer harvests whereby hunters are assigned a tree to hunt from; a zone of fire is marked on the ground with arrowed stakes. Numbered tree stand locations are randomly assigned to shotgun and bow hunters. In addition, shotgun deer hunters are allowed to enter a more remote area within the M-R Area, north of the Patuxent River, where hunters may pick their own tree stand locations.
2. Schafer Farm. Bow deer hunting only is allowed adjacent to the Whooping Crane Propagation facility to minimize noise disturbance to the birds. A safety zone is well marked to keep hunters away from crane pens.

Negative impacts related to hunting are minimal. On Central Tract, due to the highly controlled nature of the hunt program, no research programs have been compromised. Some trash has been found around tree stand locations. Overall, success has been high with a significant reduction in deer populations in the refuge headquarters area. Deer populations in and around the Schafer Farm continue to remain over carrying capacity due to abundant sanctuary for deer to avoid hunters near the crane pens.

South Tract

As with all hunting zones on the refuge, those at South Tract were carefully selected and marked to keep hunters at a safe distance from the office buildings and residences near Gate 4, and to separate hunters from public use activities around the National Wildlife Visitor Center (NWVC).

Existing roadways are used as landmarks. One hunting unit, near the interpretive tram tour route, is opened after tram tours are closed for the season. Designated hunter parking areas are clearly identified. Safety zones are marked with either orange fiberglass posts or flagging, to alert hunters to the nearby presence of structures or roadways. Public hunting impacts on the South Tract have been minimal since deer hunting was initiated in that area in 1997, with an additional area added in 2003. There have been a few cases of lost, or out-of-bounds hunters, but public safety has never been compromised. Deer populations continue to remain above carrying capacity in some areas on the South Tract because deer have abundant sanctuary to avoid hunting pressure near the NWVC building and in the forest between the entrance and exit roads of the NWVC. The overpopulation of deer in this area has put high deer-browse pressure on native vegetation plantings (Pepco Exhibit, Bayscapes, and Schoolyard Habitat) in the vicinity of the NWVC. Implementing hunting on the South Tract was established where feasible to help address the overpopulation of deer.

Additional information about impacts from hunting programs at Patuxent Research Refuge can be found in chapter 4 of the draft Comprehensive Conservation Plan and Environmental Assessment (CCP/EA).

PUBLIC REVIEW AND COMMENT:

As part of the comprehensive conservation planning process for Patuxent Research Refuge, this compatibility determination underwent extensive public review, including a comment period of 45 days following the release of the draft CCP/EA. We did not receive any comments specific to the compatibility determination for hunting.

DETERMINATION (CHECK ONE BELOW):

- Use is not compatible
- Use is compatible with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

The public hunting program will be managed in accordance with Federal and State regulations. The program will be reviewed annually to ensure that wildlife and habitat management goals are achieved and that the program is providing a safe, high-quality hunting experience for participants. Stipulations are based on the refuge's hunting management plan and the refuge-specific regulations published in Title 50, Code of Federal Regulations (50 CFR 32.39).

We publish the Refuge Hunting Regulations, which include the daily and yearly bag limits and hunting dates for the North, Central, and South Tracts prior to the hunting season. We give hunters a copy of the regulations with the fee permit, and we require the hunters to know the specific hunt seasons and regulations. All hunters are encouraged to carry a flashlight, and a whistle, and compass or a GPS while hunting all areas.

A. Migratory Game Bird Hunting. We allow hunting of goose, duck, and dove on the North Tract in accordance with State regulations subject to the following conditions:

1. We require a hunting permit issued through MNHA at the refuge HCS. MNHA charges a fee for each permit. This fee supports MNHA operational needs.

2. We publish the Refuge Hunting Regulations, which includes the daily and yearly bag limits and hunting dates, in late summer. We provide hunters with a copy of the regulations with a fee permit, and we require hunters to know the specific hunt seasons and regulations. Hunters may only possess approved nontoxic shot while in the field.
3. We require hunters age 17 or younger to have a parent or guardian cosign to receive a hunting permit.
4. We require hunters age 17 or younger to be accompanied in the field by an adult possessing a refuge hunting permit, age 21 or older.
5. Hunters must check-in and out at the HCS and exchange hunting permit for a daily hunting vehicle pass at every entry/exit of the refuge. This includes breakfast, lunch, dinner, and any other breaks where the designated hunt area is left.
6. Hunters must use designated and maintained roads for vehicular traffic.
7. Hunters must park within the selected area specified and not block traffic or gates.
8. Hunters are restricted to the selected area and activity until check-out at the HCS.
9. Hunting is prohibited on or across any road (paved, gravel, dirt, opened, or closed), within 50 yards (45 meters) of a road (paved, gravel, dirt, opened or closed), within 150 yards (135 meters) of any building or shed, and within 25 yards (22.5 meters) from any designated “No Hunting” and “Safety Zone” areas. Loaded weapons are prohibited in the above, except:
 - i. Hunters may hunt from the road, 50 yards (135 meters) beyond the gate at Blue Heron Pond;
 - ii. Hunters may hunt from the road, 50 yards (135 meters) beyond the barricade at Wood Duck Pond;
 - iii. Hunters may hunt waterfowl (goose and duck) from any refuge-permanent photo and hunt blind;
 - iv. Hunters may hunt from the roadside, at designated areas, if they possess a Maryland State “Hunt from a Vehicle Permit;” and
 - v. Hunters may hunt from the roadside for waterfowl in the designated posted portion of Wildlife Loop at Bailey Marsh.
10. Hunters must wear fluorescent orange in accordance with State regulations subject to the additional following conditions:
 - i. The hunter’s solid-colored, fluorescent hunter-orange must be visible 360 degrees while carrying-in and carrying-out equipment (e.g., portable blinds).
 - ii. “Jump shooters” must wear at least a solid-colored, fluorescent hunter-orange hat or cap while hunting. If hunters stop and stand, it may be removed.
11. The refuge allows the taking of only Canada goose during the Canada goose early resident season and late Canada goose migratory Atlantic population season.

12. The refuge prohibits hunting of goose, duck, and dove during the early deer muzzleloader seasons that occur in October, and all deer firearms seasons including the youth firearms deer hunts.
13. The refuge requires waterfowl hunters to use retrieving dogs while hunting duck and goose within 50 yards (45 meters) of the following impounded waters: Blue Heron Pond, Lake Allen, New Marsh, and Wood Duck Pond.
 - i. The refuge requires dogs to be under the immediate control of their owner at all times.
 - ii. Law enforcement officers may seize or dispatch dogs running loose or unattended.

B. Upland Game Hunting. The refuge allows hunting of gray squirrel, Eastern cottontail rabbit, and wild turkey on the North Tract. All hunting is in accordance with State and Federal regulations subject to the following conditions:

1. Conditions A1 through A10i apply.
2. Hunters may only possess approved nontoxic shot while in the field.
3. The refuge prohibits hunting of upland game during the deer muzzleloader and firearms seasons, including the youth firearms deer hunts.
4. The refuge prohibits the use of dogs to hunt upland game.
5. Spring turkey hunters are exempt from wearing the hunter orange.
6. The refuge allows the use of a bow and arrow for turkey hunting.
7. The refuge requires turkey hunters to use #4, #5, or #6 nontoxic shot or vertical bows.
8. The refuge selects turkey hunters by a computerized lottery for youth, disabled, and general public hunts. The refuge requires documentation for disabled hunters.
9. The refuge requires turkey hunters to show proof they have attended a turkey clinic sponsored by the National Wild Turkey Federation.
10. The refuge requires turkey hunters to pattern their weapons prior to hunting.

C. Big Game Hunting. The refuge requires hunters to pass a proficiency test with each weapon they desire to use prior to hunting deer. The refuge allows hunting of white-tailed deer in accordance with State and Federal regulations subject to the following conditions:

1. Conditions A1 through A10i apply.
2. Hunters must pass an annual proficiency test with each weapon to be used prior to receiving a hunt permit.
3. The refuge only allows the use of a shotgun, muzzleloader, or bow and arrow according to Refuge Hunting Regulations.
 - i. The refuge require muzzleloaders to be .40 caliber or larger with not less than 60 grains of black powder or a black powder equivalent.

- ii. The refuge prohibits the discharging of weapons after legal shooting hours, including the unloading of muzzleloaders.
4. The refuge requires (when transporting or storing) longbows and recurve bows to be unstrung and compound and crossbows must be locked in such a way to render them inoperable or cased, with no arrows nocked.
5. The refuge prohibits possession or use of buckshot.
6. All bucks harvested must have a 15-inch (37.5-centimeter) minimum outside antler spread.
7. All deer harvested will have a jaw extracted at the HCS before leaving the refuge.
8. Hunters must use portable tree stands that are at least 10 feet (3 meters) off the ground and equipped with a full-body safety harness while hunting at Schafer Farm, Central Tract, and South Tract. Hunters must wear the full-body safety harness while in the tree stand. The refuge will make limited accommodations for disabled hunters for Central Tract lottery hunts.
9. The refuge allows the use of ground blinds on North Tract only.
10. The refuge prohibits the use of dogs to hunt or track wounded deer.
11. Hunters must gain consent from a refuge law enforcement officer to track wounded deer beyond 1 and ½ hours after legal sunset. The refuge prohibits tracking 2 and ½ hours after legal sunset. Hunters must make a reasonable effort to retrieve wounded deer. This may include next-day tracking except Sundays and Federal holidays.
12. The refuge prohibits deer drives or anyone taking part in any deer drive. The refuge defines a “deer drive” as an organized or planned effort to pursue, drive, chase or otherwise frighten or cause deer to move in any direction.
13. The refuge allows shotgun, muzzleloader, and bow hunting on the North Tract, in accordance with the following regulations: Conditions C1 through C12 apply.
14. The refuge allows shotgun and bow hunting on the Central Tract, in accordance with the following regulations:
 - i. Conditions C1 through C13 apply except C3.
 - ii. The refuge selects Central Tract shotgun and bow hunters by a computerized lottery. The refuge assigns a specific hunting location.
 - iii. Schafer Farm Hunt: The refuge only allows bow hunting in accordance with the following regulations: Conditions C1, C2, and C4 through C13.
15. The refuge allows shotgun, muzzleloader, and bow hunting on the South Tract, in accordance with the following regulations:
 - i. Conditions C1 through C13 apply.
 - ii. Hunters must access South Tract hunting areas A, B, and C off Springfield Road via the Old Beltsville Airport; and South Tract hunting area D via MD Rt. 197 through Gate 4. Hunters must park in designated parking areas.

- iii. The refuge prohibits driving or parking along the entrance or exit roads, to and from the NWVC, and parking in the visitor center parking lot when checked-in to any hunt area.

JUSTIFICATION:

Since the land transfer of the North Tract to the U.S. Fish and Wildlife Service (Service) in 1991, public hunting has been a wildlife-dependent priority public recreational use that is consistent with the purposes for which the refuge was established, the Service policy on hunting, the Improvement Act, and the broad management objectives of the Refuge System. The former 7,600-acre Fort Meade tract has had a successful history of public hunting for 30 years. At the time of transfer, hunting was continued as a public use that the military had previously allowed for the general public.

The Service's policy is to provide expanded opportunities for recreational, public hunting when it is compatible with the Refuge System mission and specific refuge purposes, and consistent with sound wildlife management and public safety. We ensure that this use receives enhanced attention during planning and management. As listed in the purposes section of this compatibility determination, the refuge was established and subsequently land was acquired for a total of six purposes. Hunting will not materially interfere with or detract from the research purpose of the refuge, because wildlife research can occur throughout the year, while hunting is limited to hunting seasons. In addition, there are certain days of the week and areas of the refuge that are not open to hunting where research can occur. These uses will not materially interfere with or detract from the two purposes related to wildlife conservation, because hunting seasons reduce deer populations to levels that reduce the intensity of grazing which provides improved wildlife habitat, a healthier deer population, and increased plant diversity. The other target species also are hunted at levels to protect their regional populations. Also, this use will occur on only a portion of the refuge, which will afford some habitat that is not impacted at all. Hunting will not materially interfere with or detract from the two purposes related to migratory bird conservation, because bag limits and seasons for waterfowl hunting are set at a flyway scale such that these limits will not impact regional populations. In addition, deer hunting will reduce the deer herd which will improve forest interior habitat for migratory landbirds. This use will not materially interfere with or detract from the endangered species purpose, because there are no federally listed threatened or endangered species that occur on the refuge. Hunting will not materially interfere with or detract from the mission of the Service, because providing hunting opportunities is a focus of the Refuge System.

SIGNATURE:

REFUGE MANAGER:

Brad Knulren 6/17/13
(signature and date)

CONCURRENCE:

REGIONAL CHIEF:

Scott B. Kahn 8/19/2013
(signature and date)

MANDATORY 15-YEAR REEVALUATION DATE: 2027

REFERENCES:

- Allombert, S., A.J. Gaston, and J.L. Martin. 2005. A natural experiment on the impact of overabundant deer on songbird populations. *Biological Conservation* 126(1):1-13.
- Augustine, D.J. and L.E. Frelich. 1998. Effects of white-tailed deer on populations of understory forb in fragmented deciduous forests. *Conservation Biology* 12(5): 995-1004.
- Belanger, L. and J. Bedard. 1990. Energetic cost of man-induced disturbance to staging snow geese. *Journal of Wildlife Management* 54:36.
- Burger, J. 1981. Effect of human activity on birds at a coastal bay. *Biological Conservation* 21:231-241.
- Erwin, R.M. 1980. Breeding habitat use by colonially nesting waterbirds in two Mid-Atlantic U.S. regions under different regimes of human disturbance. *Biological Conservation* 18:39-51.
- Eyler, B. 2013. Deer Project Leader, Maryland Dept. of Natural Resources. Personal communication. 18 April 2013.
- Hammit, W.E. 1986. Resource impacts of recreation on wilderness. In: *Wilderness and Natural Areas in the Eastern United States: A Management Challenge* (Kulhavy, D.L., R.N. Conner, eds.), pp. 253-258. Stephen F. Austin State University, School of Forestry, Center for Applied Studies, Nacogdoches, TX.
- Havera et al. 1992. Hunting Control Maps—North Tract, Central Tract Headquarters, Area M-R, Schafer Farm, and South Tract.
- Kahl, R. 1991. Boating disturbance of canvasbacks during migration at Lake Poygan, Wisconsin. *Wildlife Society Bulletin* 19:242-248.
- Kaiser, M.S. and E.K. Fritzell. 1984. Effects of river recreationists on green-backed heron behavior. *Journal of Wildlife Management* 48:561-567.
- Klein, M.L. 1993. Waterbird behavioral responses to human disturbance. *Wildlife Society Bulletin* 21:31-39.
- Knight, R.L. and D.N. Cole. 1991. Effects of recreational activity on wildlife in wildlands. *Transactions of the 56th North American Wildlife and Natural Resources Conference* pp. 238-247.
- Korschen, C.E., L.S. George, and W.L. Green. 1985. Disturbance of diving ducks by boaters on a migrational staging area. *Wildlife Society Bulletin* 13:290-296.

- Liddle, M. 1997. Recreation ecology: the ecological impact of outdoor recreation and ecotourism. London, United Kingdom: Chapman and Hall. 639 pp.
- MD DNR 2009. Maryland Department of Natural Resources. Maryland White Tailed Deer Plan 2009-2018.
- Morton, J.M., A.C. Fowler, and R.L. Kirkpatrick. 1989. Time and energy budgets of American black ducks in winter. *Journal of Wildlife Management* 53:401-410 (See also corrigendum in *Journal of Wildlife Management* 54:683).
- National Wildlife Refuge Improvement Act 1997. Public Law 105-57-Oct. 9, 1997.
- Newsome, D., S.A. Moore, R.K. Dowling. 2002. Environmental impacts. In: *Natural area tourism: ecology, impacts and management* (Newsome, D., S.A. Moore, R.K. Dowling, eds.), pp. 79-145. Channel View Publications, Clevedon, United Kingdom.
- NPS 2006. National Park Service. White-tailed Deer Population at Valley Forge.
- Owen, M. 1973. The management of grassland areas for wintering geese. *Wildfowl*. 24:123-130.
- Obrecht, H.H. 1992. Hunting Management Plan/EA for Patuxent Wildlife Research Center.
- Public Law 101-519, Section 126, 104 Stat. 2247
- QDMA/Quality Deer Management Association. 2010. *Deer Cameras—the Science of Scouting*. Lindsay Thomas, Jr., ed. Bogart. Ga. 240 pp.
- U.S. Fish and Wildlife Service. Hunting Regulations, Patuxent Research Refuge, North, Central, and South Tracts, 2011-2012 Season, 50 C.F.R. § 32.39.
- VDGIF 2007. Virginia Department of Game and Inland Fisheries. Virginia Deer Management Plan, 2006-2016. Wildlife Information Publication No. 07-1. June 2007.
- 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.
- Whittaker, D. and R.L. Knight. 1998. Understanding wildlife responses to humans. *Wildlife Society Bulletin* 26:312–317.
- 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.

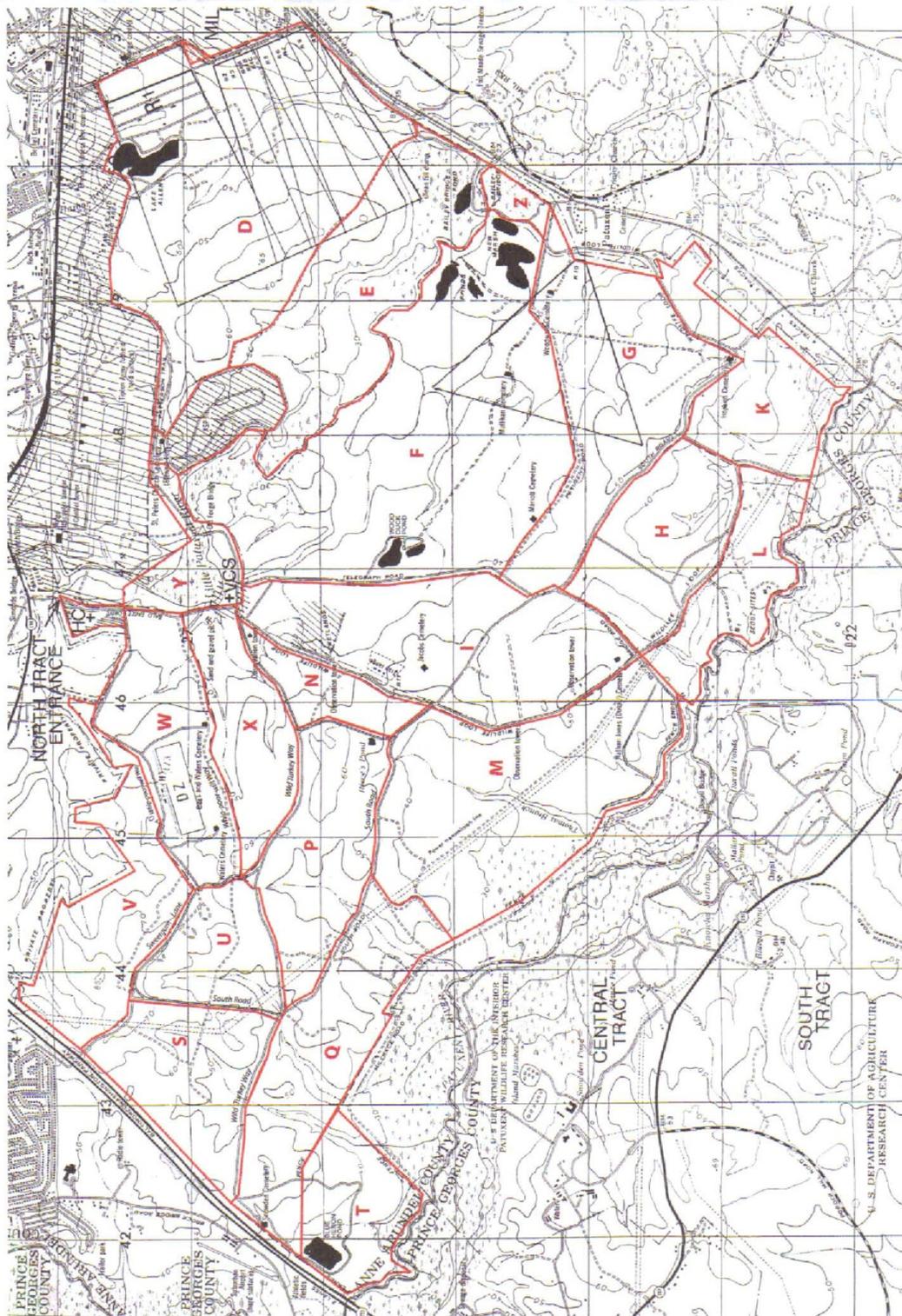
ATTACHMENTS:

Attachment 1: North Tract Hunt Zone Map

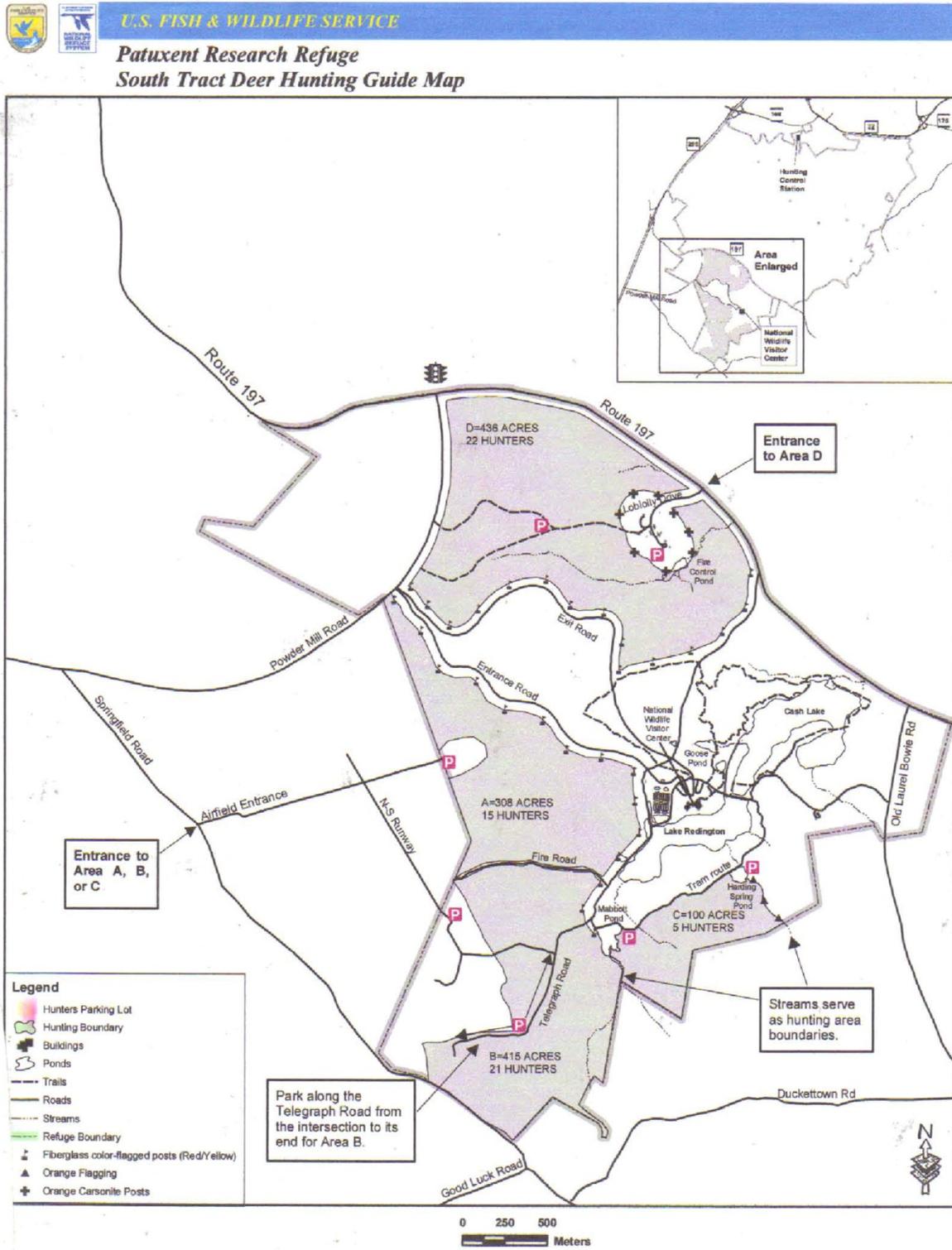
Attachment 2: South Tract Hunt Zone Map

Attachment 3: M-R and Schafer Farm Pond Hunt Map

Attachment 1: North Tract Hunt Zone Map



Attachment 2: South Tract Hunt Zone Map



Attachment 3: M-R and Schafer Farm Pond Hunt Map

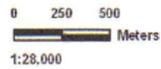


U.S. FISH & WILDLIFE SERVICE

Patuxent Research Refuge, Public Hunting, M-R and Schafer Farm



Map Projection: NAD 1983 StatePlane, Maryland (Feet)
July 20, 2007



- Legend**
- Schafer Farm Hunt Boundary
 - M-R Hunt Boundary
 - Endangered Species Area
 - Ponds
 - Refuge Boundary

COMPATIBILITY DETERMINATION

USE:

Public Fishing

REFUGE NAME:

Patuxent Research Refuge

ESTABLISHING AND ACQUISITION AUTHORITIES:

Executive Order 7514, dated December 16, 1936; Executive Order 11724, dated June 27, 1973; 16 U.S.C. 715d, Migratory Bird Conservation Act of 1929; 16 U.S.C. 1534; 16 U.S.C. 667b, dated May 19, 1948 - An Act Authorizing the Transfer of Certain Real Property for Wildlife or other purposes; and Public Law 101-519 Sec. 126, 104 Stat. 2247, dated November 5, 1990.

REFUGE PURPOSES:

1. "...as a wildlife experiment and research refuge" – Executive Order 7514, dated December 16, 1936
2. "...recreation, conservation, wildlife preservation, and related scientific and educational activities" – Executive Order 11724, dated June 27, 1973
3. "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds" – 16 U.S.C. 715d, dated February 18, 1929 (Migratory Bird Conservation Act)
4. "...to conserve fish, wildlife and plants, including those which are listed as endangered species or threatened species – 16 U.S.C. 1534, dated December 28, 1973 (Endangered Species Act)
5. "...particular value in carrying out the national migratory bird management program." – 16 U.S.C. 667b, dated May 19, 1948 (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes)
6. "...(b) The Secretary of the Interior shall administer the property transferred pursuant to subsection (a) consistent with wildlife conservation purposes and shall provide for the continued use of the property by Federal agencies to the extent such agencies are using it on the date of the enactment of this Act." – Public Law 101-519 Sec. 216, 104 Stat. 2247, dated November 5, 1990 (Defense Appropriation Act – including transfer of the North Tract from Fort Meade).

NATIONAL WILDLIFE REFUGE SYSTEM MISSION:

"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." 16 U.S.C. 668dd(a)(2) (National Wildlife Refuge System Improvement Act of 1997)

DESCRIPTION OF USE:

What is the use? Is it a priority public use?

Public fishing is the act or sport of catching fish. Fishing is a priority public recreational use of the National Wildlife Refuge System (Refuge System) under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-688ee) and the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57) (Improvement Act). The Improvement Act defines wildlife-dependent recreation and wildlife-dependent recreational use as “a use of a refuge involving hunting, fishing, wildlife observation and photography, and environmental education and interpretation.” Of the visitors sampled in the 2011 Visitor Survey, 10 percent of visitors participated in fishing in the last 12 months. In recent years, the refuge has recorded around 3,000 angler visits annually.

Supporting Uses: The use of boats (non-motorized or with electric motors 4 horsepower or less) is allowed only at Cash Lake to support fishing.

Where would the use be conducted?

Public fishing will occur at Patuxent Research Refuge in the following areas:

On the North Tract: New Marsh Pond (5 acres), Lake Allen (13 acres), Cattail Pond (1 acre), Rieve’s Pond (3/4 acre), Blue Heron Pond (9.2 acres), Bailey Bridge walkway, and up- and downstream side of Little Patuxent River from Bailey’s Bridge. Anglers wanting to partake in this activity on the North Tract must check in and out of the Visitor Contact Station according to the standard operating procedures for North Tract.

On the South Tract: Cash Lake (53 acres) is the only area designated for fishing. Access to Cash Lake will be through Gate 8 located off of Maryland Route 197 (South of Powder Mill Road Intersection-toward Bowie, Maryland).

When would the use be conducted?

On the North Tract, public fishing will be conducted year-round during normal operating hours and/or at other times or locations deemed appropriate by the refuge manager.

On the South Tract, public fishing will be allowed on Cash Lake from mid-March through October.

On both the North and South Tract, bodies of water may be temporarily closed to support other priority public uses, wildlife management activities, refuge operational needs, health and safety concerns, and the refuge-specific hunting seasons.

How would the use be conducted?

Public fishing on the refuge will be managed in accordance to Maryland State Fishing Regulations and 50 CFR 32.39, with some additional refuge restrictions, to protect fish, wildlife, and habitat; and to reduce potential public use conflicts and the introduction of invasive species.

All anglers age 16 and older must have an annual refuge fishing and parking pass as well as a valid Maryland fishing license. Permittees under the age of 18 must have a parent or guardian

co-sign their permit. Permittees will receive a free fishing and parking pass which must be displayed in vehicle windshield at Cash Lake. A refuge fishing and parking pass covers the permittee and three youth (15 years old and younger).

Fishing methods include: hook, line, non-toxic sinkers, and tackle permitted by Maryland State law. Per refuge regulations, earthworms are the only live bait allowed, and artificial lures are preferred. Bloodworms and fish or other animals or parts thereof may not be used as bait. Fishing lines must be attended at all times. Wading, for fishing purposes, is permitted only on the stretch of the Little Patuxent River that is open to fishing.

The use of boats for fishing is permitted only at Cash Lake. State boating laws apply, including requirements for personal floatation devices. Only canoes and small car-top boats 14 feet and under are permitted (non-motorized and electric motors of 4 horsepower or less are permitted). Trailers are not permitted, except for handicapped access.

All individuals entering the North Tract property are required to check in and out at the Visitor Contact Station. Visitors will receive an Access Permit which will stipulate:

1. Purpose of their visit.
2. Area restrictions for that activity (due to range use or other public use activity restrictions).
3. Waiver regarding unexploded ordnance.

Why is the use being proposed?

Public fishing on the refuge accommodates one of the priority public uses of the Refuge System. Public fishing on the South Tract (Cash Lake) was permitted in fiscal year 1991 through the *Federal Register* rulemaking process. The Improvement Act states that, when compatible, the six wildlife-dependent recreational uses are appropriate and legitimate uses of the Refuge System and are the priority general public uses of the Refuge System.

AVAILABILITY OF RESOURCES:

Facilities or materials needed to support fishing at Patuxent Research Refuge include a fully accessible fishing pier at Cash Lake, an accessible spillway and fishing platform at Lake Allen, a fishing walkway on Bailey Bridge, and other smaller impoundments. Refuge law enforcement officers will provide compliance checks. Costs associated with public fishing are estimated below:

Identifier	Cost
Administration/management to facilitate activity, this includes staff/law enforcement	\$58,080/yr
Maintenance of buildings, roadways, trails and parking areas, this includes operation of equipment	\$55,000/yr
Supplies and support	\$55,000/yr
Operating cost	\$105,000/yr
Total Costs	\$273,080/yr

After review of the refuge budget, there are sufficient funds to sustain this activity.

ANTICIPATED IMPACTS OF THE USE:

Refugewide surveys of fish populations have occurred through electromagnetic shocking and by gathering voluntary angler creel reports to provide some means of assessing fish populations. These surveys will continue to occur as needed. Based upon available documentation, these areas support predominantly bluegill, largemouth bass, catfish, black crappie, pickerel, golden shiner, chub, pumpkinseed, eel, suckers, and warmouth.

Major concerns of any refuge fishing program are accidental or deliberate introductions of non-native fish (used for bait); accidental introduction of invasive plants, pathogens, or exotic invertebrates attached to fishing boats; monofilament line entanglement of wildlife; contamination from lead-based fishing tackle; and over-harvesting. The refuge will continue to provide educational outreach and signage on this subject, and try to minimize impacts associated with nonnative species introductions, if they occur.

We have evaluated the risk of accidental introduction of invasive plants, pathogens, or exotic invertebrates attached to fishing boats. With the exception of a few isolated occurrences of purple loosestrife, refuge waters appear to be relatively free of invasive aquatic plants and mollusks. Periodic aquatic invasive species monitoring has occurred. Impacts of aquatic invasives can be mitigated by continuing invasive plant education and outreach, as well as by initiating an intensive aquatic invasive monitoring program.

Negative impacts to waterfowl and other wildlife from lost fishing gear may include ingestion of lead sinkers, hooks, lures, or litter; or entanglement in fishing line or hooks. Lost fishing tackle may harm waterfowl, eagles, and other birds externally by catching on, and tearing skin. Fishing line may also become wrapped around body parts and hinder movement (legs, wings), impair feeding (bill), or cause a constriction with subsequent reduction of blood flow and tissue damage. Entangled animals may become snagged by an object above or below the water surface, from which they are unable to escape. Birds may also ingest sinkers, hooks, floats, lures, and fishing line. Ingested tackle may be toxic or cause damage or penetration of the mouth or other parts of the digestive tract that may result in impaired functioning or death. There have not been any documented cases of this occurring on the refuge. However, Patuxent Research Refuge will continue to provide education and outreach on the hazards of fishing tackle. The refuge has also placed monofilament recycle bins at Cash Lake, New Marsh, Visitor Contact Station, National Wildlife Visitor Center, and Lake Allen to reduce the probability of wildlife coming in contact with lost fishing gear. Refuge officers assist with this public outreach effort.

Lead in the environment from fishing tackle and ammunition at very low levels of exposure can be toxic, depending on the species and the health and age of an individual. At toxic levels, lead damages the nervous system, causing paralysis and eventual death; at lower levels it is known to cause a variety of sub-lethal effects such as neurological damage, tissue and organ damage, and reproductive impairment.

Hazards of lead fishing sinkers to waterfowl became apparent in the 1970s, when lead was found to poison swans in the United Kingdom. Under certain environmental conditions (e.g., acidic or

basic water or soil) lead from shot or tackle can be readily released and taken up by plants or animals, causing a range of biochemical, physiological, and behavioral effects in some species of invertebrates, fish, amphibians, reptiles, birds, and mammals. Lead is adsorbed or incorporated into food items through the soil (The Wildlife Society 2009). Because of these concerns, use of lead tackle is prohibited on the refuge in the fishing regulations.

The refuge does not permit use of live bait, to prevent the likelihood of introductions of nonnative fish. Another common concern is the reduction or alteration of prey base important to fish-eating wildlife. Bass is the dominant predator species at the refuge and is catch and release only. Earthworms are the only live bait allowed. Artificial lures are preferred. The current fishing program of the refuge follows the State regulations and would adopt any State harvest limits that become applicable to the fish species. These limits are set to ensure that harvest levels do not cumulatively impact native fish resources to the point they are no longer self-sustainable. We also follow recommendations of Service biologists who conduct periodic sampling of refuge ponds. Illegal fishing resulting in over-harvest could also be a concern, but law enforcement presence will reduce this.

Fishing seasons in Maryland coincide, in part, with spring to early summer nesting and brood-rearing periods for many species of aquatic-dependent birds. Anglers may disturb resting and foraging birds by approaching too closely. Flushing may expose eggs to predation or cooling, resulting in egg mortality. The refuge will continue to seasonally close areas around sensitive sites to fishing. Public outreach and placement of warning signs will also be continued.

Depending on slope, bank and trail erosion from human activity (fishing piers, foot traffic) may increase aquatic sediment loads in ponds and lakes, or alter riparian or lakeshore habitat and vegetation in ways harmful to fish or other wildlife. Many of the areas that anglers access are flat, with a sandy or graveled substrate, with no significant topography change that would result in erosion. Boat access will be restricted to designated areas only. The boat launch area at Cash Lake is constructed of concrete pavers that support vehicle use and accommodate vegetation growth. This area is adjacent to a gravel parking lot that provides ample maneuvering space for vehicles to launch a boat without hampering vegetation or aquatic resources. Trails will be monitored and may be modified, restored, or closed, if conditions warrant. Because much of refuge fishing occurs from the shoreline, the refuge will monitor boardwalks and trails adjacent to ponds, lakes, and rivers in order to reduce trail erosion due to fishing-related foot traffic.

We have not observed negative impacts to water quality from human waste and litter. Public outreach and education on littering, proper waste disposal, and the prohibition of gasoline motors will lessen potential negative water quality impacts.

We have not observed nor do we anticipate impacts to terrestrial vegetation or mammals. Very minor disturbance to reptiles and amphibians could occur especially with regard to frogs that are temporarily displaced along the shoreline by anglers.

Soil compaction could occur in very small levels as anglers stand in one location or walk on established paths to access the shoreline.

There are some conflicts between range users and anglers in the form of times when Cash Lake is closed to fishing because of range operations. During those times, anglers are directed to the other refuge fishing areas. There have been no documented conflicts between anglers or between anglers and research uses. Based on interactions with staff and volunteers, anglers enjoy a high quality fishing experience. Increasing fishing hours and access may increase angler visitation, and improve angler experience. If other conflicts should arise, the refuge may need to place additional constraints on public uses to minimize conflicts. Management actions may include but are not limited to: education and outreach and separating user groups, spatially and temporally.

PUBLIC REVIEW AND COMMENT:

As part of the comprehensive conservation planning process for Patuxent Research Refuge, this compatibility determination underwent extensive public review, including a comment period of 45 days following the release of the draft Comprehensive Conservation Plan/Environmental Assessment. We did not receive any comments specific to this public fishing compatibility determination.

DETERMINATION (CHECK ONE BELOW):

- Use is not compatible
 Use is compatible with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

- The fishing program will be reviewed annually to ensure that the program contributes to refuge objectives in managing the quality of the refuge fishing program and protecting habitats. This may include angler, fish, and habitat surveys.
- All anglers will be required to have a Maryland State Fishing License and a Patuxent Research Refuge fishing and parking pass. Anglers age 17 or younger must be accompanied in the field by an adult, age 21 or older, possessing fishing and parking passes. They will also be provided with a copy of refuge-specific regulations.
- Fishing from the shore will be closely monitored to prevent the disturbance of nesting waterfowl and erosion of the banks of ponds, lakes and rivers. Impacts will be monitored and, if warranted, action will be taken to lessen impacts, including seasonal or permanent closures.
- Waterfowl nesting and resting areas will be seasonally closed to all public use to reduce disturbance.
- Access trails and launches have been constructed and situated in a way that minimizes habitat and wildlife disturbance, as well as siltation effects, and provides for public safety. Impacts will be monitored and access areas will be closed, modified, restored, or moved if there is a problem.
- The refuge will cooperate with State fishery resource agencies in implementing angling regulations and management actions.
- Public outreach and education will be increased in order to minimize conflicts between user groups, help control aquatic invasive species, reduce fish introductions, and minimize disturbance to wildlife and habitat.

- Refuge law enforcement officer(s) will promote compliance with refuge regulations, monitor public use patterns and public safety, and document visitor interactions. Refuge law enforcement personnel will monitor all areas and enforce all applicable State and Federal Regulations. Staff and Service volunteers may also monitor the areas and will pick up litter and report any violations or suspect activity to refuge law enforcement personnel.
- All individuals entering the North Tract property are required to check in and out at the Visitor Contact Station. They will receive an Access Permit which will stipulate:
 1. Purpose of their visit.
 2. Area restrictions for that activity (due to range use or other public use activities restrictions).
 3. Waiver regarding unexploded ordnance.

JUSTIFICATION:

Public fishing is one of the six priority public uses of the Refuge System and has been determined to be a compatible activity on many refuges nationwide. The Improvement Act instructs refuge managers to seek ways to accommodate these six activities. This use generally does not adversely impact the refuge's research purpose as fishing occurs on the North and South Tract in specified areas (six areas are open to fishing). The Central Tract portion of the refuge is set aside specifically to support research and public use is restricted.

At the scales and level of current angler use, wildlife and habitats are not appreciably negatively affected by this use, based on professional judgment and the consistently high biodiversity observed on the refuge. Seasonal closures of fishing areas, access restrictions, creel limits, and tackle and bait restrictions ensure reduced human impact on wildlife and habitat.

The U.S. Fish and Wildlife Service's policy is to provide expanded opportunities for fishing when compatible and consistent with sound fish and wildlife management and ensure that they receive enhanced attention during planning and management. As listed in the purposes section of this compatibility determination, the refuge was established and subsequently land was acquired for a total of six purposes. Fishing will not materially interfere with or detract from the research purpose of the refuge, because water based wildlife research can occur in areas not open to fishing. Fishing will not materially interfere with or detract from the two purposes related to wildlife conservation, because this use will occur along the shorelines of a limited number of areas that are not high priority habitat areas. In addition, as described above, fishing will have minimal impacts to wildlife resources. Fishing will not materially interfere with or detract from the two purposes related to migratory bird conservation, because fishing seasons are set to avoid waterfowl nesting seasons and high quality waterfowl habitat. This use will not materially interfere with or detract from the endangered species purpose, because there are no federally listed threatened or endangered species that occur on the refuge. Finally, fishing will not materially interfere with or detract from the mission of the U.S. Fish and Wildlife Service, because providing fishing opportunities is a focus of the Refuge System.

SIGNATURE:

REFUGE MANAGER:

Brad Knudsen 6/11/13

(signature and date)

CONCURRENCE:

REGIONAL CHIEF:

Scott B. Kahn 8/19/2013

(signature and date)

MANDATORY 15-YEAR REEVALUATION DATE: 2028

REFERENCES:

Code of Federal Regulations. Title 50. Wildlife and Fisheries (50 CFR 32.39)

Lake Umbagog National Wildlife Refuge. 2011. Public Fishing. Compatibility Determination. U.S. Fish and Wildlife Service.

Maryland Department of Natural Resources. 2012. Annual Non-tidal Freshwater Fishing Regulations. Accessed August 2012 at;
<http://www.dnr.state.md.us/fisheries/regulations/table.asp?c=recreational&Region=Freshwater>.

North Tract Public Use Areas, Standard Operating Procedures North Tract

Patuxent Research Refuge Fishing Regulations. 2011. (Internal)

Public Law 101-519, 104 Stat. 2247

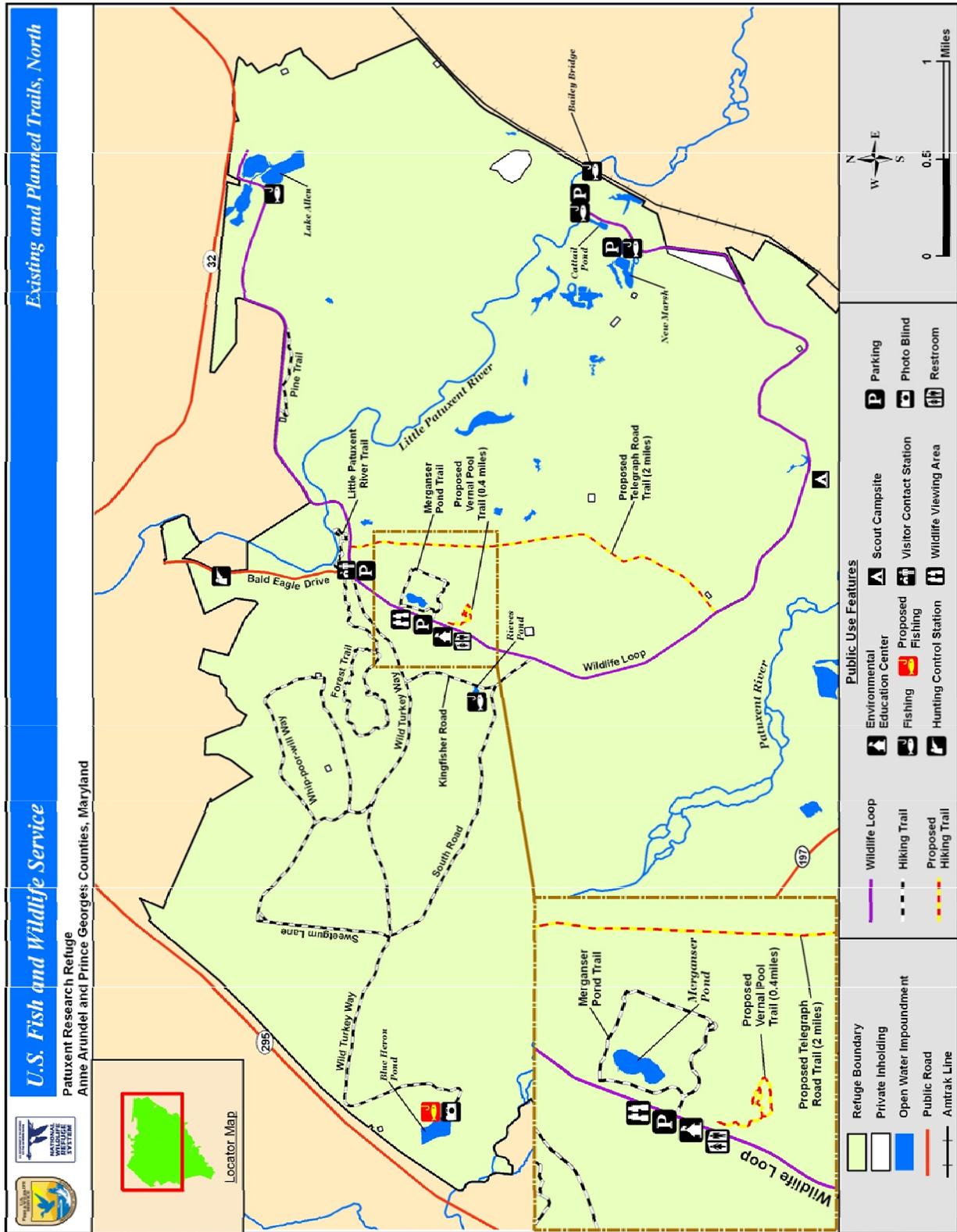
The Wildlife Society. 2009. Lead in Ammunition and Fishing Tackle. Position Statement.

ATTACHMENTS:

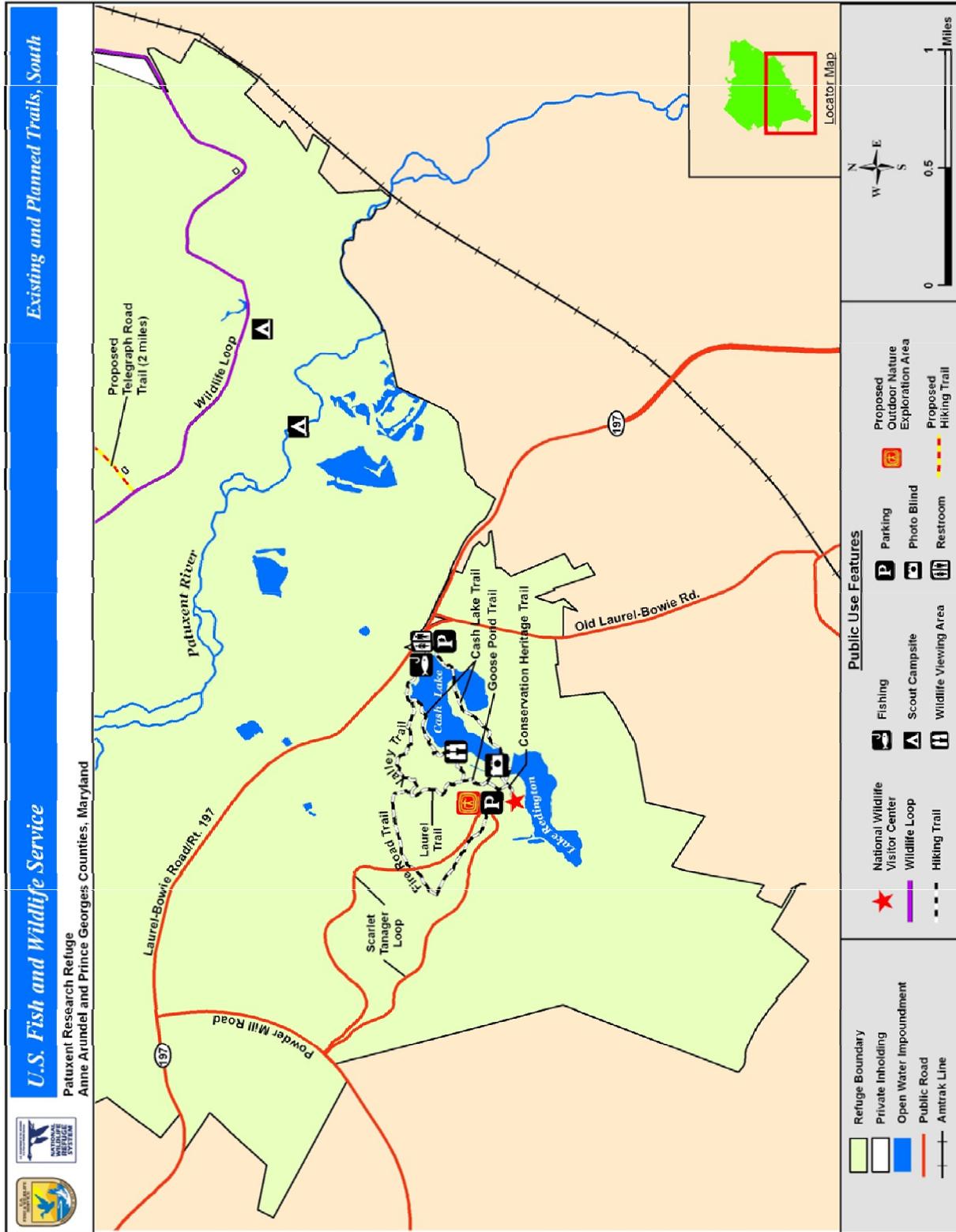
Attachment 1: Map Showing Fishing Opportunities on the North Tract

Attachment 2: Map Showing Fishing Opportunities on the South Tract

Attachment 1: Maps Showing Fishing Opportunities on the North Tract. Public Use Features for North Tract Which Highlight Fishing Opportunities.



Attachment 2: Map Showing Fishing Opportunities on the South Tract. Public Use Features for South Tract Which Highlight Fishing Opportunities.



FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Patuxent Research Refuge

Use: Hiking, Biking, Jogging, and Cross-country Skiing

This form is not required for wildlife-dependent recreational uses, 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?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	✓	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?	✓	
(h) Will this be manageable in the future within existing resources?	✓	
(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?	✓	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	✓	

Where 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 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

Refuge Manager: Brad Knudson Date: 6/11/13

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: Ac Gittner Date: 7/5/13

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

FWS Form 3-2319
02/06

JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

REFUGE NAME: Patuxent Research Refuge

USE: Hiking, Biking, Jogging, and Cross-country Skiing

NARRATIVE:

The proposed uses are hiking, biking, jogging, and cross-country skiing. Although these uses are not priority public uses, they do support wildlife observation, which is a priority public use. These uses may provide opportunities for visitors to observe and learn about wildlife, habitats and refuge lands firsthand and at their own pace in an unstructured environment. These uses may also enhance the public's appreciation for wildlife conservation and land protection. It is anticipated that participation in these uses will produce a more informed public, with an enhanced stewardship ethic and enhanced support and advocacy for the Service and natural resources as a whole.

These uses are low impact and low cost. The majority of areas where these uses are allowed on the refuge are former military roads with wide gravel bases. In a 2011 survey, hiking was one of the top three activities that participants (51 percent of surveyed visitors) to the refuge engaged in. In addition, 15 percent of surveyed visitors had participated in bicycling within the past 12 months of the survey (Sexton et al. 2011). There have been no documented complaints or conflicts between users of multiple activities.

These uses are consistent with the goals and objectives in the comprehensive conservation plan, particularly goal 5, which is to provide for high-quality recreation, environmental education, and interpretive programs to enhance refuge visitors' understanding and appreciation of fish and wildlife conservation. The uses will provide wholesome, safe outdoor recreation in a scenic setting. The hope is that those who come strictly for recreational enjoyment will be enticed to participate in the more educational and wildlife dependent facets of public use programs on the refuge. In addition, these uses promote Let's Go Outside, Connecting People with Nature, and other health-related initiatives that the U.S. Fish and Wildlife Service supports.

COMPATIBILITY DETERMINATION

USE:

Hiking, Jogging, Bicycling, and Cross-country Skiing

REFUGE NAME:

Patuxent Research Refuge

ESTABLISHING AND ACQUISITION AUTHORITIES:

Executive Order 7514, dated December 16, 1936; Executive Order 11724, dated June 27, 1973; 16 U.S.C. 715d, Migratory Bird Conservation Act of 1929; 16 U.S.C. 1534; 16 U.S.C. 667b, dated May 19, 1948 - An Act Authorizing the Transfer of Certain Real Property for Wildlife or other purposes; and Public Law 101-519 Sec. 126, 104 Stat. 2247, dated November 5, 1990.

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2. "...recreation, conservation, wildlife preservation, and related scientific and educational activities" – Executive Order 11724, dated June 27, 1973
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4. "...to conserve fish, wildlife and plants, including those which are listed as endangered species or threatened species – 16 U.S.C. 1534, dated December 28, 1973 (Endangered Species Act)
5. "...particular value in carrying out the national migratory bird management program." – 16 U.S.C. 667b, dated May 19, 1948 (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes)
6. "...(b) The Secretary of the Interior shall administer the property transferred pursuant to subsection (a) consistent with wildlife conservation purposes and shall provide for the continued use of the property by Federal agencies to the extent such agencies are using it on the date of the enactment of this Act." – Public Law 101-519 Sec. 216, 104 Stat. 2247, dated November 5, 1990 (Defense Appropriation Act – including transfer of the North Tract from Fort Meade).

NATIONAL WILDLIFE REFUGE SYSTEM MISSION:

"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." 16 U.S.C. 668dd(a)(2) (National Wildlife Refuge System Improvement Act of 1997)

DESCRIPTION OF USE:

What are the uses? Are they priority public uses?

Hiking, jogging, bicycling, and skiing are not priority public uses; however, by allowing these uses, persons engaged will be exposed to the refuge and will foster a better understanding of the mission of the refuge and the National Wildlife Refuge System (Refuge System) (Lyons 1982). In addition, hiking, jogging, and bicycling accommodate priority public uses such as wildlife observation. Hiking, jogging, and bicycling were found compatible in 1992 and skiing was found compatible in 1996. The activities are managed in accordance with standard operating procedures for North Tract Public Use Areas and the National Wildlife Visitor Center Trail System brochure.

Where would the uses be conducted?

Hiking, jogging, bicycling, and skiing are allowed on the following trails and roads: Wildlife Loop (8 miles); South Road (1.7 miles), Wild Turkey Way (3.6 miles), Sweetgum Lane (1.6 miles), Whip-poor-will Way (1.8 miles), Kingfisher Road (0.5 mile), Pine Trail (.75 mile), trail around Lake Allen (1.5 miles), and trail around Rieve's Pond (.5 mile).

The following trails are open to hiking only: Little Patuxent River Trail (.75 mile), Forest Habitats Nature Trail (2.5 miles), trail around Cattail Pond (.5 miles), New Marsh Trail (.75 miles), Loop Trail (.3 miles), Goose Pond Trail (.2 miles), Cash Lake Trail (1.4 miles), Laurel Trail (.4 miles), Valley Trail (.6 miles), Fire Road Trail (.9 miles), Vernal Pool Trail (1.25 miles), and Wildlife Viewing Area Trail (2.5 miles).

The following trails are open to hiking and biking only: Telegraph Road Trail (2.5 miles).

When would the uses be conducted?

The trails and roads found on the North Tract of the refuge are open to the public during normal operational hours which vary seasonally. Hours are posted at the North Tract Visitor Contact Station and available online on the refuge Web site. The South Tract trails and grounds are open to public use from dawn to dusk throughout the year. The refuge trails and grounds on both the North and South Tract are open year-round with the exception of Thanksgiving, Christmas, and New Year's days. Portions of the road and trail system may be temporarily closed to support priority public uses, wildlife management, refuge operational needs, and/or during refuge-specific hunting seasons.

How would the uses be conducted?

The trail system is designed to support the six priority public uses and provide access to a variety of habitat types. Persons engaged in hiking, jogging, biking, and skiing will use existing access points, parking lots, signage, and refuge roads to access the trail system. Trail systems are monitored by staff and volunteers to educate and inform visitors about trail ethics and public regulations, to report safety issues and emergencies, to assist with closing of trails/grounds, and to remove trash and assist with gate closures.

Why are these uses being proposed?

These uses are proposed to provide compatible recreational opportunities for visitors to enjoy the refuge and to gain a better understanding and appreciation for fish and wildlife, ecology, and the

relationships of plant and animal populations within various ecosystems, and to better understand wildlife management, the refuge, and the Refuge System. Although these uses are not priority public uses, they do support wildlife observation which is a priority public use. These uses may provide opportunities for visitors to observe and learn about wildlife and refuge lands firsthand and at their own pace in an unstructured environment. These uses may also enhance the public's appreciation for wildlife conservation and land protection. It is anticipated that participation in these uses will produce a more informed public, with an enhanced stewardship ethic and enhanced support and advocacy for the Service and for natural resources. In a 2011 survey, hiking was one of the top three activities that participants (51 percent of surveyed visitors) to the refuge engaged in. In addition, 15 percent of surveyed visitors had participated in bicycling within the past 12 months of the survey (Sexton et al. 2011).

These uses will also provide wholesome, safe outdoor recreation in a scenic setting. The hope is that those who come strictly for recreational enjoyment will be enticed to participate in the more educational facets of the public use program and can then become informed advocates for the Service and for natural resources. In addition, these uses promote Let's Go Outside, Connecting People with Nature, and other health-related initiatives.

AVAILABILITY OF RESOURCES:

In recent years, the refuge has been open to hunting, fishing, wildlife viewing, interpretation, environmental education, and photography. Portions of the trail and roadway system were in existence when the land was transferred to the U.S. Fish and Wildlife Service (Service). Since then, the refuge has expanded the trails and roads in support of priority public uses. There is already existing refuge infrastructure such as parking lots, signage, and other facilities which will serve to accommodate these activities. It is expected that the use of the trail and roadway systems by hikers, joggers, bikers, and skiers will slightly increase the general operating cost for personnel and maintenance of these facilities. To administer, maintain, and monitor the facilities would require 160 staff days (see below).

Cost Breakdown

The following is the list of costs to the refuge required to administer and manage the refuge programs for wildlife observation and photography and environmental education and interpretation.

Identifier	Cost
Administration/management to facilitate activity	\$24,300/yr
Maintenance of buildings, roadways, trails and parking areas	\$37,400/yr
Office supplies and support	\$5,500/yr
Operation of equipment	\$22,000/yr
Surveying facilities and law enforcement	\$4,400/yr
Total Costs	\$84,800/yr

After review of the refuge budget, there are sufficient funds to sustain this activity.

ANTICIPATED IMPACTS OF THE USE:

Effects on Wildlife

Disturbances vary with the wildlife species involved and the type, level, frequency, duration, and the time of year such activities occur. The responses of wildlife to human activities include avoidance or departure from the site (Owen 1973, Burger 1981, Kaiser and Fritzell 1984, Korschen et al. 1985, Kahl 1991, Klein 1993, Whittaker and Knight 1998), the use of sub-optimal habitat (Erwin 1980, Williams and Forbes 1980), altered behavior or habituation (Burger 1981, Korschen et al. 1985, Morton et al. 1989, Ward and Stehn 1989, Havera et al. 1992, Klein 1993, Whittaker and Knight 1998), attraction (Whittaker and Knight 1998), and an increase in energy expenditure (Morton et al. 1989, Belanger and Bedard 1990). The presence of people hiking, jogging, biking, and skiing on refuge trails and roads can lead to displacement of animals from trails, although disturbance usually is a negligible influence on large mammal distributions and movements (Purdy et al. 1987, Boyle and Samson 1985). Mammals may become habituated to humans, making them easier targets for hunters. Disturbance can have other effects including shifts in habitat use, abandonment of habitat, and increased energy demands on affected wildlife (Knight and Cole 1991). The effects of roads and trails on plants and animals are complex, and not limited to trail width. Trail use can disturb areas outside the immediate trail corridor (Trails and Wildlife Task Force 1998, Miller et al. 2001). Bird communities in this study were apparently affected by the presence of recreational roads and trails, where common species (e.g., American robins) were found near trails and rare species (e.g., grasshopper sparrows) were found farther from trails. Songbird nest failure was also greater near trails. The effects on other forms of wildlife appear to be short-term with the exception of breeding bird communities. A study by Miller, Knight, and Miller (1998) indicates that species composition and nest predation was altered adjacent to trails in both forested and grassland habitats. It appears that species composition changes are due to the presence of humans and not the trail or roadway itself. On the other hand, nest predation does appear to be a function of the trail which allows access to mammalian nest predators.

Several studies have examined the effects of recreationists on birds using shallow-water habitats adjacent to trails and roads through wildlife refuges and coastal habitats in the eastern United States (Burger 1981, Burger 1986, Klein 1993, Klein et al. 1995, Rodgers and Smith 1995, Rodgers and Smith 1997, Burger and Gochfeld 1998). Overall, the existing research clearly demonstrates that disturbances from recreation activities have at least temporary effects on the behavior and movement of birds within a habitat or localized area. Anticipated impacts of hiking, jogging, biking, and skiing on wildlife include temporary disturbances to species using habitat on the trail or directly adjacent to the trail. These disturbances are likely to be short-term. Use of some roads and trails may cause direct mortality to amphibians crossing trails during migration or foraging. There may also be nest abandonment of bird species nesting on, or next to, trails should these uses become too frequent during breeding season. Long-term impacts may include certain wildlife species avoiding trail corridors as a result of this use over time. However, trails open to hiking, biking, jogging, and skiing are located primarily in continuous tracts of hardwood or mixed hardwood/pine forests, with some open meadow areas mixed in. More sensitive and underrepresented wildlife habitats such as riparian and wetland areas were avoided, reducing the potential for wildlife disturbance. Locating these trails in upland forested habitat spreads the disturbance over the largest habitat type on the refuge, minimizing the overall impact on refuge wildlife associated with this habitat.

Effects on Soil

The use of trails and gravel roads could lead to soil compaction, exposure of tree roots, and the modification of plant species 3 to 6 feet on either side of the trail; which is a function of soil compaction, invasive species, and direct trampling of plants (Kuss 1986). The refuge will continue its management practices of using boardwalks, woodchips, erosion control, and user education to protect plant species and habitats along trails and roadways. The refuge will continue management strategies of educating trail and roadway users how their activities affect wildlife and how to modify their use to minimize impacts on wildlife. Potential conflict with priority public uses will be minimized by using trail head signs and other media to inform the various users about current public uses. Some trail and roadway use will be restricted during the refuge-specific hunting seasons, primarily during shotgun season.

The majority of the trails open for hiking, biking, jogging, and skiing are former military roads made up of gravel and sand, or asphalt (Wildlife Loop), were extensively used by military vehicles, and are currently used by refuge and public vehicles. Therefore, soils are generally compacted and less susceptible to additional physical impact and mechanical erosion. The refuge will take all reasonable measures to prevent or minimize any potential negative effects, and will evaluate the roads and trails periodically to assess whether they meet established suitability criteria and to prevent degradation. If evidence of unacceptable adverse impacts appears, the refuge will reroute, curtail, or close trails to this use as deemed appropriate. The refuge will also post and enforce refuge regulations, and establish, post, and enforce closed areas. Based on the information provided above and the current and projected levels of use, the refuge anticipates that there will be minimal adverse impacts to soils, and therefore water quality, associated with hiking, biking, jogging, and skiing.

Effects on Vegetation

The refuge anticipates that there will be minimal adverse impacts to plant communities on designated trails. Most trails designated for hiking, biking, jogging, and skiing use have hardened surfaces where plant communities are sparse or already have a heavy mix of invasive species such as Japanese stiltgrass, garlic mustard, lespedeza, Chinese silvergrass, and others. Users leaving designated trails could have impacts to adjacent vegetation. Where impacts to vegetation are observed, the refuge will take necessary measures, such as remediation and trail closures, to restore plant communities on or adjacent to the affected trail.

PUBLIC REVIEW AND COMMENT:

As part of the comprehensive conservation planning process for Patuxent Research Refuge, this compatibility determination underwent extensive public review, including a comment period of 45 days following the release of the draft Comprehensive Conservation Plan/Environmental Assessment. We did not receive any comments specific to this compatibility determination.

DETERMINATION (CHECK ONE BELOW):

- Use is not compatible
 Use is compatible with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

- Refuge staff and volunteers will continue to protect and manage wildlife and their habitat especially breeding and wintering bird communities found on the refuge through the use of education, signage, and trail or roadway closures.
- Refuge staff and volunteers will continue to monitor trail and road conditions to determine their effect on adjacent plant communities and will take all necessary steps to protect habitat. This could include, but is not limited to, protecting soil from compaction, seasonal closure of trails, and relocating trails.
- All hikers, joggers, bikers, and skiers will be restricted to the designated trail and roadway system.
- Refuge staff will develop a step-down plan for public use to include a section on the management and administration of hiking, jogging, bicycling, and skiing on the refuge's trail and roadway system.
- Refuge staff and volunteers will continue to close trails as needed during hunting seasons and for other safety concerns to prevent user conflicts and to provide for public safety.

JUSTIFICATION:

The Service and the Refuge System maintain goals of providing opportunities for wildlife viewing and photography. Allowing the use of the trail system by persons engaging in hiking, jogging, bicycling, and skiing for the sake of those activities will create opportunities to view wildlife and their habitats. These users may take the time to learn more about the refuge while they pursue their activity and become more avid supporters of the Refuge System.

These uses generally do not adversely impact the refuge's research purpose since large portions of the refuge are closed to the visiting public. The Central Tract portion of the refuge is set aside specifically to support research. At the scales and level of current visitor use, wildlife and habitats are not appreciably negatively affected by these uses, based on professional judgment and the consistently high biodiversity observed on the refuge.

There have been no documented complaints or conflicts between users of multiple activities. A recent visitor use survey found that 26 percent of visitors sampled felt that biking was an important aspect of their refuge visit. Sixty percent of visitors sampled felt that hiking was an important aspect of their refuge visit. In addition, hiking was one of the top three activities that participants (51 percent of visitors) engaged in on the refuge (Sexton 2011).

As listed in the purposes section of this compatibility determination, the refuge was established and subsequently land was acquired for a total of six purposes. These uses will not materially interfere with or detract from the research purpose of the refuge, because wildlife research does not generally occur in the vicinity of the locations that these uses occur and the impact will be minimal. These uses will not materially interfere with or detract from the two purposes related to wildlife conservation, because actual impacts to wildlife species and habitat will be minimal, as opposed to the suite of potential impacts outlined under the impacts section. There will be adequate areas for species to retreat to that will not be impacted by these uses. In addition, the trails used for these activities do not impact core habitat or nesting areas. These uses will not

materially interfere with or detract from the two purposes related to migratory bird conservation, because these uses are allowed in areas that are generally not in the vicinity of migratory waterfowl or land bird habitat. These uses will not materially interfere with or detract from the endangered species purpose, because there are no federally listed threatened or endangered species that occur on the refuge. Finally, these activities will not materially interfere with or detract from the mission of the Service, because individuals that participate in these activities will have minor impacts to refuge resources while being exposed to the refuge through signs and interpretive panels.

SIGNATURE:

REFUGE MANAGER:

Brad Knudsen 6/11/13
(signature and date)

CONCURRENCE:

REGIONAL CHIEF:

Sub. K 8/19/2013
(signature and date)

MANDATORY 10-YEAR REEVALUATION DATE: 2023

REFERENCES:

- Belanger, L. and J. Bedard. 1990. Energetic cost of man-induced disturbance to staging snow geese. *Journal of Wildlife Management* 54:36.
- Boyle S.A. and F.B. Samson. 1985. Effects of nonconsumptive recreation on wildlife: a review. 13:110-116.
- Burger, J. 1981. Effect of human activity on birds at a coastal bay. *Biological Conservation* 21:231-241.
- Burger, J. and M. Gochfeld. 1998. Effects of eco-tourists on bird behavior at Loxahatchee National Wildlife Refuge, Florida. *Environmental Conservation* 25:13.
- Kahl, R. 1991. Boating disturbance of canvasbacks during migration at Lake Poygan, Wisconsin. *Wildlife Society Bulletin* 19:242-248.
- Kaiser, M.S. and E.K. Fritzell. 1984. Effects of river recreationists on green-backed heron behavior. *Journal of Wildlife Management* 48:561-567.
- Klein, M.L. 1993. Waterbird behavioral responses to human disturbance. *Wildlife Society Bulletin* 21:31-39.
- Knight, R.L. and D.N. Cole. 1991. Effects of recreational activity on wildlife in wildlands. *Transactions of the 56th North American Wildlife and Natural Resources Conference* pp. 238-247.

- Korschen, C.E., L.S. George, and W.L. Green. 1985. Disturbance of diving ducks by boaters on a migrational staging area. *Wildlife Society Bulletin* 13:290-296.
- Kuss, F. 1986. A review of major factors influencing plant responses to recreation impacts. *Environmental Management* 10:638-65.
- Lyons, J.R. 1982. Nonconsumptive wildlife-associated recreation in the U.S.: identifying other constituency. *Transactions of the 56th North American Wildlife and Natural Resources Conference* 47:677-685.
- Miller, S.G., Knight R.L., and Miller C.K. 1998. Influence of Recreational Trails on Breeding Bird Communities. *Ecological Applications* 8(1):162-169.
- Patuxent Research Refuge National Wildlife Visitor Center Trail System, Accessed August 2012 at: <http://patuxent.fws.gov/NWVCTrails.html>.
- Purdy, Goff, Decker, Pomerantz, Connelly. 1987 A guide to managing human activity on a national wildlife refuge. New York Cooperative Fish and Wildlife Research Unit.
- Morton, J.M., A.C. Fowler, and R.L. Kirkpatrick. 1989. Time and energy budgets of American black ducks in winter. *Journal of Wildlife Management* 53:401-410 (See also corrigendum in *Journal of Wildlife Management* 54:683).
- Owen, M. 1973. The management of grassland areas for wintering geese. *Wildfowl* 24:123-130.
- Rayburn, E. 2001. Personal Communication with Ed Rayburn, West Virginia University Agricultural Extension Office. December 10, 2001.
- 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.
- Sexton, N.R., A.M. Dietsch, A.W. Don Carlos, L. Koontz, A. Solomon, and H.M. Miller. 2011. National wildlife refuge visitor survey 2010/2011: individual refuge results. U.S. Geological Survey Data Series 643.
- Standard Operating Procedures, Patuxent Research Refuge, North Tract Public Use Areas, 2003.
- Standard Operating Procedures, Patuxent Research Refuge, Public Use and Checking In/Out of the North Tract, 7/20/2003.
- Whittaker, D. and R.L. Knight. 1998. Understanding wildlife responses to humans. *Wildlife Society Bulletin* 26:312-317.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Patuxent Research Refuge

Use: Horseback Riding

This form is not required for wildlife-dependent recreational uses, 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?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	✓	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?	✓	
(h) Will this be manageable in the future within existing resources?	✓	
(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?	✓	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	✓	

Where 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 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

Refuge Manager: Bud Kudren

Date: 6/11/13

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: Ac Gittner

Date: 7/5/13

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

FWS Form 3-2319
02/06

JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

REFUGE NAME: Patuxent Research Refuge

USE: Horseback riding

NARRATIVE:

Horseback riding on the refuge is a non-priority use, but it provides an increased opportunity for public visitation to the refuge. It encourages opportunities to engage visitors in some of the six priority public uses, specifically wildlife observation and photography. Due to the length of some trails, horseback riding provides visitors with an opportunity to engage in wildlife-dependent recreation in more remote parts of the refuge that generally receive lower amounts of public use. In addition, individuals are exposed to a variety of habitats and wildlife management strategies which may increase their appreciation of natural resources and the National Wildlife Refuge System.

Horseback riding may provide opportunities for visitors to observe and learn about wildlife and refuge lands firsthand and at their own pace in an unstructured environment. These uses may also enhance the public's understanding and appreciation for the refuge's natural resources, wildlife conservation, and land protection. We anticipate that participation in this use will produce a more informed public, with an enhanced stewardship ethic and enhanced support and advocacy for the U.S. Fish and Wildlife Service and natural resources as a whole. In a 2011 visitor use survey, only 2 percent of those sampled during the sampling period were participating in horseback riding (Sexton et al. 2011). However, over the past few years, the refuge has documented, on average, approximately 100 equestrian visits annually.

Horseback riding has been allowed on the refuge since the North Tract was obtained in 1991, and was found compatible in 1992 and again in 2007. The refuge has existing infrastructure such as the trail and roadway system, parking lots, signage, and other facilities that support priority public uses, which will also accommodate horseback riding. Horseback riding is limited to designated trails and roadways that accommodate safe passage by these and other users. There have been few documented complaints from other members of the public regarding horseback riding on the refuge.

Horseback riding has, therefore, been found appropriate because it is consistent with the goals and objectives of the Comprehensive Conservation Plan, in particular goal 5 which includes providing for high-quality recreation experiences to enhance refuge visitors' understanding and appreciation of fish and wildlife conservation.

COMPATIBILITY DETERMINATION

USE:

Horseback Riding

REFUGE NAME:

Patuxent Research Refuge

ESTABLISHING AND ACQUISITION AUTHORITIES:

Executive Order 7514, dated December 16, 1936; Executive Order 11724, dated June 27, 1973; 16 U.S.C. 715d, Migratory Bird Conservation Act of 1929; 16 U.S.C. 1534; 16 U.S.C. 667b, dated May 19, 1948 - An Act Authorizing the Transfer of Certain Real Property for Wildlife or other purposes; and Public Law 101-519 Sec. 126, 104 Stat. 2247, dated November 5, 1990.

REFUGE PURPOSES:

1. "...as a wildlife experiment and research refuge" – Executive Order 7514, dated December 16, 1936
2. "...recreation, conservation, wildlife preservation, and related scientific and educational activities" – Executive Order 11724, dated June 27, 1973
3. "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds" – 16 U.S.C. 715d, dated February 18, 1929 (Migratory Bird Conservation Act)
4. "...to conserve fish, wildlife and plants, including those which are listed as endangered species or threatened species – 16 U.S.C. 1534, dated December 28, 1973 (Endangered Species Act)
5. "...particular value in carrying out the national migratory bird management program." – 16 U.S.C. 667b, dated May 19, 1948 (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes)
6. "... (b) The Secretary of the Interior shall administer the property transferred pursuant to subsection (a) consistent with wildlife conservation purposes and shall provide for the continued use of the property by Federal agencies to the extent such agencies are using it on the date of the enactment of this Act." – Public Law 101-519 Sec. 216, 104 Stat. 2247, dated November 5, 1990 (Defense Appropriation Act – including transfer of the North Tract from Fort Meade).

NATIONAL WILDLIFE REFUGE SYSTEM MISSION:

"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." 16 U.S.C. 668dd(a)(2) (National Wildlife Refuge System Improvement Act of 1997)

DESCRIPTION OF USE:

What is the use? Is it a priority public use?

The use is horseback riding. Horseback riding is not a priority public use within the National Wildlife Refuge System (Refuge System) under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 6688dd-668ee) and the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). However, when conducted responsibly, it can facilitate wildlife-dependent uses such as wildlife observation and photography.

Horseback riding was a traditional use allowed on the North Tract of the refuge when the land was administered by the Department of Defense (DOD). At that time, horseback riding was associated with a DOD equestrian center, but the DOD has since retired the center due to funding and possible disease concerns, such as Eastern Equine Encephalitis.

Where would the use be conducted?

This activity will occur only on the North Tract trail and roadway system. This includes: Wildlife Loop (8 miles shoulder use only), Kingfisher Road (1.3 miles), Wild Turkey Way (3.6 miles), Sweetgum Lane (1.6 miles), Whip-Poor-Will Way (1.8 miles), South Road (1.2 miles), Pine Trail (.75 miles), trail around Lake Allen (1.5 miles), and trail around Rieve's Pond (.5 miles).

These trails were originally constructed in the early 1900s to facilitate Fort Meade training operations, and were built to support a variety of military vehicles such as tanks, half-tracks, and other heavy equipment. These trails are typically 25 to 30 feetwide, with a solid gravel/sand base, with the exception of Wildlife Loop which is asphalt with a gravel and dirt shoulder. The refuge has no documentation of erosion and/or trail damage from equestrian use since obtaining this property from the DOD.

When would the use be conducted?

The use will be conducted during the North Tract's regular public hours, typically 8 a.m. to 4 p.m., with some seasonal variations for later closing hours, depending on staffing. Horseback riding will not be allowed during the annual white-tailed deer shotgun season, when the North Tract is closed to all other public uses.

How would the use be conducted?

All persons wishing to horseback ride on the North Tract are required to check-in, in accordance with the Public Use and Checking In and Checking Out Procedures for the North Tract. This procedure ensures visitors identify the purpose of their visit, educates them to any area closures or restrictions, and requires they sign a statement acknowledging they are aware of the presence of unexploded ordnance in the area. Portions of the road and trail system may be temporarily closed to support priority public uses, wildlife management, refuge operational needs, and some refuge-specific hunting seasons. Persons engaged in horseback riding will use existing access points, parking lots, signage, and refuge roads to access the trail system.

All designated roads and trails have sufficient viewing distance for riders to detect the approach of other users and maneuver to accommodate them. Horses must be accompanied by riders at all times and not tied to trees, staked, or confined in any way. Horseback riding is typically seasonal

with the majority of the use occurring during spring and summer months. Riders are requested to clean up manure from staging areas, including the Visitor Contact Station, and pack out all materials.

Why is the use being proposed?

Horseback riding on the refuge provides increased opportunity for public visitation to the refuge. It also allows for opportunities to engage in some of the six priority public uses, specifically wildlife observation and photography. This use may provide individuals with a connection to the natural world and an increased appreciation of natural resources, in addition to exposing them to the Refuge System.

Horseback riding has been allowed on the refuge since the North Tract was obtained in 1991. There have been few documented complaints from other members of the public regarding horseback riding on the refuge.

AVAILABILITY OF RESOURCES:

The refuge has been open for a number of years to hunting, fishing, wildlife viewing, interpretation, environmental education, and photography. The refuge has existing infrastructure such as the trail and roadway system, parking lots, signage, and other facilities that support priority public uses which will also accommodate horseback riding. It is expected that the use of the trail and roadway system by horseback riders will only slightly increase the general operating cost for the maintenance of these facilities. To administer, maintain, and survey the facilities and the use will require approximately 30 staff days.

Identifier	Cost
Administration/management to facilitate activity, this includes staff/law enforcement and survey facilities	\$4,600/yr
Maintenance of buildings, roadways, trails and parking areas	\$14,000/yr
Supplies and support	\$1,000/yr
Operating cost	\$5,500/yr
Total Costs	\$25,100/yr

These tables represent only a portion of the cost of maintaining the trail and roadway systems. This cost is prorated over various operational needs such as public uses, public safety, and other refuge operations. After review of the refuge budget, there are sufficient funds to sustain this activity.

ANTICIPATED IMPACTS OF THE USE:

Horseback riding has the potential to affect a variety of migratory and resident wildlife and their habitats when in close proximity to the travel routes. Possible negative effects include: disturbing wildlife, removing or trampling vegetation, littering, vandalism, and entering closed areas. However, visitor use associated with this activity is relatively low, relative to other public uses, with between 90 and 150 visits by horseback riders annually since fiscal year 2007. In a 2011 visitor use survey only 2 percent of the visitors sampled during the sampling period were participating in horseback riding (Sexton et al. 2011).

Effects on Hydrology and Water Quality

This use has limited potential to have effects on hydrology and/or water quality. The trails where this use is allowed do cross riparian drainages and the Little Patuxent River. However, the roads are gravel/sand or asphalt (Wildlife Loop) and are fairly resistant to erosion that might be expected on trails made out of dirt or more organic parent materials. Horse use has been linked to increased coliform bacteria from fecal contamination in at least one study in wilderness areas (Derlet et al. 2008). However, this research was conducted in areas used heavily by pack horses and in some areas by cattle.

The trails themselves do alter hydrological regimes and interrupt streamflow. A significant emphasis in this comprehensive conservation plan (CCP) is to identify those drainages most impaired by man-made structures and work to restore them to a more natural hydrology where possible. Refuge staff routinely monitors roads and trails for damage and then remediate problem areas as needed. Trail maintenance is conducted to help minimize any negative effects associated with trail use. Refuge staff will ensure that any potential negative effects are avoided or minimized. Based on the current and projected levels of use, condition of designated routes, and minimization measures employed, adverse effects on water resources because of this use are expected to be minimal.

Effects on Vegetation

Horse travel can impact plants on roads and trails by crushing them. Indirectly, horses can impact plants by compacting soils, thereby diminishing soil porosity, aeration and nutrient availability (Kuss 1986). Hammitt and Cole (1998) note compaction limits the ability of plants to revegetate affected areas. Plants growing in wet or moist soils are the most sensitive to disturbance from trampling effects (Kuss 1986). Weaver and Dale (1978) found horse use caused a greater loss of vegetation cover, wider and deeper roads and trails, and greater soil compaction when compared to hiker use on meadow and forest trail conditions. Some incidental grazing along roads and trails may occur as well. Therefore, it is anticipated that horses will have some impacts on refuge plant communities growing on the designated travel routes. Designated routes for horseback riding consist of former military roads with hardened surfaces, and are located predominately on upland soils to prevent impacts to fragile wetland soils and associated plant communities. Designated routes do not have any known occurrences of rare plant species on their surface that would be affected by this use. The refuge does not allow tethering horses to trees or other vegetation, which will help prevent further damage to vegetation.

Invasive plant species that alter native vegetation may be transported onto the refuge through the presence of exotic plant seeds in feed hay, horse trailers, and horse manure. While this is a concern, this is only one of several contributing sources for the invasive species along roadsides and trails. Transport of weed seeds from vehicle tires or footwear are other contributors. This makes it difficult to measure the relative contributions from each source and the elimination of horses from trails would not alone resolve the issue. This concern has initiated strict requirements for weed-free hay in some national parks and forests. Also, it takes 48 hours for the food to completely pass through the horses' gastrointestinal system, so precise timing of feeding before visiting the refuge may be unrealistic. Most hay comes from carefully managed pastures where emphasis is placed on quality forage species such as orchardgrass, bluegrass, fescue,

timothy, which are heavily grazed in the pastures and seldom have an opportunity to go to seed. Japanese stiltgrass, a problem species at the refuge, is not common in managed, heavily grazed pastures, but would be found in unmanaged areas removed from the pastures and therefore not likely to be in the grazers' diet (Burk, A.O. Ph.D, University of Maryland, personal communication, November 6, 2012). Due to the relatively short timeframe for horseback riding excursions on the refuge, most users do not even bring in supplemental feed. This could potentially be a realistic control point for the refuge to minimize invasive plant introductions by requiring that, should visitors desire to bring feed along, they ensure that feeding be confined only to inside the trailer and by disallowing cleanout of trailers while onsite. However, it has not been identified as a problem to this point by refuge staff. It is anticipated that horse use will cause minimal increases in invasive plants relative to the current presence of invasive plants on the refuge.

The refuge anticipates that there will be minimal adverse impacts to plant communities on designated routes. Most routes designated for horse use have hardened surfaces where plant communities are sparse or already have a heavy mix of invasive species such as Japanese stiltgrass. Users leaving designated trails could have impacts to adjacent vegetation. Where impacts to vegetation are observed, we will take necessary measures, such as remediation and trail closures, to restore plant communities on or adjacent to the affected trail.

Effects on Soils

Horses can cause physical impacts to soil surfaces. Horses may cause trail erosion by loosening the soil and increasing soil particle detachment under both wet and dry trail conditions (Deluca et al. 1998). Horses can also increase soil compaction (Weaver and Dale 1978). All of the trails open for horseback riding are former military roads made up of gravel and sand, or asphalt (Wildlife Loop), were extensively used by military vehicles, and are currently used by refuge and public vehicles. Therefore, soils are generally compacted and less susceptible to additional physical impact and mechanical erosion. The refuge will take all reasonable measures to prevent or minimize any potential negative effects, and will evaluate the roads and trails periodically to assess whether they meet established suitability criteria and to prevent degradation. If evidence of unacceptable adverse impacts appears, the refuge will re-route, curtail, or close trails to this use as deemed appropriate. The refuge staff will also post and enforce refuge regulations, and establish, post, and enforce closed areas. Based on the information provided above and the current and projected levels of use, we anticipate that there will be minimal adverse impacts to soils associated with horse use.

Effects on Wildlife

Disturbances vary with the wildlife species involved and the type, level, frequency, duration, and the time of year such activities occur. The responses of wildlife to human activities include avoidance or departure from the site (Owen 1973, Burger 1981, Kaiser and Fritzell 1984, Korschen et al. 1985, Kahl 1991, Klein 1993, Whittaker and Knight 1998), the use of sub-optimal habitat (Erwin 1980, Williams and Forbes 1980), altered behavior or habituation (Burger 1981, Korschen et al. 1985, Morton et al. 1989, Ward and Stehn 1989, Havera et al. 1992, Klein 1993, Whittaker and Knight 1998), attraction (Whittaker and Knight 1998), and an increase in energy expenditure (Morton et al. 1989, Belanger and Bedard 1990). Mammals may become habituated to humans, making them easier targets for hunters.

Disturbance can have other effects including shifts in habitat use, abandonment of habitat, and increased energy demands on affected wildlife (Knight and Cole 1991). The effects of roads and trails on plants and animals are complex, and not limited to, trail width. Trail use can disturb areas outside the immediate trail corridor (Trails and Wildlife Task Force 1998, Miller et al. 2001). Bird communities in this study were apparently affected by the presence of recreational roads and trails, where common species (e.g., American robins) were found near trails and rare species (e.g., grasshopper sparrows) were found farther from trails. Songbird nest failure was also greater near trails. Several studies have examined the effects of recreationists on birds using shallow-water habitats adjacent to trails and roads through wildlife refuges and coastal habitats in the eastern United States (Burger 1981, Burger 1986, Klein 1993, Klein et al. 1995, Rodgers and Smith 1995, Rodgers and Smith 1997, Burger and Gochfeld 1998). Overall, the existing research clearly demonstrates that disturbances from recreation activities have at least temporary effects on the behavior and movement of birds within a habitat or localized area.

Anticipated impacts of horseback riding on wildlife include temporary disturbances to species using habitat on the trail or directly adjacent to the trail. These disturbances are likely to be short term and infrequent as much of the use is concentrated during weekends in the spring and summer. Use of some roads and trails may cause direct mortality to amphibians crossing trails during migration or foraging. There may also be nest abandonment of bird species nesting on, or next to, trails should horse use become heavy enough. Long-term impacts may include certain wildlife species avoiding trail corridors as a result of this use over time.

However, trails open to horseback riding are located primarily in continuous tracts of hardwood or mixed hardwood/pine forests, with some open meadow areas mixed in. More sensitive and/or underrepresented wildlife habitats such as riparian and wetland areas were avoided, reducing the potential for wildlife disturbance. Locating these trails in upland forested habitat spreads the disturbance over the largest habitat type on the refuge, minimizing the overall impact on refuge wildlife associated with this habitat.

The trails open to horseback riding are also open to hiking, biking, hunting, vehicle access (most, not all trails), and jogging, all of which are more common uses than horseback riding. Therefore, disturbance to wildlife due to horseback riding is expected to be far more minimal than disturbance by other user groups.

Effects on Threatened and Endangered Species

There are no federally listed species known to occur on the refuge. Several State-listed species of dragonflies and damselflies have been documented on the refuge, but, for the most part, they are located in small gravel pit/open water areas far from these public use trails. There are also a variety of State-listed darkling beetle species on the refuge, in the vicinity of the savannah restoration area in the northwest corner of the refuge, adjacent to Whip-Poor-Will Way and Sweetgum Way, both open to horseback riding. Direct mortality from trampling is possible but considered highly improbable.

PUBLIC REVIEW AND COMMENT:

As part of the comprehensive conservation planning process for Patuxent Research Refuge, this compatibility determination underwent extensive public review, including a comment period of 45 days following the release of the draft CCP/Environmental Assessment. We received a number of comments in writing and at the public meetings. A listing of the comments along with our responses can be found in appendix I of the CCP. We made two changes to the compatibility determination based upon the comments that we received. First, we will not require cleanup of manure along trails. We still require cleanup in parking lots and will work with riding groups to clean manure from areas within one half mile of the parking lot. Second, we will not require all riding to be done at a walk. We require that horses walk when encountering another user.

DETERMINATION (CHECK ONE BELOW):

- Use is not compatible
 Use is compatible with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

The refuge will continue to monitor trail and roadway conditions to determine the effects on adjacent plant communities and take necessary steps to protect habitat. This will include, but is not be limited to, protecting soil from compaction, seasonal closure of trails, and relocating trails.

All horseback riders will be restricted to the trail and roads previously identified. No expansion of this use is anticipated. Continued use of existing routes is not likely to cause further wetland alteration or degradation. There is low risk that hydrology, soil stability, sensitive plant communities, riparian zones, and wildlife habitats would be adversely affected.

Free-trailing or loose-herding of horses on trails is prohibited.

Allowing horses to proceed in excess of a walk when passing in the immediate vicinity of a moving vehicle or persons on foot or bicycle is prohibited.

Horseback rider group size is encouraged to be no more than 10 persons to promote public safety, reduce conflict with other users, promote a quality experience, and reduce wildlife disturbance. Groups larger than 10 persons must contact the refuge office prior to visiting the trail system so the refuge can determine if a special use permit is needed.

Horses will not be staked, hobbled, tied to trees, or confined on the refuge in any way and must be accompanied by riders at all times.

Horse trailers will be restricted to the Visitor Contact Station parking lot and other designated parking areas nearby if overflow is needed.

Cleaning out of trailers while on site is prohibited. Do not shovel manure out of horse trailers in staging areas. Horse manure must be cleaned up and packed out of staging areas.

If feed is brought on site, only certified weed-free hay is permitted. Feeding must take place only inside trailer. Processed horse pellets are also allowed.

Potential conflicts with other public uses such as hunting, interpretation, etc. will be minimized by informing visitors about current public use activities as well as which activities are authorized in specific locations throughout the refuge.

This use may be restricted during the fall and winter when the refuge has priority, wildlife-dependent activities (like deer hunting) in progress, to help ensure public safety and minimize user conflicts.

We have a strategy to deal with the introduction of invasive plant species from any source, including potential introduction from horse use. Invasive species management will encompass three objectives: (1) prevent the introduction of new invasive plant species, (2) conduct early treatment of new infestations of invasive plant species, and (3) contain and control established infestations of invasive plant species. The trail and roadway system which will be used for horseback riding are already infested with invasive species such as Japanese Stiltgrass, mile-a-minute, Japanese barberry, spotted knapweed, Chinese silvergrass, and Korean Lespedeza.

JUSTIFICATION:

The U.S. Fish and Wildlife Service and the Refuge System maintain goals of providing opportunities to view wildlife. Allowing the use of the trail system by persons engaging in horseback riding, for the sake of riding, will facilitate wildlife observation. These users may take the time to learn more about the refuge and become avid supporters of the Refuge System.

This use generally does not adversely impact the refuge's research purpose since large portions of the refuge are closed to the visiting public. The Central Tract portion of the refuge is set aside specifically to support research. Horseback riding supports goal 5 of the CCP which is to provide high-quality recreation, environmental education, and interpretive programs to enhance refuge visitors' understanding and appreciation of fish and wildlife conservation. At the scales and level of current levels of horseback riding, wildlife and habitats are not appreciably negatively affected by these uses, based on professional judgment and the consistently high biodiversity observed on the refuge.

Horseback riding will not materially interfere with or detract from the two purposes related to wildlife conservation because impacts to wildlife species and habitat will be minimal. In addition, the trails used for these activities do not impact core habitat areas. This use will not materially interfere with or detract from the two purposes related to migratory bird conservation, because these uses are allowed in areas that are generally not in the vicinity of migratory waterfowl or land bird habitat. This use will not materially interfere with or detract from the endangered species purpose, because there are no federally listed threatened or endangered species that occur on the refuge. Finally, horseback riding will not materially interfere with or detract from the mission of the U.S. Fish and Wildlife Service, because of the limited impacts to refuge resources and the opportunity to reach other users as supporters of the Refuge System.

SIGNATURE:

REFUGE MANAGER:

Bruce Knudsen 6/11/13

(signature and date)

CONCURRENCE:

REGIONAL CHIEF:

Scott B. / Cole 8/19/2013

(signature and date)

MANDATORY 10-YEAR REEVALUATION DATE: 2023

REFERENCES:

- Belanger, L. and J. Bedard. 1990. Energetic cost of man-induced disturbance to staging snow geese. *Journal of Wildlife Management* 54:36.
- Boyle, S.A. and F.B. Samson. 1985. Effects of nonconsumptive recreation on wildlife: a review. 13:110-116.
- Burger, J. 1981. Effect of human activity on birds at a coastal bay. *Biological Conservation* 21:231-241.
- Burger, J. 1986. The effect of human activity on shorebirds in two coastal bays in northeastern United States. *Biological Conservation* 13:123-130.
- Burger, J. and M. Gochfeld. 1998. Effects of eco-tourists on bird behavior at Loxahatchee National Wildlife Refuge, Florida. *Environmental Conservation* 25:13-21.
- Carlson, James R., PhD. <http://www.bioone.org/doi/abs/10.1580/PR05-05.1-aff1#aff1>.
- DeLuca, T.H., W.A.I. Patterson, W.A. Freimund, and D. Cole. 1998. Influence of llamas, horse, and hikers on soil erosion from established recreation trails in Western Montana, USA. *Environmental Management* 22:255-262.
- Derlet, R.W., K.A. Ger, J.R. Richards, and J.R. Carlson. 2008 Risk factors for coliform bacteria in backcountry lakes and streams in the Sierra Nevada mountains: a 5-year study. *Wilderness Environ. Med.* 19:82-90.
- Erwin, R.M. 1980. Breeding habitat use by colonially nesting waterbirds in two Mid-Atlantic U.S. regions under different regimes of human disturbance. *Biological Conservation* 18:39-51.
- Ger, K. Ali. <http://www.bioone.org/doi/abs/10.1580/PR05-05.1-aff1#aff1>.
- Hammit, W.E. and D.N. Cole. 1998. *Wildlife recreation: ecology and management* (2nd edition). John Wiley & Sons, New York. 361 pp.
- Kahl, R. 1991. Boating disturbance of canvasbacks during migration at Lake Poygan, Wisconsin. *Wildlife Society Bulletin* 19:242-248.

- Kaiser, M.S. and E.K. Fritzell. 1984. Effects of river recreationists on green-backed heron behavior. *Journal of Wildlife Management* 48: 561-567.
- Klein, M.L. 1989. Effects of high levels of human visitation on foraging waterbirds at J.N. "Ding" Darling National Wildlife Refuge, Sanibel, Florida. Final Report to USFWS. 103 pp.
- Klein, M.L. 1993. Waterbird behavioral responses to human disturbance. *Wildlife Society Bulletin* 21:31-39.
- 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. *Transactions of the 56th North American Wildlife and Natural Resources Conference* pp. 238-247.
- Korschen, C.E., L.S. George, and W.L. Green. 1985. Disturbance of diving ducks by boaters on a migrational staging area. *Wildlife Society Bulletin* 13:290-296.
- Kuss, F. 1986. A review of major factors influencing plant responses to recreation impacts. *Environmental Management* 10:638-650
- Miller, S.G., R.L. Knight, and C.K. Miller. 1998. Influence of recreational trails on breeding bird communities. *Ecological Applications* 8(1):162-169.
- Morton, J.M., A.C. Fowler, and R.L. Kirkpatrick. 1989. Time and energy budgets of American black ducks in winter. *Journal of Wildlife Management* 53:401-410 (See also corrigendum in *Journal of Wildlife Management* 54:683).
- Owen, M. 1973. The management of grassland areas for wintering geese. *Wildfowl* 24:123-130.
- 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.
- Sexton, N.R., A.M. Dietsch, A.W. Don Carlos, L. Koontz, A. Solomon, and H.M. Miller. 2011. National wildlife refuge visitor survey 2010/2011: individual refuge results. U.S. Geological Survey Data Series 643.
- Standard Operating Procedures, Patuxent Research Refuge, Public Use and Checking In/Out of the North Tract, 7/20/2003.
- Summer, R. 1986. Geomorphic impacts of horse traffic on montane landforms. *Journal of Soil and Water conservation* 41:126-128.
- Weaver, T. and D. Dale. 1978. Trampling effects of hikers, motorcycles and horses in meadows and forests. *Journal of Applied Ecology* 15:451-457.
- Whittaker, D. and R.L. Knight. 1998. Understanding wildlife responses to humans. *Wildlife Society Bulletin* 26:312-317.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Patuxent Research Refuge

Use: Production of Educational Films; Conducting Photo. Workshops

This form is not required for wildlife-dependent recreational uses, 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?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	✓	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?	✓	
(h) Will this be manageable in the future within existing resources?	✓	
(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?	✓	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description); compatible, wildlife-dependent recreation into the future?	✓	

Where 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 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

Refuge Manager: Brad Knudsen

Date: 6/11/13

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: AC Gittone

Date: 7/5/13

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

FWS Form 3-2319
02/06

JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

REFUGE NAME: Patuxent Research Refuge

USE: Production of Educational Films and Conducting Photography Workshops

NARRATIVE:

The proposed use includes the production of educational films and conducting photography workshops on Patuxent Research Refuge. The emphasis is placed on wildlife and scenic photography. Neither film production nor conducting photography workshops are priority public uses; however, they both support and enhance the priority public uses of environmental education, interpretation, and wildlife photography.

The production of, and involvement with, environmental filming and photography workshops will provide participants with an opportunity to learn about wildlife, habitats, and natural resources, while providing similar experiences to the general populous through educational films. This allows the refuge to educate the public with a low-impact secondary activity. By allowing these uses, the visiting public will have a better understanding and appreciation for wildlife, habitats, and the cultural history of the refuge, and of the importance of the National Wildlife Refuge System.

These uses are low impact, low cost, and highly controllable. Relatively small areas of the refuge are impacted by these activities. The educational value of these filming productions is very high. Many are marketed through public broadcasting stations reaching a broad spectrum and large number of potential customers. Photography workshops increase the interest in wildlife resources and the awareness for the benefits of refuges Nationwide.

COMPATIBILITY DETERMINATION

USE:

Production of Educational Films and Conducting Photography Workshops

REFUGE NAME:

Patuxent Research Refuge

ESTABLISHING AND ACQUISITION AUTHORITIES:

Executive Order 7514, dated December 16, 1936; Executive Order 11724, dated June 27, 1973; 16 U.S.C. 715d, Migratory Bird Conservation Act of 1929; 16 U.S.C. 1534; 16 U.S.C. 667b, dated May 19, 1948 - An Act Authorizing the Transfer of Certain Real Property for Wildlife or other purposes; and Public Law 101-519 Sec. 126, 104 Stat. 2247, dated November 5, 1990.

REFUGE PURPOSES:

1. "...as a wildlife experiment and research refuge" – Executive Order 7514, dated December 16, 1936
2. "...recreation, conservation, wildlife preservation, and related scientific and educational activities" – Executive Order 11724, dated June 27, 1973
3. "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds" – 16 U.S.C. 715d, dated February 18, 1929 (Migratory Bird Conservation Act)
4. "...to conserve fish, wildlife and plants, including those which are listed as endangered species or threatened species – 16 U.S.C. 1534, dated December 28, 1973 (Endangered Species Act)
5. "...particular value in carrying out the national migratory bird management program." – 16 U.S.C. 667b, dated May 19, 1948 (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes)
6. "...(b) The Secretary of the Interior shall administer the property transferred pursuant to subsection (a) consistent with wildlife conservation purposes and shall provide for the continued use of the property by Federal agencies to the extent such agencies are using it on the date of the enactment of this Act." – Public Law 101-519 Sec. 216, 104 Stat. 2247, dated November 5, 1990 (Defense Appropriation Act – including transfer of the North Tract from Fort Meade).

NATIONAL WILDLIFE REFUGE SYSTEM MISSION:

"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." 16 U.S.C. 668dd(a)(2) (National Wildlife Refuge System Improvement Act of 1997)

DESCRIPTION OF USE:

What is the use? Is the use a priority public use?

This secondary use is producing educational films and conducting photography workshops on Patuxent Research Refuge. Film productions usually involve two to five people. Photographic workshops usually involve approximately 10 to 20 participants and an instructor. The emphasis is placed on wildlife and scenic photography. Neither film production nor photography workshops are priority public uses; however, they both support and enhance the priority public use of wildlife photography. In addition, the films produced normally support the priority public uses of environmental education and interpretation.

Where would the use be conducted?

This type of filming and photography can take place in a variety of refuge habitats and at varying times of the year, depending on the objectives of the project. Filming is permitted for educational purposes.

When would the use be conducted?

The productions and workshops would be conducted at different times of year depending on the subject matter.

How would the use be conducted?

The filming and photography involved in these types of productions would be conducted in specified areas of the refuge depending on season, number of requests, and possible impacts to the resource. Specific areas of the refuge would be identified for the activity and participants would remain in the specified location. A special use permit with appropriate conditions would be issued each time those activities are allowed.

Why is this use being proposed?

The production of, and involvement with, environmental filming and photographic workshops will allow participants an opportunity to learn about wildlife and natural resources, while providing similar experiences to the general populous through educational films. This allows the refuge to educate the public with a low impact non-priority activity.

AVAILABILITY OF RESOURCES:

Time spent reviewing, issuing, and overseeing permit holders will be minimal for refuge staff, and therefore, resources are available.

ANTICIPATED IMPACTS OF THE USE:

Impacts to wildlife would be similar to potential disturbance from other activities which usually are conducted adjacent to some refuge impoundments, such as wildlife observation, hiking, environmental education and interpretation.

Conflicts arise when migratory birds and humans are present in the same areas (Boyle and Samson 1985). The presence of people on refuge trails and roads can lead to displacement of animals from trails, although disturbance usually is a negligible influence on large mammal distributions and movements (Purdy et al. 1987, Boyle and Samson 1985). The effects on other

forms of wildlife appear to be short-term with the exception of breeding bird communities. A study by Miller, Knight, and Miller (1998) indicates that species composition and nest predation was altered adjacent to trails in both forested and grassland habitats. It appears that species composition changes are due to the presence of humans and not the trail or roadway itself. On the other hand, nest predation does appear to be a function of the trail which allows access to mammalian nest predators. The refuge will continue management strategies of educating trail and roadway users how of their activities affect wildlife and how to modify their use to minimize impacts on wildlife.

The use of trails and gravel roads could lead to soil compaction, exposure of tree roots, and the modification of plant species 3 to 6 feet on either side of the trail which is a function of soil compaction, invasive species, and direct trampling of plants (Kuss 1986). The refuge will continue its management practices of the use of boardwalks, woodchips, erosion control, and user education to protect plant species and habitats along trails and roadways. Potential conflict with priority public uses will be minimized by using trail head signs and other media to inform the various users about current public uses and by restricting filming opportunities and photography workshops during critical times. Some trail and roadway use will be restricted during the refuge-specific hunting seasons, primarily during shotgun season. Portions of trails and roadways are closed seasonally to reduce human disturbance to wintering and nesting waterfowl and these closures would be adhered to for filming and photography workshop purposes.

People and vehicles can be vectors for invasive plants when seeds or other propagules are moved from one area to another. Once established, invasives can out compete native plants, thereby altering habitats and indirectly impacting wildlife. The threat of invasive plant establishment will always be an issue requiring annual monitoring and, when necessary, treatment. Staff will work to eradicate invasives and educate the visiting public.

Similar types of disturbance related to hiking, wildlife observation, environmental education and interpretation may occur on the refuge when filming and photographic workshops occur. The degree of disturbance will depend on the time of year. Due to the infrequency of these uses and restrictions placed on them, disturbance is expected to be minimal.

The refuge does not support large numbers of migratory waterfowl or shorebirds and as such, filming activities are not expected to significantly impact either migrating or wintering waterfowl or shorebirds any more than other wildlife dependent uses (e.g., wildlife observation). Filming would not be allowed in sensitive areas where negative impacts to wildlife would be likely. Sensitive areas would include captive breeding areas in the Endangered Species Area. Requests will be carefully coordinated and planned in conjunction with U.S. Geological Survey staff.

PUBLIC REVIEW AND COMMENT:

As part of the comprehensive conservation planning process for Patuxent Research Refuge, this compatibility determination underwent extensive public review, including a comment period of 45 days following the release of the draft Comprehensive Conservation Plan/Environmental Assessment. We did not receive any comments specific to this filming and photography workshop compatibility determination.

DETERMINATION (CHECK ONE BELOW):

- Use is not compatible
 Use is compatible with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

Conducting these activities in areas normally open to the public will be coordinated with refuge staff in advance, to lessen impacts to all wildlife.

Participants and equipment will be restricted to public trails and roads.

These activities will require a special use permit that may include additional specific stipulations.

The size and number of photography workshops will be restricted as necessary depending on the time of year and nature of the request.

These activities will be prohibited in areas deemed the most critical for migratory birds and other wildlife depending on the season.

JUSTIFICATION:

By allowing the uses described in this determination, the visiting public will have a better understanding and appreciation for wildlife, the cultural history of the refuge, and the importance of the National Wildlife Refuge System (Refuge System). One of the secondary goals of the Refuge System is to provide opportunities for the public to develop an understanding and appreciation for wildlife wherever those opportunities are compatible. These uses are low impact, low cost, and highly controllable. Relatively small areas of the refuge are impacted by these activities.

Educational filming is a non-wildlife-dependent use that can be used as a tool to educate the public about the mission of the Refuge System, in addition to encouraging participation in wildlife-dependent uses. The act of photography is a priority wildlife-dependent use for the Refuge System through which the public can develop an appreciation for fish and wildlife (Executive Order 12996, March 25, 1996, and the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57)).

These uses will not adversely impact the refuge's research purpose since large portions of the refuge are closed to the visiting public. The Central Tract portion of the refuge is set aside specifically to support research. At the infrequency of these uses, wildlife and habitats will not be appreciably negatively affected by these uses, based on professional judgment and the consistently high biodiversity observed on the refuge.

These uses will not materially interfere with or detract from the two purposes related to wildlife conservation. Refuge staff will determine the locations for these workshops to ensure reduced levels of impacts to wildlife. These uses will not materially interfere with or detract from the two

purposes related to migratory bird conservation, because these uses will generally not be allowed in the vicinity of migratory waterfowl or land bird habitat during sensitive times of year. Filming and photography workshops will not materially interfere with or detract from the endangered species purpose, because there are no federally listed threatened or endangered species that occur in the wild on the refuge. Finally, filming and photography workshops will not materially interfere with or detract from the mission of the Refuge System, because of the limited locations where they will occur on the refuge and the limited number of individuals that will be participating.

SIGNATURE:

REFUGE MANAGER:

Burl Knudson 6/11/13

(signature and date)

CONCURRENCE:

REGIONAL CHIEF:

Scott B. Van 8/19/2013

(signature and date)

MANDATORY 10-YEAR REEVALUATION DATE: 2023

REFERENCES:

Boyle, S.A. and F.B. Samson. 1985. Effects of nonconsumptive recreation on wildlife: a review. Wildlife Society Bulletin 13:110-116.

Kuss, F. 1986. A review of major factors influencing plant responses to recreation impacts. Environmental Management 10:638-665.

Miller, S.G., Knight R.L., and Miller C.K. 1998. Influence of recreational trails on breeding bird communities. Ecological Applications 8(1):162 -169.

Purdy, Goff, Decker, Pomerantz, Connelly. 1987. A guide to managing human activity on a national wildlife refuge. New York Cooperative Fish and Wildlife Research Unit.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Patuxent Research Refuge

Use: Wildlife Research

This form is not required for wildlife-dependent recreational uses, 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?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	✓	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?	✓	
(h) Will this be manageable in the future within existing resources?	✓	
(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?	✓	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D.603 FW 1, for description) compatible, wildlife-dependent recreation into the future?	✓	

Where 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 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

Refuge Manager: Brad Knudsen

Date: 6/11/13

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: Ae Sittner

Date: 7/5/13

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

FWS Form 3-2319
02/06

JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

REFUGE NAME: Patuxent Research Refuge

USE: Wildlife Research

NARRATIVE:

Pursuant to Executive Order 7514 by President Franklin Roosevelt, the refuge was established on December 16, 1936 to preserve the Nation's wildlife and to conduct wildlife research. Land was acquired under this authority as a national wildlife refuge on which "to effectuate further the purposes of the Migratory Bird Conservation Act" and "as a wildlife experiment and research refuge." By order of the President, the area was to be known as the Patuxent Research Refuge. Dedicated on June 3, 1939, Secretary of Agriculture Henry A. Wallace stated that, "the chief purpose of this refuge is to assist in the restoration of wildlife - one of our greatest natural resources." The original refuge has grown from 2,679 acres in 1936 to 12,842 acres today. Historically, it was the only wildlife research facility in the U.S. Fish and Wildlife Service (Service) with a large land base where wildlife research could be conducted to support biological management decisions applicable to many refuges and other wildlands throughout the United States. As such, it provides a unique opportunity to integrate biological research and on-the-ground application.

Wildlife research is conducted by Service and non-Service personnel, with the bulk of the research conducted by the U.S. Geological Survey's (USGS) Patuxent Wildlife Research Center; colleges; Federal, State, and local agencies; non-governmental organizations; and qualified members of the general public.

The purposes of wildlife research conducted on the refuge are to further the understanding of natural resources and to improve the management of such resources on the refuge or within the National Wildlife Refuge System (Refuge System). A Memorandum of Agreement signed in 2000 by the Directors of the Service and the USGS, stipulated that the refuge would support "priority research," defined as "those projects that are considered important to agencies of the Department of the Interior, the U.S. Fish and Wildlife Service, the National Wildlife Refuge System, and State Fish and Game Agencies, and that address important management issues or demonstrate techniques for management of species and/or habitats."

Wildlife research supports goal 1 of the Comprehensive Conservation Plan (CCP) which is to maintain and actively promote Patuxent Research Refuge as an "outdoor laboratory," providing a diversity of wildlife and natural resource research opportunities on the refuge in such areas as landscape conservation, habitat fragmentation, climate change, and other emerging issues, as well as the more traditional types of wildlife research, including inventory and monitoring techniques, land management, and understanding ecological processes. Research that supports the overall Service mission, and evaluates the best methods for protecting natural resources throughout the Refuge System and other land management agencies will be a priority. Wildlife research has, therefore, been found appropriate because it is consistent with the goals and objectives of the CCP and the defining legislation of Patuxent Research Refuge.

COMPATIBILITY DETERMINATION

USE:

Wildlife Research

REFUGE NAME:

Patuxent Research Refuge

ESTABLISHING AND ACQUISITION AUTHORITIES:

Executive Order 7514, dated December 16, 1936; Executive Order 11724, dated June 27, 1973; 16 U.S.C. 715d, Migratory Bird Conservation Act of 1929; 16 U.S.C. 1534; 16 U.S.C. 667b, dated May 19, 1948 - An Act Authorizing the Transfer of Certain Real Property for Wildlife or other purposes; and Public Law 101-519 Sec. 126, 104 Stat. 2247, dated November 5, 1990.

REFUGE PURPOSES:

1. "...as a wildlife experiment and research refuge" – Executive Order 7514, dated December 16, 1936
2. "...recreation, conservation, wildlife preservation, and related scientific and educational activities" – Executive Order 11724, dated June 27, 1973
3. "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds" – 16 U.S.C. 715d, dated February 18, 1929 (Migratory Bird Conservation Act)
4. "...to conserve fish, wildlife and plants, including those which are listed as endangered species or threatened species – 16 U.S.C. 1534, dated December 28, 1973 (Endangered Species Act)
5. "...particular value in carrying out the national migratory bird management program." – 16 U.S.C. 667b, dated May 19, 1948 (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes)
6. "... (b) The Secretary of the Interior shall administer the property transferred pursuant to subsection (a) consistent with wildlife conservation purposes and shall provide for the continued use of the property by Federal agencies to the extent such agencies are using it on the date of the enactment of this Act." – Public Law 101-519 Sec. 216, 104 Stat. 2247, dated November 5, 1990 (Defense Appropriation Act – including transfer of the North Tract from Fort Meade).

NATIONAL WILDLIFE REFUGE SYSTEM MISSION:

"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." 16 U.S.C. 668dd(a)(2) (National Wildlife Refuge System Improvement Act of 1997)

DESCRIPTION OF USE:

What is the use? Is the use a priority public use?

Research is a scholarly or scientific investigation or inquiry. Patuxent Research Refuge (refuge) was established as a wildlife experiment and research refuge. Wildlife research is not a priority public use on national wildlife refuges, but it directly supports the primary purpose of the refuge (Executive Order 7514, dated Dec. 16, 1936). The wildlife research will be conducted by U.S. Fish and Wildlife Service (Service) and non-Service personnel, with the bulk of the research likely conducted by the U.S. Geological Survey (USGS) Patuxent Wildlife Research Center. The purposes of research conducted on the refuge are to further the understanding of natural resources and to improve the management of such resources on the refuge or within the National Wildlife Refuge System (Refuge System). A Memorandum of Agreement signed in 2000 by the Directors of the Service and the USGS, stipulated that the refuge would support “priority research,” defined as “those projects that are considered important to agencies of the Department of the Interior, the U.S. Fish and Wildlife Service, the National Wildlife Refuge System, and State Fish and Game Agencies, and that address important management issues or demonstrate techniques for management of species and/or habitats.” This CD does not apply to research that is conducted by USGS staff that occurs in facilities that are covered by the MOA between the Service and USGS (2000) or the Occupancy Agreement (2008).

Where would the use be conducted?

The location of the wildlife research will vary depending on the individual research project that is being conducted. Patuxent Research Refuge is located in the National Capital Region just below the fall line of the Patuxent River valley between the Northern Piedmont and Upper Coastal Plain. The majority of the refuge’s 12,841 acres is drained by the Big and Little Patuxent Rivers, which run through the refuge. A small portion of the refuge (southwest corner) is drained by the Anacostia River. Habitat types include old fields, upland deciduous forest, floodplain forest and hardwood bottomland, freshwater nontidal marshes, and impoundments. Rare habitats or plant communities include magnolia bogs and Coastal Plain acidic seeps. The refuge provides habitat for at least 33 mammal species, 49 amphibian and reptile species, 25 orders of insects, and 250 bird species. Although the Central Tract was originally acquired for the research land base and has traditionally provided sites for the majority of the research conducted on the refuge for the past 75 years, other portions of the refuge (North Tract or South Tract) may also be made available for consideration. However, an individual research project is usually limited to a particular habitat type, plant, or wildlife species. On occasion, research projects may encompass an assemblage of habitat types, plants, or wildlife. The research location will be limited to only those areas of the refuge that are necessary to conduct any specific, approved research project.

Much of the ongoing research occurs in animal colonies and pen complexes, exclusively on the Central Tract. These areas include support infrastructure such as wells, well houses, propagation buildings, storage sheds, maintenance shops, etc. Research in these areas include behavioral and contaminant research and endangered species propagation. Activities, operations, and maintenance within these complexes are governed by Occupancy Agreements established in 2009.

When would the use be conducted?

The timing of the research will depend on the individual research project that is being conducted. Scientific research may 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 a refuge hunting season, special precautions or limitations are required to ensure the safety of researchers or staff.

Other constraints include active shooting ranges that limit access to approximately 2,500 acres of the North Tract and the presence of unexploded ordnance on the entire 8,100 acres of the North Tract.

How would the use be conducted?

The methods of a research project will depend on the individual project that is being conducted. The senior refuge biologist will evaluate the methods of each research project before it will be allowed to occur on the refuge. Non-Service research proposals that involve the land base must be submitted to the refuge biologist for a special use permit. Any research involving direct handling of animal life must also be reviewed before the Animal Care and Use Committee (ACUC), a joint team comprised of seven voting members, including a permanent USGS employee and a permanent Service employee. No research project will be allowed to occur if it does not have a study plan approved by the refuge manager, deputy manager, refuge biologist, and ACUC committee (if applicable); or if the refuge manager determines the project may adversely affect wildlife, wildlife habitat, on-going or planned refuge management activities, previously approved research programs, approved priority public uses, or public health and safety. This compatibility determination does not include research projects that involve habitat manipulation of more than 10 acres or that would have an irreversible or long-term impact to habitat of any size unless that manipulation is included in a refuge management plan, such as the comprehensive conservation plan, habitat management plan, fire management plan, or annual habitat work plan.

The Service will encourage and support wildlife 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. Research that informs better management of the Nation's biological resources; is generally considered important to agencies of the Department of the Interior, including the Service, the Refuge System, and State Fish and Game Agencies; and that addresses important management issues or demonstrates techniques for management of species and habitats, will be the priority. The refuge manager may also consider research for other purposes which may not be directly related to refuge-specific objectives, but will contribute to the broader enhancement, protection, use, preservation, and management of populations of fish, wildlife, and plants, and their natural diversity at various landscape scales. These proposals should not substantially interfere with the refuge's purposes of supporting research and wildlife conservation, migratory bird conservation, and endangered species management. The refuge may develop 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 of management treatments, or other assistance as appropriate.

Refuge staff will maintain a database and GIS maps of current research to prevent conflicts; and will impose conditions to prevent negative impacts, such as keeping vehicles on refuge roads, prohibiting intrusive marking of vegetation, or staggering the timing of research at the same locations.

Why is this use being proposed?

This use is being proposed because it is the primary purpose specified for Patuxent Research Refuge. Pursuant to Executive Order 7514 by President Franklin Roosevelt, the refuge was established on December 16, 1936, to preserve the Nation’s wildlife and to conduct wildlife research. Land was acquired under this authority as a national wildlife refuge on which “to effectuate further the purposes of the Migratory Bird Conservation Act” and “as a wildlife experiment and research refuge.” By order of the President, the area was to be known as the Patuxent Research Refuge. Dedicated on June 3, 1939, Secretary of Agriculture Henry A. Wallace stated that, “the chief purpose of this refuge is to assist in the restoration of wildlife - one of our greatest natural resources.” The original refuge has grown from 2,679 acres in 1936 to 12,841 acres today. It was the only research facility in the Service with a large land base where research could be conducted to support biological management decisions applicable to many refuges and other wildlands throughout the United States. As such, it provides a unique opportunity to integrate biological research and on-the-ground application.

Research by non-Service personnel may be conducted by partner agency USGS Patuxent Wildlife Research Center; colleges; Federal, State, and local agencies; non-governmental organizations; and qualified members of the general public.

Past research has included land management activities such as wetland management, grassland and meadow management, population surveys and monitoring techniques, toxicology, and captive propagation of endangered species. Some of this research continues today. However, future research opportunities will likely focus on landscape level conservation issues such as climate change, habitat fragmentation, alternative energy, and urban ecology.

AVAILABILITY OF RESOURCES:

The bulk of the cost for research is incurred in staff time to review research proposals, coordinate with researchers, participate in a review with ACUC members, write special use permits, map the research or study sites, administer some logistics for access, summarize activities for the refuge annual performance plan, and review the research results. In some cases, a research project may only require 1 day of staff time to write a special use permit. Monitoring of research projects occurs through periodic and annual reporting, opportunistic evaluations of site impacts, flagging and equipment removal, final documentation and reporting of the project. In other cases, a research project may require several days of staff time. Currently, a senior refuge biologist and an assistant biologist spend an average of 1 day per week, or 52 days a year, each on administration of research projects conducted by outside researchers. Estimated costs in the below table do not reflect costs involving other USGS ACUC team members spent reviewing

projects. Other refuge staff periodically provides support with coordination of management activities, scheduling research-related meetings, discussing issues with USGS management, and field support.

Task	Staff Days	Cost
Administration and management to facilitate activity	104 GS 12 Biologist \$240/day, 52 days GS-9 Biologist \$160/day, 52 days	\$20,800/year (2011 values)
Maintenance of facilities	20	\$4,046/year (2007 values)
Surveying facilities (includes law enforcement services)	10	\$2,023/year (2007 values)
Total cost for staff		\$26,869/year

Supplies/Services	Cost (2007 values)
Maintenance of buildings, roadways, trails, parking areas	\$40,000/year
Office supplies and support	\$5,000/year
Operation of equipment	\$10,000/year
Total cost of supplies and services	\$55,000/year

Total cost of research (staff + supplies and services): \$81,869 per year

After review of the refuge budget, there are sufficient staff and funds to sustain this activity.

ANTICIPATED IMPACTS OF THE USE:

Compared to the impacts from trails, hunting, and refuge management activities (such as prescribed fire and bush hogging), past research has had minimal impact on refuge resources, such as soils, vegetation and wildlife, with the exception of hydrology. Hydrology has been impacted by past impoundment creation and research, and this may have impacted soils and vegetation within their respective footprints (roughly 300 acres).

Research may have a similar disturbance impact to habitats and wildlife as public hunting since both activities involve single individuals or small parties walking off trail and infrequently repeated visits. In 2011, public hunting on the refuge, for example, had over 5,000 hunter visits across 75 percent of the refuge acreage over a 5-month period, whereas research involved 23 projects involving 1 to 4 individuals each, or less than 100 individuals, over a similar area but throughout a 12-month period. We estimate that the types of disturbance impacts to wildlife and habitats are similar off trail as on trail both spatially and temporally. Because research visits are not restricted to trails, the reach of disturbance would be greater spatially. Because field visits to research sites are substantially less frequent, shorter duration, or more sporadic than public hunting, the disturbance would be less. The most concerning disturbance is that caused to ground-nesting birds, or winter roosting species that have limited energy reserves. The presence of people on refuge trails and roads can lead to displacement of animals from trails, although disturbance usually is a negligible influence on large mammal distributions and movements (Purdy et al. 1987, Boyle and Samson 1985). The effects on other forms of wildlife appear to be short-term with the exception of breeding bird communities. A study by Miller, Knight, and

Miller (1998) indicates that species composition and nest predation was altered adjacent to trails in both forested and grassland habitats. It appears that species composition changes are due to the presence of humans and not the trail or roadway itself. On the other hand, nest predation does appear to be a function of the trail which allows access to mammalian nest predators (Miller, Knight and Miller 1998).

Based on observations of research projects, we have not observed any impacts to water quality, soils, or other wildlife species.

Disturbance to wildlife and vegetation by researchers could occur through observation, a variety of wildlife capture techniques, banding, collecting blood samples, flushing wildlife, and vegetation trampling from accessing the study area by foot or vehicle. It is possible that direct or indirect mortality could result as a by-product of research activities. Mist-netting or other wildlife capture techniques, for example, can cause mortality directly through the capture method or in-trap predation, and indirectly through capture injury or stress caused to the organism. Multiple, concurrent research projects could exacerbate impacts. Additional impacts could result from abandoned research apparatus left in the field. Overall, however, allowing well-designed and properly reviewed research 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 through allowing the research. The refuge maintains a database and GIS maps of current research to prevent conflicts and imposes guidelines (see below) to prevent negative impacts, such as keeping vehicles on refuge roads, prohibiting intrusive marking of vegetation, or staggering the timing of research at same sites. ACUC committee scrutinizes projects involving wildlife handling and to ensure avoidance of unnecessary harm excepting that allowed for the research purposes of the study, such as tissue sampling. Even then, researchers are limited so as not to reduce local populations of targeted species. Most research projects are conducted on small areas; few are refugewide.

Refuge Guidelines Specific to Research Permits

- No nails or other metal fasteners will be driven into trees.
- Tree boring tools are not permitted.
- Permittee will observe refugewide speed limit of 25 mph at all times.
- No pets or any animals may be brought into the refuge.
- Vehicle must stay on refuge roads.
- Respect study plots of other researchers that may be encountered and where flagged.
- No removal of plants or artifacts, animals, fungi, nest, or collecting of any natural resources is permitted unless granted by special provision for the purpose of the study and if permittee provides a valid, current collection permit (State and if a federally listed species, Federal) which must accompany the permit application for animal collection.
- No disturbance of wildlife other than that temporarily caused by your presence. Keep noise to a minimum, footprint of activity to a minimum.
- Plants of rare status must not be disturbed or destroyed. Locations should be brought to the attention of the refuge biologist.
- This permit is non-transferable. If permittee wishes to bring a non-Service person onto the refuge for assistance, permittee must receive approval from the Service and provide

name, date of proposed access. Permittee assistants must obtain display the refuge permit vehicle pass provided by the refuge office.

- Permittee must inform refuge biologist if there are any changes in the plan pertaining to this permit.
- Permittee shall flag or mark the research site or equipment left in field using name and permit number. All flagging, field markers, equipment must be removed from the refuge at the conclusion of this permit.
- Permittee must supply a map depicting location(s) of proposed research or surveys, or GPS coordinates or shapefiles of these locations. If the target areas are broad and general, indicate the general areas on the map.

PUBLIC REVIEW AND COMMENT:

As part of the comprehensive conservation planning process for Patuxent Research Refuge, this compatibility determination underwent extensive public review, including a comment period of 45 days following the release of the draft Comprehensive Conservation Plan/Environmental Assessment. We did not receive any comments specific to this wildlife research compatibility determination.

DETERMINATION (CHECK ONE BELOW):

- 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 (USFWS Refuge Manual Chapter 4 Section 6, as amended). If collection or manipulation of wildlife is involved, the proposal must also be submitted to the ACUC by the 15th of the month. ACUC is a joint USGS and Service committee with seven members, including one permanent member each from USGS and the Service.

In most cases, the refuge will require that proposals for research be submitted more than 60 days to review proposals before research begins. Proposals will be prioritized and approved based on need, benefit, compatibility, and funding required.

Special use permits will be required for all research. The special use permit will list the conditions that the refuge manager determines to be necessary to ensure compatibility. The special use permit will also identify a schedule for progress reports and the submittal of a final report or scientific paper. Regional refuge biologists, other Service Divisions, State agencies or non-governmental organizations, and biologists may be asked to provide additional review and comment on any research proposal.

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

Any research involving ground disturbance may require historic preservation consultation with the Regional Office and/or State Historic Preservation Office. Additionally, any research involving ground disturbance on the North Tract may require a survey for unexploded ordnance.

All researchers are required to submit a final report to the refuge upon completion of their work. If the study is long-term, an interim progress report will be required. Researchers who publish the work in peer-reviewed publications are to provide copies to the refuge. All reports, presentations, posters, articles or other publication will acknowledge the Service and Patuxent Research Refuge. The acknowledgement recognizes that the research could not have been conducted without the existence of the refuge and its support and cooperation.

Upon completion of a project, researchers are required to remove all research apparatus in the field.

All research related special use permits will contain a statement regarding the Service's policy regarding disposition of biotic specimen. The current Service policy language in this regard is:

You may use specimens collected under this permit, any components of any specimens (including natural organisms, enzymes, genetic material or seeds), and research results derived from collected specimens for scientific or educational purposes only, and not for commercial purposes unless you have entered into a Cooperative Research and Development Agreement (CRADA) with us. We prohibit the sale of collected research specimens or other transfers to third parties. Breach of any of the terms of this permit will be grounds for revocation of this permit and denial of future permits. Furthermore, if you sell or otherwise transfer collected specimens, any components thereof, or any products or any research results developed from such specimens or their components without a CRADA, you will pay us a royalty rate of 20 percent of gross revenue from such sales. In addition to such royalty, we may seek other damages and injunctive relief against you (USFWS 1999).

Any research project may be terminated at any time for non-compliance with the special use permit conditions; or modified, redesigned, relocated, or terminated, upon a 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.

JUSTIFICATION:

Executive Order 7514, which originally established Patuxent Refuge, stipulates that the purpose of the refuge is to conduct research. The Service encourages approved research to further understanding and management of refuge natural resources. Research by non-Service personnel adds greatly to the information base for refuge managers to make proper decisions. The Memorandum of Agreement between USGS and the Service reaffirmed the partnership and cooperation between the two agencies, ensured that the research activities on the refuge are consistent with the Refuge Improvement Act of 1997 and other applicable laws and policies, and defined priority research. The refuge and our USGS Patuxent Wildlife Research Center partner will work cooperatively to interpret the research activities so that the public understands the research, and its importance and relevance to current wildlife/natural resource management issues.

Research activities, adhering to the stipulations previously mentioned, authorized through special use permits, and reviewed periodically will not compromise our wildlife conservation purposes. The Central Tract portion (2,670 acres) of the refuge is set aside specifically to support and accommodate the research of the Patuxent Wildlife Research Center. Generally researchers yield to other uses on the refuge (i.e., refuge closed to all uses during certain hunting periods). There is little to no user conflict between researchers and the general public, or between researchers and wildlife management practices. In addition to the Central Tract, scientists have access to others areas of the refuge to support research and can often go off trail where most of the public does not have access. Compared to impacts from trails, hunting, and refuge management activities (such as prescribed fire, bush hogging), past research has had minimal impact on refuge resources (such as soils, vegetation, and wildlife), with the exception of hydrology. Hydrology has been impacted by past impoundment creation and research, and this may have impacted soils and vegetation within their respective footprints (roughly 300 acres). A benefit to the scientific community and the Refuge System is the accumulation of long-term data. The short-term negative impacts from disturbance by research are off-set by the benefits gained from increasing our knowledge database and understanding of wildlife and habitat relationships, and ecological functions.

Wildlife research will not materially interfere with or detract from the two purposes related to wildlife conservation, because impacts to wildlife species and habitats are expected to be minimal. This use will not materially interfere with or detract from the two purposes related to migratory bird conservation, because research will be timed to avoid large scale impacts to migratory waterfowl or land bird habitat. In addition, at any given time such a small percentage of the refuge will be used for these uses that ample habitat is available for migratory species. Wildlife research will not materially interfere with or detract from the endangered species purpose, because there are no federally listed threatened or endangered species that occur on the refuge. Finally, wildlife research will not materially interfere with or detract from the mission of the Service, because it is intended to add to the knowledge base that will improve refuge and habitat management overall.

SIGNATURE:

REFUGE MANAGER:

Bruce Knudsen 6/11/13
(signature and date)

CONCURRENCE:

REGIONAL CHIEF:

Sean B. Kern 8/19/2013
(signature and date)

MANDATORY 10-YEAR REEVALUATION DATE: 2023

REFERENCES:

Federal Register Volume I, Number 198. December 18, 1936. Executive Order (7514) establishing Patuxent Research Refuge signed by President Franklin D. Roosevelt at the White House on December 16, 1936.

Boyle S.A. and F.B. Samson. 1985. Effects of nonconsumptive recreation on wildlife: a review. 13:110-116.

Miller, S.G., R.L. Knight, and C.K. Miller. 1998. Influence of recreational trails on breeding bird communities. *Ecological Applications* 8(1):162-169.

Purdy, Goff, Decker, Pomerantz, Connelly. 1987 A guide to managing human activity on a national wildlife refuge. New York Cooperative Fish and Wildlife Research Unit.

U.S. Fish and Wildlife Service. 1985. Refuge Manual. Washington, D.C.: U.S. Government Printing Office.

U.S. Fish and Wildlife Service. 1999. Director's Order No. 109: Use of specimens collected on fish and wildlife lands. March 30, 1999.

U.S. Fish and Wildlife Service and U.S. Geological Survey. 2000. Memorandum of agreement for the administration, operations, and maintenance of facilities co-located at the Patuxent Research Refuge.

USGS-USFWS Animal Care and Use Committee (ACUC) Standard Operating Procedures, SOP 007. May 2006.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Patuxent Research Refuge

Use: Primitive Camping for Boy and Girl Scouts and 4-H Groups

This form is not required for wildlife-dependent recreational uses, 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?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	✓	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?	✓	
(h) Will this be manageable in the future within existing resources?	✓	
(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?	✓	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	✓	

Where 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 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

Refuge Manager: Bruce Knudsen

Date: 6/11/13

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: Ae Sittman

Date: 7/5/13

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

FWS Form 3-2319
02/06

JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

REFUGE NAME: Patuxent Research Refuge

USE: Primitive Camping for Scouts and 4-H Groups

NARRATIVE:

Camping is the act of encamping and living in a tent in a camp or designated site. Scout camping was a traditional use of the North Tract during the administration of the Department of the Army and has been allowed to continue after the transfer of land to the U.S Fish and Wildlife Service. Even though camping is not a priority public use, scout groups having the opportunity to camp on Patuxent Research Refuge could develop a sense of stewardship and an understanding of the National Wildlife Refuge System and its mission (Lyons 1982). Camping will be restricted to members of the Boy Scouts of America, Girl Scouts of America, and 4-H clubs of America which have a Memorandum of Understanding with the U.S. Fish and Wildlife Service (Service Manual 142-144 FW1, Policies and Procedures).

The scout camps are located on the east bank of the Patuxent River on the North Tract. The scout areas and associated lands total approximately 10 acres. The camping will be conducted in Area L which consists of two campsites. Scout site 1 is restricted to a total of 25 people. Scout site 2 is restricted to a total of 15 people. Campers will be furnished with firewood, a fire extinguisher and sand, gate key, portable toilet, and potable water for drinking, cooking, and washing. The check-in procedure for camping groups will follow the established Standard Operating Procedure for Scout Camping and the Public Use and Check In/Out of the North Tract. Camping would be conducted on Patuxent Research Refuge from mid-March through the end of June for approximately 45 days a year. Campers would be allowed to camp in designated areas for no more than 3 days and 2 nights (weekends only) in order to further minimize the impact on wildlife.

Camping does not interfere with research purposes or wildlife and habitat management practices provided that regulations and mandates are set and strictly enforced for the purpose of preventing the detrimental effects camping may have on wildlife and habitats. Camping is allowed to occur for a limited portion of the year in designated areas. There has been no documentation of user conflicts. The camping experience helps to facilitate a sense of stewardship by the campers for habitats, wildlife and the U.S. Fish and Wildlife Service mission.

COMPATIBILITY DETERMINATION

USE:

Primitive Camping for Scouts and 4-H groups

REFUGE NAME:

Patuxent Research Refuge

ESTABLISHING AND ACQUISITION AUTHORITIES:

Executive Order 7514, dated December 16, 1936; Executive Order 11724, dated June 27, 1973; 16 U.S.C. 715d, Migratory Bird Conservation Act of 1929; 16 U.S.C. 1534; 16 U.S.C. 667b, dated May 19, 1948 - An Act Authorizing the Transfer of Certain Real Property for Wildlife or other purposes; and Public Law 101-519 Sec. 126, 104 Stat. 2247, dated November 5, 1990.

REFUGE PURPOSES:

1. "...as a wildlife experiment and research refuge" – Executive Order 7514, dated December 16, 1936
2. "...recreation, conservation, wildlife preservation, and related scientific and educational activities" – Executive Order 11724, dated June 27, 1973
3. "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds" – 16 U.S.C. 715d, dated February 18, 1929 (Migratory Bird Conservation Act)
4. "...to conserve fish, wildlife and plants, including those which are listed as endangered species or threatened species – 16 U.S.C. 1534, dated December 28, 1973 (Endangered Species Act)
5. "...particular value in carrying out the national migratory bird management program." – 16 U.S.C. 667b, dated May 19, 1948 (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes)
6. "... (b) The Secretary of the Interior shall administer the property transferred pursuant to subsection (a) consistent with wildlife conservation purposes and shall provide for the continued use of the property by Federal agencies to the extent such agencies are using it on the date of the enactment of this Act." – Public Law 101-519 Sec. 216, 104 Stat. 2247, dated November 5, 1990 (Defense Appropriation Act – including transfer of the North Tract from Fort Meade).

NATIONAL WILDLIFE REFUGE SYSTEM MISSION:

"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." 16 U.S.C. 668dd(a)(2) (National Wildlife Refuge System Improvement Act of 1997)

DESCRIPTION OF USE:

Camping is the act of encamping and living in a tent in a camp or designated site. Scout camping was a traditional use of the North Tract during the administration of the Department of the Army and has been allowed to continue after the transfer of land to the U.S Fish and Wildlife Service (Service). Even though camping is not a priority public use, scout groups having the opportunity to camp on Patuxent Research Refuge could develop a sense of stewardship and an understanding of the National Wildlife Refuge System (Refuge System) and its mission (Lyons 1982). Camping will be restricted to members of the Boy Scouts of America, Girl Scouts of America, and 4-H clubs of America, which have a Memorandum of Understanding with the Service (Service Manual 142-144 FW1, Policies and Procedures).

The camps are located on the east bank of the Patuxent River on the North Tract. The areas and associated lands total approximately 10 acres, including access roads to the sites. The camping will be conducted in Area L which consists of two campsites. Site 1 is restricted to a total of 25 people. Site 2 is restricted to a total of 15 people. Campers will be furnished with firewood, a fire extinguisher and sand, gate key, portable toilet, and potable water for drinking, cooking, and washing. The check-in procedure for camping groups will follow the established Standard Operating Procedure for Scout Camping and the Public Use and Check-In/Out of the North Tract. Camping would be conducted on Patuxent Research Refuge from mid-March through the end of June for approximately 45 days a year. Campers would be allowed to camp in designated areas for no more than 3 days and 2 nights (weekends only) in order to further minimize the impact on wildlife.

During their camping stay, groups generally participate in other activities such as fishing, wildlife observation and photography, and environmental interpretation. Participation by the groups in each of these secondary activities is reviewed as a part of the individual compatibility determinations for those activities.

AVAILABILITY OF RESOURCES:

Patuxent Research Refuge will furnish a portable toilet, fire extinguisher and sand, and potable water for drinking, cooking, and washing for each campsite. The access roads, signage, Visitor Contact Station and gates used to facilitate the camping program are maintained in order to support priority public use; therefore, cost associated with camping is minimal. The campsites themselves were constructed by the Department of the Army, so no associated construction cost was funded by the refuge. The coordination for camping will be done by the visitor services manager and designated North Tract and law enforcement personnel requiring 10 staff days. Designated refuge staff will compose the rules and regulations for camping on the refuge. North Tract staff will oversee the process of booking, and check-in and check-out of the campers. The maintenance staff will handle general maintenance of campsites, road repair, gate maintenance, and posting of signage. A breakdown of the cost is outlined below.

Task	Staff Days	Cost
Administration/management of camping activities	10	\$2,589 per year
Monitoring camping activities	1	\$258 per year
Maintenance of access routes and camping facilities	3	\$773 per year
Totals	14	\$3,620 per year

Services/Supplies	Cost
Placement and service of portable toilet	\$945 per year
Facilities maintenance	\$1,100 per year
Office supplies	\$110 per year
Maintenance supplies (paint, signs, lumber, and road materials)	\$1,100 per year
Equipment operation and upkeep	\$1,100 per year
Total cost for supplies and services	\$4,355 per year

Total cost for camping activity (staff + supplies and services): \$7,975 per year

After review of the refuge budget, there are sufficient funds to sustain this activity.

ANTICIPATED IMPACTS OF THE USE:

The following are the anticipated short and long-term impacts of primitive camping:

- The presence of people camping could result in some disturbance to wildlife located in habitats adjacent to the campsites (Boyle and Samson 1985). In order to minimize this impact, time allowed will be restricted to no more than 3 days and 2 nights (weekends only; mid-March through the end of June).
- Vegetation disturbance, compaction, and erosion could occur on trails that are frequently used by campers to access the campground. In order to manage for this impact, campers are restricted to designated areas where trails have been previously established and maintained (Kuss 1986).
- Invasive plants gain their first footholds in sunny disturbed areas, along trails or around shelters (Scherer 2001). Campers are required to camp only in designated areas in order to alleviate the creation of newly disturbed areas which may foster invasive plants. As the refuge develops its invasive weed management plan, new control measure may be implemented to lessen the possibility of establishing invasive weed communities.
- Trampled campsites can become dead zones of compacted soil and may lack understory vegetation (Boyle and Samson 1985, Kuss 1986). The refuge will develop a management plan which will close a campsite for a number of years to allow for the regrowth of understory vegetation and regenerative processes to occur. This plan will allow for a rotating cycle of campsite closures.
- Food and other debris may influence small mammal populations by attracting them to the campsite areas (Boyle and Samson 1985). The refuge requires all trash to be packed out when the campers leave the refuge. The sites are inspected after each visit to ensure trash has been removed from the premise.
- Vegetation changes in and near campgrounds appear to be responsible for the increase of local diversity in bird species (Guth 1978). These increases of local diversity birds appear to have an affect on forest dwelling species of birds. This effect will be countered by allowing the campgrounds to only be used approximately 45 days a year as well as allowing the campsites to regenerate forest undergrowth through cyclical closures if necessary.

- Camp fires, if not kept under proper supervision, can quickly escalate to an uncontrollable fire resulting in significant wildlife habitat loss. Fires are only allowed in previously established fire rings and only if there is no burn ban in effect. It is required that camp fires never be left unattended and fires are completely extinguished before departure.
- Human waste must be disposed in a proper manner to prevent the contamination of groundwater and nearby waterways. All human waste will be disposed by use of portable toilet since pit latrines are prohibited on the refuge.

PUBLIC REVIEW AND COMMENT:

As part of the comprehensive conservation planning process for Patuxent Research Refuge, this compatibility determination underwent extensive public review, including a comment period of 45 days following the release of the draft Comprehensive Conservation Plan/Environmental Assessment. We did not receive any comments specific to this scout and 4-H camping compatibility determination.

DETERMINATION (CHECK ONE BELOW):

- Use is not compatible
 Use is compatible with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

In order to ensure the compatibility of camping with the refuge's current research activities and wildlife/habitat management practices, the following stipulations will be strictly enforced.

- All camping activities will be restricted to designated campsites on North Tract of the refuge. Camping on Patuxent Research Refuge will only be permitted by access permit. Access to other areas outside of operational hours must be approved by the Visitor Contact Station staff.
- Camping opportunities are primitive. Noise and light pollution should be minimal and have little to no impact on wildlife. Campers must use low wattage lighting. Music and other forms of electronic entertainment should be kept down or not used at all to reduce disturbance to wildlife.
- A list of all members of the Scout and 4-H groups and their emergency contact phone numbers must be provided to the Visitor Contact Station.
- Scout site 1 is restricted to a total of 25 people. Scout site 2 is restricted to a total of 15 people. The time restrictions are not to exceed 3 days and 2 nights (weekends only) for each camp site.
- Fires are prohibited during high fire conditions. Fires (including propane stoves) will be restricted to the designated areas with established buffer zones. Open fires will be no higher than 2 feet. Fire extinguisher and water/sand buckets will always be kept adjacent to the fire. Campers will be provided with firewood from the refuge. They are not permitted to bring their own firewood from off-refuge.

- All litter will be packed out. Campsites will be checked by staff upon check-out.
- Swimming, bathing, and washing of articles of clothing or cooking utensils and dishes in the river is prohibited. All washing will take place at least 100 feet from waterways. Only biodegradable soaps or detergents are permitted.
- Pit latrines are prohibited. All human waste will be disposed by use of portable toilet.
- No vegetation will be removed or destroyed. Disturbing and collecting of any natural feature is prohibited including rocks, vegetation, downed trees, or animals. Campers will not attach anything to plants or trees (hanging lanterns, nails, axes, knives, etc.).
- No pets are allowed.
- The refuge's step-down plan for public use will be developed to include a section on the management and administration of camping activities on the refuge.

JUSTIFICATION:

Scout and 4-H group camping was a traditional use of the North Tract during the administration of the Department of the Army and has been allowed to continue after the transfer of land to the Service. Camping is allowed to occur for a limited portion of the year in designated areas. There has been no documentation of user conflicts. The camping experience helps to facilitate a sense of stewardship by the campers for habitats, wildlife and the Refuge System mission.

As listed in the purposes section of this compatibility determination, the refuge was established and subsequently land was acquired for a total of six purposes. Scout and 4-H group camping will not materially interfere with or detract from the research purpose of the refuge, because wildlife research does not generally occur in the vicinity of the locations that these uses occur. This use will not materially interfere with or detract from the two purposes related to wildlife conservation because impacts to refuge lands are minimal. This use will not materially interfere with or detract from the two purposes related to migratory bird conservation, because these uses are allowed in areas that are generally not in the vicinity of migratory waterfowl or land bird habitat. Scout and 4-H group camping will not materially interfere with or detract from the endangered species purpose, because there are no federally listed endangered species that occur on the refuge. Finally, this use will not materially interfere with or detract from the mission of the Service, because the use occurs at low levels in an area of the refuge that does not contain core habitat.

SIGNATURE:

REFUGE MANAGER:

Brad Knudsen 6/11/13
(signature and date)

CONCURRENCE:

REGIONAL CHIEF:

Scott B. Kim 8/19/2013
(signature and date)

MANDATORY 10- YEAR REEVALUATION DATE: 2023

REFERENCES:

Boyle, S.A. and F.B. Samson. 1985. Effects of nonconsumptive recreation on wildlife: a review. 13:110-116.

Kuss, F. 1986. A review of major factors influencing plant responses to recreation impacts. Environmental Management 10:638-650.

Guth, R.W. 1978. Forest and campground bird communities of Peninsula State Park, Wisconsin. Passenger Pigeon 40: 489-493.

Lyons, J.R. 1982. Nonconsumptive wildlife-associated recreation in the U.S.: identifying other constituency. Trans. North American Wildlife and Natural Resources Conference 47:677-685.

Scherer, G. 2001. Backcountry visitor impacts: we have met the enemy, and he is us. American Hiker.

Scout Camping Guidelines; Patuxent Research Refuge

Standard Operating Procedure-Public Use and Checking In/Out on the North Tract

U.S. Fish and Wildlife Service Manual; 054 Youth Programs Part 142-144.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Patuxent Research Refuge

Use: Dog training for waterfowl hunting purposes

This form is not required for wildlife-dependent recreational uses, 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?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	✓	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?	✓	
(h) Will this be manageable in the future within existing resources?	✓	
(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?	✓	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	✓	

Where 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 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

Refuge Manager: Brad Knudson Date: 6/11/13

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: Ac Githens Date: 7/5/13

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

FWS Form 3-2319
02/06

JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

REFUGE NAME: Patuxent Research Refuge

USE: Dog Training for Waterfowl Hunting Purposes

NARRATIVE:

Dog training is a preparatory action taken by hunters to train hunting dogs to respond to a weapon firing, the use of decoys, and to teach the canines to retrieve waterfowl or small game from impounded waters, lakes, and swamps. This use directly supports hunting, one of the six wildlife-dependent public uses identified in the Refuge Improvement Act of 1997.

The refuge requires all migratory game bird hunting parties to “use retrievers when hunting over impounded waters,” as stated in the annual Hunting Regulations, U.S. Fish and Wildlife Service, Patuxent Research Refuge (for the North, Central, and South Tracts). These requirements help minimize lost game that cannot be retrieved by the hunter due to deep water, losing it in marsh vegetation, etc.

The use is being proposed to support the requirement that hunters engaged in hunting waterfowl over refuge impoundments must have a retrieving dog with them to minimize lost game. It is reasonable for the refuge to provide an area(s) for waterfowl hunters to train the animals they are required to have in order to hunt over impounded waters. Per 50 CFR 26.21(b), 32.39.A.14, dogs are only lawful on the refuge when under direct control of their owners at all times. Owners training their dogs must ensure they and their dogs are in compliance in order to participate in dog training for waterfowl hunting, so the dogs will not impact refuge wildlife or other users. Dog training for waterfowl hunting purposes is an important aspect of promoting proper hunting ethics and in reducing wasted game. Therefore, we find the use appropriate.

COMPATIBILITY DETERMINATION

USE:

Dog Training for Waterfowl Hunting Purposes

REFUGE NAME:

Patuxent Research Refuge

ESTABLISHING AND ACQUISITION AUTHORITIES:

Executive Order 7514, dated December 16, 1936; Executive Order 11724, dated June 27, 1973; 16 U.S.C. 715d, Migratory Bird Conservation Act of 1929; 16 U.S.C. 1534; 16 U.S.C. 667b, dated May 19, 1948 - An Act Authorizing the Transfer of Certain Real Property for Wildlife or other purposes; and Public Law 101-519 Sec. 126, 104 Stat. 2247, dated November 5, 1990.

REFUGE PURPOSES:

1. "...as a wildlife experiment and research refuge" – Executive Order 7514, dated December 16, 1936
2. "...recreation, conservation, wildlife preservation, and related scientific and educational activities" – Executive Order 11724, dated June 27, 1973
3. "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds" – 16 U.S.C. 715d, dated February 18, 1929 (Migratory Bird Conservation Act)
4. "...to conserve fish, wildlife and plants, including those which are listed as endangered species or threatened species – 16 U.S.C. 1534, dated December 28, 1973 (Endangered Species Act)
5. "...particular value in carrying out the national migratory bird management program." – 16 U.S.C. 667b, dated May 19, 1948 (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes)
6. "...(b) The Secretary of the Interior shall administer the property transferred pursuant to subsection (a) consistent with wildlife conservation purposes and shall provide for the continued use of the property by Federal agencies to the extent such agencies are using it on the date of the enactment of this Act." – Public Law 101-519 Sec. 216, 104 Stat. 2247, dated November 5, 1990 (Defense Appropriation Act – including transfer of the North Tract from Fort Meade).

NATIONAL WILDLIFE REFUGE SYSTEM MISSION:

"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." 16 U.S.C. 668dd(a)(2) (National Wildlife Refuge System Improvement Act of 1997)

DESCRIPTION OF USE:

What is the use? Is it a priority public use?

Dog training is a preparatory action taken by hunters to train hunting dogs to respond to a weapon firing, the use of decoys, and to teach the canine(s) to retrieve waterfowl or small game from impounded waters, lakes, and swamps. Dog training is not a priority public use on national wildlife refuges but it directly supports hunting, a priority public use as stated in the National Wildlife Refuge System Improvement Act of 1997.

The refuge requires all migratory game bird hunting parties to “use retrievers when hunting over impounded waters,” as stated in the annual Hunting Regulations, U.S. Fish and Wildlife Service (Service), Patuxent Research Refuge, North, Central, and South Tracts. This requirements help minimize game that cannot be retrieved by the hunter due to deep water, losing it in marsh vegetation, etc.

Where would the use be conducted?

Dog training will be allowed at New Marsh (7.1 acres) and at Cattail Pond (2.7 acres). This totals approximately 9.8 acres.

When would the use be conducted?

To avoid user conflict, minimize disturbances to breeding and nesting waterfowl or water birds and their broods, and fish spawning, the use will occur from August 1 through August 31.

How would the use be conducted?

The use will be restricted to those individuals holding a valid Meade Natural Heritage Association hunting permit (refuge hunt permit) and a valid Federal waterfowl hunting stamp.

All individuals would be required to check in and out at the Hunt Control Station, as do all other hunters.

Retrieving dummies is only allowed when training

Blank or dummy cartridges to acclimate dogs to the sound of gunfire may be used. Firearms may be checked by refuge law enforcement to ensure appropriateness.

Why is the use being proposed?

The use is being proposed to support the requirement that hunters engaged in hunting waterfowl over refuge impoundments must have a retrieving dog with them to minimize lost game. It is reasonable for the refuge to provide an area(s) for waterfowl hunters expected to hunt here, to train the animals they are required to have.

This use directly supports hunting, one of the six wildlife-dependent public uses identified in the Refuge Improvement Act of 1997.

AVAILABILITY OF RESOURCES:

Dog training occurs during the month of August. Time spent to administer this use, and to maintain and inspect the dog training areas, is expected to be minimal, and handled by existing

refuge staff and volunteers.

ANTICIPATED IMPACTS OF THE USE:

This use could have some negative impacts to wildlife. Total number of waterfowl hunt visits in fiscal year 2011 totaled 446 (September 198, November 134, January 114). This amounts to 7.8 waterfowl hunt visits per day. Since all waterfowl hunters are required to use retrieving dogs there is no difference with respect to impacts on wildlife and habitats between training and working dogs. Since fiscal year 2005, there has been a total of 55 dog training visits, an average of only 7.8 visits annually. All dogs are required to be under owners' control at all times. Impacts to wildlife and habitats may be similar to other public use activities involving dogs, such as dog walking or search and rescue training.

Studies on impacts of recreational dog walking in woodlands demonstrated a 35 percent reduction in bird diversity and 41 percent reduction in abundance, both in areas where dog walking is common and where dogs are prohibited (Banks and Bryant 2007). The higher energy and noise involved in training might be even more disturbing. Free-ranging and uncontrolled dogs can chase and flush ground-nesting or foraging birds and other wildlife, and occasionally prey on reptiles. The season has been set to avoid waterfowl breeding, so the impacts to waterfowl will be minimized. Potential impacts of domestic dogs could be broadly classified as harassment, injury, or death of wildlife. Harassment is the disruption of normal maintenance activities, such as feeding, bedding, or grooming. It can take the form of disrupting, alarming, or even chasing. If dogs chase or pursue wildlife, injuries could be sustained directly or indirectly as a result of accidents that occur during the chase itself rather than direct contact with the dog. Impacts of domestic dogs can also include modification of wildlife behavior.

Another concern is the possibility of disease transmission. Dogs also have endo- and ectoparasites and can contract diseases from, or transmit diseases to, wild animals. Canine Distemper, for example, can be transmitted freely in wild carnivore populations such as wolves, foxes, badgers, and in encounters with raccoons. The best way to prevent this contact is to prevent contact with wildlife. There is variability in dog behavior based on age and training experience. Dogs in the early stages of their training are more apt to run at large than more experienced dogs. This could increase disturbance to wildlife or increase the possibility of disease transmission, but the risk is minimized here because dog trainers are required to maintain control over their dogs at all times.

Training areas are open to public fishing year-round, wildlife observation and photography so some wildlife disturbance may already be occurring. New Marsh and Cattail Pond are in close proximity to the shooting range frequented by the U.S. Secret Service, with gunfire and vehicle disturbances already prevalent. Dog training use is not expected to add significantly to existing disturbances that are caused by these nearby uses or waterfowl hunting. There may be temporary displacement of wildlife, but suitable escape habitat is nearby on the refuge, including the Little Patuxent River, so the disturbances are anticipated to be minimal.

There have been no documented user complaints. However, there is potential for user conflict to occur between multiple public uses, particularly outside of the hunt season. Limiting the time frame and confining the areas to which it can occur will help to mitigate conflicts. Cattail and

New Marsh Pond typically receive low amounts of waterfowl hunting, so we do not anticipate hunting and dog training conflicts.

Activity along the shorelines could result in shoreline soil erosion or compaction, and trampling of shoreline vegetation. Changes in water quality are not anticipated. Based on the nature of this training, this is a low-impact activity and is likely to have no more of an impact than anglers accessing the shoreline.

The use of training ammunition may cause a temporary sound disturbance to the visiting public and temporary flushing of wildlife.

PUBLIC REVIEW AND COMMENT:

As part of the comprehensive conservation planning process for Patuxent Research Refuge, this compatibility determination underwent extensive public review, including a comment period of 45 days following the release of the draft Comprehensive Conservation Plan/Environmental Assessment. We did not receive any comments specific to this dog training compatibility determination.

DETERMINATION (CHECK ONE BELOW):

- Use is not compatible
- Use is compatible with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

The refuge will restrict the time of year this use is allowed to minimize wildlife disturbance. To avoid user conflict, minimize disturbances to breeding and nesting waterfowl or water birds and their broods, and fish spawning, the use will occur from August 1 through 31.

The use will be restricted to two impoundments that already receive a fair amount of public use from fishing and wildlife observation. Wildlife in this area may be habituated to on-going multiple disturbances or may have relocated due to disturbances.

The use will be restricted to those individuals holding a valid Meade Natural Heritage Association hunting permit (refuge hunt permit) and a valid Federal waterfowl hunting stamp.

All individuals will be required to check in and out at the Hunting Control or Visitor Contact Station.

Retrieving dummies will be allowed when training.

Blank or dummy cartridges to acclimate dogs to the sound of gunfire may be used. Firearms may be checked by refuge law enforcement to ensure appropriateness.

Refuge regulations require dogs to be leashed or under their control at all times, which will include going to, and coming from, the training sites. Loose or unattended dogs are subject to seizure by refuge law enforcement (refer to 50 CFR 26.21(b), 32.39.A.14). Refuge staff will

educate users about these regulations when they check in.

Refuge staff and volunteers will educate users about these regulations when and where able.

JUSTIFICATION:

Dog training is a non-priority public use that supports a priority public use (hunting) on national wildlife refuges. The intent of allowing dog training at on the refuge is to encourage the refuge's hunters to train retrievers in preparation for waterfowl hunting on the refuge.

Recent biological assessments of refuge habitats resulted in the determination to convert many of the open field/meadow habitats into scrub-shrub habitat for neotropical migrant birds, a management practice consistent with the refuge's wildlife and habitat objectives. Only the upland area used for dog training will be eliminated as part of this conversion to shrub-early succession habitat, while the two wetland sites, New Marsh and Cattail Pond, will continue to be open for waterfowl dog training

This use has occurred at relatively low levels in recent years, with minimal impacts to other visitors, research, wildlife and habitats. In fiscal year 2011, a total of 446 waterfowl hunt visits were recorded. In addition to being a requirement to participate in waterfowl hunting on the refuge, it is an important part of promoting proper hunting ethics and in reducing wasted game. We do not anticipate impacts to research, wildlife or habitats based on the limited areas dog training is allowed to occur and on the low level of use received.

As listed in the purposes section of this compatibility determination, the refuge was established and subsequently land was acquired for a total of six purposes. Dog training will not materially interfere with or detract from the research purpose of the refuge, because wildlife research does not generally occur in the vicinity of the locations that these uses occur and the vast majority of refuge lands are not impacted by these uses. These uses will not materially interfere with or detract from the two purposes related to wildlife conservation, because impacts to refuge wildlife and habitat are minimal. In addition, the level of use is very low (averaging 7.8 visits per year). This use will not materially interfere with or detract from the two purposes related to migratory bird conservation, because the use occurs at such low levels as not to impact migratory bird populations. Dog training will not materially interfere with or detract from the endangered species purpose, because there are no federally listed threatened or endangered species that occur on the refuge. Finally, the use will not materially interfere with or detract from the mission of the U.S. Fish and Wildlife Service because of the low levels of use that occur annually.

SIGNATURE:

REFUGE MANAGER:

Brad Knudsen 6/11/13
(signature and date)

CONCURRENCE:

REGIONAL CHIEF:

Scott B. Kern 8/19/2012
(signature and date)

MANDATORY 10-YEAR REEVALUATION DATE: 2022

REFERENCES:

Banks, P.B. and J.V. Bryant. 2007. Dog walking impacts on wildlife. *Biology Letters* 3: 611–613.

Ittner, R. et al. 1978. Recreational impacts on wildlands. U.S. Forest Service 157.

Sime, C.A. 1999. Domestic dogs in wildlife habitats. In: *Effects of Recreation on Rocky Mountain Wildlife: A Review of Montana* (Joslin, G. and H. Youmans, coordinators), pp. 8.1-8.17. Montana Chapter of The Wildlife Society, Committee on Effects of Recreation on Wildlife. 307 pp.

Thompson, P. 1985. *Thompson's Guide to Freshwater Fishes*. Houghton Mifflin Company P. 159.

U.S. Fish and Wildlife Service. 1992. *Fish and Wildlife Service Manual*, 631 FW 5.

U.S. Fish and Wildlife Service. 2010-2011 *Hunting Regulations*, Patuxent Research Refuge, North, Central, and South Tracts.

U.S. Fish and Wildlife Service. *Public Use and Checking In/Out of the North Tract-Standard Operating Procedures-Patuxent Research Refuge North Tract*.

U.S. Fish and Wildlife Service. *Dog Training Guidelines-Standard Operating Procedures-Patuxent Research Refuge North Tract*.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Patuxent Research Refuge

Use: Dog Walking

This form is not required for wildlife-dependent recreational uses, 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?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	✓	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?	✓	
(h) Will this be manageable in the future within existing resources?	✓	
(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?	✓	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	✓	

Where 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 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

Refuge Manager: Brad Knudson

Date: 6/11/13

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: De Sitter

Date: 7/5/13

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

FWS Form 3-2319
02/06

JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

REFUGE NAME: Patuxent Research Refuge

USE: Dog Walking

NARRATIVE:

The proposed use is dog walking on designated trails and with dogs on a leash. This use is not a priority public use; however, it may provide opportunities for visitors to observe and learn about wildlife, habitats, and refuge lands firsthand and at their own pace in an unstructured environment. This use may also enhance the public's appreciation for wildlife conservation and land protection. It is anticipated that participation in this use will produce a more informed public, with an enhanced stewardship ethic and enhanced support and advocacy for the U.S. Fish and Wildlife Service and natural resources as a whole.

Dog walking is an existing use on Patuxent Research Refuge public trails and has occurred without incident. Dog walking is a very popular activity which encourages public visitation, exposure to the refuge and the mission of the National Wildlife Refuge System. Dog walking is strictly enforced on the refuge, and regulations require dogs to be on a leash of 6 feet or less. Dog owners are also required to immediately pick up, and properly dispose of, dog waste. Dog walking is restricted to public use trails on both the North and South Tracts. These regulations minimize impact to wildlife and their habitats.

Patuxent Research Refuge is located in a highly urban to suburban area. The majority of the trails that are used for dog walking are former military roads. Impacts associated with dog walking given the setting and type of trails that are used, combined with the history of dog use on the lands, lead us to consider dog walking as an appropriate use of Patuxent Research Refuge.

COMPATIBILITY DETERMINATION

USE:

Dog Walking

REFUGE NAME:

Patuxent Research Refuge

ESTABLISHING AND ACQUISITION AUTHORITIES:

Executive Order 7514, dated December 16, 1936; Executive Order 11724, dated June 27, 1973; 16 U.S.C. 715d, Migratory Bird Conservation Act of 1929; 16 U.S.C. 1534; 16 U.S.C. 667b, dated May 19, 1948 - An Act Authorizing the Transfer of Certain Real Property for Wildlife or other purposes; and Public Law 101-519 Sec. 126, 104 Stat. 2247, dated November 5, 1990.

REFUGE PURPOSES:

1. "...as a wildlife experiment and research refuge" – Executive Order 7514, dated December 16, 1936
2. "...recreation, conservation, wildlife preservation, and related scientific and educational activities" – Executive Order 11724, dated June 27, 1973
3. "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds" – 16 U.S.C. 715d, dated February 18, 1929 (Migratory Bird Conservation Act)
4. "...to conserve fish, wildlife and plants, including those which are listed as endangered species or threatened species – 16 U.S.C. 1534, dated December 28, 1973 (Endangered Species Act)
5. "...particular value in carrying out the national migratory bird management program." – 16 U.S.C. 667b, dated May 19, 1948 (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes)
6. "... (b) The Secretary of the Interior shall administer the property transferred pursuant to subsection (a) consistent with wildlife conservation purposes and shall provide for the continued use of the property by Federal agencies to the extent such agencies are using it on the date of the enactment of this Act." – Public Law 101-519 Sec. 216, 104 Stat. 2247, dated November 5, 1990 (Defense Appropriation Act – including transfer of the North Tract from Fort Meade).

NATIONAL WILDLIFE REFUGE SYSTEM MISSION:

"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." 16 U.S.C. 668dd(a)(2) (National Wildlife Refuge System Improvement Act of 1997)

DESCRIPTION OF USE:

What is this use? Is it a priority public use?

The use is dog walking. Dog walking is not a priority public use of the National Wildlife Refuge System (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).

Where would the use be conducted?

Dog walking will be allowed on all current public trails located on Patuxent Research Refuge's North and South Tract.

When would the use be conducted?

The use will be conducted year-round, during refuge hours of operation. As with other uses, a temporary closure or restriction of these activities could be implemented for various reasons, such as during hunting seasons, or for public safety.

How would the use be conducted?

Visitors enter the refuge, park in the visitor parking lots, and proceed to the open trails on the South Tract. On the North Tract, visitors must first check in at the Visitor Contact Station to learn which trails are open to the public on any given day. Dogs must be kept on a leash no longer than 6 feet in length. This leash regulation will be strictly enforced to minimize wildlife and visitor disturbance. Owners will be required to immediately clean up after their dogs and pack out any waste. Refuge signs regarding dog walking will be developed and placed when and where necessary to help regulate this activity. Refuge staff patrols by foot and vehicle will be conducted to advise visitors of regulations, monitor visitor activity, and, as necessary, to enforce the regulations.

Why is this use being proposed?

Visitors can participate in wildlife-dependent recreation while walking a dog. There is a current demand for this use on the refuge, therefore, we plan to continue with our existing policy on dog walking to better meet the needs of our public and minimize wildlife disturbances. This use may provide individuals with a connection to the natural world and an increased appreciation of natural resources, in addition to exposing them to the Refuge System.

AVAILABILITY OF RESOURCES:

Permitting this use is within the resources available to administer our visitor services program. There is no additional staff or material costs incurred to the refuge. Compliance with the leash law is within the regular duties of the law enforcement officer.

ANTICIPATED IMPACTS OF THE USE:

Potential Impacts to Birds

The presence of dogs and pedestrians on the refuge, either on trails or off trails, is likely to cause temporary disturbance to birds. A study done in Colorado (Miller et al. 2001) found that robins, representing forest species, and western meadowlarks and vesper sparrows, representing grassland species, flushed when approached by dogs on and off leash. Dogs alone generally

resulted in less disturbance than when pedestrians were present, either alone or holding a leashed dog. The authors surmised that because dogs resemble coyotes and foxes, which are not considered significant predators of songbirds (Leach and Frazier 1953, Andelt et al. 1987), they may not have been perceived as an important threat. Disturbance was generally greater off trails than on trails. Dogs alone are not likely to cause significant disturbance beyond that caused by foxes and coyotes. Any disturbance will be temporary and should not lead to loss of migratory birds or their habitats.

Potential Impacts to Threatened and Endangered Species

There are no federally listed species known to occur on the refuge. Several State-listed species of dragonflies and damselflies have been documented on the refuge, but, for the most part, they are located in small gravel pit/open water areas far from these public use trails. There are also a variety of State-listed darkling beetle species on the refuge, in the vicinity of the savannah restoration area in the northwest corner of the refuge, adjacent to Whip-Poor-Will Way and Sweetgum Way.

Potential Impacts to Wetlands

It is unlikely that dogs will enter refuge wetlands due to trail location and refuge regulations. All dogs must be on leash and regulations state that visitors must remain on public trails.

Potential Impacts to Other Fish and Wildlife Resources

There can be an increase in wildlife disturbance from dog walking simply due to normal dog behavior (i.e., jumping, barking, running off a leash). At some level, domestic dogs maintain instincts to hunt and/or chase. Given the appropriate stimulus, those instincts can be triggered in many different settings. Even if the chase instinct is not triggered, dog presence in and of itself has been shown to disrupt many wildlife species (Sime 1999). Sime presents some effects of disturbance, harassment, and displacement on wildlife attributable to domestic dogs that accompany recreationists. Sime states that authors of many wildlife disturbance studies concluded that dogs with people, dogs on-leash, or loose dogs provoked the most pronounced disturbance reactions from their study animals. Dogs extend the zone of human influence when off-leash. Many ungulate species demonstrated more pronounced reactions to unanticipated disturbances, as a dog off-leash would be. In addition, dogs can force movement by ungulates (avoidance or evasion during pursuit), which is in direct conflict with overwinter survival strategies which promote energy conservation. Sime continues to highlight that dogs are noted predators for various wildlife species in all seasons. Domestic dogs can potentially introduce diseases (distemper, parvovirus, and rabies) and transport parasites into wildlife habitats. While dog impacts to wildlife likely occur at the individual scale, the results may still have important implications for wildlife populations. For most wildlife species, if a “red flag” is raised by pedestrian-based recreational disturbance, there could also be problems associated with the presence of domestic dogs. Recent extensive research has shown that human walkers (without dogs) can induce anti-predator responses in birds including vigilance and early flight, which may lead to a cascade of related responses that negatively affect birds (Blumstein and Daniel 2005). In a study by Banks and Bryant (2007), results reveal that even dogs restrained on leads can disturb birds sufficiently to induce displacement. Responses to transient human disturbance are well known (Blumstein et al. 2005) and predicted to lead to population-level impacts on some birds species (Hill et al. 1997). One study found no net difference in bird diversity or abundance between areas with and without regular dog walking receiving the same treatment, suggesting

that long-term impacts in that area may be small (Banks and Bryant 2007). The amplitude of this type of impact would be greater if ground nesting birds were disturbed to the extent that they would stop returning to their nest, or if nests, eggs, or young were to be trampled by foot traffic, especially since handlers or trainer are more likely to be focusing on their dogs, not the ground. Off-lead dog walking can also disturb some species of breeding shorebirds from their nests (Lord et al. 2001). To minimize these potential impacts, dogs are required to be on a leash of 6 feet or less at all times, and in control of the owner. In addition, trails that accommodate dog walking do not traverse wetlands or areas that support shorebird nesting. Lastly, dog waste can create sanitation issues and an unsightly environment to other refuge visitors. Therefore, dog owners are required to immediately pick up after their pets and pack out waste.

Studies on impacts of recreational dog walking in woodlands demonstrated a 35 percent reduction in bird diversity and 41 percent reduction in abundance, both in areas where dog walking is common and where dogs are prohibited (Banks and Bryant 2007). Free-ranging and uncontrolled dogs can chase and flush ground-nesting or foraging birds and other wildlife, and occasionally prey on reptiles. Potential impacts of domestic dogs could be broadly classified as harassment, injury, or death of wildlife. Harassment is the disruption of normal maintenance activities, such as feeding, bedding, or grooming. It can take the form of disrupting, alarming, or even chasing. If dogs chase or pursue wildlife, injuries could be sustained directly or indirectly as a result of accidents that occur during the chase itself rather than direct contact with the dog. Impacts of domestic dogs can also include modification of wildlife behavior.

However, the proposed use of dog walking will be restricted to public trails where disturbance may already occur due to other public use activities. In addition, the requirement for dogs to be kept on a 6-foot leash will minimize the impacts to other users and wildlife. We do not anticipate any impacts to water quality, soils, or vegetation other than those impacts from normal trail use as described in our wildlife observation compatibility determination. We do not expect a substantial increase in the cumulative effects of visitor use over the 15-year timeframe of this plan. Staff, in collaboration with volunteers, will monitor and evaluate the effects of these priority public uses to discern and respond to any unacceptable impacts on wildlife or habitats.

PUBLIC REVIEW AND COMMENT:

As part of the comprehensive conservation planning process for Patuxent Research Refuge, this compatibility determination underwent extensive public review, including a comment period of 45 days following the release of the draft Comprehensive Conservation Plan/Environmental Assessment. We received one comment from an individual that believes the refuge would be better off without domestic animals. The commenter stated that this would reduce one possible vector of disease transmission. We have not seen any evidence of disease transmission to date, but will reconsider this issue if we see evidence or receive additional information that would cause concern.

DETERMINATION (CHECK ONE BELOW):

- Use is not compatible
 Use is compatible with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

Dogs must be on a leash, no longer than 6 feet in length, and must be prevented from entering closed areas. Dog owners must also pick up after their pets and pack out waste. Visitors and their leashed dogs must remain on public trails.

JUSTIFICATION:

Although dogs can increase disturbance to wildlife, the refuge will strictly enforce a leash law to keep dogs and disturbances localized with the pedestrian. This is an existing use at Patuxent Research Refuge, with no history of significant negative impacts. There are no documented incidents of domestic dog-wildlife disturbances, or of dog-human conflicts. The majority of dog walkers are local residents who regularly visit the refuge for wildlife-dependent recreation and who understand our policy. The U.S. Fish and Wildlife Service and the Refuge System maintain goals of providing opportunities to view wildlife. Allowing the use of the trail system by persons engaging in dog walking, may facilitate wildlife observation. These users may take the time to learn more about the refuge and become avid supporters of the Refuge System.

As listed in the purposes section of this compatibility determination, the refuge was established and subsequently land was acquired for a total of six purposes. Dog walking will not materially interfere with or detract from the research purpose of the refuge, because wildlife research does not generally occur on the trails where these uses occur and the impact will be minimal. Dog walking will not materially interfere with or detract from the two purposes related to wildlife conservation because the impacts to wildlife species and habitats will be minimal. This use will not materially interfere with or detract from the two purposes related to migratory bird conservation, because these uses are allowed in areas that are generally not in the vicinity of migratory waterfowl or land bird habitat. Dog walking will not materially interfere with or detract from the endangered species purpose, because there are no federally listed threatened or endangered species that occur on the refuge. Finally, dog walking will not materially interfere with or detract from the mission of the U.S. Fish and Wildlife Service, because of the limited locations where it will occur on the refuge.

SIGNATURE:

REFUGE MANAGER:

Brad Knudsen 6/11/13
(signature and date)

CONCURRENCE:

REGIONAL CHIEF:

Scott B. Kern 8/19/2013
(signature and date)

MANDATORY 10-YEAR REEVALUATION DATE: 2023

REFERENCES:

Andelt, W.F., J.G. Kie, F.F. Knowlton, and K. Cardwell. 1987. Variation in coyote diets associated with season and successional changes in vegetation. *Journal of Wildlife Management* 51:273-277.

- Banks, P.B. and J.V. Bryant. 2007. Four-legged friend or foe? Dog walking displaces native birds from natural areas. *Biology Letter* 3:611–613.
- Blumstein, D.T. and J.C. Daniel. 2005. The loss of anti-predator behaviour following isolation on islands. *Proc. R. Soc. B* 272: 1663–1668.
- Blumstein, D.T., E. FernándeZ-Juricic, P.A. Zollner, and S.C. Garity. 2005. Inter-specific variation in avian responses to human disturbance. *Journal of Applied Ecology* 42: 943–953.
- Hill, D., D. Hockin, D. Price, G. Tucker, R. Morris, and J. Treweek. 1997. Bird disturbance: improving the quality and utility of disturbance research. *Journal of Applied Ecology* 34: 275–288.
- Leach, H.R. and W.H. Fraizer. 1953. A study of the possible extent of predation on heavy concentrations of valley quail with special reference to the bobcat. *California Fish and Game* 39:527-538.
- Lord, A., J.R. Waas, J. Innes, and M.J. Whittingham. 2001. Effects of human approaches to nests of northern New Zealand dotterels. *Biological Conservation* 98:233–240.
- Miller, S.G., R.L. Knight, and C.K. Miller. 2001. Wildlife responses to pedestrians and dogs. *Wildlife Society Bulletin* 29(1):124-132.
- Sime, C.A. 1999. Domestic dogs in wildlife habitats. In: *Effects of recreation on Rocky Mountain wildlife: A Review for Montana* (Joslin, G. and H. Youmans, coordinators), pp. 8.1-8.17. Montana Chapter of The Wildlife Society, Committee on Effects of Recreation on Wildlife. 307 pp.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Patuxent Research Refuge

Use: Search and Rescue Training for Canine Teams

This form is not required for wildlife-dependent recreational uses, 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?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	✓	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?	✓	
(h) Will this be manageable in the future within existing resources?	✓	
(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?	✓	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	✓	

Where 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 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

Refuge Manager: Brad Knudson

Date: 6/11/13

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: Ac Gittman

Date: 7/5/13

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

FWS Form 3-2319
02/06

JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

REFUGE NAME: Patuxent Research Refuge

USE: Search and Rescue Training for Canine Teams

NARRATIVE:

The use is allowing periodic training exercises by certified canine search and rescue (SAR) teams on refuge property. This use involves simulating a search and rescue for a missing person by using scent-oriented training techniques for SAR dogs. Allowing this use will provide a service to local SAR teams that require continuous and variable training to keep their teams performing at peak levels. It provides a “wilderness” or “remote area” scenario to the cadre of sites such teams like to utilize. The use will be conducted at remote locations, away from other public use areas, to avoid disruption to the general public and to keep the SAR teams from being distracted by other activities. Typically, the use has occurred in the fields and wooded edges of the Old Beltsville Airport located on the South Tract. Other areas could include the retired stables area on the North Tract and the retired agricultural fields on the South Tract. Dogs must be under immediate control of their owners at all times (50 CFR 26.21(b)).

Time-of-year restrictions and infrequent use will curtail impacts to wildlife, habitats, and research purposes of the refuge. The proposed use fosters a partnership with local SAR teams that will benefit the refuge should a need for such a service arise. Refuge staff may also benefit from exposure to this type of training, particularly refuge law enforcement officers. The refuge is just one of other local sites being used by SAR organizations, and this minimizes the demand on the refuge.

There are several specialized uses which, as long as found to be appropriate and compatible with a given refuge, could be allowed on refuge property by permit. We review each request on a case-by-case basis and the availability of other local sites is considered. Examples include fire safety training, search and rescue training and boat operations safety training. Law enforcement training exercises in support of refuge management activities are usually appropriate (603 FW 1.10 D(5)). These uses assist local government agencies by allowing health, safety, and rescue training operations. We reviewed this SAR use as to its appropriateness for Patuxent Research Refuge as defined in 603 FW 1.11 and will develop an appropriate special use permit containing conditions to ensure compatibility with the refuge purposes and mission.

COMPATIBILITY DETERMINATION

USE:

Search and Rescue Training for Canine Teams

REFUGE NAME:

Patuxent Research Refuge

ESTABLISHING AND ACQUISITION AUTHORITIES:

Executive Order 7514, dated December 16, 1936; Executive Order 11724, dated June 27, 1973; 16 U.S.C. 715d, Migratory Bird Conservation Act of 1929; 16 U.S.C. 1534; 16 U.S.C. 667b, dated May 19, 1948 - An Act Authorizing the Transfer of Certain Real Property for Wildlife or other purposes; and Public Law 101-519 Sec. 126, 104 Stat. 2247, dated November 5, 1990.

REFUGE PURPOSES:

1. "...as a wildlife experiment and research refuge" – Executive Order 7514, dated December 16, 1936
2. "...recreation, conservation, wildlife preservation, and related scientific and educational activities" – Executive Order 11724, dated June 27, 1973
3. "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds" – 16 U.S.C. 715d, dated February 18, 1929 (Migratory Bird Conservation Act)
4. "...to conserve fish, wildlife and plants, including those which are listed as endangered species or threatened species – 16 U.S.C. 1534, dated December 28, 1973 (Endangered Species Act)
5. "...particular value in carrying out the national migratory bird management program." – 16 U.S.C. 667b, dated May 19, 1948 (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes)
6. "... (b) The Secretary of the Interior shall administer the property transferred pursuant to subsection (a) consistent with wildlife conservation purposes and shall provide for the continued use of the property by Federal agencies to the extent such agencies are using it on the date of the enactment of this Act." – Public Law 101-519 Sec. 216, 104 Stat. 2247, dated November 5, 1990 (Defense Appropriation Act – including transfer of the North Tract from Fort Meade).

NATIONAL WILDLIFE REFUGE SYSTEM MISSION:

"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." 16 U.S.C. 668dd(a)(2) (National Wildlife Refuge System Improvement Act of 1997)

DESCRIPTION OF USE:

What is the use? Is the use a priority public use?

The use is allowing periodic training exercises by certified canine search and rescue (SAR) teams on refuge property. It involves simulating a search and rescue for a missing person by using scent-oriented training techniques for SAR dogs. This is not a priority public use of the National Wildlife Refuge System (Refuge System) under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), and the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57).

Where would the use be conducted?

The use will be conducted at remote locations, away from other public use areas, to avoid disruption to the general public and to keep the SAR teams from being distracted by other activities. Typically, the use has occurred in the fields and wooded edges of the Old Beltsville Airport located on the South Tract. Other areas could include the retired stables area on the North Tract and the retired agricultural fields on the South Tract.

When would the use be conducted?

This use will typically occur on weekend days during the non-hunting season and on Sundays during hunting season. The use would be conducted during daylight hours on days where hunting is not occurring on the refuge and may be further restricted to outside of the breeding season depending on the site.

South Tract: to protect grassland breeding birds in the retired agricultural fields on the South Tract, one of the refuge's prime grassland habitats, the SAR activity will be restricted to any day from August 15 to September 30, Sundays only from October 1 to January 31, and any day from February 1 to April 15. Breeding season for ground nesting grassland birds is currently regarded as April 15 to August 15 to encompass nest site selection at the beginning of the season and fledgling growth and development near the end of the season. Grassland birds are most likely to be affected by this activity, especially if conducted in the retired agricultural fields.

North Tract: SAR activities may be conducted at the retired stable areas during daylight hours on days where hunting is not occurring, typically on weekdays outside of the North Tract's hunt season, September 15 to January 31 and spring gobbler season (variable dates, but about mid-April to late May), and on Sundays when hunting is not allowed. These time restrictions prevent conflicts with refuge public hunting and biological goals for breeding landbirds.

We generally only receive about three requests annually and do not expect to receive more than six requests annually. The per-day training duration is about 6 hours.

How would the use be conducted?

The use will be conducted by local SAR teams and their trained dogs. Dogs are under their handlers' control at all times. Dogs are trained to respond to human scent only, and do not respond to wildlife scent. An air-scenting search dog is trained to scan the air currents for the scent of a human being. Dogs are also trained to respond to trailing scents (a specific human). The dog locates the source of the scent and indicates it to the handler. The dogs can work well in areas that have been "contaminated" by previous searchers. They can search day or night in most

kinds of weather, including rain and snow. In addition to wilderness and undeveloped tracts, the dogs can be effective in rural or suburban areas. They can search groves of trees, overgrown vacant lots and fields, abandoned buildings, junkyards, and city parks. They are especially effective where human sight is most limited - in the dark, in dense woods, heavy brush, trash, or debris.

Vehicles will be required to remain on refuge roads. Only dogs and trainer personnel will be allowed to exercise on off-road areas. Duration of SAR exercises is generally about 6 hours. Group sizes average 8 to 10 dogs plus their handlers and the trainer(s) (on average 8 to 10 people). Search teams use primarily wooded areas, adjacent to their parking area. The area is divided into multiple sections, trainers and dogs are then sent to their specified area to seek out one individual who is waiting in the respective area. SAR exercises may range from 15 minutes to 4 or 5 hours in duration.

Why is this use being proposed?

The use is being proposed to provide a service to local SAR teams that require continuous and variable training to keep their teams performing at peak levels. The refuge is one of several sites used by such teams. It provides a “wilderness” or “remote area” scenario to the cadre of sites such teams like to utilize.

AVAILABILITY OF RESOURCES:

Refuge staff will be required to issue special use permits to allow SAR requests. Requests are not expected to exceed six per year, but it has generally never been more than three requests annually. Depending on location, refuge staff may have to guide SAR teams to the site. Staff time is estimated to be 12 to 24 hours annually for coordinating this use. After review of the refuge budget, there are sufficient staff and funds to sustain this activity.

ANTICIPATED IMPACTS OF THE USE:

The anticipated impacts to the refuge are minimal. There may be temporary displacement of wildlife from SAR activities, but suitable escape habitat is adjacent to the areas where the use will be occurring. The dogs are extremely disciplined and trained to focus only on their scent goal; they are not allowed to chase wildlife.

The most likely impact will be disturbance to wildlife that will be flushed as dogs and handlers approach. Recent extensive research has shown that human walkers (without dogs) can induce anti-predator responses in birds including vigilance and early flight, which may lead to a cascade of related responses that negatively affect birds (Blumstein and Daniel 2005). In a study by Banks and Bryant (2007), results reveal that even dogs restrained on leads can disturb birds sufficiently to induce displacement and cause a depauperate local bird fauna. These effects were in excess of significant impacts caused by human disturbance, which also caused to decline in diversity and abundance. Responses to transient human disturbance are well known (Blumstein et al. 2005) and predicted to lead to population-level impacts on some birds species (Hill et al. 1997). Another study found no net difference in bird diversity or abundance between areas with and without regular dog walking receiving the same treatment, suggesting that long-term impacts in this area may be small (Banks and Bryant 2007). The level of this type of impact would be greater if ground nesting birds were disturbed to the extent that they would stop returning to their

nest, or if nests, eggs, or young were to be trampled by foot traffic, especially since handlers or trainer are more likely to be focusing on their dogs, not the ground. For this reason, in areas where there is heightened sensitivity or concern, we limit SAR activity to non-breeding season, when young birds are less vulnerable. In winter, this activity could flush birds from a resting site resulting in higher energy expenditures, but the footprint of this disturbance would be a very localized and temporary. SAR activities occur on only one day, one location and the time intervals between scheduled visits on the refuge can be months because of the availability of other sites. Moreover, SAR activities typically do not utilize grassland or open field areas.

Another anticipated impact of the use is trampling of vegetation in an area that we are trying to restore. We expect this to be minor to none because of the time of year restrictions and the resiliency of the grasses and forb vegetation in this area. We do not anticipate impacts to water quality or soils based on the low level of use and dispersed nature of the activity.

PUBLIC REVIEW AND COMMENT:

As part of the comprehensive conservation planning process for Patuxent Research Refuge, this compatibility determination underwent extensive public review, including a comment period of 45 days following the release of the draft Comprehensive Conservation Plan/Environmental Assessment. We did not receive any comments specific to this search and rescue compatibility determination.

DETERMINATION (CHECK ONE BELOW):

- Use is not compatible
 Use is compatible with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

- SAR exercises will require a special use permit and must follow the permit conditions. This includes following time-of-year restrictions (i.e., to protect breeding ground nesting birds).
- All SAR activities will be conducted in areas away and out of view from other public activities.
- All training exercises will be conducted in a manner that “leaves no trace” on the refuge. This includes litter, flagging, and other items/materials that may be used to simulate a SAR scenario.
- Dogs will be attended and under handlers’ control at all times.

JUSTIFICATION:

SAR uses generally do not adversely impact the refuge’s research purpose since uses are coordinated through a special use permit and work around research needs. In addition, the Central Tract portion of the refuge is set aside specifically to support research.

As listed in the purposes section of this compatibility determination, the refuge was established and subsequently land was acquired for a total of six purposes. Search and rescue exercises will

not materially interfere with or detract from the research purpose of the refuge, because wildlife research does not generally occur in the vicinity of the locations that these uses occur. This use will not materially interfere with or detract from the two purposes related to wildlife conservation, because the impacts described above will be minimal. In addition, SAR exercises will not materially interfere with or detract from the two purposes related to migratory bird conservation, because these uses are allowed in areas that are generally not in the vicinity of migratory waterfowl or land bird habitat. This use will not materially interfere with or detract from the endangered species purpose, because there are no federally listed threatened or endangered species that occur on the refuge. At the scales and level of current and anticipated SAR use, research, or wildlife and habitat purposes are not appreciably negatively affected by these uses. Low frequency of use (less than six times per year) and time of year restrictions further limit the impacts to refuge purposes. Finally, this use will not materially interfere with or detract from the mission of the U.S. Fish and Wildlife Service, because of the low levels of use.

The proposed use fosters a partnership with local SAR teams that will benefit the refuge should a need for such service arise. The refuge is just one of other local sites area being used by SAR organizations, and this minimizes the demand on the refuge.

SIGNATURE:

REFUGE MANAGER:

Brad Knudsen 6/11/13
(signature and date)

CONCURRENCE:

REGIONAL CHIEF:

Scott B. Kim 8/19/2013
(signature and date)

MANDATORY 10-YEAR REEVALUATION DATE: 2023

REFERENCES:

- Banks, P.B. and J.V. Bryant. 2007. Four-legged friend or foe? Dog walking displaces native birds from natural areas. *Biology Letter* 3:611–613.
- Blumstein, D.T. and J.C. Daniel. 2005. The loss of anti-predator behaviour following isolation on islands. *Proc. R. Soc. B* 272:1663–1668.
- Blumstein, D.T., E. Fernandez-Juricic, P.A. Zollner, and S.C. Garity. 2005 Inter-specific variation in avian responses to human disturbance. *Journal of Applied Ecology* 42:943–953.
- Hill, D., D. Hockin, D. Price, G. Tucker, R. Morris, and J. Treweek. 1997. Bird disturbance: improving the quality and utility of disturbance research. *Journal of Applied Ecology* 34: 275–288.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Patuxent Research Refuge

Use: U.S. Secret Service Training Exercises at the National Wildlife Visitor Center

This form is not required for wildlife-dependent recreational uses, 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?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	✓	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?	✓	
(h) Will this be manageable in the future within existing resources?	✓	
(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?		✓
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	✓	

Where 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 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

Refuge Manager: Basil Kudron

Date: 6/11/13

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: De J. Turner

Date: 7/5/13

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

FWS Form 3-2319
02/06

JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

REFUGE NAME: Patuxent Research Refuge

USE: U.S. Secret Service Training Exercises in the National Wildlife Visitor Center

NARRATIVE:

The use is allowing periodic training exercises by the adjacent James J. Rowley Secret Service Training Center (JJRTC) to occur in the National Wildlife Visitor Center (NWVC). This training typically involves 12 to 15 graduating agents and up to a dozen U.S. Secret Service (USSS) instructors and role-players utilizing the building for visiting dignitary protection and physical security training scenarios. Each session would involve 2 days of pre-exercise scouting and planning (4 to 6 hours a day), followed up on occasion by the actual training scenario on the third day (2 to 3 hours in length).

The use is being proposed to provide a convenient location for this critical training for another Federal agency. The JJRTC is immediately adjacent to the NWVC. USSS already has a positive working relationship with the refuge through the use of a firing range on the North Tract. The close proximity to the JJRTC saves training time and travel costs for the USSS. The NWVC is only one of several facilities that USSS uses for this training and provides a unique venue they have described as “perfect” for this occasional training need. In the past 10 years, reported conflicts with this use have been minimal, and typically have had to do with temporary confusion related to volunteer or staff access to a particular room. Additionally, the refuge is often visited by mid- to upper-level government officials and dignitaries; gaining some exposure to this type of training helps prepare staff for such events.

While this use does not directly contribute to the public’s understanding and appreciation of resources, it does not detract from the refuge fulfilling their establishing purposes of supporting research, habitats and wildlife. This use should pose no impacts to vegetation, wildlife, or soil, as the entire exercise will be conducted inside the NWVC.

COMPATIBILITY DETERMINATION

USE:

U.S. Secret Service Training Exercises in the National Wildlife Visitor Center

REFUGE NAME:

Patuxent Research Refuge

ESTABLISHING AND ACQUISITION AUTHORITIES:

Executive Order 7514, dated December 16, 1936; Executive Order 11724, dated June 27, 1973; 16 U.S.C. 715d, Migratory Bird Conservation Act of 1929; 16 U.S.C. 1534; 16 U.S.C. 667b, dated May 19, 1948 - An Act Authorizing the Transfer of Certain Real Property for Wildlife or other purposes; and Public Law 101-519 Sec. 126, 104 Stat. 2247, dated November 5, 1990.

REFUGE PURPOSES:

1. "...as a wildlife experiment and research refuge" – Executive Order 7514, dated December 16, 1936
2. "...recreation, conservation, wildlife preservation, and related scientific and educational activities" – Executive Order 11724, dated June 27, 1973
3. "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds" – 16 U.S.C. 715d, dated February 18, 1929 (Migratory Bird Conservation Act)
4. "...to conserve fish, wildlife and plants, including those which are listed as endangered species or threatened species – 16 U.S.C. 1534, dated December 28, 1973 (Endangered Species Act)
5. "...particular value in carrying out the national migratory bird management program." – 16 U.S.C. 667b, dated May 19, 1948 (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes)
6. "... (b) The Secretary of the Interior shall administer the property transferred pursuant to subsection (a) consistent with wildlife conservation purposes and shall provide for the continued use of the property by Federal agencies to the extent such agencies are using it on the date of the enactment of this Act." – Public Law 101-519 Sec. 216, 104 Stat. 2247, dated November 5, 1990 (Defense Appropriation Act – including transfer of the North Tract from Fort Meade).

NATIONAL WILDLIFE REFUGE SYSTEM MISSION:

"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." 16 U.S.C. 668dd(a)(2) (National Wildlife Refuge System Improvement Act of 1997)

DESCRIPTION OF USE:

What is the use? Is the use a priority public use?

The use is allowing periodic training exercises by the adjacent James J. Rowley Secret Service Training Center (JJRTC) to occur in the National Wildlife Visitor Center (NWVC). This training typically will involve 12 to 15 graduating agents and up to a dozen U.S. Secret Service (USSS) instructors and role-players utilizing the building for visiting dignitary protection and physical security training scenarios. Each session would involve 2 days of pre-exercise scouting and planning (4 to 6 hours a day), followed up on occasion by the actual training scenario on the third day (2 to 3 hours in length). This 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), and the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57).

Where would the use be conducted?

The use will be conducted within the confines of the NWVC. Vehicles would be parked in the public parking lot that serves the NWVC.

When would the use be conducted?

The use will occur on low visitation weekdays throughout the year. The requests would not be accommodated on dates where major conferences, school groups, or similar activities have been previously scheduled.

How would the use be conducted?

The use will be allowed through a special use permit between the refuge and the JJRTC. The use will be closely coordinated between NWVC staff and the cadre of USSS instructors. Specific rooms may be set aside to serve the training needs, which include a briefing room, “meet and greet” rooms, and a “safe-room,” to simulate where a VIP would be escorted to in the event of a threat to their safety. Access to and from the NWVC will be coordinated so as not to interfere with staff, volunteer, and public needs and operations.

Why is this use being proposed?

The use is being proposed to provide a convenient location for this critical training for another Federal agency. The JJRTC is immediately adjacent to the NWVC and USSS already has a positive relationship with the refuge through the use of one of the shooting ranges on the North Tract.

AVAILABILITY OF RESOURCES:

Initial coordination with USSS may require 2 to 3 staff days and providing floor plans or blueprints of the NWVC. Staff support, which is available, to USSS would be minimal after that, generally in responding to scheduling and minor coordination on the actual training days. After review of the refuge budget, there are sufficient staff and funds to sustain this activity.

ANTICIPATED IMPACTS OF THE USE:

There may be minimal impact to staff and visiting public on the pre-visit days, with more likelihood of minor disruptions on the day of the scenario, if members of the public inquire what

is going on or attempt to view the training. This disruption is anticipated to be minimal.

There should be no impacts to vegetation, wildlife, water, or soil, as the entire exercise will be conducted inside the NWVC.

PUBLIC REVIEW AND COMMENT:

As part of the comprehensive conservation planning process for Patuxent Research Refuge, this compatibility determination underwent extensive public review, including a comment period of 45 days following the release of the draft Comprehensive Conservation Plan/Environmental Assessment. We did not receive any comments specific to this training compatibility determination.

DETERMINATION (CHECK ONE BELOW):

- Use is not compatible
 Use is compatible with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

- Training sessions will be conducted on days of anticipated low visitation and minimal use of conference facilities to minimize exposure to the general public.
- Role-playing exercises will be isolated from the general public, other than the potential walking tour scenario. This simulation may involve a walk-through of the NWVC display area.
- No scenarios involving bomb squads, hostage extraction, or use of force will be permitted.
- Agents and students will not have loaded firearms in their possession while on-site.
- Scheduling of USSS training exercises will be of lower priority than scheduling of U.S. Fish and Wildlife Service and the National Wildlife Refuge System mission-related activities such as environmental education, teacher workshops, and science conferences.

JUSTIFICATION:

The refuge has previously issued a special use permit with USSS for this indoor training use at the NWVC. The close proximity to the USSS Training Center saves training time and travel costs for the USSS. The NWVC is only one of several facilities that USSS uses for this training and provides a unique venue they have described as “perfect” for this occasional training need. In the past 10 years, reported conflicts with this use have been minimal, and typically have had to do with temporary confusion related to volunteer or staff access to a particular room. Additionally, the refuge is often visited by mid- to upper-level government officials and dignitaries; gaining some exposure to this type of training helps prepare staff for such events. Indoor training opportunities receive a lower priority level when scheduling the use of the NWVC in order to promote and accommodate refuge purposes first and foremost.

As listed in the purposes section of this compatibility determination, the refuge was established

and subsequently land was acquired for a total of six purposes. This indoor training will not materially interfere with or detract from the research purpose of the refuge, because wildlife research does not occur inside the visitor center. This use will not materially interfere with or detract from the two purposes related to wildlife conservation, because this indoor training will not impact any wildlife. These training exercises will not materially interfere with or detract from the two purposes related to migratory bird conservation, because these uses are allowed indoors and will not impact migratory waterfowl or land bird habitat. This use will not materially interfere with or detract from the endangered species purpose, because there are no federally listed threatened or endangered species that occur on the refuge. Finally, USSS training will not materially interfere with or detract from the mission of the National Wildlife Refuge System because the use occurs only within the NWVC and will be scheduled to minimize impacts to other users.

SIGNATURE:

REFUGE MANAGER:

Brad Knudsen 6/11/13
(signature and date)

CONCURRENCE:

REGIONAL CHIEF:

Scott B. / K 8/19/2013
(signature and date)

MANDATORY 10-YEAR REEVALUATION DATE: 2023

COMPATIBILITY DETERMINATION

USE:

Continuing Maintenance of Baltimore Gas and Electric Overhead Electric Transmission Right-of-Way on the North Tract

REFUGE NAME:

Patuxent Research Refuge

ESTABLISHING AND ACQUISITION AUTHORITIES:

Executive Order 7514, dated December 16, 1936; Executive Order 11724, dated June 27, 1973; 16 U.S.C. 715d, Migratory Bird Conservation Act of 1929; 16 U.S.C. 1534; 16 U.S.C. 667b, dated May 19, 1948 - An Act Authorizing the Transfer of Certain Real Property for Wildlife or other purposes; and Public Law 101-519 Sec. 126, 104 Stat. 2247, dated November 5, 1990.

REFUGE PURPOSES:

1. "...as a wildlife experiment and research refuge" - Executive Order 7514, dated December 17, 1936
2. "...recreation, conservation, wildlife preservation, and related scientific and educational activities" – Executive Order 11724, dated June 27, 1973
3. "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds" - 16 U.S.C. 715d, February 18, 1929 (Migratory Bird Conservation Act)
4. "...to conserve fish, wildlife, and plants, including those which are listed as endangered species or threatened species" 16 U.S.C. 1534, December 28, 1973 (Endangered Species Act)
5. "...particular value in carrying out the national migratory bird management program." 16 U.S.C. 667b, May 19, 1948 (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes)
6. "... (b) The Secretary of the Interior shall administer the property transferred pursuant to subsection (a) consistent with wildlife conservation purposes and shall provide for the continued use of the property by Federal agencies to the extent such agencies are using it on the date of the enactment of this Act." Public Law 101-519, Sec. 216, 104 Stat. 2247, dated November 5, 1990 (Defense Appropriations Act including the transfer of North Tract from Fort Meade)

NATIONAL WILDLIFE REFUGE SYSTEM MISSION:

"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." 16 U.S.C. 668dd(a)(2) (National Wildlife Refuge System Improvement Act of 1997)

DESCRIPTION OF USE:

What is the use? Is the use a priority public use?

The use is the maintenance of an overhead electric transmission line on the North Tract of Patuxent Research Refuge, owned and managed by Baltimore Gas and Electric (BG&E). The North Tract was conveyed to the Service with this 50 year right-of-way (ROW) easement through a Transfer of Military Property from the Department of Defense to the Department of the Interior in 1991. This 300-footwide ROW serves 230KV and 500KV overhead electric transmission lines, running approximately 5.5 miles through the refuge, encompassing approximately 230 acres. Maintenance activities include working on the powerline infrastructure itself, as well as management of the vegetation beneath the wire zone and border zone to prevent vegetation-caused outages.

The maintenance of a ROW easement is not a priority use of the National Wildlife Refuge System (Refuge System) under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee) and the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). However, certain vegetation management practices will support some of the establishing purposes of the refuge, particularly the research purpose, as it will allow for studies on wildlife response to various vegetation management techniques under a major powerline corridor. The current ROW permit is for 50 years from the date of signature, which was August 16, 1972, expiring in 2022. To date, BG&E has complied with the terms and conditions of the ROW easement, with very minor exceptions. When these exceptions occurred, we developed closer communication with and scrutiny of the BG&E staff or contractors, which resulted in greater compliance. The vegetation management plan is currently undergoing revisions, in cooperation with BG&E, the U.S. Fish and Wildlife Service (Service) Ecological Services program, and IVM, a non-profit consulting company, focusing on greater control of invasive species, while promoting reestablishment and regrowth of native forbs, grasses, and shrubs.

Long-term easements such as this are reevaluated for compatibility every 10 years to ensure compliance with the terms and conditions of the easement, and to ensure there is no net loss of habitat, per 16 U.S.C. 668dd(d)(3)(B)(vii).

Where would the use be conducted?

The ROW begins at the Amtrak railroad line on the eastern end of the refuge and ends at the Baltimore-Washington Parkway (MD 295) ramp on the north end of the refuge. There are 34 towers in the ROW. The tower spans are an average of 1,000 feet in length. Each span totals about 300,000 square feet, or about 6.875 acres.

When would the use be conducted?

BG&E staff and contractors will coordinate with refuge staff prior to requesting access for non-emergency, planned vegetation control activities. This will involve checking in at the North Tract Visitor Contact Station upon arrival and upon departure. This is especially important during hunting season, which begins in September. Non-emergency, planned vegetation management and control activities will occur only outside of the bird breeding season, which runs from April 15 to August 15. There may be exceptions for the treatment of invasive plant species, which mature during this time and control efforts will not be as effective outside this

timeframe. In such cases, BG&E staff and contractors will coordinate with the refuge senior biologist for permission to conduct agreed upon treatments.

It may be necessary for emergency repairs and inspections to be done at any hour of the day, any time of year. Coordination with refuge staff will be expected to occur as soon as is reasonably possible in these instances.

How would the use be conducted?

Infrastructure maintenance will vary widely depending on the nature of the repair and replacement of towers, tower pads, and wires. It will be done in accordance with BG&E policies and procedures, but with special consideration for the unique situation of being located on a national wildlife refuge. Access will be coordinated with refuge staff ahead of time for routine maintenance, and as soon as possible before, during and after emergency responses. There has been minimal need for this type of activity in the 20 years the refuge has managed the underlying property.

Vegetation management within the ROW will be conducted using the principles of integrated pest management (IPM), and will not conflict with new requirements established by the Federal Energy Regulatory Commission (FERC) in 2008-2009. These revised requirements require more aggressive control of vegetation height under ROW wire zones, increasing the desired distance between vegetation and the wires from 12 feet to 15 feet. IPM principles include minimal use of herbicides approved by the refuge manager or Regional Office, avoidance of sensitive habitats such as wetlands or bogs, mechanical control as necessary using power saws, bush hogs, and other similar power equipment, and hand control where feasible. Please refer to the Stipulations section for further details.

Vegetation management will occur both within the wire zone and the border zone. The wire zone is the area of the ROW directly beneath the conductors and extending 20 feet outside of the last conductor toward the ROW edge. The border zone is everything from this point to the woods line. The height restriction within the wire zone varies according to line voltage and clearance from the conductor to the ground. Generally, no vegetation above 15 feet in height will be allowed to grow anywhere within the wire zone, except where clearances are greater than normal, such as a ravine. Vegetation in the border zone can be taller so long as it does not jeopardize the flashover distance of the voltage, taking into consideration wind and sway of trees and wires. Species are generally restricted to shrub and scrub growth, with such species as mountain laurel, blackberry, blueberry, viburnum, and some low stature trees like serviceberry, sumac, and dogwood.

Why is the use being proposed?

The use is being proposed to continue allowing maintenance of this transmission ROW, in a manner that is fully protective of refuge habitats. The agreed-upon vegetation management plan will help the refuge achieve goal 3 in the Comprehensive Conservation Plan (CCP): “Manage refuge non-forested upland communities to provide ecological structure, composition, and function to support native plants and wildlife, including species of conservation concern.” It will provide an early successional stage habitat of grasses, forbs, and low shrubs beneficial to such bird species as gray catbird, ruby-crowned kinglet and prairie warbler, and a host of pollinating

insects and native bee species. Through successful vegetation management, the presence of invasive species under and adjacent to the ROW will decline, including autumn olive, lespedeza, and mile-a-minute, and be replaced with native flora. Management of this regionally declining habitat will be nearly entirely at BG&E's expense.

AVAILABILITY OF RESOURCES:

Refuge staff time will be required to coordinate, develop, and issue special use permits; review site operations and safety plans; and to attend and participate in annual meetings, site visits, or phone calls with BG&E representatives. Under the current term of this compatibility determination and ROW easement, the majority of vegetation management expenses will be the responsibility of BG&E personnel and contractors to keep the vegetation within FERC height restrictions and for invasive and undesirable species control. Some refuge staff time will be required to review management plans and assess habitat quality pre- and post-vegetation treatments and other maintenance activities, process and approve pesticide use proposals, and to monitor invasive plant species.

Task	Staff Days	Cost/year
Review annual vegetation management plan	2 days/year, supervisory biologist GS12	\$480/year
Visual habitat and vegetation monitoring	4 days/year supervisory biologist GS12 bio-tech GS 5/6/7	\$960/year \$563/year
Write, process pesticide use proposals	2 days/year, assistant biologist GS-9	\$311/year
Invasive species treatment	4 days/year supervisory biologist GS12 bio-tech GS 5/6/7 2 interns	\$960/year \$563/year \$334/year
Total staff cost		\$4,171/year

Supplies/Services	Cost
Maintenance of buildings, roadways, and parking areas	\$1,100
Office supplies	\$110
Equipment and herbicide	\$550
Total cost of supplies and services	\$1,760

Total Annual Cost: \$5,931

After review of the refuge budget, there are sufficient staff and funds to sustain this activity.

ANTICIPATED IMPACTS OF THE USE:

Through the agreed upon vegetation management plan, the ROW is undergoing natural succession, requiring selective management with shorter stature vegetation comprised of trees, shrubs, forbs, and grasses. A one-lane, dirt access road running throughout most of the wire zone

also results in sparseness, or no vegetation, and invites invasive species establishment. However, this road is necessary to allow proper minimal access for required vegetation control under FERC guidelines.

Short-term direct impacts to wildlife, soils, and vegetation may result from vegetation removal, tower and cable maintenance, and periodic safety inspections and testing. Impacts to wildlife include temporary flushing of birds and other wildlife. Impacts to soils include moderate, localized soil compaction and erosion (depending on equipment used). Occasional mortality of reptiles and amphibians in the path of vehicles and equipment could occur.

Shrub and early succession habitat provide benefits to numerous species of birds of conservation concern; provide high-quality food and cover resources for migrating and fledging bird; and provide species, age, and structural diversity of plant-life for a variety of invertebrates, which are integral to the food web. Shrub vegetation cover types provide structural and species diversity to a forest. The refuge forest community will gain from the juxtaposition of shrub and early succession habitat. Forest interior-dwelling bird species, such as scarlet tanager, seek such habitats for rearing their young. Forest openings, which the ROW mimics, serve as forage areas for forest bats, box turtles, pollinators, and herbivorous native insects, and the whip-poor-will, a declining species in the State of Maryland (personal communication with Dr. Sam Droege, Dr. Daniel Bystrak, USGS, and Dr. Timothy Jones, USFWS).

PUBLIC REVIEW AND COMMENT:

As part of the comprehensive conservation planning process for Patuxent Research Refuge, this compatibility determination underwent extensive public review, including a comment period of 45 days following the release of the draft CCP/environmental assessment. We did not receive any comment specific to this ROW compatibility determination.

DETERMINATION (CHECK ONE BELOW):

- Use is not compatible
- Use is compatible with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

The use would be conducted continually under these specific terms and conditions referenced in 50 CFR 29.21-4, 29.21-8, and 50 CFR 26.41 (c), 1 October, 1990:

1. By accepting the ROW, the holder has agreed to such terms and conditions as may be prescribed by the Regional Director in the granting document. In this case, these include the ROW conditions issued in 1972 and the stipulations listed below, unless waived in part by the Regional Director, and may include additional special stipulations at his or her discretion (50 C.F.R. 29-21-4(b)).

Per the existing ROW, BG&E or its representatives:

1. Shall comply with State and Federal laws applicable to the project within which the ROW was granted, and to the lands which are included in the ROW, and lawful existing regulations thereunder.

2. Shall ensure and maintain adequate spacing between energized lines both vertically and horizontally, as specified by the Joint Avian Protection Guidelines of Edison Institute and the Service to prevent electrocution by large raptors, particularly bald and golden eagles, which are protected species under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. Sixty horizontal inches will accommodate wrist-to-wrist distance for an eagle, and 48 vertical inches will accommodate an eagle's standard height. Compliance with these requirements is a basic preventative measure and will not immunize BG&E from liability for any violation of the bird laws.
3. Shall release the Service and the U.S. Government from any liability and indemnify and hold them harmless for any incidents involving unexploded ordnance (UXO) encountered on the ROW premises or during access to the ROW. Signage and materials notifying all visitors to the North Tract of the presence of UXO is provided along the North Tract entrance, and at the Visitor Contact Station on Bald Eagle Drive. It shall be the responsibility of BG&E to notify contractors and representatives.
4. Shall manage vegetation in ROW area in the manner directed by the refuge manager and dispose of all vegetative and other material cut, uprooted, or otherwise accumulated during the construction and maintenance of the project in a manner which decreases the fire hazard and also is in accordance with such instructions as the refuge manager may specify.
5. Shall prevent the disturbance or removal of any public land survey monument or project boundary monument unless and until the applicant has requested and received from the Regional Director approval of measures the applicant will take to perpetuate the location of aforesaid monument.
6. Shall prevent soil erosion and conditions leading to stream down-cutting resulting from road maintenance and use or related construction and maintenance activities as the refuge staff in charge may request.
7. Shall do everything reasonably within its power, both independently and on request of any duly authorized representative of the United States, to prevent and suppress fires on, or near, lands to be occupied under the easement or permit area, including making available such construction and maintenance forces as may be reasonably obtainable for the suppression of such fires (50 CFR § 29.21-4(b)(5)).
8. Shall rebuild and repair such roads, fences, structures, and trails as may be destroyed or injured by construction work and, upon request by the refuge manager, build and maintain necessary and suitable crossings and culvert for all roads and trails that intersect the works constructed, maintained, or operated under the ROW. Holder shall be responsible for maintenance and repair of access roads serving the ROW (50 CFR § 29.21-4(b)(6)).
9. Shall notify promptly the refuge manager of the amount of merchantable timber, if any, which will be cut, removed, or destroyed in the construction and maintenance of the project, and to pay the United States in advance of construction and maintenance such sum of money as the project manager may determine to be the full stumpage value of the timber to be so cut, removed, or destroyed. (50 CFR § 29.21-4(b)(8)).

10. Shall restore the land to its original condition to the satisfaction of the refuge manager so far as it is reasonably possible to do so upon revocation or termination of the easement, or following land disturbance resulting from repairs and construction, unless this requirement is waived in writing by the Regional Director (50 CFR 29.21-4(b)(10)). Termination also includes permits or easements that terminate under the terms of the grant.
11. Shall keep the refuge manager informed at all times of its address, and, in case of corporations, of the address of its principal place of business and the names and addresses of its principal officers (50 CFR § 20.21-4(b)(11)).
12. Shall not, when hiring for work on the ROW, discriminate against any employee or applicant for employment because of race, creed, color, or national origin and shall require an identical provision to be included in all subcontracts.
13. Shall not unduly interfere with the management, administration, or disposal by the United States of the land affected thereby. The easement holder agrees and consents to the occupancy and use by the United States, its grantees, permittees, or lessees of any part of the easement or permit area not actually occupied for the purpose of the granted rights to the extent that it does not interfere with the full and safe utilization thereof by the holder. The holder of the easement also agrees that authorized representatives of the United States shall have the right of access to the easement or permit area for the purpose of making inspections and monitoring the construction, operation, and maintenance of facilities, and other refuge-authorized business or activities provided that they do not interfere with the holder's rights.
14. Shall modify or adapt any facility if found to be necessary by the refuge manager, without liability or expense to the United States, so that such facility will not conflict with the use and occupancy of the land for any authorized works which may hereafter be constructed thereon under the authority of the United States. Any such modification will be planned and scheduled so as not to interfere unduly with or to have minimal effect upon continuity of energy and delivery requirements.
15. Shall not construe the permit to include the further right to authorize any other use within the easement or permit area unless approved in writing by the Regional Director.
16. Shall report immediately any cultural or paleontological resources (historic or prehistoric site or object including burials or skeletal material) discovered by the easement holder, or any person working on its behalf, on public or Federal land to the refuge manager. BG&E, or its representative, shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer or a Service-approved Archaeologist to determine appropriate actions to take pursuant to the provisions of law, including 36 FRCFR 800.7 (resources discovered during construction) to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation. Any decision as to proper mitigation measures will be made by the authorized officer after consulting the holder.
17. Shall not collect any plants, wildlife, or artifacts from refuge property.
18. Shall not bring any pets or other animals onto the ROW or any refuge property.

19. Shall not transport, deliver, transfer, store, or use any hazardous materials or fuels in the ROW except as authorized by the refuge manager. All transport, delivery, transfer, storage, and use of such materials and fuels authorized shall comply with all applicable Federal and State law and regulations.
20. Shall notify the refuge manager as soon as possible, and no later than 12 hours, after learning of any accident or other event in the ROW that could result in damage to the resources, values, or purposes of the refuge. In the event of such accidents or other events, the holder shall take all reasonable steps to prevent or mitigate damage to the resources, values, or purposes of the refuge at the direction of the refuge manager.
21. Shall immediately report any problems with wildlife to the refuge manager or senior biologist.
22. Shall limit ingress and egress to the ROW to vehicular use on existing and maintained roadways of the refuge, and on the ROW access road. No off-road vehicular access is authorized, unless necessary for maintenance needed to remain in compliance with FERC requirements. The holder will obtain permission from the refuge manager before such off-road use occurs.
23. Shall not leave unattended vehicles, equipment, or materials parked or stored in the ROW without prior written authorization from the refuge manager.
24. Shall post no signage that is not authorized by permit in the ROW except for appropriate signs, barricades, and other warnings to notify the public of any danger posed by the permitted use or permitted facilities.
25. Shall protect, in accordance with the rules prescribed in the National Electric Safety Code, at crossings and at places in proximity to its transmission lines on the ROW authorized, all government and other telephone, telegraph, and power transmission lines from contact and all highways and railroads from obstructions and maintain its transmission lines in such manner as not to menace life or property (50 C.F.R. § 29.21-8(a)).
26. Shall remain legally liable for causing inductive (electromagnetic field) or conductive (contact) interference between any project transmission line or other project works constructed, operated, or maintained by the holder on the servient lands, and any radio installation, telephone line, or other communication facilities now or hereafter constructed and operated by the United States or any agency thereof (50 C.F.R. § 29.21-8(b)).
27. Shall conduct vegetation control and maintenance in accordance with a mutually agreed upon vegetation management plan. There is currently an interim vegetation management plan being developed, in cooperation with BG&E, the Service Ecological Services program, and IVM, a non-profit consulting company. It embraces the concepts of IPM, mentioned previously in the, "How would the use be conducted" section. The following stipulations apply to BG&E and its contractors:
 - Coordinate with refuge staff prior to requesting access for non-emergency, planned vegetation control activities.
 - Check in at the North Tract Visitor Contact Station upon arrival and upon

departure. This is especially important during hunting season, which begins in September.

- Work during daylight hours when staff is available to monitor permits and compliance unless in the case of needed emergency repairs.
- Conduct non-emergency, planned vegetation monitoring and control activities only outside of the bird breeding season, April 15 to August 15. There may be exceptions for the treatment of invasive plant species which mature during this time and would thus not be available for treatment earlier. In such cases, BG&E and its contractors will coordinate with the refuge senior biologist for permission to conduct spot treatments.
- Debris from brush-cutting or tree top removal shall not be left in piles, but mulched in place and distributed so as not to cause an accumulation of thatch and produce a fire hazard or interfere with plant germination 50 CFR § 29.21-4(b)(2). Small amounts of debris cuttings may be left in place for decomposition.
- Ensure that heavy equipment and vehicles are free of weed seeds or propagating plant parts before being brought onto the job site. Workers shall also be vigilant against transporting weed seeds from other job sites on footwear, tools, and equipment. The refuge reserves the right to inspect such tools and equipment to confirm compliance with this condition.
- Annually notify the refuge senior biologist of intent to use herbicides and provide a list of intended herbicides that includes trade name, active ingredient, target species, method of application, and rate of application. The refuge shall prepare a pesticide use permit for each herbicide, to be approved at refuge manager or regional office level, and in accordance with U.S. Environmental Protection Agency label directions. No herbicides may be applied without an approved PUP from the refuge. Notify senior refuge biologist 60 days in advance for additional herbicides intended.

JUSTIFICATION:

The refuge is surrounded by high-density urban and suburban development. A powerline ROW through the refuge provides an opportunity to supply a habitat type (shrub and early successional forest) on a scale that would otherwise be difficult for the refuge to accomplish and maintain on its own. Proximity of early succession habitat with large blocks of forest provides benefits for forest interior-dwelling species and priority edge species, such as forest bats, whip-poor-will, prairie warbler, and eastern box turtle.

Over the past 20 years, BG&E has been in compliance with the terms and conditions of the ROW easement, with minor exceptions. Some vegetation control was conducted prior to coordinating with the refuge. These occurrences were followed up with increased communication and coordination with BG&E and its contractors.

There has been long-term maintenance of open grass and shrub-scrub communities, which are habitats in decline in the region. The evolving vegetation management plan will result in fewer invasive species being present on the 230 acres of the refuge, and will encourage the presence of

native flora and fauna.

As listed in the purposes section of this compatibility determination, the refuge was established and subsequently land was acquired for a total of six purposes. The maintenance of this ROW will not materially interfere with or detract from the research purpose of the refuge, because wildlife research does not generally occur in the vicinity of the locations that these uses occur and the vast majority of refuge lands are not impacted by these uses. The habitat that is maintained in the ROW may provide additional research opportunities. This use will not materially interfere with or detract from the two purposes related to wildlife conservation, because the scrub-shrub habitat that is maintained under the power line provides valuable habitat to refuge wildlife. This use will not materially interfere with or detract from the two purposes related to migratory bird conservation, because these areas provide foraging habitat for migratory species. Maintenance of the ROW will not materially interfere with or detract from the endangered species purpose, because there are no federally listed threatened or endangered species that occur on the refuge. Finally, this use will not materially interfere with or detract from the mission of the Refuge System, because the amount of land that is impacted is a minor portion of the refuge and the land still provides viable wildlife habitat.

SIGNATURE:

REFUGE MANAGER:

Brad Knudsen 6/11/13

(signature and date)

CONCURRENCE:

REGIONAL CHIEF:

Scott B. Kim 8/19/2013

(signature and date)

MANDATORY 10-YEAR REEVALUATION DATE: 2023

REFERENCES:

Droege, S., D. Bystrak (USGS), and T. Jones (USFWS). 2011. Personal communication.

Edison Electric Institute Avian Powerline Interactive Committee and the U.S. Fish and Wildlife Service. April 2005. Avian protection plan (APP) guidelines: a joint document.

COMPATIBILITY DETERMINATION

USE:

Continued Maintenance of Toro Energy Underground Gas Line Right-of-way Easement through Patuxent Research Refuge, South Tract

REFUGE NAME:

Patuxent Research Refuge

ESTABLISHING AND ACQUISITION AUTHORITIES:

Executive Order 7514, dated December 16, 1936; Executive Order 11724, dated June 27, 1973; 16 U.S.C. 715d, Migratory Bird Conservation Act of 1929; 16 U.S.C. 1534; 16 U.S.C. 667b, dated May 19, 1948 - An Act Authorizing the Transfer of Certain Real Property for Wildlife or other purposes; and Public Law 101-519, Sec.216 104 Stat. 2247, dated November 5, 1990.

REFUGE PURPOSES:

1. "...as a wildlife experiment and research refuge" – Executive Order 7514, dated December 16, 1936
2. "...recreation, conservation, wildlife preservation, and related scientific and educational activities" – Executive Order 11724, dated June 27, 1973
3. "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds - 16 U.S.C. 715d, February 18, 1929 (Migratory Bird Conservation Act)
4. "...to conserve fish, wildlife, and plants, including those which are listed as endangered species or threatened species 16 U.S.C. 1534, December 28, 1973 (Endangered Species Act)
5. "...particular value in carrying out the national migratory bird management program." 16 U.S.C. 667b, May 19, 1948 (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes)
6. "... (b) The Secretary of the Interior shall administer the property transferred pursuant to subsection (a) consistent with wildlife conservation purposes and shall provide for the continued use of the property by Federal agencies to the extent such agencies are using it on the date of the enactment of this Act." – Public Law 101-519, Sec. 216, 104 Stat. 2247, dated November 5, 1990 (Defense Appropriation Act including the transfer of North Tract from Fort Meade)

NATIONAL WILDLIFE REFUGE SYSTEM MISSION:

"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." 16 U.S.C. 668dd(a)(2) (National Wildlife Refuge System Improvement Act of 1997)

DESCRIPTION OF USE:

Toro Energy of Maryland, LLC currently has a 30-year right-of-way (ROW) (expiration 2032) easement for a 10-inch, underground polyethylene pipeline in the southwest corner of Patuxent Research Refuge (refuge). This pipeline was constructed in 2002, after the refuge completed its compatibility determination and found the use compatible. The pipeline continues to transport methane from the closed Sandy Hill Landfill to fire boilers at the National Aeronautics and Space Administration (NASA) Goddard Space Flight Center. The pipeline follows the eastern boundary of the refuge, crosses the refuge, follows Good Luck Road off the refuge to the south, and terminates at NASA Goddard Space Flight Center. The pipeline is buried 48 inches below ground. The dimension of the ROW is 30 feet by 2,520 feet long, occupying 1.91 acres in mostly upland forested habitat.

There are no long-term maintenance concerns for this ROW because, after immediate soil stabilization, the area was left to re-vegetate naturally on its own. Toro Energy has no concerns of tree roots growing into the pipe because thick walled polyethylene pipes are not susceptible to this problem. The long-term maintenance essentially consists of monitoring the pipeline for any break that may occur, which is an extremely slight chance.

The alignment was chosen in an already disturbed former ROW with a long history of vegetation and soil compaction disturbance prior to refuge ownership. Recovery of vegetation is nearly complete.

AVAILABILITY OF RESOURCES:

No direct refuge funds or equipment support or resources are anticipated. At most, refuge staff may want to walk the pipeline location annually to check for invasive species, human debris, and proper signage. After review of the refuge budget, there are sufficient staff and funds to sustain this activity.

ANTICIPATED IMPACTS OF THE USE:

The site is primarily upland hardwood forest, which had been partially cleared by Western Union as a utility ROW. Some remnant utility poles are still present, and tree saplings younger than the adjacent forest have grown up in the ROW.

There is no maintenance of the utility ROW; therefore, no impacts to research, public use, wildlife, public uses, vegetation, soil, or water are anticipated. A letter dated May 22, 2000, from Toro Energy of Maryland, LLC states, "Because the line would be maintenance free, our presence would only be required if the refuge would prefer Toro to maintain the easement from fallen trees or debris." The refuge's preference was for Toro to not do any tree or debris removal, allowing the ROW to return to as natural condition as possible. This design for natural re-vegetation of the ROW is appropriate to avoid resource impacts and ensure that there is no net loss of habitat quantity or quality (50 CFRC.F.R. 26.41 21(c)).

PUBLIC REVIEW AND COMMENT:

As part of the comprehensive conservation planning process for Patuxent Research Refuge, this compatibility determination underwent extensive public review, including a comment period of

45 days following the release of the draft Comprehensive Conservation Plan/Environmental Assessment. We did not receive any comment specific to this Right-of-Way compatibility determination.

DETERMINATION (CHECK ONE BELOW):

- Use is not compatible
 Use is compatible with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

The following stipulations must be followed to ensure compatibility:

1. Provide and maintain adequate signage to indicate location of pipeline.
2. Continue to allow native forest vegetation to regenerate. Monitor and control invasive plant species.

See Attachment A, "Limited Right-of-Way Permit," for additional stipulations that relate both to the construction phase (completed in 2002) and the ongoing ROW easement.

JUSTIFICATION:

Toro Energy of Maryland, LLC, has agreed there is no ongoing maintenance necessary due to the nature of the pipeline construction and location.

A categorical exclusion from further National Environmental Policy Act review as provided by 516 DM 6 (appendix 1) was signed in April 2002 by the U.S. Fish and Wildlife Service's Regional Director.

The alignment follows a former ROW with a long history of vegetation clearing, soil compaction from maintenance vehicles, and adjacent sand and gravel mining, prior to the land becoming part of the National Wildlife Refuge System. The continued presence of the easement does not compromise the refuge's research purpose or any wildlife conservation purposes of the refuge. The maintenance-free design for this buried pipeline will not materially interfere with, or detract from, the fulfillment of the National Wildlife Refuge System mission or any of the refuge purposes listed at the beginning of this document.

SIGNATURE:

REFUGE MANAGER:

Brad Knudson 6/11/13

(signature and date)

CONCURRENCE:

REGIONAL CHIEF:

Sean B. [Signature] 8/19/2013

(signature and date)

MANDATORY 10-YEAR REEVALUATION DATE: 2023

Attachment A. Limited Right-of-Way Permit

LIMITED RIGHT-OF-WAY PERMIT (30 Years)

This permit authorizes the placement and maintenance of a 10" underground polyethylene pipeline along the former Western Union Telegraph Right-of-Way in the southwest corner of the Patuxent Research Refuge (P-2). The pipeline will transport methane gas from the closed Sandyhill Landfill along the eastern boundary of the Refuge, cross the Refuge, follow Goodluck Road off Refuge to the south, and terminate at NASA Goddard Space Flight Center.

THE SECRETARY OF THE INTERIOR, by her authorized representative, the Regional Director, U.S. Fish and Wildlife Service, in accordance with applicable authorities, and regulations published December 19, 1969, 50 CFR Part 29, Subpart B, for and in consideration of the sum of (\$9,720.00) Nine Thousand Seven Hundred and Twenty dollars and other valuable considerations hereby grants a permit to Toro Energy of Maryland, LLC, herein referred to as the permittee, to use and occupy certain lands of the Patuxent Research Refuge for a period of Thirty (30) years, over, across, in, and upon lands of the United States described as follows:

The hereinafter-described two (2) tracts of land are located in the State of Maryland, Prince George's County, northeast of Springfield Road, northwest of the Duckettown Road, and south of State Highway Route 197, situate approximately 2.0 miles northeasterly of Huntington, and encumber a portion of UNITED STATES (TRACT 100) and UNITED STATES (TRACT 146), and are more particularly described as follows:

These two (2) descriptions are based on the Maryland State Plane Coordinate System, NAD83. Distances are GROUND Distances.

TRACT (P100)

BEING a natural gas line easement, thirty (30) feet in width, through lands of the UNITED STATES (TRACT 100), [(TRACT 100) having been conveyed from Edward E. Perkins and Margaret B. Buchanan to the United States of America by Warranty Deed, dated April 9, 1936 and recorded April 17, 1936, in Liber 447 at Folio 313, on file in the Land Records of Prince George's County, Maryland]; the center line of said easement being more particularly described as follows:

BEGINNING at Corner 7 of UNITED STATES (TRACT 100), [being the beginning of the 7th or N 51° 16' 30" W, 769.58 foot course of the aforesaid Liber 447 Folio 313],

thence N 51° 22' 24" W, along the easterly edge of Springfield Road and UNITED STATES (TRACT 100), 172.30 feet to the TRUE POINT OF BEGINNING;

thence through land of the UNITED STATES (TRACT 100) the following four (4) courses:

- 1) N 43° 15' 38" E, 63.44 feet to a point;
- 2) thence N 18° 49' 56" E, 167.28 feet to a point;
- 3) thence N 65° 20' 27" E, along an abandoned Telegraph Line, 631.95 feet to a point;
- 4) thence N 64° 31' 58" E, along said abandoned Telegraph Line, 599.48 feet to UNITED STATES (TRACT 146) and the END POINT, from which Corner 1 of UNITED STATES (TRACT 146) bears S 26° 24' 06" W, 217.05 feet; said End Point being also the True Point of Beginning for UNITED STATES TRACT (P146).

UNITED STATES TRACT (P100) contains 1.0070 acres, more or less.

TRACT (P146)

BEING a natural gas line easement, thirty (30) feet in width, through lands of the UNITED STATES (TRACT 146), [(TRACT 146) having been conveyed from the Potomac Electric Power Company, a District of Columbia, and Virginia corporation, to the United States of America by Warranty Deed, dated April 11, 1963 and recorded April 18, 1963, in Liber 2807 at Folio 535, on file in the Land Records of Prince George's County, Maryland]; the center line of said easement being more particularly described as follows:

BEGINNING at Corner 1 of UNITED STATES (TRACT 146), now or formerly a sandstone monument with standard disc, marked "1404 COR 8 TR 100 PERKINS BROWN";

thence N 26° 24' 06" E, along land of the UNITED STATES (TRACT 100), 217.05 feet to the TRUE POINT OF BEGINNING;

thence through land of the UNITED STATES (TRACT 146) the following four (4) courses:

- 5) N 64° 31' 58" E, along an abandoned Telegraph Line, 1,051.57 feet to a point;
- 6) thence N 10° 21' 16" E, 154.46 feet to a point;
- 7) thence N 09° 33' 36" E, 91.71 feet to a point;
- 8) thence N 70° 57' 02" E, 17.09 feet to land, now or formerly, of Prince George's County, (as conveyed in Liber 6860 Folio 744, on file in the Land Records of Prince George's County, Maryland) and the END POINT, from which a stone monument, being Corner 7 of UNITED STATES (TRACT 146), bears S 09° 33' 36" W, 100.00 feet, (said monument also being at the beginning of the 1st or N 76° 24' 02" E, 346.74 foot line of the lands conveyed by Marc H. Berman and Meryl F. Berman to James K. Fletcher and Cynthia J. Rapp by Deed dated December 11, 1998, and recorded in Liber 12684, Folio 455, on file in the Land Records of Prince George's County, Maryland).

UNITED STATES TRACT (P146) contains 0.9055 acres, more or less.

The above-described two (2) tracts of land, containing, in the aggregate, 1.9125 acres, more or less, are delineated on a map designated the "*Plat Of Easement For Gas Pipeline Right Of Way, Through Property Of United States Of America, Patuxent National Wildlife Refuge*", dated January, 2002, prepared by R. C. Kelly & Associates, Inc., of Silver Springs, Maryland, and of record in the files of the Department of the Interior, Fish and Wildlife Service, Office of Realty, located at 300 Westgate Center Drive, Hadley, Massachusetts 01035-9589.

By accepting this permit the permittee agrees to the following terms and conditions:

- (1) To comply with State and Federal laws applicable to the project within which the right-of-way is granted, and to the land which are included in the right-of-way, and lawful existing regulations thereunder.
- (2) To clear and keep clear the lands within the right-of-way to the extent and in the manner directed by the refuge manager, and to dispose of all vegetative and other material cut, uprooted, or otherwise accumulated during the construction and maintenance of the project in such a manner as to decrease the fire hazard and also in accordance with such instruction as the refuge manager may specify.
- (3) To prevent the disturbance or removal of any public land survey monument or project boundary monument unless and until the applicant has requested and received from the Regional Director approval of measures the applicant will take to perpetuate the location of aforesaid monument.
- (4) To take such soil and resource conservation and protection measures, including weed control on the land covered by the rights-of-way as the refuge manager may request.
- (5) To do everything reasonable with his/her power, both independently and on request of any duly authorized representative of the United States, to prevent and suppress fires on or near lands to be occupied under the rights-of-way, including making available such construction and maintenance forces as may be reasonably obtainable for the suppression of such fires.
- (6) To rebuild and repair such roads, fences, structures and trails as may be destroyed or altered by construction work and to build necessary and suitable crossings for all roads and trails that intersect the works constructed, maintained, or operated under the rights-of-way.
- (7) To pay the United States the full value for all damages to the lands or other property of the United States caused by him/her or by his/her employees, contractors, or employees of the contractors, and to indemnify the United States against any liability for damages to life, person, or property arising from the occupancy or use of the lands under the rights-of-way, except where a right-of-way is granted hereunder to a State or other governmental agency which has no legal power to assume such a liability with respect to damages caused by it to lands or property, such agency in lieu thereof agrees to repair all such damages. The holder of this permit, or its

employees, contractors, or agents of the contractors, shall be liable for injuries incurred in connection with the right-of-way.

(8) To notify promptly the refuge manager of the amount of merchantable timber, if any, which will be cut, removed, or destroyed in the construction and maintenance of the project, and to pay the United States in advance of construction such sum of money as the refuge manager may determine to be the full stumpage value of the timber to be so cut, removed, or destroyed.

(9) That all of any part of the rights-of-way granted may be terminated by the Regional Director, Fish and Wildlife Service for failure to comply with any or all of the terms or conditions of this grant, or for nonuse for a 2-year period, or abandonment of the rights-of-way granted. In the event of noncompliance such non-use, or abandonment, the Regional Director will notify the permittee in writing of her intent to suspend or terminate the permit unless corrective action is taken within 60 days. However, in the event of extenuating circumstances such as adverse weather conditions, disturbance of wildlife during periods of peak concentrations, or other compelling reasons, the Regional Director may grant an extension of time which in his/her judgment is reasonably necessary. In the event of termination of an easement or permit for noncompliance, nonuse, or abandonment, a written notice of termination will be furnished to the permittee.

(10) To restore the land to its original condition to the entire satisfaction of the Regional Director, so far as it is reasonably possible to do so upon revocation and termination of the permit, unless this requirement is waived in writing.

(11) If the Refuge Manager determines that an immediate temporary suspension of activities within a right-of-way or permit area is necessary to protect public health and safety or the environment, he may issue an emergency suspension order to abate such activities prior to an administrative proceeding. The Regional Director must make a determination and notify the holder in writing within 15 days from the date of suspension as to whether the suspension should continue and list actions needed to terminate the suspension. Such suspension shall remain in effect for only so long as an emergency condition continues.

(12) To keep the refuge manager informed at all times of his/her address, and, in case of corporations, of the address of its principal place of business and the names and addresses of its principal officers.

(13) That in the construction, operation, and maintenance of the project, he/she shall not discriminate against any employee or applicant for employment because of race, creed, color, or national origin and shall require an identical provision to be included in all subcontracts.

(14) That the allowance of the rights-of-way shall be subject to the express condition that the exercise thereof will not unduly interfere with the management, administration, or disposal by the United States of land affected thereby, and that the permittee agrees and consents to the occupancy and use by the United States, its grantees, permittees, or lessees of any part of the

rights-of-way not actually occupied or required by the permittee for the purpose of the granted rights or the full and safe utilization thereof. The permittee also agrees that authorized representatives of the United States shall have the right of access to the permit area for the purpose of making inspections and monitoring the construction, operation, and maintenance of facilities.

(15) That the rights-of-way herein granted shall be subject to the express covenant that any facility constructed thereon will be modified or adapted if such is found by the Regional Director, Fish and Wildlife Service, to be necessary, without liability or expense to the United States, so that such facility will not conflict with the use and occupancy of the land for any authorized works which may hereafter be constructed thereon under the authority of the United States.

(16) That the rights-of-way herein granted shall be for the specific use described and may not be construed to include the further right to authorize any other use within the rights-of-way unless approved in writing by the Regional Director.

(17) Right-of-way grants will be subject to the special requirements of Section 28 of the Mineral Leasing Act of 1920 (30 U.S.C. §185), as amended.

(18) Permittee agrees to design, construct, and operate all proposed facilities in accordance with the provisions of parts 192 and/or 195 of Title 49 of the CFR and in accordance with the Occupational Safety and Health Act of 1970, Pub. L. 91-596, including any amendments thereto.

(19) The permittee agrees to undertake the following activities to ensure: restoration, revegetation and curtailment of erosion of the surface; air and water quality standards established by law; and control or prevention of damage to the environment including damage to fish and wildlife habitat, public or private property:

- a) Maintain an average 15' wide construction zone corridor.
- b) Flush cut only those trees necessary to install the underground pipeline. Make brush piles adjacent to the construction zone using all flush cut trees.
- c) Install and maintain silt fencing adjacent to all soil disturbed areas.
- d) Use "Ditch Witch" trenching machine to minimize root impact to trees. Reinstall soil in the trench in the same manner as it was removed to preserve the soil horizon.
- e) Use tunneling equipment (jack and bore) to burrow under wetland tributaries and primary lateral roots of larger trees. Wetland hydrology will not be altered.
- f) If major tree roots need to be cut, use a Vermeer Wheel or vibratory knife to

provide a clean cut. Side dress the wound with root stimulator fertilizer.

- g) Cease work during rain or periods of soil saturation, to reduce soil compaction and overtaking erosion control devices.
- h) Perform core aeration and fertilization in soil compacted areas around mature mast trees to minimize the effects of soil compaction.
- i) Plant soil disturbed areas with short-lived, non-persistent nurse crops to stabilize soil and reduce establishment of exotic and invasive plant species. A nurse crop seed mixture of 20 pounds/acre of winter wheat, annual ryegrass, winter rye, red top grass, and deer tongue grass will be used. The rationale for this seed mixture is to immediately stabilize the soil with fast growing annuals and minimize the establishment of the invasive Japanese Stilt Grass (*Microstegium sp.*) As the annuals die back, the native perennials such as red top and deer tongue will remain to re-vegetate the area longer term.
- j) Replant tree removal zones with 1/2" or greater caliper native trees to re-forest the disturbed area as quickly as possible.
- k) Prepare an Emergency Response Plan with contingencies in the event of a break in the underground pipeline.

20) Each right-of-way or permit shall reserve to the Regional Director the right to grant additional rights-of-way or permits for compatible uses on or adjacent to rights-of-way or permit areas granted under this section after giving notice to the holder and an opportunity to comment.

Special terms and conditions may be added to those listed above as determined by the Service.

The Service has made an initial determination that this action is covered as a categorical exclusion under NEPA. However, if during construction any problems arise or it becomes apparent that the impact to the environment is greater than what was anticipated, the Service has the right to halt the project and in order to allow it to timely complete an Environmental Assessment.

IN WITNESS WHEREOF, I have hereunto set my hand this day of 2002.

THE UNITED STATES OF AMERICA

SEAL

By _____
Regional Director
U.S. Fish and Wildlife Service

ACKNOWLEDGMENT

STATE OF _____)
) SS
COUNTY _____)

I, _____, a Notary Public in and for _____ County, Massachusetts,
do hereby certify that _____, Regional Director, United States
Fish and Wildlife Service, Department of the Interior, party to a certain permit bearing the date
of _____ day of _____, 2002, and hereto annexed, personally appeared
before me, the said _____, Regional Director, being personally
well known to me as the person and officer who executed said permit, and acknowledged the
same to be her act and deed, for purposes therein expressed.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official
seal this _____ day of _____, 2002.

Notary Public

County, MA.
My commission expires: _____

(SEAL)

IN WITNESS WHEREOF, I, _____
have executed this instrument in behalf of the permittee herein on this _____ day of
2002.

WITNESS: _____
Toro Energy of Maryland LLC

*This instrument was prepared by Betty Jarous, U.S. Fish and Wildlife Service, 300
Westgate Center Drive, Hadley, Massachusetts 01035.*

COMPATIBILITY DETERMINATION

USE:

Issuance of New Permit to Potomac Electric Power Company for Overhead Electric Transmission Line on Existing Right-of-way with Expired U.S. Department of Agriculture Permits on the Central Tract and South Tract

REFUGE NAME:

Patuxent Research Refuge

ESTABLISHING AND ACQUISITION AUTHORITIES:

Executive Order 7514, dated December 16, 1936; Executive Order 11724, dated June 27, 1973; 16 U.S.C. 715d, Migratory Bird Conservation Act of 1929; 16 U.S.C. 1534; 16 U.S.C. 667b, dated May 19, 1948 - An Act Authorizing the Transfer of Certain Real Property for Wildlife or other purposes; and Public Law 101-519 Sec. 126, 104 Stat. 2247, dated November 5, 1990.

REFUGE PURPOSES:

1. "...as a wildlife experiment and research refuge" – Executive Order 7514, dated December 16, 1936
2. "...recreation, conservation, wildlife preservation, and related scientific and educational activities" – Executive Order 11724, dated June 27, 1973
3. "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds" – 16 U.S.C. 715d, dated February 18, 1929 (Migratory Bird Conservation Act)
4. "...to conserve fish, wildlife and plants, including those which are listed as endangered species or threatened species– 16 U.S.C. 1534, dated December 28, 1973 (Endangered Species Act)
5. "...particular value in carrying out the national migratory bird management program." – 16 U.S.C. 667b, dated May 19, 1948 (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes)
6. "... (b) The Secretary of the Interior shall administer the property transferred pursuant to subsection (a) consistent with wildlife conservation purposes and shall provide for the continued use of the property by Federal agencies to the extent such agencies are using it on the date of the enactment of this Act." – Public Law 101-519 Sec. 216, 104 Stat. 2247, dated November 5, 1990 (Defense Appropriation Act – including transfer of the North Tract from Fort Meade).

NATIONAL WILDLIFE REFUGE SYSTEM MISSION:

"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." 16 U.S.C. 668dd(a)(2) (National Wildlife Refuge System Improvement Act of 1997)

DESCRIPTION OF USE:

What is the use? Is it a priority public use?

The use is the issuance of a new permit to Potomac Electric Power Company (PEPCO) for overhead electric transmission line on existing right-of-way (ROW) with expired U.S. Department of Agriculture (USDA) permits on the Central Tract and South Tract. PEPCO, Inc. is a major supplier of electrical power in the area. The transmission line ROW consists of approximately 76 acres along a 3-mile-long corridor. A deed of easement was granted by the USDA to PEPCO, on September 25, 1959. That easement was for a 250-foot ROW totaling 16.66 acres for a period of 50 years from September 25, 1959. A second easement was granted August 18, 1961, for a 250-foot ROW totaling 59.23 acres and lying to the north or west of Route 197, also for 50 years. PEPCO owns a perpetual easement in another part of the refuge that is not included in this compatibility determination. PEPCO timely applied to the U.S. Fish and Wildlife Service (Service) for a new permit to continue using the ROW before the USDA permits expired in 2009 and 2011. This compatibility determination is part of our process for reviewing the permit application.

The granting of a ROW permit is not a priority use of the National Wildlife Refuge System (Refuge System) under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee) and the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). However, certain vegetation management practices employed within the ROW by PEPCO and its contractors may support some of the purposes and goals of the refuge. Long-term ROWs that apply for reauthorization are analyzed based on the existing conditions with the use in place, not based on the original, pre-use conditions (603 FW 2.11.H(3)).

Where would the use be conducted?

The use will be conducted along the existing PEPCO transmission line ROW that crosses the Central Tract and the South Tract (see attached map).

When would the use be conducted?

Pepeco staff and contractors will coordinate with refuge staff prior to requesting access for non-emergency, planned vegetation control activities. Non-emergency, planned vegetation management and control activities will occur only outside of the bird breeding season, which runs from April 15 to August 15. There may be exceptions for the treatment of invasive plant species, which mature during this time and control efforts will not be as effective outside this timeframe. In such cases, PEPCO staff and contractors will coordinate with the refuge senior biologist for permission to conduct agreed upon treatments.

It may be necessary for emergency repairs and inspections to be done at any hour of the day, any time of year. Coordination with refuge staff will be expected to occur as soon as is reasonably possible in these instances.

How would the use be conducted?

Infrastructure maintenance will vary widely depending on the nature of the repair and replacement of towers, tower pads, and wires. It will be done in accordance with PEPCO policies and procedures, adapted to meet the stipulations listed below that are required to protect the wildlife refuge. It will be done with special consideration for the unique situation of being

located on a national wildlife refuge. This will include seasonal restrictions, pesticide restrictions, etc. to minimize impacts to wildlife and habitat. Access will be coordinated with refuge staff ahead of time for routine maintenance, and as soon as possible before, during and after emergency responses. (Note: there has been minimal need for this type of activity in the 20 years the refuge has owned the underlying property.)

Vegetation management within the ROW will be conducted using the principles of Integrated Pest Management (IPM) (USFWS 2012), and will not conflict with new requirements established by the Federal Energy Regulatory Commission (FERC) in 2008-2009. These revised requirements allow for somewhat more aggressive control of vegetation height under ROW wire zones, increasing the desired distance between vegetation and the wires from 12 feet to 15 feet. IPM principles include minimal use of herbicides approved by the refuge manager or Regional Office, avoidance of sensitive habitats such as wetlands or bogs, mechanical control as necessary utilizing power saws, bush hogs, and other similar power equipment, and hand control where feasible. Please refer to the IPM citation above, and the “Stipulations” section for further details.

Vegetation management would occur both within the wire zone and the border zone. The wire zone is the area of the ROW directly beneath the conductors and extending 20 feet outside of the last conductor toward the ROW edge. The border zone is everything from this point to the woods line. The height restriction within the wire zone varies according to line voltage and clearance from the conductor to the ground. Generally, no vegetation above 15 feet in height would be allowed to grow anywhere within the wire zone, except where clearances are greater than normal, such as a ravine. Vegetation in the border zone can be taller so long as it does not jeopardize the flashover distance of the voltage, taking into consideration wind and sway of trees and wires. Species in both zones are generally restricted to shrub or scrub growth, with such species as mountain laurel, blackberry, blueberry, viburnum, and some low stature trees like serviceberry, sumac and dogwood.

Why is the use being proposed?

The use is being proposed to replace the recently expired 50-year USDA permit for this transmission line ROW. Chapter 1 of the Comprehensive Conservation Plan (CCP) summarizes the Service’s consideration of environmental factors in continuing this refuge use. The agreed-upon vegetation management plan (USFWS 2012) will help the refuge achieve goal 4 in the CCP: “Manage refuge non-forested upland communities to provide ecological structure, composition, and function to support native plants and wildlife, including species of conservation concern.”

It will provide an early successional stage habitat of grasses, forbs, and low shrubs beneficial to such bird species as gray catbird, ruby-crowned kinglet and prairie warbler, and a host of pollinating insects and native bee species. Through successful vegetation management, the presence of invasive species under and adjacent to the ROW will decline, including autumn olive, lespedza, and mile-a-minute, and be replaced with native flora. Management of this regionally declining habitat will be nearly entirely at PEPCO’s expense.

AVAILABILITY OF RESOURCES:

Refuge staff time will be required to coordinate, develop, and issue special use permit(s)

annually; review site operations and safety plans; and to attend and participate in annual meetings, site visits, and phone calls with PEPCO representatives. Under the current term of this compatibility determination and ROW permit, the majority of vegetation management expenses will be the responsibility of PEPCO personnel and contractors to keep the vegetation within FERC height restrictions and for invasive and undesirable species control. Some refuge staff time will be required to review management plans and assess habitat quality pre- and post-vegetation treatments and other maintenance activities, process and approve pesticide use proposals (PUPs), and to monitor invasive plant species.

Task	Staff Days	Cost/year
Review annual vegetation management plan	2 days/year, Supervisory biologist GS12	\$480/year
Visual habitat/vegetation monitoring	4 days/year Supervisory biologist GS12 Bio-tech GS 5/6/7	\$960/year \$563/year
Write, process PUPs	2 days/year, Assistant biologist GS-9	\$311/year
Invasive species treatment	4 days/year Supervisory biologist GS12 Bio-tech GS 5/6/7 2 Interns	\$960/year \$563/year \$334/year
Total staff cost		\$4,171/year

Supplies/Services	Cost
Maintenance of buildings, roadways, and parking areas	\$1100
Office supplies	\$110
Equipment and herbicide	\$550
Total cost of supplies and services	\$1,760

Total Annual Cost: \$5,931

The refuge has adequate resources for this proposed use.

ANTICIPATED IMPACTS OF THE USE:

Effects on Vegetation and Wildlife

The powerline ROW occupies approximately 76 acres of what would otherwise have been interior forest. After development of the ROW in the late 1950s, the forest was replaced, through natural succession and selective management, with shorter stature vegetation comprised of trees, shrubs, forbs, and grasses. The change in mature forest canopy changed the sunlight-to-soil and ground moisture dynamics of the forest floor. Different plants have and will continue to establish and replace those unable to adapt to the new regime, and over 50 years this has evolved into a quite different plant community. The current plant communities are expected to persist over the next 50 years under the current management activities.

The powerline ROW through the refuge provides a habitat type (shrub and early successional

forest) on a moderate scale. Proximity of early succession habitat with large blocks of forest provides benefits for forest-interior-dwelling species and priority edge species, such as forest bats, whip-poor-will, prairie warbler, and eastern box turtle, and numerous species of conservation concern. Shrub and early succession habitat provide high-quality food and cover resources for migrating and fledging bird; and provide species, age, and structural diversity of plant-life for a variety of invertebrates. Shrub vegetation cover types also mitigate the fragmenting results of an opening such as a ROW, providing structural and species diversity to the forest. The refuge forest community will benefit from the juxtaposition of shrub and early succession habitat; forest interior dwelling bird species, such as scarlet tanager, seek such habitats for rearing their young. Also, such openings in the forest are necessary for forage areas for forest bats, box turtles, pollinators and herbivorous native insects, and whip-poor-wills, a declining species in the State of Maryland.

The presence of contrasting adjoining habitats can influence each habitat along their shared borders. An example of contrasting habitats would be a mature hardwood forest bordering shrub and early succession habitat. The transition between these two habitat types often results in a “soft edge.” In this case, there will be an increase in vegetation density, complexity of structure, and plant species diversity along this edge, creating a “soft edge” of early successional species of trees, shrubs, herbaceous plants. Often this “soft edge” effect is viewed by wildlife managers as beneficial because of the increased food and cover provided for species that use such edge. It also reduces negative edge effects, such as encroachment by non-native plants, accessibility to the forest interior by predators (snakes, feral cats, fox, raccoons, crows, jays, brown-headed cowbirds), and by penetrating light and wind. Habitats contrasting sharply with forests, also known as “hard edges” made by lawns, roads, and parking lots, do not provide such benefits and make adjacent forests vulnerable to negative edge effects. Thus, all the acreage within a certain distance of an edge, be it a forest, grassland, or wetland habitat, will be edge habitat. Just how far the edge effect extends is variable and recommendations for buffering interior habitat vary from 50 meters (164 feet) (Paton 1994) to about 90 meters (300 feet) (Robbins et al. 1989, Brittingham and Temple 1983, Jones et al. 2000).

Disturbances vary with the wildlife species involved and the type, level, frequency, duration, and the time of year such activities occur. The responses of wildlife to human activities include avoidance or departure from the site (Owen 1973, Burger 1981, Kaiser and Fritzell 1984, Korschen et al. 1985, Kahl 1991, Klein 1993, Whittaker and Knight 1998), the use of sub-optimal habitat (Erwin 1980, Williams and Forbes 1980), altered behavior or habituation (Burger 1981, Korschen et al. 1985, Morton et al. 1989, Ward and Stehn 1989, Havera et al. 1992, Klein 1993, Whittaker and Knight 1998), attraction (Whittaker and Knight 1998), and an increase in energy expenditure (Morton et al. 1989, Belanger and Bedard 1990). Infrequent visits to the area by maintenance workers could cause limited impacts to wildlife in the form of these behavioral changes.

Disturbance can have other effects including shifts in habitat use, abandonment of habitat, and increased energy demands on affected wildlife (Knight and Cole 1991). The effects of roads and trails on plants and animals are complex, and not limited to, trail width. Trail use can disturb areas outside the immediate trail corridor (Trails and Wildlife Task Force 1998, Miller et al. 2001). Bird communities in this study were apparently affected by the presence of recreational

roads and trails, where common species (e.g., American robins) were found near trails and rare species (e.g., grasshopper sparrows) were found farther from trails. Songbird nest failure was also greater near trails. Several studies have examined the effects of recreationists on birds using shallow-water habitats adjacent to trails and roads through wildlife refuges and coastal habitats in the eastern United States (Burger 1981, Burger 1986, Klein 1993, Klein et al. 1995, Rodgers and Smith 1995, Rodgers and Smith 1997, Burger and Gochfeld 1998). Infrequent visits to the area by maintenance workers could cause limited impacts to wildlife in the form of these behavioral changes.

Invasive plants gain their first footholds in sunny disturbed areas, along trails or around shelters (Scherer 2001). Through successful vegetation management, the presence of invasive species under and/or adjacent to the ROW will decline, including autumn olive, lespedza, and mile-a-minute, and be replaced with native flora. Impacts to wildlife from this use are expected to be minimal. The dirt access road is used only periodically for vegetation management and maintenance of the ROW. Having an established ROW through the refuge has actually been beneficial to neo-tropical migrants by providing much need foraging and resting areas. Patuxent staff and volunteers use the ROWs to band and monitor neo-tropical migrants utilizing these spaces. Early successional stage habitat of grasses, forbs, and low shrubs are beneficial to such bird species as gray catbird, ruby-crowned kinglet and prairie warbler, and a host of pollinating insects and native bee species.

Effects on Soil

A one-lane, dirt access road runs beneath some segments of the wire zone and results in sparseness or no vegetation, and may also cause some minor soil erosion and run-off. Run-off, if any were to occur, would be filtered by well-established vegetation on either side of the dirt access road.

Effects on Hydrology and Water Quality

This use has limited potential to have effects on hydrology and/or water quality over the next 50 years. Maintaining scrub shrub and early successional forest will serve as a natural filter for water and any run-off that may be associated with the ROW.

Effects on Priority Public Uses

This use will not affect priority public uses, as the ROW transects areas that are not open to public use.

PUBLIC REVIEW AND COMMENT:

As part of the comprehensive conservation planning process for Patuxent Research Refuge, this compatibility determination underwent extensive public review, including a comment period of 45 days following the release of the draft CCP/Environmental Assessment. We did not receive any comment specific to this ROW compatibility determination.

DETERMINATION (CHECK ONE BELOW):

- Use is not compatible
 Use is compatible with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

The use will be conducted continually under the specific terms and conditions referenced in the Service regulations, including without limitation 50 CFR 29.21-4, 29.21-8, and 50 CFR 26.41 (c), 1 October, 1990.

1. ROW permit will be subject to any outstanding rights of third parties (50 CFR 29.21-4(a)).
2. By accepting the ROW permit, the holder agrees to such terms and conditions as may be prescribed by the Service's Regional Director (50 CFR 29.21-4(b)).

Such terms and conditions shall include the following conditions below, unless waived in part by the Regional Director, and may include additional special stipulations at his or her discretion.

PEPCO and its representatives (the permit holder):

1. Shall comply with State and Federal laws applicable to the project within which the permit was granted, and to the lands which are included in the ROW, and lawful existing regulations thereunder (50 CFR § 29.21-4(b)(1)).
2. Shall manage vegetation in ROW area in the manner directed by the refuge manager and dispose of all vegetative and other material cut, uprooted, or otherwise accumulated during the construction and maintenance of the project in a manner which decreases the fire hazard and also is in accordance with such instructions as the refuge manager may specify (50 CFR § 29.21-4(b)(2)).
3. Shall prevent the disturbance or removal of any public land survey monument or project boundary monument unless and until the applicant has requested and received from the Regional Director approval of measures the applicant will take to perpetuate the location of aforesaid monument (50 CFR § 29.21-4(b)(3)).
4. Shall take such soil and resource conservation and protection measures, including weed control on the land covered by the easement or permit as the project manager in charge may request (50 CFR § 29.21-4(b)(4)).
5. Shall do everything reasonably within its power, both independently and on request of any duly authorized representative of the United States, to prevent and suppress fires on, or near, lands to be occupied under the permit, including making available such construction and maintenance forces as may be reasonably obtainable for the suppression of such fires (50 CFR § 29.21-4(b)(5)).
6. Shall rebuild and repair such roads, fences, structures, and trails as may be destroyed or injured by construction work and, upon request by the refuge manager, build and maintain necessary and suitable crossings and culvert for all roads and trails that intersect the works constructed, maintained, or operated under the ROW. Holder shall be responsible for maintenance and repair of access roads serving the ROW (50 CFR § 29.21-4(b)(6)).
7. Shall pay the United States the full value for all damages to the lands or other property of the United States caused by it or its employees, contractors, or employees of the contractors, and indemnify the United States against any liability for damages to life,

person, or property arising from the occupancy or use of the lands under the permit. Because the permit involves special hazards we will impose liability without fault for injury and damage to the land and property of the United States up to a specified maximum limit commensurate with the foreseeable risks or hazards presented. The amount of no-fault liability for each occurrence is hereby limited to no more than \$1,000,000.00 (50 CFR § 29.21-4(b)(7)).

8. Shall notify promptly the refuge manager of the amount of merchantable timber, if any, which will be cut, removed, or destroyed in the construction and maintenance of the project, and to pay the United States in advance of construction and maintenance such sum of money as the project manager may determine to be the full stumpage value of the timber to be so cut, removed, or destroyed (50 CFR § 29.21-4(b)(8)).
9. All or any part of the ROW permit may be terminated by the Regional Director, for failure to comply with any of the permit terms and conditions, or for abandonment of the ROW (50 CFR § 29.21-4(b)(9)).
10. Shall restore the land to its original condition to the satisfaction of the refuge manager so far as it is reasonably possible to do so upon revocation or termination of the permit, or following land disturbance resulting from repairs and construction, unless this requirement is waived in writing by the Regional Director. Termination also includes permits that terminate under the terms of the grant (50 CFR § 29.21-4(b)(10)).
11. Shall keep the refuge manager informed at all times of its address, and, in case of corporations, of the address of its principal place of business and the names and addresses of its principal officers (50 CFR § 20.21-4(b)(11)).
12. Shall not, when hiring for work on the ROW, discriminate against any employee or applicant for employment because of race, creed, color, or national origin and shall require an identical provision to be included in all subcontracts (50 CFR § 29.21-4(b)(12)).
13. Shall not unduly interfere with the management, administration, or disposal by the United States of the land affected thereby. The permit holder agrees and consents to the occupancy and use by the United States, its grantees, permittees, or lessees of any part of the permit area not actually occupied for the purpose of the granted rights to the extent that it does not interfere with the full and safe utilization thereof by the holder. The holder of the permit also agrees that authorized representatives of the United States shall have the right of access to the permit area for the purpose of making inspections and monitoring the construction, operation, and maintenance of facilities, and other refuge-authorized business or activities provided that they do not interfere with the holder's rights (50 CFR § 29.21-4(b)(13)).
14. Shall modify or adapt any facility if found to be necessary by the refuge manager, without liability or expense to the United States, so that such facility will not conflict with the use and occupancy of the land for any authorized works which may hereafter be constructed thereon under the authority of the United States. Any such modification will be planned and scheduled so as not to interfere unduly with or to have minimal effect upon continuity of energy and delivery requirements (50 CFR § 29.21-4(b)(14)).

15. Shall not construe the permit to include the further right to authorize any other use within the easement or permit area unless approved in writing by the Regional Director (50 CFR § 29.21-4(b)(15)).
16. Shall report immediately any cultural or paleontological resources (historic or prehistoric site or object including burials or skeletal material) discovered by the permit holder, or any person working on its behalf, on public or Federal land to the refuge manager. PEPCO or its representative shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer or a Service-approved archaeologist to determine appropriate actions to take pursuant to the provisions of law including 36 CFR 800.7 (resources discovered during construction) to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation. Any decision as to proper mitigation measures will be made by the authorized officer after consulting the holder.
17. Shall protect, in accordance with the rules prescribed in the National Electric Safety Code, at crossings and at places in proximity to its transmission lines on the ROW authorized, all government and other telephone, telegraph, and power transmission lines from contact and all highways and railroads from obstruction and maintain its transmission lines in such manner as not to menace life or property (50 C.F.R. § 29.21-8(a)).
18. Shall remain legally liable for causing inductive (electromagnetic field) or conductive (contact) interference between any project transmission line or other project works constructed, operated, or maintained by the holder on the servient lands, and any radio installation, telephone line, or other communication facilities now or hereafter constructed and operated by the United States or any agency thereof (50 C.F.R. § 29.21-8(b)).
19. Shall ensure and maintain adequate spacing between energized lines both vertically and horizontally, as specified by the Joint Avian Protection Guidelines of Edison Institute and the Service to prevent electrocution by large raptors, particularly bald and golden eagles, which are protected species under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. Sixty horizontal inches will accommodate wrist-to-wrist distance for an eagle, and forty-eight vertical inches will accommodate an eagle's standard height.
20. Shall not collect any plants, wildlife, or artifacts from refuge property.
21. Shall not bring any pets or other animals onto the ROW or any refuge property.
22. Shall not transport, deliver, transfer, store, or use any hazardous materials or fuels in the ROW except as authorized by the refuge manager. All transport, delivery, transfer, storage, and use of such materials and fuels authorized shall comply with all applicable Federal and State law and regulations.
23. Shall notify the refuge manager as soon as possible, and no later than 12 hours, after learning of any accident or other event in the ROW that could result in damage to the resources, values, or purposes of the refuge. In the event of such accidents or other events, the holder shall take all reasonable steps to prevent or mitigate damage to the

resources, values, or purposes of the refuge at the direction of the refuge manager.

24. Shall immediately report any problems with wildlife to the refuge manager or senior biologist.
25. Shall limit ingress and egress to the ROW to vehicular use on existing and maintained roadways of the refuge, and on the ROW access road. No off-road vehicular access is authorized, unless necessary for maintenance needed to remain in compliance with FERC requirements. The holder will obtain permission from the refuge manager before such off-road use occurs.
26. Shall not leave unattended vehicles, equipment, or materials parked or stored in the ROW without prior written authorization from the refuge manager.
27. Shall post no signage that is not authorized by permit in the ROW except for appropriate signs, barricades, or other warnings to notify the public of any danger posed by the permitted use or permitted facilities.
28. Shall conduct vegetation control and maintenance in accordance with a mutually agreed upon vegetation management plan. There is currently an interim vegetation management plan being developed, in cooperation with PEPCO, the Service Ecological Services program, and IVM, a non-profit consulting company. It embraces the concepts of IPM (USFWS 2012), mentioned previously in the “How would the use be conducted” section. The following additional stipulations apply to PEPCO and its contractors in connection with the vegetation management plan:
 - Coordinate with refuge staff prior to requesting access for non-emergency, planned vegetation control activities.
 - Work during daylight hours when staff is available to monitor permits and compliance unless in the case of needed emergency repairs.
 - Conduct non-emergency, planned vegetation monitoring and control activities only outside of the bird breeding season, April 15 to August 15. There may be exceptions for the treatment of invasive plant species which mature during this time and would thus not be available for treatment earlier. In such cases, PEPCO or its contractors will coordinate with the refuge senior biologist for permission to conduct spot treatments.
 - Debris from brush-cutting or tree top removal shall not be left in piles, but mulched in place and distributed so as not to cause an accumulation of thatch and produce a fire hazard or interfere with plant germination (50 CFR § 29.21-4(b)(2)). Small amounts of debris cuttings may be left in place for decomposition.
 - Ensure that heavy equipment and vehicles are free of weed seeds or propagating plant parts before being brought onto the job site. Workers shall also be vigilant against transporting weed seeds from other job sites on footwear, tools, and equipment. The refuge reserves the right to inspect such tools and equipment to confirm compliance with this condition.
 - Annually, notify the refuge senior biologist of intent to use herbicides and provide a list of intended herbicides that includes trade name, active ingredient, target

species, method of application, and rate of application. The refuge shall prepare a PUP for each herbicide, to be approved at refuge manager or regional office level, and in accordance with Environmental Protection Agency label directions. No herbicides may be applied without an approved PUP from the refuge. Notify senior refuge biologist 60 days in advance for additional herbicides intended.

JUSTIFICATION:

The refuge is surrounded by high-density urban and suburban development. A powerline ROW through the refuge provides an opportunity to supply a habitat type (shrub and early successional forest) on a scale that would otherwise be difficult for the refuge to accomplish and maintain on its own. Proximity of early succession habitat with large blocks of forest provides benefits for forest-interior-dwelling species and priority edge species, such as forest bats, whip-poor-will, prairie warbler, and eastern box turtle.

Over the past 20 years, PEPCO has been in compliance with the terms and conditions of the ROW easement, with minor exceptions. Some vegetation control was conducted prior to coordinating with the refuge. These occurrences were followed up with increased communication and coordination with PEPCO and its contractors. When such an incident has occurred, it has generally resulted in improvements to the vegetation management techniques. An example is relying more on basal herbicide treatments to woody vegetation rather than broadcast spraying.

There will be no net loss of habitat, but a conversion of forested communities to shrub scrub and early successional communities, which are habitats in decline in the region. The evolving vegetation management plan will result in fewer invasive species being present on the 76 acres of the refuge, and will encourage the presence of native flora and fauna.

As listed in the purposes section of this compatibility determination, the refuge was established and subsequently land was acquired for a total of six purposes. The maintenance of this ROW will not materially interfere with or detract from the research purpose of the refuge, because wildlife research does not generally occur in the vicinity of the ROW. However, the habitat that is maintained in the ROW may provide research opportunities, such as monitoring and sampling pollinator species, studying vegetation changes, and monitoring neo-tropical migrant species. This use will not materially interfere with or detract from the two purposes related to wildlife conservation, because the scrub-shrub habitat that is maintained under the power line provides valuable habitat to refuge wildlife. This use will not materially interfere with or detract from the two purposes related to migratory bird conservation, because these areas provide foraging habitat for migratory species. Maintenance of the ROW will not materially interfere with or detract from the endangered species purpose, because there are no federally listed, threatened or endangered that occur in the wild on the refuge. Finally, this use will not materially interfere with or detract from the mission of the Refuge System, because the land will provide viable wildlife habitat. Therefore, we find that the issuance of a new ROW permit, and its ongoing necessary maintenance and operations will not materially interfere with, or detract from, the fulfillment of the Refuge System mission or the purposes of the refuge.

SIGNATURE:

REFUGE MANAGER:

Brad Knudsen 6/11/13
(signature and date)

CONCURRENCE:

REGIONAL CHIEF:

Scott B. Lee 8/19/2013
(signature and date)

MANDATORY 10-YEAR REEVALUATION DATE: 2023

REFERENCES:

- Belanger, L. and J. Bedard. 1990. Energetic cost of man-induced disturbance to staging snow geese. *Journal of Wildlife Management* 54:36.
- Brittingham, M.D. and A. Temple. 1983. Have cowbirds caused forest songbirds to decline. *BioScience* 33:31-35.
- Burger, J. 1981. Effect of human activity on birds at a coastal bay. *Biological Conservation* 21:231-241.
- Erwin, R.M. 1980. Breeding habitat use by colonially nesting waterbirds in two Mid-Atlantic U.S. regions under different regimes of human disturbance. *Biological Conservation* 18:39-51.
- Havera, S.P., L.R. Boens, M.M. Georgi, and R.T. Shealy. 1992. Human disturbance of waterfowl on Keokuk Pool, Mississippi River. *Wildlife Society Bulletin* 20:290-298.
- Jones, C., J. McCann, S. McConville. 2000. A guide to conservation of forest interior dwelling birds in the Chesapeake Bay critical area. *Critical Area Commission for the Chesapeake and Atlantic Coastal Bays*.
- Kahl, R. 1991. Boating disturbance of canvasbacks during migration at Lake Poygan, Wisconsin. *Wildlife Society Bulletin* 19:242-248.
- Kaiser, M.S. and E.K. Fritzell. 1984. Effects of river recreationists on green-backed heron behavior. *Journal of Wildlife Management* 48: 561-567.
- Klein, M.L. 1993. Waterbird behavioral responses to human disturbance. *Wildlife Society Bulletin* 21:31-39.
- Korschen, C.E., L.S. George, and W.L. Green. 1985. Disturbance of diving ducks by boaters on a migrational staging area. *Wildlife Society Bulletin* 13:290-296.

- Morton, J.M., A.C. Fowler, and R.L. Kirkpatrick. 1989. Time and energy budgets of American black ducks in winter. *Journal of Wildlife Management* 53:401-410 (See also corrigendum in *Journal of Wildlife Management* 54:683).
- Owen, M. 1973. The management of grassland areas for wintering geese. *Wildfowl* 24:123-130.
- Paton, P.W.C. 1994. The effect of edge on avian nest success: how strong is the evidence? *Conservation Biology* 8.1:17-26.
- Robbins, C.S., D.K. Dawson, and B.A. Dowell. 1989. *Habitat Area Requirements of breeding forest birds of the Middle Atlantic States*. Wildlife Monograph no. 103. Wildlife Society. Blacksburg, VA.
- Scherer, G. March 2001. Backcountry visitor impacts: we have met the enemy, and he is us. *American Hiker*.
- U.S. Fish and Wildlife Service. 2012. Integrated pest management for PEPCO right-of-way on Patuxent Research Refuge (draft). Laurel, MD.
- 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, AK. pp.193.
- 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:

Use of Softball Fields at North Tract, Patuxent Research Refuge

REFUGE NAME:

Patuxent Research Refuge

ESTABLISHING AND ACQUISITION AUTHORITIES:

Executive Order 7514, dated December 16, 1936; Executive Order 11724, dated June 27, 1973; 16 U.S.C. 715d, Migratory Bird Conservation Act of 1929; 16 U.S.C. 1534; 16 U.S.C. 667b, dated May 19, 1948 - An Act Authorizing the Transfer of Certain Real Property for Wildlife or other purposes; and Public Law 101-519 Sec. 126, 104 Stat. 2247, dated November 5, 1990.

REFUGE PURPOSES:

1. "...as a wildlife experiment and research refuge" – Executive Order 7514, dated December 16, 1936
2. "...recreation, conservation, wildlife preservation, and related scientific and educational activities" – Executive Order 11724, dated June 27, 1973
3. "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds" – 16 U.S.C. 715d, dated February 18, 1929 (Migratory Bird Conservation Act)
4. "...to conserve fish, wildlife and plants, including those which are listed as endangered species or threatened species – 16 U.S.C. 1534, dated December 28, 1973 (Endangered Species Act)
5. "...particular value in carrying out the national migratory bird management program." – 16 U.S.C. 667b, dated May 19, 1948 (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes)
6. "... (b) The Secretary of the Interior shall administer the property transferred pursuant to subsection (a) consistent with wildlife conservation purposes and shall provide for the continued use of the property by Federal agencies to the extent such agencies are using it on the date of the enactment of this Act." – Public Law 101-519 Sec. 216, 104 Stat. 2247, dated November 5, 1990 (Defense Appropriation Act – including transfer of the North Tract from Fort Meade).

NATIONAL WILDLIFE REFUGE SYSTEM MISSION:

"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." 16 U.S.C. 668dd(a)(2) (National Wildlife Refuge System Improvement Act of 1997)

DESCRIPTION OF USE:

What is the use? Is the use a priority public use?

The use is continuing to permit the National Security Agency's (NSA) Civilian Welfare Fund (CWF) to use four softball fields located off of Bald Eagle Drive on the North Tract of Patuxent Research Refuge (refuge). This is not a priority public use of the National Wildlife Refuge System (Refuge System) under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), and the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57) and because it is not wildlife-dependent recreation as defined in 16 U.S.C. 668ee (2).

Where would the use be conducted?

The use has been conducted at the existing softball fields, obtained by the refuge in 1991-92 from Fort Meade when lands were transferred from the Department of Defense to the Department of the Interior. The four softball fields are located at the intersection of Maryland State Highway 198 and Bald Eagle Drive.

When would the use be conducted?

This use has occurred from mid-April through August on weekday evenings from 3:30 p.m. to 8 p.m., with some tournaments allowed on Fridays and Saturdays.

How would the use be conducted?

The use has been authorized through a special use permit to the CWF. A copy of the most recent special use permit is included for reference. Up to 36 teams, comprised of NSA employees, utilize the fields annually.

Why is this use being proposed?

This use was a pre-existing use of the land when Public Law 101-519 transferred the property from the Department of Defense to the Department of the Interior in 1991-92. Section 126(b) of this law states that, "The Secretary of the Interior shall administer the property transferred pursuant to subsection (a) consistent with wildlife conservation purposes and shall provide for the continued use of the property by Federal agencies to the extent such agencies are using it on the date of the enactment of this Act, including activities of the Department of Defense that are consistent with the recommendations of the Base Realignment and Closure Commission." The use has been permitted by the refuge since 1992, without any determination whether it is compatible with the refuge purposes and the Refuge System mission.

AVAILABILITY OF RESOURCES:

Approximately 10 staff days are required each year for coordination and communication with CWF, regarding scheduling and obtaining visitor use statistics from NSA staff (number of people visiting ball fields including spectators, maintenance crews, etc.). Law enforcement is responsible for a small portion of the estimated staff days, performing routine checks, policing parking, etc. The refuge has the available resources to continue this coordination if we find that the use is otherwise compatible.

ANTICIPATED IMPACTS OF THE USE:

The impacts to the refuge are significant on this particular piece of refuge property. The 10.3 acres encumbered by the softball fields are essentially turf grass, exposed soil, and gravel parking lot, offering minimal value to wildlife. Canada geese, both resident and migratory populations, and white-tailed deer may occasionally be observed grazing and loafing on the grounds, but neither species is dependent on the existence of these ball fields.

The presence of contrasting adjoining habitats can influence each habitat along their shared borders. An example of contrasting habitats would be a mature hardwood forest bordering a short-stature grassland. In this case, should the border be unmanaged (i.e., un-mowed), there will be an increase in vegetation density, complexity of structure, and plant species diversity along this edge, creating a “soft edge” of early succession species of trees, shrubs, herbaceous plants. Often this “soft edge” effect is viewed by wildlife managers as beneficial because of the increased food and cover provided for species that use such edge. It also reduces negative edge effects, such as encroachment by non-native plants, accessibility to the forest interior by predators (snakes, feral cats, fox, raccoons, crows, jays, brown-headed cowbirds), and by penetrating light and wind. Protection against accessibility can also be achieved by expansion of forest acreage through conversion of adjacent open habitats into more forest. Habitats contrasting sharply with forests, also known as “hard edges” made by lawns, roads, and parking lots do not provide such benefits and make adjacent forests vulnerable to negative edge effects. Thus, all the acreage within a certain distance of an edge, be it a forest, grassland, or wetland habitat, will be edge habitat. Conservation design recommendations regarding how far the edge effect can be vary from 50 meters (164 feet) (Paton 1994) to about 90 meters (300 feet) (Robbins et al 1989, Brittingham and Temple 1983, Jones et al. 2000).

We equate the ball field with a lawn, since it is mowed and managed as turf grass immediately adjacent to the border of the refuge forest and as such, is considered a sharply contrasting habitat affording high opportunities for negative edge effects. The most generous estimate of the area of adjacent refuge forest impacted by the ball field would be 12.8 acres, more than doubling the size of the impacted habitat using the 90 meter (300 feet) distance factor. (This calculation uses only the east and south edge of the ball field that borders on refuge forest. Its western and northern sides border on roads or highways.)

Access along Bald Eagle Drive, the only public access to the North Tract of the refuge, is often compromised due to vehicles parked along the road that are associated with the softball games, including players and spectators. Enforcement of parking violations has helped but it is difficult to have a consistent law enforcement presence given other high priority law enforcement matters. This can lead to frustration among other visitors to the refuge who participate in a wildlife-dependent activity, such as wildlife observation or fishing. There is also frequent after hour trespass on the ball fields, as they are located outside the refuge access gate. This trespass is not of a serious nature in and of itself (Frisbee throwing, after hour access, etc.), but it is a violation of refuge regulations.

Research has not been conducted on the ball fields since the land was acquired in 1991 and cannot be conducted without either disruption to the operation of the ball fields or prohibitive

restrictions to the research. In addition, given its current condition as a recreational site, this parcel of land does not lend itself to wildlife research.

If this use were to be discontinued, the refuge could expect to have an additional 10.3 acres of wildlife habitat established within three to four years in the form of grassland or scrub shrub habitat. Eventually the area would be restored to Virginia pine or mixed hardwood forest over time, based on surrounding habitat types. In addition to this increase of 10.3 acres of suitable wildlife habitat, the surrounding buffer area of 12.8 acres would become more attractive to forest interior dwelling bird species. These are focal species in the Comprehensive Conservation Plan (CCP), particularly supported by goal 2, objective 2.2 which encourages upland deciduous, pine and mixed forest associations. Upland forest communities provide both nesting and migration habitat for bird species listed by regional conservation plans, including the Bird Conservation Region 30 Implementation Plan, Partners in Flight 44 Bird Conservation Plan, and the Maryland Wildlife Diversity Conservation Plan, as well as international plans like Saving Our Shared Birds, Partners in Flight Tri-National Vision for Landbird Conservation.

Discontinuing this use and allowing the area to re-vegetate with native shrubs and trees will offer greater protection from highway runoff entering Gaither's Run, a highly diverse tributary to the Little Patuxent River, and the Little Patuxent River itself, which is within approximately 150 yards of the ball fields. This area would be incorporated into the refuge's active habitat management plan; invasive species would be managed as needed, and where possible native species would be allowed to re-colonize through natural processes or be re-introduced. Forested buffers are some of the most effective nutrient and sediment buffers in nature. Forest cover best provides and conserves such water-related ecosystem services as groundwater recharge, water quality, flood control, nutrient and pollutant uptake, and stabilizing of soils to prevent erosion and associated sedimentation in creeks. In addition, forest litter and vegetation reduce sheetflow and reduce erosion from water coming from off-refuge. Currently, the softball fields are fertilized once a year, in the fall, to promote growth of the grass. Sediment from the ball fields has been observed flowing into Gaither's Run by refuge staff on multiple occasions over the years during and after heavy rain events.

The forested area that lies between the ball fields and Tipton Airport is almost completely edge habitat (using the 90 meter distance factor), and in two places the managed ball field is as close as 142 feet to 171 feet to the Little Patuxent River. Positive impacts would be realized for both forest and river should the ball field be converted to forest. It would increase the effective interior of the forested area that lies east of the Little Patuxent River and is bounded by Route 198 and Bald Eagle Drive and would enhance its corridor or connectivity value. This increase in forest interior would directly benefit forest interior dwelling bird species, a focal species of the CCP. Increasing forest interior habitat and habitat connectivity is the core focus of refuge management in the CCP, and is moving forward elsewhere on the refuge where grasslands are being consolidated and impoundments reverted to increase forest habitat on the refuge. Frequently recommended buffer widths for maximum benefits to riparian species and aquatic habitat function (water quality) vary depending on adjacent land uses and conservation objectives, but range from greater than 30 meters (100 feet) to greater than 500 meters (1,640 feet) (Fischer and Fischenich 2000, Bentrup 2008). Terrestrial salamanders need at least 165 meters of buffer around wetlands to maintain viable population. Far greater widths may be required to adequately address nutrient load and high volume storm water (Houlihan and Findlay

2004).

PUBLIC REVIEW AND COMMENT:

As part of the comprehensive conservation planning process for Patuxent Research Refuge, this compatibility determination will undergo extensive public review, including a comment period of 45 days, following the release of the draft CCP/Environmental Assessment.

DETERMINATION (CHECK ONE BELOW):

- Use is not compatible
 Use is compatible with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

There are no stipulations that could make this use compatible because the grooming and use of the fields will prevent them from functioning as habitat.

JUSTIFICATION:

Public Law 101-519 states that the transferred lands are to be administered consistent with wildlife conservation purposes. Since there are no threatened or endangered species known to use the area around the fields, this use would not materially interfere with the endangered species purpose of the refuge. However, this use conflicts with the other refuge purposes in that it creates an unnatural environment that is used for softball games and associated parking. Continuing this use will adversely impact the refuge's research purpose because it minimizes the suitability of this parcel of land to conduct wildlife research. In addition, use of the ball fields materially interferes with and detracts from the refuge's migratory bird purposes, because these highly impacted lands, and associated buffer lands, provide little to no habitat value for migratory birds. In particular this use materially interferes with management for forest interior dwelling bird species which are identified as a focal species in the CCP. This use will also materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission, because use of the ball fields will prevent this portion of the refuge from supporting conservation of wildlife and habitats.

SIGNATURE:

REFUGE MANAGER:

Brad Knudson

9/10/13

(signature and date)

CONCURRENCE:

REGIONAL CHIEF:

Scott B. Kerhan

(signature and date)

MANDATORY 10-YEAR REEVALUATION DATE: 2023

REFERENCES:

- Bentrup, G. 2008. Conservation buffers: design guidelines for buffers, corridors, and greenways. Gen. Tech. Rep. SRS-109. U.S. Department of Agriculture, Forest Service, Southern Research Station, Asheville, NC. 110 p.
- Bird Conservation Region (BCR) 30 Implementation Plan.
- Brittingham, M.D. and A. Temple. 1983. Have cowbirds caused forest songbirds to decline. *BioScience* 33:31-35.
- Fischer, R.A. and J.Craig Fischenich. 2000. Design recommendations for riparian corridors and vegetated buffer strips. Army Corps of Engineers.
- Houlihan, J.E. and C.S. Findlay. 2004. Estimating the 'critical' distance at which adjacent land use degrades wetland water and sediment quality. *Landscape Ecology* 19:677-690.
- Jones, C., J. McCann, S. McConville. 2000. A guide to conservation of forest Interior dwelling birds in the Chesapeake Bay critical area. Critical Area Commission for the Chesapeake and Atlantic Coastal Bays.
- Maryland Department of Natural Resources (MD DNR). 2005a. Maryland wildlife diversity conservation plan. Maryland Department of Natural Resources, Annapolis, MD.
- Paton, P.W.C. 1994. The effect of edge on avian nest success: how strong is the evidence? *Conservation Biology* 8.1:17-26.
- Robbins, C.S., D.K. Dawson, and B.A. Dowell. 1989. Habitat Area Requirements of breeding forest birds of the Middle Atlantic States. Wildlife Monograph no. 103. Wildlife Society. Blacksburg, VA.
- Rosenberg, K.V, R.W. Rohrbaugh, Jr., S.E. Barker, J.D. Lowe, R.s. Hames, and A. A. Dhondt. 1999. A land managers guide to improving habitat for scarlet tanager and other forest interior birds. Cornell Lab of Ornithology.
- Watts. 1999. Partners in Flight (PIF). Bird conservation plan for the Mid-Atlantic Coastal Plain (Physiographic Area 44), Version 1.0. American Bird Conservancy, Williamsburg, VA.