COMPATIBILITY DETERMINATION

USE:  Big Game Hunting for White-tailed Deer, Sika, and Wild Turkey

REFUGE NAME:  Blackwater National Wildlife Refuge

DATE ESTABLISHED:  January 23, 1933

ESTABLISHING AND ACQUISITION AUTHORITY(IES):

5) Refuge Administration Act {16 U.S.C. 668ddb}.

REFUGE PURPOSE(S):

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

• “…to conserve (A) fish or wildlife which are listed as endangered or threatened species...or (B) plants.” 16 U.S.C. § 1534 (Endangered Species Act of 1973).

• “…suitable for -- (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species...” 16 U.S.C. § 460k-1 (Refuge Recreation Act).

• “…(1) to protect, enhance, restore, and manage an appropriate distribution and diversity of wetland ecosystems and other habitats for migratory birds and other fish and wildlife in North America; (2) to maintain current or improved distribution of migratory bird populations; and (3) to sustain an abundance of waterfowl and other migratory birds consistent with the goals of the North American Waterfowl Management Plan and the international obligations contained in the migratory bird treaties and conventions and other agreements with Canada, Mexico, and other countries.” 16 U.S.C. § 4401-413 (North American Wetlands Conservation Act).

• “…to protect, enhance, restore, and manage wetland ecosystems and other habitats for migratory birds, endangered and threatened species, and other wildlife.” 16 U.S.C. § 668ddb (Refuge Administration Act).

NATIONAL WILDLIFE REFUGE SYSTEM MISSION:

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

DESCRIPTION OF USE:

(a) What is the use? Is it a priority public use?
The use is big game hunting for white-tailed deer, sika, and wild turkey on Blackwater National Wildlife Refuge (NWR). Hunting was identified as one of the priority public use of the Refuge System under the Refuge System Administration Act of 1966, as amended by the Refuge System Improvement Act of 1997 (Public Law 105-57).

A compatibility determination for the hunting of white-tailed deer, sika, and turkey was completed as part of the refuge’s Comprehensive Conservation Plan (CCP) in 2006. That review determined that hunting of these species will not materially interfere with or detract from the mission of the Refuge System or the purposes for which the refuge was established.

(b) Where would the use be conducted?
The use will be conducted in designated areas of refuge lands in Dorchester and Wicomico counties, Maryland. After completing the U.S. Fish and Wildlife Service’s (Service) administrative procedures, additional lands acquired at the refuge from willing sellers may be open to big game hunting.

Hunting areas are typically located in upland forest and forested wetland habitats away from public use areas, high density waterfowl use areas, and away from the majority of marsh and open water. Portions of the marshes adjacent to forested wetlands are hunted for sika; however, these areas are not intensively used by waterfowl as evidenced by our aerial waterfowl surveys.

(c) When would the use be conducted?
Big game hunting on the refuge will generally take place within the season dates established by the State of Maryland. White-tailed deer and sika hunting is normally between late October and late January. Hunting for turkeys (gobblers only) will be during the State season, typically April to May, on designated hunt days. Specific regulations for each hunt will be published by the refuge in advance of the hunt seasons.

(d) How would the use be conducted?
Hunting will generally take place within the regulatory framework established by the State of Maryland. In some instances, the refuge hunt may deviate from State seasons in an attempt to increase harvest and reduce white-tailed deer and/or sika herd size. Any deviation from State seasons would be developed in coordination with State partners.

We require hunters to obtain a permit (Big/Upland Game Hunt Application, FWS Form 3-2356 or Quota Deer Hunt Application FWS Form 3-2354). Hunting brochures, hunting application procedures, seasons, bag limits, methods of hunting, maps depicting areas open to hunting, and the terms and conditions under which we issue hunting permits are available at the refuge visitor center, administration office, and on the refuge's website.
Administrative fees will be charged for the permits. Fees will be utilized to administer the hunt which includes but is not limited to hiring a hunt program coordinator, maintaining roads, parking areas, gates, and signs. Youth participating in the designated youth hunt days will not be required to pay a fee.

During the spring turkey and deer archery seasons, hunters may “walk in” from existing designated parking areas, and all vehicle access will be prohibited. During the firearms seasons, vehicles will be restricted to designated roadways and existing parking areas. There will be no off-road vehicles or all-terrain vehicle (ATV) use allowed during any hunting season, except for persons with disabilities in designated areas. Boat access may be allowed, at the manager’s discretion, where it does not conflict with areas closed for the protection of wintering waterfowl. Sections of Wildlife Drive and some refuge trails may be closed for designated periods of time during the muzzleloader and/or shotgun hunts to allow for the harvest of white-tailed deer and sika. Areas of the refuge are designated for hunters with disabilities.

The hunting program will be reviewed annually or as needed, in consultation with Maryland Department of Natural Resources (DNR), to assess its effectiveness and ensure wildlife populations and habitat quality are managed appropriately. In addition, refuge-specific regulations listed under “Stipulations Necessary to Ensure Compatibility” will apply.

(e) Why is the use being proposed?
Hunting is one of the priority uses outlined by Congress in the Refuge System Improvement Act of 1997. This legitimate and appropriate use of a national wildlife refuge is generally considered compatible, as long as it does not materially interfere with or detract from the fulfillment of the Refuge System mission or the purposes of the refuge. Hunting is used in some instances to manage wildlife populations, and is also a traditional form of wildlife-oriented recreation that can be accommodated on many Refuge System lands.

The primary objectives of the refuge deer hunts are to: (1) maintain a healthy white-tailed deer population at or below habitat carrying capacity, (2) minimize crop depredation to refuge and adjacent private croplands, (3) keep non-native sika populations at a level compatible with its habitat to prevent the species from increasing its range inland, thereby intruding into and competing with the native white-tailed deer, and (4) provide quality, compatible, consumptive, wildlife-oriented recreation.

AVAILABILITY OF RESOURCES:
The Refuge Recreation Act requires that funds are available for the development, operation, and maintenance of the permitted forms of recreation. The administrative fee ($10 to $20) is the minimal amount needed to offset the cost of managing the hunting programs. This fee may increase in time if deemed necessary by the refuge manager to offset program costs. Funds generated through administrative fees are used to contract or hire a hunt coordinator to administer aspects of the hunting programs. The responsibilities of this hunt coordinator include responding to questions and providing assistance to the public, opening and closing hunt units at specified times, staffing the check station as needed, process hunt applications and permits, conduct mailings, provide visitor assistance for the hunt programs, make a positive impression on customers and the public, and otherwise assist hunters in following regulations and having a
positive hunting experience.

Administrative fees collected through the hunts will continue to fund the annual publication of regulations, cover postage, and permit applications, maps, and leaflets. Any remaining revenue generated from the administrative process would be used to replace signs, post closed areas, and maintain parking areas and roads. There may be some costs to the refuge budget associated with these programs in the form of infrastructure maintenance and law enforcement. These costs should be minimal relative to total refuge operations. Maintenance costs would not diminish resources dedicated to other refuge management programs.

**ANTICIPATED IMPACTS OF THE USE:**

Hunting can result in positive or negative impacts to the wildlife resource. A positive effect of allowing hunter access to the refuge will be a better appreciation and understanding of the wildlife and habitats associated with Mid-Atlantic Coastal Plain ecosystems. This can translate into more widespread and stronger support for the refuge, the Refuge System and the Service. The typical ranges of impacts are addressed in greater detail in the Chesapeake Marshlands NWR Complex Hunting Program Final Environmental Assessment (USFWS 2007).

**General Impacts of Public Use**

Direct impacts are those impacts immediately attributable to an action. Indirect impacts are those impacts that are farther in time and in space. Effects that are minor when considered alone, but collectively may be important, are known as cumulative effects. Incremental increases in activities by people engaged in the variety of allowed uses on the refuge could cumulatively result in detrimental consequences to wildlife and/or habitats. Refuge staff will monitor these activities to ensure wildlife resources are not impacted in a detrimental manner. Since the hunting areas comprise portions of the refuge with the least amount of waterfowl use and hunting times are restricted, disturbance and other impacts are not expected to be significant.

In this compatibility determination, the anticipated impacts are not considered major or significant, and are often described as either negligible or minor. The magnitude of such changes is defined as follows:

- **Negligible**–Management actions would result in impacts that would not be detectable or if detected, would have effects that would be considered slight, localized, and short-term.
- **Minor**–Management actions would result in a detectable change, but the change would be slight and have only a local effect on the community, the resource, or ecological processes. The change would be discountable, insignificant, and of little consequence and short-term in nature.

During the 2012 to 2015 seasons, an average of 3,762 permits were issued per year to hunt white-tailed deer and sika on the refuge. Permits are specific to the season and weapon type. An individual hunter may hold multiple permits to hunt during any given year. Hunters harvested a total of 256 white-tailed deer and 1,159 sika on the refuge over the last 4 years. Thus, our determination considers these factors in our overall analysis.
Hunting provides additional wildlife-dependent recreational opportunities and can foster a better appreciation and more complete understanding of the wildlife and habitats associated with Delmarva ecosystems. This can translate into more widespread and stronger support for wildlife conservation, the refuge, the Refuge System, and the Service. The following is a discussion of refuge-specific impacts.

**Air and Water Quality**
Air quality and water quality impacts will be minimal and limited to automobile emissions on open roads and trails and subsequent surface runoff. These effects will not only come from hunters but also from other users engaged in wildlife-dependent recreation. The effects of hunting-related activities, as well as other management actions on overall air and water quality in the region will be negligible, compared to the effects from industrial centers and non-refuge vehicle traffic.

**Vegetation**
The physical effects on vegetation from hunting are expected to be minimal, as hunters tend to travel on existing roads and game trails. Some off trail hiking is anticipated, but it will generally be dispersed over large areas. Possible negative cumulative impacts of recreational hunting include temporary trampling of vegetation and light soil erosion. Spring turkey season could cause some trampling effects to growing plants, especially in wet areas; however, we do not expect these impacts to be substantial, because turkey hunter density is expected to be low and dispersed. Most hunting occurs during the fall, but hunters tend to disperse when in the woods; as a result, we do not anticipate substantial impacts to habitats. Some hunt seasons extend into winter when the ground is either frozen, covered in snow, and/or when plants are dormant. Hunters will have little impact on plants during this period. For these reasons, cumulative impacts to plant communities and soils are not likely to be significant during the fall, winter, or spring hunting seasons.

The impacts of the existing deer herd on vegetation on the refuge, particularly agricultural crops, are striking. Excessive white-tailed deer and sika herbivory has significant negative impacts on the refuge farm program, resulting in the total loss of crops in some fields. This directly impacts the ability of the refuge to meet the goals and objectives outlined in the CCP. Neighboring farmers are reporting an unacceptable level of crop depredation as well. The herd’s impacts to forest resources are more subtle. Deer herbivory has been noted as the cause of failure on a number of tree planting projects. The refuge is currently undertaking a study on how deer herbivory is impacting forest regeneration following tree harvest.

Positive effects on vegetation may result from maintaining white-tailed deer and sika populations at levels commensurate with the carrying capacity of available habitat. The impacts of dense deer populations on forest regeneration and the composition and diversity of the herbaceous understory have been well documented (Tierson et al. 1966; Behrend et al. 1970; Tilghman 1989, Cote et al. 2004, White 2012). Disturbances that typically promote forest diversity, such as fire and small canopy gaps, may not have the desired benefits if browsers are overabundant (Nuttle et al. 2013). An overabundance of deer can suppress native vegetation, facilitating the success of invasive species in forested habitats (Knight et al. 2009). Lessening the impact of
excessive deer herbivory is a key forest management strategy (White 2012, Nuttle et al. 2013) and will likely become even more important as the climate warms (Galatowitsch et al 2009).

Well-managed hunting has the potential to effectively control deer populations (Brown et al. 2000, Oyer and Porter 2004). The net impact of deer hunting on vegetation should be positive, and result in better regeneration of forest canopy species and an increase in the diversity of the herbaceous understory.

**Soils**

It is anticipated that minor impacts to soils will occur as a result of allowing hunting access on the refuge. Soils can be compacted and erode as a result of repeated foot traffic, especially those soils associated with wetland habitats. Erosion potential will likely vary during the season based on soil moisture and temperatures. During much of the hunting season, soils may be frozen or covered in snow, thereby reducing the impacts greatly. At the anticipated use levels, and because hunters tend to disperse when searching for game, impacts to soils (erosion and compaction) are not likely to be significant.

**Hydrology**

Hydrology impacts from hunting would be minimal and only result from the use of roads and trails. Unsurfaced trails are susceptible to a variety of impacts including vegetation loss and compositional changes, soil compaction, erosion, and muddiness, exposure of plant roots, trail widening, and the proliferation of visitor created side trails (Marion and Leung 2001). However, these effects are considered minimal due to the fact that hunters are generally dispersed, which reduces repeated erosive actions on soils.

**Visitation**

Impacts on non-hunting public uses are minimal. Public use facilities are unaffected by the archery hunt. Sections of Wildlife Drive and some refuge trails may be closed for designated periods of time during the muzzleloader and/or shotgun hunts to allow for the harvest of white-tailed deer and sika in these areas. The timing of these closures is designed to maximize deer harvest and minimize impacts to the non-hunting public. The Visitor Center and approximately one-third of the Wildlife Drive remains open and are unaffected by the temporary closures.

**Federal and State Endangered Species**

The Delmarva Peninsula fox squirrel (*Sciurus niger cinereus*), a subspecies of the eastern fox squirrel found only on the Delmarva Peninsula, was until very recently listed as Endangered on the Federal List of Endangered and Threatened Wildlife. It inhabits mature forests of mixed hardwoods and pines within the agricultural landscapes of the peninsula. Historically, this subspecies had a patchy distribution throughout most of the Delmarva Peninsula and into southern Pennsylvania, but by the time of its listing in 1967 remnant populations occurred in only four Maryland counties, including Blackwater NWR (Taylor 1976). After listing, the hunting season for this subspecies was closed, and recovery efforts focused on expanding the squirrel's distribution through translocations. In addition, new populations have been discovered since the time of listing and there are now many more acres of forest known to be occupied by the subspecies. The determination was made that the subspecies is now sufficiently abundant.
and well distributed to withstand foreseeable threats. The subspecies was removed from the Federal List of Endangered and Threatened Wildlife effective December 16, 2015.

The big game hunting program has been successfully implemented for many years without conflicts with maintaining healthy populations of Delmarva Peninsula fox squirrels on the refuge.

The northern long-eared bat (*Myotis septentrionalis*) is listed as federally threatened due to white-nose syndrome-related population declines. This is a forest-associated bat that roosts in dead and dying trees. This species was detected during maternity and volant period surveys conducted on the refuge in 2016. Due to the lack of hibernacula on the refuge, this species likely migrates away from the refuge during the winter when the majority of the big game hunting takes place. We anticipate that big game hunting will have no effect on northern long-eared bats, but we will continue to consult with Service’s Endangered Species staff with the Chesapeake Bay Field Office to ensure there are no negative impacts to this species.

**Wildlife**

In general, the presence of humans will disturb most mammals, which typically results in indirect negligible short-term adverse impacts without long-term effects on individuals and populations. Adverse impacts on resident game populations from hunting would be negligible.

The Maryland DNR is responsible for managing native white-tailed deer and exotic sika in the State. The department utilizes broad-based deer management techniques to meet their diverse goals, which are: (1) to ensure the present and future well-being of deer and their habitat; (2) maintain deer populations at levels necessary to ensure compatibility with human land uses and natural communities; (3) encourage and promote the recreational use and enjoyment of the deer resource; and (4) inform and educate Maryland citizens concerning deer biology, management options, and the impacts that deer have on landscapes and people. During the last couple of decades, the primary focus of deer management in the State has been to slow a rapidly growing deer population. Refuge staff works closely with the State on an annual basis to review, develop, and implement the hunt program on the refuge. This close coordination helps ensure the refuge hunt program is as effective as possible in meeting its goals and is working synergistically with State efforts.

All deer and turkey harvested in Maryland must be field tagged immediately and checked in within 24 hours via the internet, telephone, or mobile app. Blackwater NWR has a specific land code that allows harvested animals reported to the State to be identified as harvested on the refuge. In Dorchester County, an average of 2,655 white-tailed deer and 2,607 sika were harvested per year during the last four seasons (see Table 1, 2012 to 2016 data). During this same period, an average of 64 white-tailed deer and 290 sika were harvested per year on the refuge.
Using past harvest data, Maryland DNR deer biologists estimated sika herd population size on Blackwater NWR. The Downing Population Reconstruction Model was applied to produce a minimum population estimate for the refuge. Too few white-tailed deer are harvested on the refuge to run models for this species. Downing population reconstruction “uses harvest-by-age data and backward addition of cohorts to estimate minimum population size over time” (Davis et al 2007). Results indicate that sika populations on the refuge may have increased with the existing hunt program (see Figure 1). The Downing population estimate is based on harvest data rather than survey data, and the estimate takes into account only populations associated with the refuge. The estimate does not consider countywide populations, nor hunter effort or skill.

Given the low numbers of animals harvested from the refuges in respect to the total countywide harvest and deer population, no cumulative impacts to local, regional, or Statewide populations of white-tailed deer are anticipated from hunting of the species on the refuge.

Negative impacts from hunting on non-hunted mammals, such as voles, moles, mice, shrews, and bats, are expected to be negligible. Except for some species of migratory bats, these species have very limited home ranges and hunting would not affect their populations regionally. Impacts of hunting to migratory bat species would be negligible. These species are in torpor or have completely passed through Maryland by peak hunting season. Vehicles are restricted to roads and harassment or taking of any wildlife other than legal game species is not permitted.

Potential impacts to non-game wildlife are expected to be minimal. Turkey hunters utilize the refuge at low enough densities that they will not likely impact ground nesting songbirds. Deer hunting takes place during the non-breeding season. Short-term and sporadic wildlife disturbances such as flushing birds and mammals are likely to occur from hunter access; however, these infrequent events are not likely to have a negative overall impact on resident or migratory birds, mammals, and reptiles or the habitats that they occupy.

Excessive herbivory by white-tailed deer has been shown to impact songbird habitat in forested environments (Chollet and Martin 2013). DeCalsta (1994) found a decline in the intermediate canopy nesting songbirds when deer densities exceeded 7.9 deer/square kilometer (km²). A well-managed hunt has the potential to have positive impacts on breeding songbirds where deer herbivory is altering forest structure.
Lead ammunition is used by many big game hunters. When deer are field dressed, fragments of lead can remain in gut plies that are left behind (Hunt et al. 2006). When a wounded deer cannot be retrieved, it may die with lead fragments in its body. Bald eagles and other wildlife scavenge on deer carcasses and can ingest lead fragments, leading to sub-lethal or lethal impacts on affected individuals (Rattner et al. 2008, Golden et al. 2016). While bald eagle numbers on the refuge continue to increase (USFWS, unpublished data), eagle carcasses have been recovered on the refuge with elevated levels of lead in their blood (Tri-State Bird Rescue and Research, unpublished data). The refuge recognizes that removal of lead ammunition will require collaboration among affected stakeholders and will encourage hunters to voluntarily use nontoxic alternatives.

**Summary**
Cumulative effects on the environment result from incremental effects of a proposed action when these are added to other past, present, and reasonably foreseeable future actions. While cumulative effects may result from individually minor actions, they may, viewed as a whole, become substantial over time. The hunt program has been designed to be sustainable through time given relatively stable conditions.

The cumulative impacts of big game hunting on white-tailed deer, sika, and wild turkey
populations at Blackwater NWR are negligible. The proportion of the refuge’s harvest of these species is negligible when compared to local, regional, and Statewide populations and harvest.

Because of the regulatory process for harvest management in place within the Service, the setting of hunting seasons largely outside the breeding seasons of resident and migratory wildlife, the ability of individual refuge hunt programs to adapt refuge-specific hunting regulations to changing local conditions, and the wide geographic separation of individual refuges, we anticipate no direct or indirect cumulative effects on resident wildlife, migratory birds, and non-hunted wildlife of big game hunting on Blackwater NWR.

PUBLIC REVIEW AND COMMENT:

This compatibility determination will be submitted for a 14-day public review and comment period. The program outlined in this compatibility determination is based on comments received on the deer hunting program during a 20-day public comment period and meeting held in April 2016.

Additionally, this big game hunt program is nearly identical to that which was evaluated in the 2006 Environmental Assessment (EA) for the Draft CCP for the Chesapeake Marshlands NWR Complex (USFWS 2005, USFWS 2006). The program went through extensive public comment and review during the development of the EA and CCP.

DETERMINATION (CHECK ONE BELOW):

_____ Use is not compatible

__X__ Use is compatible, with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY

These hunting programs have been conducted for many years and the special regulations, restrictions, and general operations have been structured to ensure compatibility. If monitoring indicates that this use materially interferes with or detracts from fulfillment of the Refuge System mission or the purposes of the refuge, we would curtail or eliminate the use.

Special Regulations governing our hunting programs will be codified in the Code of Federal Regulations, Title 50 and will be subject to Maryland State regulations and the following special refuge conditions:

- We require hunters to obtain a deer or turkey hunting permit (Big/Upland Game Hunt Application, FWS Form 3-2356 or Quota Deer Hunt Application FWS Form 3-2354). Hunting brochures, hunting application procedures, seasons, bag limits, methods of hunting, maps depicting areas open to hunting, and the terms and conditions under which we issue hunting permits are available at the refuge visitor center, administration office, and on the refuge's website.
- Hunters must possess on their person at all times while on refuge property: a valid Maryland hunting license and all required stamps, a valid form of Government-issued photo identification, and a printed valid hunting permit issued by the refuge.
- We prohibit hunting from a permanently constructed tree stand or blind. We allow the use of temporary tree stands and blinds for hunting. We do not allow screw-in steps, spikes, or other objects that may damage trees. All stands and blinds left on refuge property, unoccupied, must be tagged in plain sight with your permit number and the years that are printed on your permit. Hunters must remove all stands and blinds by legal sunset of a date established annually by the refuge manager. We are not responsible for damage, theft, or use of the stand by other hunters.
- We prohibit organized deer drives, unless otherwise authorized by the refuge manager on designated hunt days.
- Hunters must notify and receive permission from a Service law enforcement officer, refuge manager, or designee if they need to enter a refuge closed area or another hunting area for which they do not possess a valid permit to retrieve game.
- We prohibit the use of bicycles, air boats, boats, ATVs, motorized off-road vehicles, and amphibious vehicles or Argos to access the refuge except as authorized by the refuge manager, within certain hunt areas, on designated days, routes of travel, waterways, and launch sites.
- We prohibit shooting a projectile from a firearm, muzzleloader, bow, or crossbow from, down, or across any refuge road. A refuge road is any road that is traveled by vehicular traffic.
- We prohibit parking in front of any gate. Parked vehicles may not impede any road traffic.
- Hunters must make a reasonable effort to retrieve all wounded or killed game and include it in their daily bag limit. We prohibit leaving deer or turkey entrails or other waste within 50 feet (15.2 meters) of any road, parking area, trail, or refuge structure on the refuge.
- We allow the use of marking devices, including flagging or tape, but it must be removed by legal sunset of date established annually by the refuge manager. We prohibit paint or any other permanent marker to mark trails.
- We require that all deer harvested be checked in at the refuge-sponsored check station during hunt days when the refuge-sponsored check station is being operated. If hunters fail to check deer during operation hours of the check station, they must notify the hunt coordinator by noon the following day of the kill.
- Hunters must adhere to the bag limits set fourth annually in the brochure. Deer harvested on the refuge do not count toward State bag limits but must be recorded and checked with the State. Deer harvested on the refuge must be checked pursuant to the refuge hunt in which they are taken, regardless of the weapon used or corresponding State season.
- We prohibit the use of rimfire or centerfire rifles and all handguns, including muzzleloading pistols, for hunting.
- We do not allow archery hunters to hunt within areas designated for the youth hunt on designated days.
- We do not allow commercialized guiding.
- We do not allow pets in hunt areas.
• Hunters are encouraged to voluntarily use nontoxic ammunition when hunting big game.

**JUSTIFICATION:**

Hunting 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 Refuge System Administration Act of 1966, as amended by the Refuge System Improvement Act of 1997 (Public Law 105-57)). Service policy is to provide expanded opportunities for wildlife dependent uses when compatible and consistent with sound fish and wildlife management and ensure that they receive enhanced attention during planning and management.

Hunting seasons and limits are established by the State of Maryland and generally adopted by the refuge. These restrictions ensure the continued well-being of overall populations of game animals. Hunting does result in the taking of many individuals within the overall population, but restrictions are designed to safeguard an adequate population from year to year. Specific refuge regulations address equity and quality of opportunity for hunters, and help safeguard refuge habitat. Disturbance to other fish and wildlife does occur, but this disturbance is generally short-term and adequate habitat occurs in adjacent areas. Loss of plants from foot traffic is minor, or temporary, since hunting occurs mainly after the growing season.

Big game hunting is conducted on the refuge to maintain populations at a level compatible with refuge habitat, minimize crop depredations on and adjacent to the refuge, prevent the increase of exotic sika populations and minimize potential competition with native white-tailed deer, and to provide the general public with quality hunting. Without a method to reduce the deer herd, overpopulation would occur, followed by a reduction in the quality of the habitat and associated impacts. A public hunt is the most feasible alternative at this time to accomplishing a reduction in the herd size.

Limited spring turkey hunting in accordance with the restrictions and numbers of hunters proposed would have insignificant impacts on biological resources, with the exception that obviously a few gobblers would be killed. However, their removal from the population would not have significant impacts on the species or its abundance.

Stipulations above will ensure proper control of the means of use and provide management flexibility should detrimental impacts develop. Allowing this use also furthers the mission of the Refuge System by providing renewable resources for the benefit of the American public while conserving fish, wildlife, and plant resources on the refuge.

This activity will not materially interfere with or detract from the mission of the Refuge System or purposes for which the refuge was established.
Signature: Refuge Manager: ____________________________________________

(Signature and Date)

Concurrence: Regional Chief: ____________________________________________

(Signature and Date)

Mandatory 15-Year Re-evaluation Date: ________________________________

(Date)
LITERATURE CITED:


Butt, J.P. 1984. Deer and trees on the Allegheny: how could hunters keep the deer and the forest service keep regeneration when the deer were eating the regeneration? Journal of Forestry 82:468-471.


