CLARKS RIVER NATIONAL WILDLIFE REFUGE

Big Game, Migratory Birds, Upland Game, Amphibians/Reptiles, and Invasive/Feral Species 2020 Sport Hunt Plan

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Clarks River National Wildlife Refuge 2020 Sport Hunt Plan
For
Big Game, Migratory Birds, Upland Game, Amphibians/Reptiles, and Invasive/Feral Species

INTRODUCTION

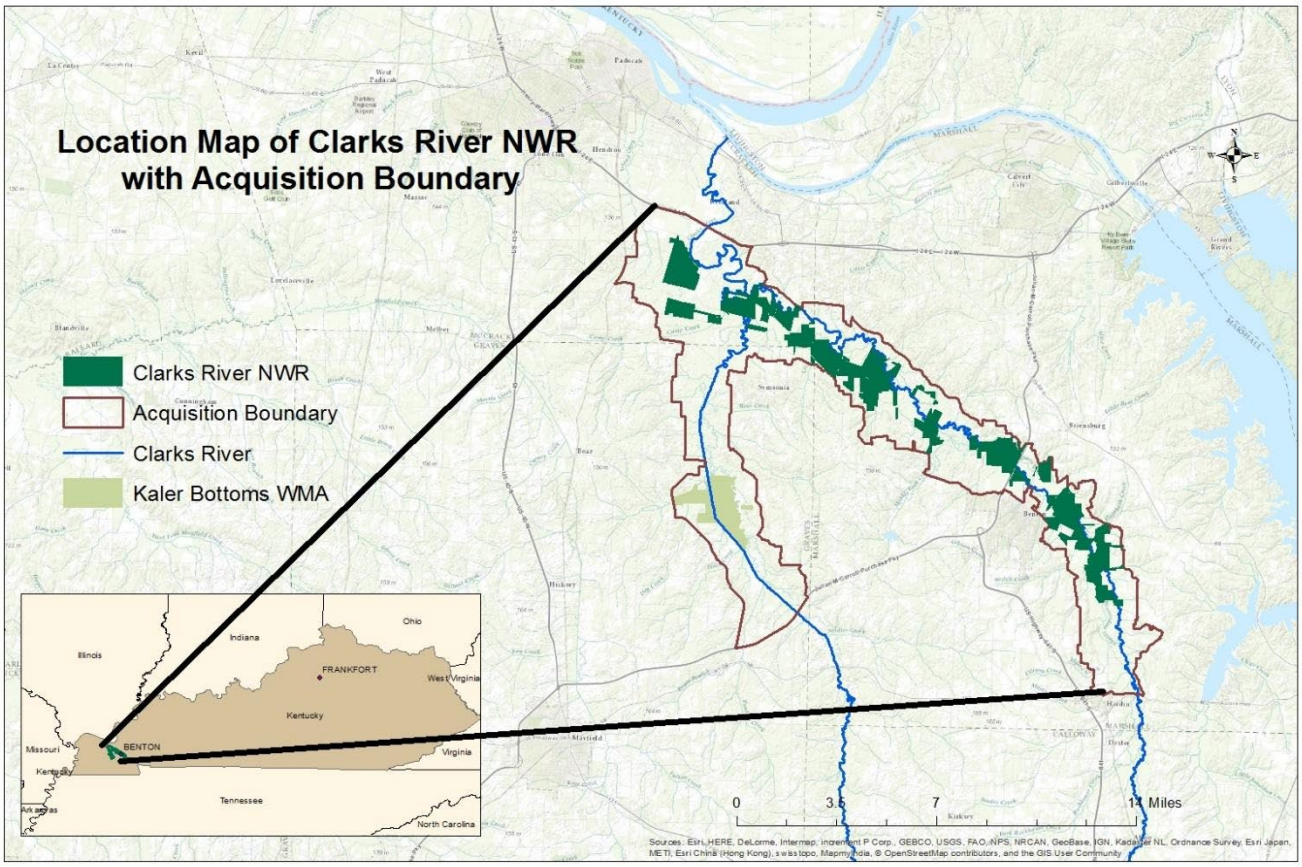
National Wildlife Refuges are guided by the mission and goals of the National Wildlife Refuge System (NWRS), the purposes of an individual refuge, Service policy, and laws and international treaties. Relevant guidance includes the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997, Refuge Recreation Act of 1962, and selected portions of the Code of Federal Regulations and Fish and Wildlife Service Manual.

Clarks River National Wildlife Refuge (NWR or refuge) was established pursuant to the Federal Property and Administrative Service Act of 1949 (40 U.S.C. 471-535), as amended; Fish and Wildlife Coordination Act of 1934 (16 U.S.C. 661-666c) as amended; Fish and Wildlife Act of 1956 (16 U.S.C. 742a-742j Stat. 1119) as amended; the Act of May 19, 1948, Public Law 80-537 (16 U.S.C. 667b-667d; 62 Stat. 240) as amended; and The National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended. Clarks River NWR was established in 1998 under the Emergency Wetlands Resources Act of 1986 (16 U.S.C. 3901(b); 100 Stat. 3582-91). For the first time since the establishment of Kentucky Woodlands NWR in 1938, and its disposal in 1969, the Commonwealth of Kentucky had a national wildlife refuge located entirely within its borders.

The primary purpose of the refuge is *"...for the development, advancement, management, conservation, and protection of fish and wildlife resources ..." 16 U.S.C. 742f (a) (4) and "... for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude..." 16 U.S.C. 742f (b) (1) (Fish and Wildlife Act of 1956).*

Clarks River NWR is located about 60 miles southeast of Cypress Creek NWR, 60 miles northeast of Reelfoot Lake NWR, 50 miles north of Tennessee NWR, 50 miles southwest of Sloughs Wildlife Management Area (WMA), 35 miles east-southeast of Ballard WMA, 8 miles west of the Kentucky Lake WMA, and 44 miles southeast of West Kentucky WMA. The refuge averages about two to three miles wide, extends about 20 miles from near Paducah, Kentucky to just south of Benton, Kentucky and is located in Graves, Marshall and McCracken Counties (See Figure 1).

Figure 1. Clarks River NWR Location Map



The 9,300 acre Clarks River NWR was established for the conservation and enhancement of migratory birds, and other fish and wildlife management conservation and protection. The Refuge is comprised primarily of wetland forests, backwater sloughs, and open farmland with some fields of warm-season grasses and small amounts of upland forest. The East Fork of the Clarks River is comparatively slow-moving and subject to frequent, short duration, over-flow flooding from rainfall in the upper watershed. Backwater flooding is less common, but occurs when the Ohio or Tennessee Rivers reach flood stage. The wetland complexes present provide habitats that support a diverse bottomland forest and an abundance of wildlife resources.

Clarks River NWR is located within both the Appalachian Landscape Conservation Cooperative (LCC) and the Gulf Coastal Plains and Ozarks LCC. Both the East Gulf Coastal Plain Joint Venture (EGCPJV) and the Appalachian LCC have identified western Kentucky as a priority area. The EGCPJV has launched a Jackson Purchase Region Initiative. This initiative's primary purpose is to advance conservation of priority habitats for migratory birds in the Jackson Purchase region of western Kentucky. Additionally, the Appalachian LCC has determined that areas within the Jackson Purchase Region are Regional Cores of key aquatic connectivity areas and terrestrial significant habitats. The Refuge plays a significant role in achieving the objectives of the United States Shorebird Conservation Plan, North America Waterbird Conservation Plan, Fisheries Vision for the Future, and the Kentucky Wildlife Action Plan.

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

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

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

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

Therefore, it is a priority of the Service to provide for wildlife-dependent recreation opportunities, including hunting and fishing, when those opportunities are compatible with the purposes for which the refuge was established and the mission of the National Wildlife Refuge System.

Public hunts on the Clarks River NWR began in November 1999 in conjunction with the State-wide opening of white-tailed deer and upland game seasons. Turkey hunting was opened the following spring on the Refuge. Archery season was opened in September of 2001. The Refuge provides the visitor with an additional recreational opportunity where hunting opportunities on public lands are limited. Species included in the hunt program are big game (white-tailed deer, eastern wild turkey), upland game (gray and fox squirrels, eastern cottontail and swamp rabbits, raccoon, opossum, quail, coyote, bobcat, skunk, otter, muskrat, mink, gray and red fox, weasel, beaver), migratory birds (ducks, coots, geese, woodcock, snipe, dove, crow), amphibians/reptiles (bullfrogs) and feral/invasive species (feral hogs), if a hunting option is selected to control this invasive population.

STATEMENT OF OBJECTIVES

Hunting is one of the six wildlife-dependent recreational uses prioritized by the NWRSIA. The Secretary of the Interior may permit hunting on a refuge if it is determined that such use is compatible with the Refuge purpose.

The Kentucky Department of Fish & Wildlife Resources (KDFWR) is responsible for the management of resident wildlife throughout the State and is a key partner to the refuge, especially in terms of ensuring biological soundness with respect to resident wildlife populations. KDFWR has collected data to determine population levels and the overall health of species, such as deer and turkey. From this data, they set regulations that allow hunting at levels that maintain habitat and wildlife health. The Refuge coordinates with KDFWR and follows their regulations as closely as possible.

Development and enhancement of a quality and biologically sound Hunt Program that leads to enjoyable recreation experiences, greater understanding and appreciation of wildlife resources, and aids in the conservation of wildlife populations and their habitats is the overall goal for the Hunt Program at Clarks River NWR.

All Clarks River NWR public activities are designed to contribute to or be compatible with all refuge objectives. Clarks River NWR will continue to provide high quality, wildlife-oriented recreation to the general public and the opportunity to utilize a valuable renewable resource. A well-managed public use program will protect and preserve wildlife resources and habitats as well as maintain refuge resources by minimizing negative impacts and enhancing wildlife populations and habitat diversity.

The objectives of a big game, upland game, migratory bird hunting, amphibians/reptiles, and feral/invasive species hunting program on Clarks River NWR are to:

- Provide opportunities for safe, compatible wildlife-dependent public recreation as mandated by and according to Service law and policy.
- Promote and provide public opportunities for high quality hunting experiences on the refuge and increase opportunities for hunting, especially for those who may not have opportunities otherwise, as part of a larger compatible wildlife-dependent recreational program.
- Preserve the natural diversity and variety of biotic communities occurring on Refuge lands
- Maintain wildlife populations at levels compatible with seasonal habitat carrying capacities by providing the public an opportunity to utilize a valuable renewable resource using legitimate and traditional methods.

Hunting is consistent with the refuge's Comprehensive Conservation Plan's (CCP) larger vision for a compatible wildlife-dependent recreational program (USFWS 2012). Hunting objectives and strategies in the Clarks River NWR CCP were designed to provide a quality hunting experience that meets Service guidelines and policies and refuge goals and objectives. The designs of the existing and the sport hunt plan directly support multiple goals and objectives of the 2012 CCP (USFWS 2012), including:

Goal A. Fish and Wildlife Population Management. Protect, manage, enhance, and restore healthy and viable populations of migratory birds, resident wildlife, fish, and native plants, including all federal and state threatened and endangered species found within the Clarks River NWR and surrounding Clarks River Watershed.

Objective A-2 Waterfowl Sanctuary - Maintain three sanctuary sites throughout the refuge.

Objective A-11 Big Game Species - Continue deer herd health checks utilizing the Southeast Cooperative Wildlife Disease Study (SCWDS) Unit at the University of Georgia. Utilize state harvest reporting systems to track harvest/population data. Implement annual turkey brood survey in June through August, annual gobbler counts, and deer check station.

Objective A-12 Upland (small) Game Species - Utilize state hunter log reporting systems to track harvest/population data related to upland (small) game species (dove, opossum, raccoon, rabbit, and squirrel). Utilize refuge-specific hunter log reporting system to update public use opportunities.

Objective A-21 Nuisance Animals - Inventory, monitor, and control nuisance animals to help meet refuge objectives and/or provide public safety.

Goal B. Habitat Management: Conserve, restore, and enhance diverse bottomland hardwood forests, open lands, and associated habitats essential to support sustainable populations of migratory and resident wildlife species.

Objective B-1 Bottomland Hardwood Forest Restoration and Protection - Strategically restore and protect bottomland hardwood forest habitat in the Clarks River Basin where opportunities exist and as appropriate. Inventory and monitor survival and wildlife response.

Goal D. Visitor Services: Promote environmental education and interpretation opportunities and enhance compatible wildlife-dependent public uses, including hunting, fishing, wildlife observation, and wildlife photography on Clarks River NWR.

Objective D-2 Hunting - Ensure quality hunting opportunities during refuge hunting seasons by evaluating additional quota hunts, participation in recreational fee program, improvement of access points, and utilization of time and space zoning.

Strategies to implement these goals and objectives include:

- Maintain, at a minimum, the current waterfowl hunting period of only one-half day throughout the refuge, or give consideration to only 3 days/week of one-half day waterfowl hunting (refuge-wide).
- Enforce waterfowl hunting prohibitions in closed areas.
- Monitor the closed-to-hunting areas for disturbance during waterfowl wintering period.
- Evaluate closed areas from a conservation perspective for size, location, and access. The closed areas should comprise a contiguous block of at least 400-500 acres (larger if possible), depending on terrain and physical boundary features. No motorized entry and no gun hunting during the above stated periods (possible exception for the National Youth Hunt days for waterfowl).
- Develop protocol to estimate deer population on the refuge (browse survey).
- Continue to partner with SCWDS to conduct deer herd health checks on the refuge.
- Apply adaptive management to determine best practices to use in response to monitoring data on deer population and habitat.
- If deer population increases beyond carrying capacity, work with KDFWR to reduce the herd size by adjusting season length, bag limits, and method of take.
- Partner with KDFWR to monitor occurrence of chronic wasting disease in Kentucky and neighboring states.
- Explore on-refuge harvest reporting approaches to obtain additional upland game data.

- Develop inventorying and monitoring plan for upland game species found on refuge lands.
- Implement an aggressive control program in accordance with state and federal policies and regulations to reduce/eliminate feral or free ranging domestic animal species on Refuge lands.
- Develop a nuisance feral and free ranging animal action plan that includes control, monitoring and management protocols.
- Conduct inventorying and monitoring of bottomland hardwoods habitats to maintain diverse and viable stands for the benefit of bottomland hardwood-dependent species.
- Refuge will participate in annual state hunt coordination meetings to discuss proposed refuge hunting programs and regulations as possible.
- Maintain communication on hunting issues that the state may have regarding opportunities or modifications to these programs.
- Update the Hunt Plan as needed to ensure the highest quality opportunity.

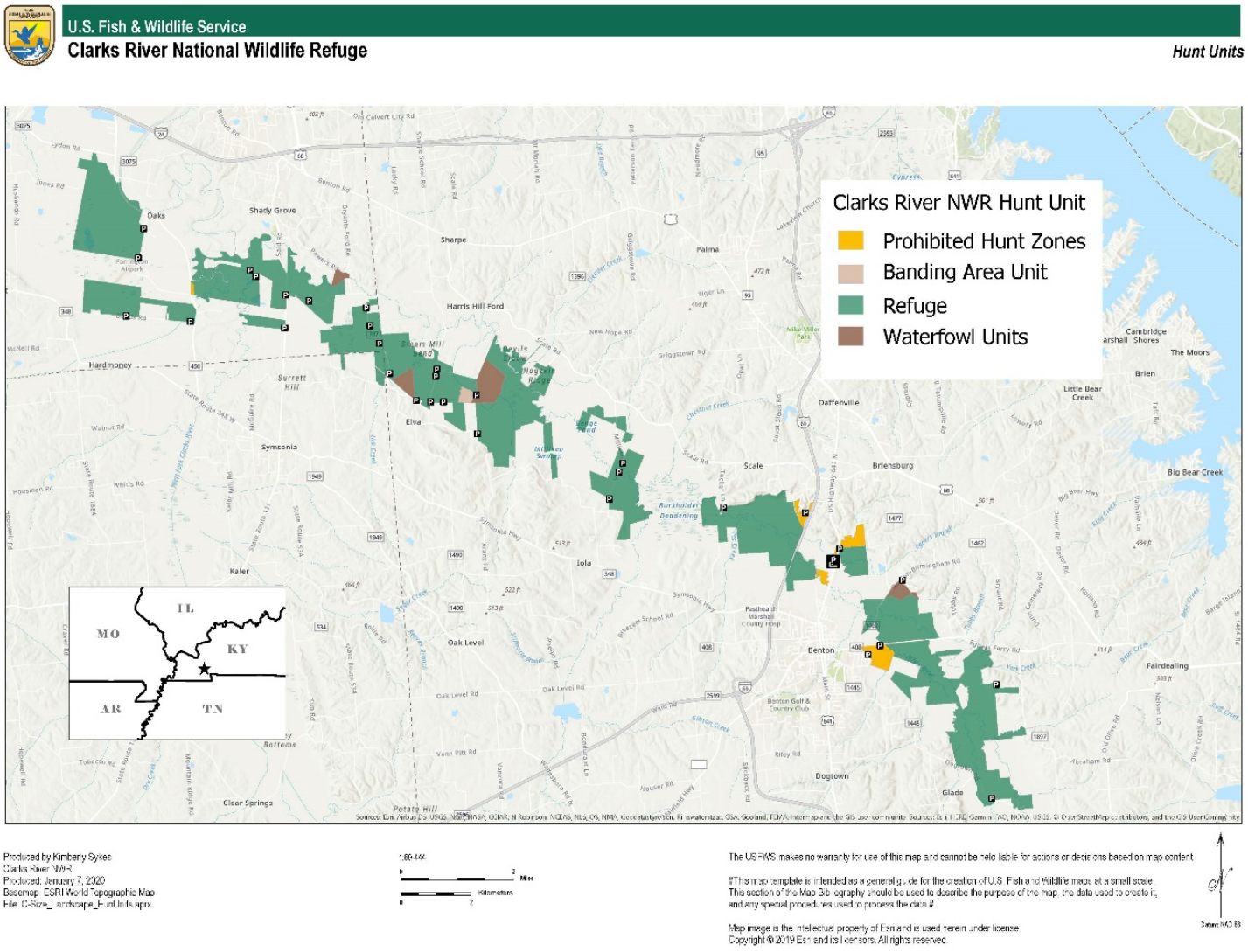
Conducting a well-managed hunt program on Clarks River NWR would assist the refuge in meeting one of its primary objectives by offering the public quality wildlife-oriented recreational programs that are compatible with the purposes for which the refuge was established. The Service will continue to coordinate with the KDFWR for all hunts and work to incorporate state seasons and bag limits when these do not conflict with refuge purposes. The special youth-only hunts provide a unique opportunity for the Refuge to introduce young hunters to the System and educate them on the importance of wildlife conservation. In fact, Congress, through the NWRSIA, directs refuges to provide increased opportunities for families to experience compatible wildlife-dependent recreation, particularly opportunities for parents and their children to safely engage in traditional outdoors activities such as hunting and fishing.

DESCRIPTION OF HUNTING PROGRAM

AREAS TO BE OPENED TO HUNTING

Currently, approximately 9,000 acres of the Refuge are open to hunting. Less than 250 acres are specifically closed for various reasons. Some locations on the Refuge are closed to all hunting for visitor/staff/volunteer safety (e.g., Refuge Office and Environmental Education and Recreation Area grounds); while other locations are closed due to the narrow refuge lands and close proximity to private dwellings; and some areas are closed to reduce wildlife disturbance (Figure 2). To achieve the objectives set forth by this plan, on occasion, it may be necessary to deviate from state season structures, adjust bag limits or implement other restrictions. Determinations will be based on safety, public use levels, management actions, disease transmission, minimum viable populations, or wildlife disturbance. Adjustments will be made to ensure achievement of the primary goal of the National Wildlife Refuge System "Wildlife First." However, hunting seasons and bag limits for the species listed will not be altered to be more liberal than those set by the KDFWR. Additionally, each future parcel of land acquired as part of Clarks River NWR will be evaluated for inclusion of hunting according to this Sport Plan.

Figure 2. Clarks River NWR with restricted hunting locations



SPECIES TO BE TAKEN, HUNTING PERIODS, HUNTING ACCESS

In general, state regulations apply except for only minor differences in some specific season lengths, and closed seasons believed necessary to achieve refuge purposes, goals and objectives.

- MIGRATORY BIRD HUNTING: Migratory bird hunting includes ducks, geese, coots, woodcock, snipe, dove, and crow. The hunting period for migratory birds will be consistent with KDFWR season framework and regulations with the exception of duck, geese and coots which may only be hunted during morning hours. The use of non-toxic shot is required while hunting migratory birds on refuge lands. The use of dogs for retrieving purposes or in the pursuit of migratory birds is permitted. Specific Refuge regulations for waterfowl (duck, goose, and coot) are discussed below. Waterfowl quota hunting areas are established on the Waterfowl Hunt Units, comprised of Mallard Point, Lindsey, Wolfe, and Redhead, of the refuge to limit hunting pressure through the season (Figure 2). The Mallard Point will be open on Saturdays and Sundays of the statewide waterfowl season, with the exception of the modern rifle or muzzleloader deer seasons, for the drawn permit holders. The Redhead and Wolfe will be open on Tuesdays and Wednesdays of the statewide waterfowl season, with the exception of the modern rifle or muzzleloader deer seasons, for the drawn permit holders. The Lindsey is available for use by mobility impaired hunters when operational. Waterfowl hunters attempting to hunt these areas will be required to submit an application for a random draw which will be held prior to the opening of the general waterfowl hunt season adopted by KDFWR and the refuge. The Waterfowl Hunt Units will be closed to all entry from November 1 through March 31, with the exception of the drawn permit holder and their guests on drawn hunt days ONLY. Areas on the Refuge, outside of the Waterfowl Units, are open to waterfowl hunting. All waterfowl seasons and regulations are in accordance with KDFWR with the following exceptions:
    - Access to the Refuge is two hours before sunrise.
    - Hunting will cease and hunters will be out of the field by 12 noon each day.
    - Only portable and temporary blinds are permitted.
    - Decoys and blinds must be removed each day.

  Dove, woodcock, snipe, crow, and quail will be consistent with KDFWR season framework and regulations with the following exceptions:
    - Only nontoxic shot permitted
    - Closed during all refuge modern gun and muzzleloader deer seasons
    - Access to the refuge is two hours before sunrise to two hours after sunset.

- BIG GAME HUNTING: Big game hunting includes white-tailed deer and wild turkey. The hunting period for big game as it relates to white-tailed deer will be consistent with KDFWR season framework, bag limits, and regulations with the following exceptions:
    - Hunting of deer by the aid of or distributing any feed, salt, minerals or other ingestible attractants is prohibited
    - Hunters may not hunt by organized deer drives of two or more hunters
    - Pursuit of white-tailed deer with dogs is prohibited.
    - Construction or use of any permanent tree stand is prohibited. Only climbing and/or portable stands may be used.
    - Tree stands may be placed in the field no earlier than two weeks prior to the opening of season and must be removed from the field within one-week after the season closes.
    - All stands left in the field must be identified by hunter's license number or hunter's name, address and phone number. If each stand does not contain this information, it will be confiscated.

- Safety belts are required at all times with use of tree stand
- Access to the refuge is two hours before sunrise to two hours after sunset.
- Ground blinds are permitted but must be removed when not in use.
- During modern gun, muzzleloader, and youth firearm ground blinds must display 1 square foot (144 square inches) of solid unbroken hunter orange visible from all sides.

The hunting period for big game as it relates to wild turkey will be consistent with KDFWR season framework, bag limits, and regulations with the following exceptions:

- Access to the refuge is two hours before sunrise to two hours after sunset.
- The use of dogs for retrieving purposes or in the pursuit of wild turkey is permitted in accordance with KDFWR regulations

Modification of big game hunting may occur over time as warranted by biological, safety issues, user conflicts, and/or excessive hunter participation determined through the annual evaluation process. If such issues arise, it is likely a quota modern gun deer season and a quota spring turkey season would be implemented as part of the refuge's hunt program. A big game quota hunt system would result in a reduction in hunter opportunities through participation regulation and/or available hunt days; an increase in the hunt program administration costs; and potentially the implementation of a recreation use fee for hunters. Quota permitting for other program hunts is not anticipated, but may become necessary if hunter numbers exceed levels believed appropriate to meet refuge objectives and/or the intent of this plan.

- UPLAND GAME HUNTING: Upland game hunting includes gray and fox squirrels, eastern cottontail and swamp rabbits, raccoon, opossum, quail, coyote, bobcat, skunk, otter, muskrat, mink, gray and red fox, weasel, beaver. The hunting period for upland game as it relates to gray and fox squirrels and eastern cottontail and swamp rabbits will be consistent with KDFWR season framework, bag limits, and regulations with the following exceptions:
  - Only nontoxic shot permitted
  - Use of centerfire weapons is prohibited for hunting of gray and fox squirrels, eastern cottontail and swamp rabbits
  - Closed during all refuge modern gun and muzzleloader deer seasons
  - Access to the refuge is two hours before sunrise to two hours after sunset.
  - The use of dogs for retrieving purposes or in the pursuit of gray and fox squirrels and eastern cottontail and swamp rabbits is permitted.

  The hunting period for upland game as it relates to raccoon and opossum will be consistent with KDFWR season framework, bag limits, and regulations with the following exceptions:
  - Only nontoxic shot permitted
  - The use of dogs in the pursuit of raccoon and opossum is permitted in accordance with State regulations.
  - Use of dogs outside hunting season is by special use permit only
  - Access to the refuge after sunset is permitted

  The hunting period for upland game as it relates to coyote, bobcat, skunk, otter, muskrat, mink, gray and red fox, weasel, and beaver will be consistent with KDFWR season framework, bag limits, and regulations with the following exceptions:
  - Use of dogs is not permitted.
  - May only be taken during daylight hours
  - Only nontoxic shot permitted
  - Access to the refuge is two hours before sunrise to two hours after sunset.

- AMPHIBIAN/REPTILES: Amphibian/reptile hunting includes only bullfrogs. The amphibian/reptile hunting period as it relates to bullfrogs will be consistent with KDFWR season framework, bag limits, and regulations with the following exceptions:

- Hunting of bullfrogs at the Environmental Education Recreation Area is prohibited.
- Access to the refuge after sunset is permitted

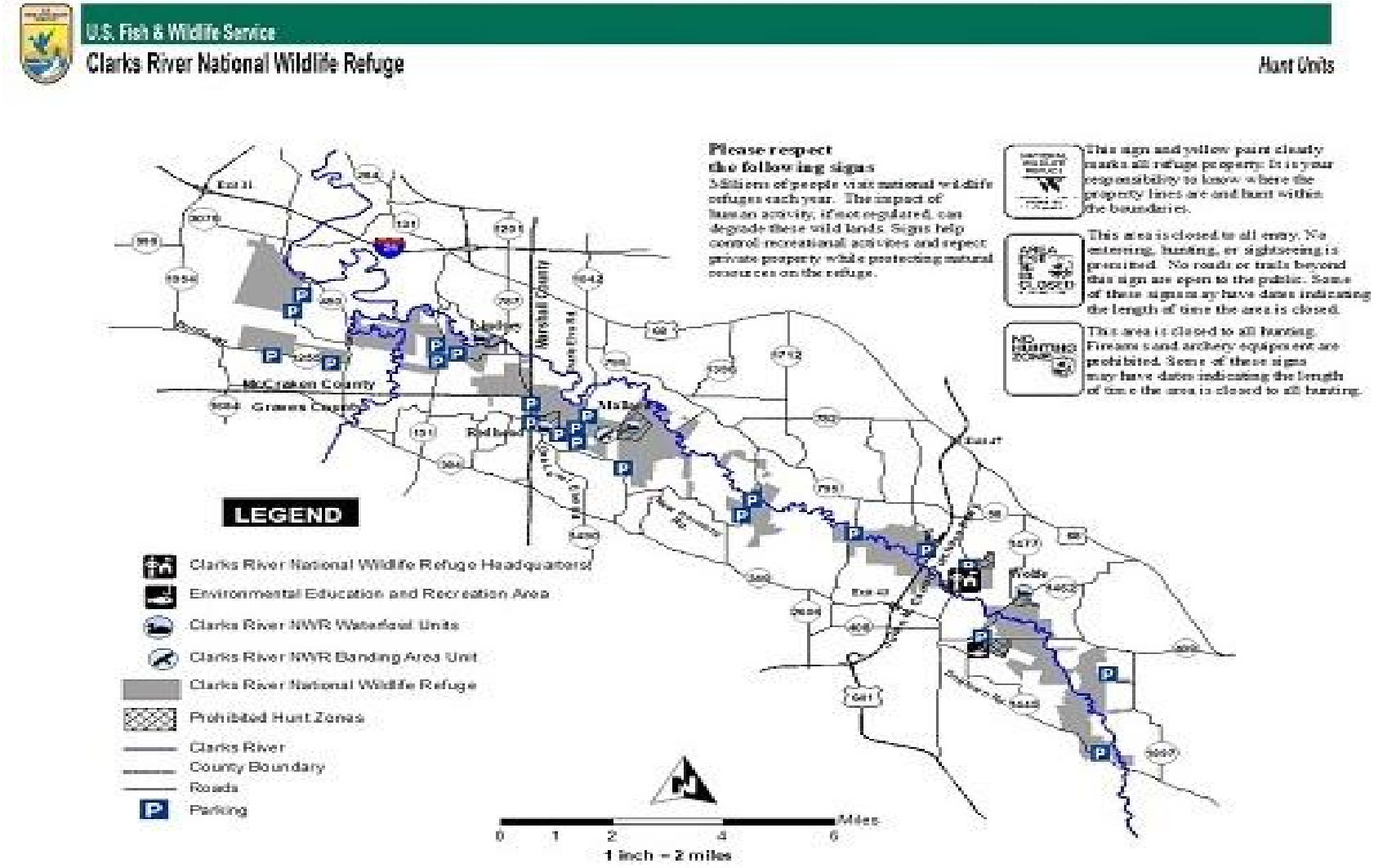
The collection, hunting, and/or harm of all other species of reptiles and amphibians on the Refuge is prohibited.

- FERAL/INVASIVE ANIMALS: Uncontrolled feral and invasive exotic species, specifically feral hogs, degrade, change or displace native habitats and compete with native wildlife to the point of causing harm to fish, wildlife, and plant resources. Due to the potential of severe degradation of habitat by pest species if left unrestrained, management of pest and exotic species is vital to maintain native flora and fauna. Adaptive management will be necessary in maintaining the biological integrity of the refuge as new species are identified and located, as well as native species becoming pests. While hunter harvest is not expected to influence the control or eradication of feral hogs, as part of adaptive management, all available control measures will be considered which could include hunting. Feral hogs will not be regarded as a game species on Clarks Rive NWR and control measures will be implemented to eradicate this invasive species, which may include a hunting option. Feral and invasive wildlife will be directly addressed in Clarks River NWR Integrated Pest Management Plan. Currently, a feral hog population has not been documented on Clarks River NWR.

- HUNTING NOT PERMITTED: Sandhill crane and groundhog hunting is not permitted on Clarks River NWR.

Access can be limited due to patchwork of ownership across the Refuge (Figure 3). Prohibited Hunt Zones, comprising less than 250 acres, are specifically closed to all hunting to reduce wildlife disturbance and visitor/staff/volunteer/public safety. The Waterfowl Management Units (Mallard Point, Lindsey, Wolfe, and Redhead) are closed to all entry from November 1 through March 31, with the exception of the drawn permit holder and their guests on drawn hunt days ONLY. The Banding Unit is closed to hunting from April 1 through August 31. These areas are marked with “Area Beyond This Sign Closed”. Hunting is also restricted within 200 feet of any home, refuge graveled road or portions of the abandoned railroad tracks.

Figure 3. Clarks River NWR with Hunting Access and Locations



HUNTER PERMIT REQUIREMENTS

Hunters will be required to have the required Federal and State Hunting Licenses and Permits, as well as a Refuge-Specific Permit. See “Hunter Permit Application and/or Registration Procedures” below.

CONSULTATION AND COORDINATION WITH THE STATE

The Refuge reviewed the operations and regulations for neighboring State wildlife management areas to find consistency where possible. The Refuge first reached out to the State in both August and September of 2019 to discuss this Sport Hunt Plan. We worked with the local State biologist and Regional Biologist early in the development of the plan. In early November, Clarks River NWR staff met with KDFWR Regional Biologist to discuss this plan as well as the State’s Chronic Wasting Disease (CWD) Response Plan. Support was indicated for aligning the Refuge Hunt program with State seasons. In addition, it was recognized that Kentucky will have the lead on any disease which affect resident wildlife and Clarks River NWR will support the State in its’ prevention and surveillance efforts. Both Clarks River NWR and the State will follow the guidance in the Association of Fish and Wildlife Agencies Technical Report on Best Management Practices for the Prevention, Surveillance, and Management of Chronic Wasting Disease and work jointly with KDFWR to implement the response plan for CWD or any other disease which surface in Kentucky.

On December 30, 2019, we asked for review by the State regional office that covers our area to help adjust our plan to align, where possible, with State management goals. Clarks River NWR and KDFWR will continue to work together to ensure safe and enjoyable sport hunting opportunities. Hunter participation and harvest data are collected by the State and law enforcement officers from both Clarks River NWR and KDFWR work together to patrol the Refuge, safeguarding hunters, visitors, and both game and nongame species.

LAW ENFORCEMENT

Enforcement of refuge violations normally associated with management of a National Wildlife Refuge is the responsibility of commissioned Federal Wildlife Officers. Other officers, Special Agents, State game wardens, and the local Sheriff’s Department often assist the Clarks River NWR full time federal wildlife officer.

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

- Refuge and hunt area boundaries will be clearly posted;
- The Refuge will provide a brochure that shows hunt areas;
- Clarks River NWR law enforcement staff will randomly check hunters for compliance with Federal and State Laws.

FUNDING AND STAFFING REQUIREMENTS

Specific funding to administer refuge hunts has not been allocated. Refuge operations and maintenance funding annually allocated to the refuge will be utilized for administration of the Clarks River NWR hunt program. User fees will not be collected at this time but may become necessary in future. Expenses inherent to the hunt program include: law enforcement-related

expenditures; road, trail and parking area maintenance; information signage; brochure printing; boundary signs/paint; administrative costs associated with quota hunts; website maintenance; and addressing needs of mobility impaired hunters. Total estimated cost for refuge hunt program is $105,000. The majority of these costs are salary-related and considered administrative in nature. These costs are equivalent to approximately 1.5 full time staff. Hunting is a priority refuge use and an important component of meeting refuge objectives and goals. Current staffing and funding are available to meet the requirements of a quality hunting program as identified. It is anticipated that adequate funding would continue to be sufficient to maintain these standards set in future years.

CONDUCT OF THE HUNTING PROGRAM

HUNTER PERMIT APPLICATION, SELECTION, AND/OR REGISTRATION PROCEDURES

General permits are required by all parties participating in the refuge hunt program. Currently, these permits are free of charge, and have been incorporated as part of the refuge hunt brochure. These permits must be signed and carried by the hunter while participating in refuge hunts.

Waterfowl hunting will be allowed on Waterfowl Management Units by a quota draw. The areas will be closed to all public entry from November 1st- March 31th except for quota waterfowl hunters and up to 4 guests on specific open dates for which drawn. To be placed in the drawing, persons will be required to provide name, address and phone number to the designated official at the Clarks River NWR administrative office. Applications will be accepted from September 1st - October 15th. Preferred hunt dates may be requested. If dates requested are already assigned the next available date will be given to the drawn applicant. Quota applicants will be selected by random draw. Selected hunters will be notified through the U. S. Mail with an official refuge letter indicating their status as being drawn for the hunt. This letter will serve as their permit to hunt.

Eligible applicants must be 16 years of age or older (excluding the youth waterfowl weekend which will have a separate draw for youth hunters following the same procedures as the general draw), and possess a valid current state and federal licenses and stamps for hunting waterfowl. Drawn permit holders will be allowed to hunt a designated blind or area, and may bring up to three guests. Guests will not be allowed in the area or blind without the drawn permit holder. No person shall sell, trade or barter their permit (non-transferable). If a permit holder cannot attend his/her scheduled hunt that area or blind will be closed for hunting during that period. Hunting will cease at 12:00 pm, decoys and blinds must be removed each day. No watercraft is allowed in the hunting units with the exception of drawn permit holders, which may use watercraft to access their assigned areas or blinds and retrieve downed birds.

Hunters with disabilities will be required to follow the same application process for hunting opportunities associated with quota hunting on the refuge. However, these hunters may request a special use permit (SUP) allowing the use of all-terrain-vehicles to aid in access to designated quota areas. The request for a special use permit to aid hunters with mobility impairments can be made for any refuge hunt, quota or non-quota. Any person making a request for this permit must complete a mobility impaired access application, which includes specifying their disability, providing a doctor’s evaluation, and specific needs to hunt on the refuge. Applications received will be reviewed and approved, or disapproved, on a case-by-case basis by the American Disabilities Act (ADA) coordinator (refuge manager).

In the future, plans are to charge $15.00 for a hunting and fishing permit (free to youth under 16 and $5.00 for individuals 65 and over); and $50.00 for an annual Recreational Special Use Permits on Clarks River NWR. Permit sales as well as the waterfowl quota hunt drawings will be administered either through the State of Kentucky hunting licensing system or a similar system. Additional administrative cost may be associated with the management of these permit sales and drawings.

REFUGE-SPECIFIC HUNTING REGULATIONS

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

The Clarks River NWR hunting program will follow Kentucky Department of Fish and Wildlife Resources season frameworks to the extent practicable. The refuge hunting program will be reviewed annually and amended as necessary. Amendments considered significant will be coordinated with the appropriate KDFWR personnel prior to implementation. In general, state regulations apply except for only minor differences in some specific season lengths, and closed seasons believed necessary to achieve refuge purposes, goals and objectives.

Refuge-specific regulations prohibit the following activities:

- Hunting without signed refuge permit on person
- Hunting in designated closed areas
- Hunting within 100 feet of a residence.
- Discharging a firearm within 200 feet of residence, gravel road, or portions of the abandoned railroads.
- Retrieving or tracking game from posted closed area without authorization
- Marking trails or areas with non-biodegradable materials
- Trapping
- Possessing and/or using non-toxic shot, with the exception of turkey hunting.
- Hunting waterfowl after noon (12:00 PM CST)
- Hunting of raccoon or opossum with pursuit dogs outside of hunting season, with the exception of authorization by special use permit to decrease wildlife disturbance
- Conducting deer drives of 2 or more hunters
- Reserving hunting areas by leaving boat, decoys, portable blinds, etc.
- Hunting quota waterfowl management units after November 1st without quota permit
- Entering quota waterfowl management units from November 1st through March 31st without quota permit on drawn hunt days
- Entering or hunting within the Banding Area Unit form April 1st through August 31st
- Hunting of dove, woodcock, snipe, crow, quail, gray and fox squirrels, and eastern cottontail and swamp rabbits during muzzleloader and modern gun deer seasons
- Use of all-terrain vehicles by non-mobility impaired hunters
- Mule or horse use off of designated routes (graveled, paved roads, abandoned railroad right of way) or for activities other than those identified as wildlife dependent activities and during muzzleloader or modern gun deer seasons
- Bicycle use off of designated routes (graveled, paved roads, abandoned railroad right of way), or for activities other than those identified as wildlife-dependent activities
- Blocking gates or roadways
- Use of dogs in the pursuit of white-tailed deer, coyote, bobcat, fox, skunk, muskrat, mink, weasel, beaver, and feral hogs, if a hunting option is selected to control this invasive population.

RELEVANT STATE REGULATIONS

Regulations for the State of Kentucky in regard to hunting are located at the following websites:

- KRS CHAPTER 150 FISH AND WILDLIFE RESOURCES Section 010-999 https://apps.legislature.ky.gov/law/statutes/chapter.aspx?id=37729

- TITLE 301 - TOURISM, ARTS AND HERITAGE CABINET - DEPARTMENT OF FISH AND WILDLIFE RESOURCES Chapter 1-6 https://apps.legislature.ky.gov/law/kar/TITLE301.HTM

OTHER REFUGE RULES AND REGULATIONS FOR HUNTING

Code of Federal Regulations prohibited activities relative to the refuge hunt program (not all inclusive):

- Target practice or non-hunting discharge of a weapon
- Use of motor vehicle on other than designated routes
- Unauthorized taking, disturbing, injuring and damaging of wildlife and plants (includes cutting trees or brush)
- Introduction of plants and animals or their parts taken elsewhere
- Searching for, or removing, any object of antiquity or other valued objects
- Use of audio devices to cause unreasonable disturbance to others
- Artificial light to locate wildlife
- Interference with any private person or employee of state or federal government engaged in an authorized activity
- Running dogs outside of permitted season without appropriate permit (field trials)
- Littering
- Permanent stands or blinds
- Fires
- Camping
- Pets not on a leash
- Participating in a commercial activity without appropriate permit
- Drive a nail, spike or other metal object in tree or hunt from tree with such object in it
- Hunting without securing and possessing appropriate state license
- Each person 16 years of age and older hunting Migratory Birds w/o possession Migratory Bird Hunting Stamp
- Use or any drug on any arrow for bow hunting
- Use or possession of alcoholic beverages
- Hunting of any wildlife by the aid of or distributing any feed, salt, minerals or other ingestible attractants

PUBLIC ENGAGEMENT

OUTREACH FOR ANNOUNCING AND PUBLICIZING THE HUNTING PROGRAM

Hunting information is publicized through news releases, visitor contact at the refuge office and visitor center, and distribution of hunting brochures. This information is also available on the station website at: https://www.fws.gov/refuge/clarks_river/.

The proposal has been thoroughly coordinated with all interested and/or affected parties. The Service sent letters regarding the Draft Hunt Plan, compatibility, regulations, and EA to the state of Kentucky on December 31, 2019. Refuge staff will continue to coordinate with KDFWR to address annual implementation of hunting activities. The Service also sent letters requesting comments and consultation on November 4, 2019 to:

- Absentee Shawnee Tribe of Indians
- Chickasaw Nation
- Delaware Nation of Oklahoma
- Eastern Band of Cherokees
- Peoria Tribe of Indians of Oklahoma
- Quapaw Tribal Business Committee
- Shawnee Tribe of Oklahoma
- Stockbridge Munsee Community

On, April 9, 2020, the Service sent letters and copies of the Draft Sport Hunt Plans, Environmental Assessment, Compatibility Determination and other documents to those tribes listed above. Clarks River NWR also received a supportive letter from the Chickasaw Nation.

The Clarks River NWR Draft 2020 Sport Hunt Plan, Environmental Assessment, and Compatibility Determination were made available for public review and comment for 45 days starting on March 23, to May 6, 2020. Notice was posted at the Clarks River NWR Headquarters Office, refuge website and refuge Facebook page. Further, an information bulletin announcing the availability of the documents for public review and comment was provided to local newspapers. Additionally, public comments were requested through the Federal Register process announced on April 9, 2020 and ended on June 8, 2020 (85 FR, Number 69; Docket Number FWS-HQ-NWRS-2020-0013, FXRS12610900000-201-FF09R20000). Clarks River NWR received 5 public comments expressing general support for expanding hunting opportunities under the proposed Sport Hunt Plan. Two public comments were received in opposition to the expansion of hunting opportunities on Clarks River NWR. Clarks River NWR addressed the public comments in Appendix D.

ANTICIPATED PUBLIC REACTION TO THE HUNTING PROGRAM

Public reaction from the surrounding communities to all refuge hunts is, for the most part, favorable and should continue to be the same in the future. The hunting public has supported refuge hunting, though there is always some opposition to specific regulations or hunts. Hunting has been allowed on Clarks River NWR since 1999. Based on the comments received during development of the CCP (USFWS 2012), little negative public reaction is expected. Hunting is an important economic and recreational use of Kentucky's natural resources. Better access and more waterfowl hunting opportunities have been the most notable local/regional issues

expressed since 1999 when the interim hunting program on Clarks River NWR was first implemented. Some adjacent landowners have expressed concern about illegal trespass, safety issues, and overharvest of deer. Although minimal local opposition to hunting on the refuge exists, nationally, there have been some anti-hunting sentiments expressed by organizations that are opposed to hunting on National Wildlife Refuges. Generally, the local public desires more hunting, not less, on the refuge. Public reaction during the past few years and presently has been very favorable. This view of the refuge Hunt Program is expected to continue in future years.

HOW HUNTERS WILL BE INFORMED OF RELEVANT RULES AND REGULATIONS

General information regarding hunting and other wildlife-dependent public uses can be obtained at Clarks River NWR headquarters at P.O. Box 89 Benton, Kentucky 42025 or by calling (270) 527-5770. Dates, forms, hunting unit directions, maps, applications, and permit requirements about the hunt will be available on the station website at: https://www.fws.gov/refuge/clarks_river/ and at the Refuge Visitor Center at 91 U.S. Highway 641 N Benton, Kentucky 42025.

LITERATURE CITED

USFWS 2011. Clarks River National Wildlife Refuge Draft Comprehensive Conservation and Land Protection Plan and Environmental Assessment. Atlanta, Georgia.

USFWS 2012. Clarks River National Wildlife Refuge Comprehensive Conservation and Land Protection Plan. Atlanta, Georgia.

USFWS 2007. Clarks River National Wildlife Refuge Sport Hunt Plan. Benton, KY.

SECTION B. ENVIRONMENTAL ASSESSMENT FOR THE CLARKS RIVER NATIONAL WILDLIFE REFUGE SPORT HUNT PLAN

Cost for Developing this Environmental Assessment - $18,000.00

INTRODUCTION

This Environmental Assessment (EA) is being prepared to evaluate the effects associated with the alternatives and complies with the National Environmental Policy Act (NEPA) in accordance with Council on Environmental Quality regulations (40 CFR 1500-1509) and Department of the Interior (43 CFR 46; 516 DM 8) and U.S. Fish and Wildlife Service (550 FW 3) regulations and policies. NEPA requires examination of the effects of the alternatives on the natural and human environment.

PROPOSED ACTION

The U.S. Fish and Wildlife Service (Service) is proposing to open hunting opportunities for upland game (bobcat, skunk, otter, muskrat, mink, gray and red fox, weasel, beaver) and feral/invasive species (feral hogs), if a hunting option is selected to control this invasive population, on the Clarks River National Wildlife Refuge (NWR or refuge) in accordance with the refuge's Clarks River NWR Big Game, Upland Game, Migratory Birds, Amphibians/Reptiles, and Feral/Invasive Species Hunt Plan which is a step-down plan from 2012 Clarks River NWR Comprehensive Conservation Plan (CCP) (USFWS 2012) and replaces the 2007 Sport Hunting Plan and Environmental Assessment (USFWS 2007). In order to become more aligned with the State of Kentucky's regulations and seasons, Clarks River NWR is proposing to open or expand hunting opportunities on approximately 8,700 acres for the following species:

- Bobcat (opening),
- Skunk (opening),
- Otter (opening),
- Muskrat (opening),
- Mink (opening),
- Gray and red fox (opening),
- Weasel (opening),
- Beaver (opening), and
- Feral hogs (if a hunting option is selected to control this invasive population).

This proposed action is often iterative and evolves over time during the process as the agency refines its proposal and learns more from the public, tribes, and other agencies. Therefore, the final proposed action may be different from the original. The final decision on the proposed action will be made at the conclusion of the public comment period for the EA and the 2020-2021 Refuge-Specific Hunting and Sport Fishing Regulations.

BACKGROUND

National Wildlife Refuges are guided by the mission and goals of the National Wildlife Refuge System (NWRS), the purposes of an individual refuge, Service policy, and laws and international treaties. Relevant guidance includes the National Wildlife Refuge System

Administration Act of 1966 (NWRSAA), as amended by the National Wildlife Refuge System Improvement Act of 1997 (NWRSIA), Refuge Recreation Act of 1962, and selected portions of the Code of Federal Regulations and Fish and Wildlife Service Manual.

Clarks River NWR was established pursuant to the Federal Property and Administrative Service Act of 1949 (40 U.S.C. 471-535), as amended; Fish and Wildlife Coordination Act of 1934 (16 U.S.C. 661-666c) as amended; Fish and Wildlife Act of 1956 (16 U.S.C. 742a-742j Stat. 1119) as amended; the Act of May 19, 1948, Public Law 80-537 (16 U.S.C. 667b-667d; 62 Stat. 240) as amended; and The National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended. Clarks River NWR was established in 1998 under the Emergency Wetlands Resources Act of 1986 (16 U.S.C. 3901(b); 100 Stat. 3582-91). For the first time since the establishment of Kentucky Woodlands NWR in 1938, and its disposal in 1969, the Commonwealth of Kentucky had a national wildlife refuge located entirely within its borders.

The primary purpose of the refuge is *"...for the development, advancement, management, conservation, and protection of fish and wildlife resources ..." 16 U.S.C. 742f (a) (4) and "... for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude..." 16 U.S.C. 742f (b) (1) (Fish and Wildlife Act of 1956)*

The mission of the NWRS, as outlined by the NWRSAA, as amended by the NWRSIA (16 U.S.C. 668dd et seq.), is to:

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

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

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

Therefore, it is a priority of the Service to provide for wildlife-dependent recreation opportunities, including hunting and fishing, when those opportunities are compatible with the purposes for which the refuge was established and the mission of the National Wildlife Refuge System.

Public hunts on the Clarks River NWR began in November 1999 in conjunction with the State-wide opening of white-tailed deer and small game seasons. Turkey hunting was opened the following spring on the Refuge. Archery season was opened in September of 2001. The Refuge provides the visitor with an additional recreational opportunity where hunting opportunities on public lands are limited. Species included in the hunt program are big game (white-tailed deer, eastern wild turkey), upland game (gray and fox squirrels, eastern cottontail and swamp rabbits, raccoon, opossum, quail, coyote, bobcat, skunk, otter, muskrat, mink, gray and red fox, weasel, beaver), migratory birds (ducks, coots, geese, woodcock, snipe, dove, crow), amphibians/reptiles (bullfrogs) and feral/invasive species (feral hogs), if a hunting option is selected to control this invasive population.

PURPOSE AND NEED

The purpose of this EA is to provide compatible wildlife-dependent recreational opportunities on Clarks River NWR. The need of the EA is to meet the Service's priorities and mandates as outlined by the NWRSAA to "recognize compatible wildlife-dependent recreational uses as the priority general uses of the NWRS" and "ensure that opportunities are provided within the NWRS for compatible wildlife-dependent recreational uses." 16 U.S.C. 668dd(a)(4)).

All Clarks River NWR public activities are designed to contribute to or be compatible with all refuge objectives. Clarks River NWR will continue to provide high quality, wildlife-oriented recreation to the general public and the opportunity to utilize a valuable renewable resource. A well-managed public use program will protect and preserve wildlife resources and habitats as well as maintain refuge resources by minimizing negative impacts and enhancing wildlife populations and habitat diversity. Public hunting on Clarks River NWR is an appropriate and compatible form of wildlife oriented public recreation, which is compatible with the purpose for which the Refuge was established. Hunting, being a viable management tool when used wisely, often prevents the overpopulation of species within a given habitat community and can provide for greater wildlife diversity. In this way, the environment is managed for the benefit of a variety of wildlife. The hunting program is designed to meet the following goals and objectives of the Refuge.

Sport hunting is consistent with the refuge's CCP larger vision for a compatible wildlife-dependent recreational program (USFWS 2012). Hunting objectives and strategies in the Clarks River NWR CCP were designed to provide a quality hunting experience that meets Service guidelines and policies and refuge goals and objectives. The designs of the existing and 2020-21 hunt plan directly support multiple goals and objectives of the 2012 CCP, including:

Goal A. Fish and Wildlife Population Management. Protect, manage, enhance, and restore healthy and viable populations of migratory birds, resident wildlife, fish, and native plants, including all federal and state threatened and endangered species found within the Clarks River NWR and surrounding Clarks River Watershed.

> Objective A-2 Waterfowl Sanctuary - Maintain three sanctuary sites throughout the refuge.
>
> Objective A-11 Big Game Species - Continue deer herd health checks utilizing the Southeast Cooperative Wildlife Disease Study (SCWDS) Unit at the University of Georgia. Utilize state harvest reporting systems to track harvest/population data.

Implement annual turkey brood survey in June through August, annual gobbler counts, and deer check station.

Objective A-12 Upland (Small) Game Species - Utilize state hunter log reporting systems to track harvest/population data related to upland (small) game species (dove, opossum, raccoon, rabbit, and squirrel). Utilize refuge-specific hunter log reporting system to update public use opportunities.

Objective A-21 Nuisance Animals - Inventory, monitor, and control nuisance animals to help meet refuge objectives and/or provide public safety.

Goal B. Habitat Management: Conserve, restore, and enhance diverse bottomland hardwood forests, open lands, and associated habitats essential to support sustainable populations of migratory and resident wildlife species.

Objective B-1 Bottomland Hardwood Forest Restoration and Protection - Strategically restore and protect bottomland hardwood forest habitat in the Clarks River Basin where opportunities exist and as appropriate. Inventory and monitor survival and wildlife response.

Goal D. Visitor Services: Promote environmental education and interpretation opportunities and enhance compatible wildlife-dependent public uses, including hunting, fishing, wildlife observation, and wildlife photography on Clarks River NWR.

Objective D-2 Hunting - Ensure quality hunting opportunities during refuge hunting seasons by evaluating additional quota hunts, participation in recreational fee program, improvement of access points, and utilization of time and space zoning.

ALTERNATIVES CONSIDERED

Two alternatives were considered and developed for this EA: (1) Increase Hunting Season Structure and Alignment (Proposed Action Alternative), and (2) Current Management (No Action Alternative). Both alternatives will meet Refuge objectives by providing opportunities for safe, high quality hunting experiences to the public. However, the Proposed Action Alternative will better align Clarks River NWR hunt program with the State of Kentucky, provide an additional means of managing certain wildlife populations, and provide additional opportunities for hunters.

ALTERNATIVE A – INCREASE HUNTING SEASON STRUCTURE AND ALIGNMENT – [PROPOSED ACTION ALTERNATIVE]

The refuge has prepared an accompanying sport hunt plan, which is presented in this document as the Proposed Action Alternative.

The Proposed Action Alternative including refuge-specific regulations are described in the table below. Under this Alternative, hunting opportunities for upland game species permitted on Clarks River NWR would be opened to include bobcat, skunk, otter, muskrat, mink, gray and red fox, weasel, beaver and feral/invasive species (feral hogs), if a hunting option is selected to control this invasive population, in addition to current hunting seasons (Table 1). Refuge-specific regulations will be published in the Federal Register as part of the 2020-2021 Refuge-Specific Hunting and Sport Fishing Regulations.

Table 1. Overview of the Proposed Action Alternative.

TYPE	SEASON DATES/ BAG LIMITS	REFUGE SPECIFIC REGULATIONS
Duck Goose Coot	Same as State Waterfowl Seasons and Bag Limits.	-Hunting will cease and hunters will be out of the field by 12 noon each day. -Only portable and temporary blinds are permitted. -Decoys and blinds must be removed each day. -Only nontoxic shot permitted. -Access to the refuge is two hours before sunrise. -The use of dogs for retrieving purposes or in the pursuit of migratory birds is permitted. *Waterfowl hunting on Clarks River Waterfowl Units by Quota Permit only.
Dove Woodcock Snipe Crow Quail	Same as State Seasons and Bag Limits. Closed during all refuge modern gun and muzzleloader deer seasons	-Only nontoxic shot permitted -Access to the refuge is two hours before sunrise to two hours after sunset. -The use of dogs for retrieving purposes or in the pursuit of migratory birds is permitted. -Centerfire weapons prohibited.
Squirrel Rabbit	Same as State Season and Bag Limits. Closed during all refuge modern gun and muzzleloader deer seasons.	-Only nontoxic shot permitted -Use of centerfire weapons is prohibited -Access to the refuge is two hours before sunrise to two hours after sunset. -The use of dogs for retrieving purposes or in the pursuit of gray and fox squirrels, eastern cottontail and swamp rabbits is permitted.
Raccoon Opossum	Same as State Season and Bag Limits	-Only nontoxic shot permitted -The use of dogs in the pursuit of raccoon and opossum is permitted in accordance with State regulations. -Use of dogs outside hunting season is by special use permit only. -Access to the refuge after sunset is permitted
Coyote Bobcat Fox Skunk Otter Muskrat Mink Weasel	Same as State Season and Bag Limits (Bobcat and Otter taken on Refuge will be telechecked through State 1-800-245-4263 with public land code for Clarks River NWR)	-Only nontoxic shot permitted -Use of dogs is not permitted. -Access to the refuge is two hours before sunrise to two hours after sunset. - May only be taken during daylight hours

TYPE	SEASON DATES/ BAG LIMITS	REFUGE SPECIFIC REGULATIONS
Beaver		
White-tail Deer	Same as State Season and Bag Limits for Zone 1 (Deer taken on Refuge will be telechecked through State 1-800-245-4263 with public land code for Clarks River NWR)	- Pursuit of white-tailed deer with dogs is prohibited. -Construction or use of any permanent tree stand is prohibited. Only climbing and/or portable stands may be used. - Tree stands may be placed in the field no earlier than two weeks prior to the opening of season and must be removed from the field within one-week after the season closes. -All stands left in the field must be identified by hunter's State hunting license identification number. It is not required but the owner may provide the owner's name, address and phone number instead of the hunting identification number. If stand does not contain this information it will be confiscated. -Safety belts are required at all times with use of tree stand. -Hunters may not hunt by organized deer drives of two or more hunters. -Hunting of deer by the aid of or distributing any feed, salt, minerals or other ingestible attractants is prohibited -Access to the refuge is two hours before sunrise to two hours after sunset. -Ground blinds are permitted but must be removed when not in use. -During modern gun, muzzleloader, and youth firearm ground blinds must display 1 square foot (144 square inches) of solid unbroken hunter orange visible from all sides.
Turkey	Same as State Seasons and Bag Limits (Turkey taken on Refuge will be telechecked through State 1-800-245-4263 with public land code for Clarks River NWR)	- Access to the refuge is two hours before sunrise to two hours after sunset. -The use of dogs for retrieving purposes or in the pursuit of wild turkey is permitted in accordance with Kentucky Department of Fish and Wildlife Resources (KDFWR) regulations
Bullfrogs	Same as State Seasons and Bag Limits	-Hunting of bullfrogs at the Environmental Education Recreation Area is prohibited. -Access to the refuge after sunset is permitted -Collection, hunting, and/or harm of all other species of reptiles and amphibians on the Refuge is prohibited.
Feral Hogs	Feral hogs will not be regarded as a game species on Clarks Rive NWR and control	Feral hogs will not be regarded as a game species on Clarks Rive NWR and control measures will be implemented to eradicate this

TYPE	SEASON DATES/ BAG LIMITS	REFUGE SPECIFIC REGULATIONS
	measures will be implemented to eradicate this invasive species, which may include a hunting option.	invasive species, which may include a hunting option.
Sandhill Crane Groundhog	Closed	Closed

Mitigation Measures to Avoid Conflicts:

- Designated areas are closed to hunting for public, volunteer, and staff safety and/or as wildlife sanctuaries
- Target practice or non-hunting discharge of a weapon is prohibited to avoid wildlife disturbance and for the safety of visitors as well as prohibited by 50 CFR 27.41.
- Hunting within 100 feet of a residence is prohibited.
- Discharging a firearm within 200 feet of residence, gravel road or maintained trail is prohibited for the safety of visitors and local residents
- Use or possession of lead shot (shot shells) is prohibited for all species with the exception of turkey to reduce the likelihood of lead poisoning to waterfowl and their natural predators as well as prohibited by 50 CFR 32.2(k).
- Hunting waterfowl after noon (12:00 PM CST) is prohibited to allow waterfowl time to feed and rest without disturbance.
- Hunting raccoon or opossum with pursuit dogs outside of hunting season is only authorized by special use permit to decrease wildlife disturbance.
- Entering waterfowl management units from November 1st through March 31th without quota permit on drawn hunt days is prohibited to allow waterfowl time to feed and rest without disturbance.
- Hunting dove, woodcock, snipe, crow, quail, gray and fox squirrels, and eastern cottontail and swamp rabbits is prohibited during muzzleloader and modern gun deer seasons for safety issues and to reduce user conflict.
- Use of all-terrain vehicles by non-mobility impaired hunters is prohibited to reduce wildlife and visitor disturbance from noise.
- Mule or horse use off of designated routes (graveled, paved roads, abandoned railroad right of way), for activities other than those identified as wildlife dependent recreation activities is prohibited to protect native plants, reduce disturbance, and limit erosion/compaction of soils. During muzzleloader or modern gun deer seasons this use is prohibited on the refuge for safety of both the riders and animals.
- Bicycle use off of designated routes (graveled, paved roads, abandoned railroad right of way), or for activities other than those identified as wildlife-dependent recreation activities is prohibited to protect native plants, reduce disturbance, and limit erosion/compaction of soils
- Use of dogs in the pursuit of white-tailed deer, coyote, bobcat, fox, skunk, muskrat, mink, weasel, beaver, and feral hogs, if a hunting option is selected to control this invasive population, to reduce wildlife disturbance and for user safety.

Under this Alternative, Clarks River NWR will continue to provide high quality, wildlife-oriented recreation to the general public and the opportunity to utilize a valuable renewable

resource. Public hunting on Clarks River NWR is an appropriate and compatible form of wildlife oriented public recreation, which is compatible with the purpose for which the Refuge was established. Hunting, being a viable management tool when used wisely, often prevents the overpopulation of species within a given habitat community and can provide for greater wildlife diversity. In this way, the environment is managed for the benefit of a variety of wildlife. This alternative provides a recreational experience to the general public while maintaining a well-managed public use program which protects and preserves wildlife resources and their habitats as well as maintain refuge resources by minimizing negative impacts and enhancing wildlife populations and habitat diversity. The estimated cost to operate a hunt program is estimated to be $105,000.00 annually. Under this alternative the Refuge Law Enforcement Officer and/or Kentucky Department of Fish and Wildlife Resource wardens monitor the hunt, they will conduct license, bag limit, and access compliance checks.

This alternative offers increased opportunities for public hunting/fishing and fulfills the Service's mandate under the National Wildlife Refuge System Improvement Act of 1997. The Service has determined that the hunt plan is compatible with the purposes of the Clarks River NWR and the mission of the NWRS.

ALTERNATIVE B – CURRENT MANAGEMENT – [NO ACTION ALTERNATIVE]

This alternative, commonly referred to as "No Action" is "Continue Current Management" which allows hunting of Migratory Birds, Big Game, and some species of Upland Game (Table 2). Under this alternative, coyote hunting would be limited to approximately 60 days. Hunting of Bobcat, Fox, Skunk, Furbearers (Otter, Muskrat, Mink, Weasel), and Beaver would not be permitted on Clarks River NWR. In additions, hunting could not be used as a management tool to reduce Feral Hog populations if they became established on the Refuge.

Table 2. Overview of the Current Management Alternative.

TYPE	SEASON DATES/ BAG LIMITS	REFUGE SPECIFIC REGULATIONS
Duck Goose Coot	Same as State Waterfowl Seasons and Bag Limits.	-Hunting will cease and hunters will be out of the field by 12 noon each day. -Only portable and temporary blinds are permitted. -Decoys and blinds must be removed each day. -Only nontoxic shot permitted. -Use of dogs is permitted. *Waterfowl hunting on Clarks River Waterfowl Units by Quota Permit only.
Dove Woodcock Snipe Crow Quail	Same as State Seasons and Bag Limits.	-Only nontoxic shot permitted. -Closed during all refuge modern gun and muzzleloader deer seasons -Centerfire weapons prohibited. -Use of dogs is permitted.

TYPE	SEASON DATES/ BAG LIMITS	REFUGE SPECIFIC REGULATIONS
Squirrel Rabbit	Same as State Season and Bag Limits.	-Only nontoxic shot permitted -Closed during all refuge modern gun and muzzleloader deer seasons -Centerfire weapons prohibited. -Use of dogs is permitted.
Raccoon Opossum	Same as State Season and Bag Limits	-Use of dogs outside hunting season is by special use permit only.
Coyote	Legal Sunrise on the first Monday following the end of deer archery season and closing at legal sunset on the Friday two weeks prior to the beginning of youth turkey season.	You may hunt coyote under statewide regulations during this timeframe with the following exceptions: -Use of dogs is not permitted. -May only be taken during daylight hours
Coyote – incidental take	Coyote may be taken during any daytime refuge hunt for other wildlife species. No Bag Limit	-Must use weapons, ammunitions, and equipment legal for the species being hunted only.
White-tail Deer	Same as State Season and Bag Limits for Zone 1 Deer taken on Refuge will be telechecked through State 1-800-245-4263 with public land code for Clarks River NWR.	-Use of dogs is not permitted. -Construction or use of any permanent tree stand is prohibited. Only climbing and/or portable stands may be used. - Tree stands may be placed in the field no earlier than two weeks prior to the opening of season and must be removed from the field within one-week after the season closes. - All stands left in the field must be identified by hunter's State hunting license identification number. It is not required but he owner may provide the owner's name, address and phone number instead of the hunting identification number. If each stand does not contain information, it will be confiscated. -Safety belts are required at all times with use of tree stand. -Hunters may not hunt by organized deer drives of two or more hunters. -Hunting of deer by the aid of or distributing any feed, salt, minerals or other ingestible attractants is prohibited
Turkey	Same as State Seasons and Bag Limits	-Turkey taken on Refuge will be telechecked through State 1-800-245-4263 with public land code for Clarks River NWR.
Bobcat Furbearers (Mink, Otter,	Closed	Closed

TYPE	SEASON DATES/ BAG LIMITS	REFUGE SPECIFIC REGULATIONS
Weasel, Muskrat) Beaver Fox Sandhill Crane Groundhog		

AFFECTED ENVIRONMENT

A thorough review of the Affected Environment is provided in the Comprehensive Conservation Plan and Environmental Assessment and is hereby incorporated by reference (USFWS 2012). For more information regarding the affected environment, please see Chapter 2 of the Refuge's Comprehensive Conservation Plan, which can be found here: https://ecos.fws.gov/ServCat/DownloadFile/19296.

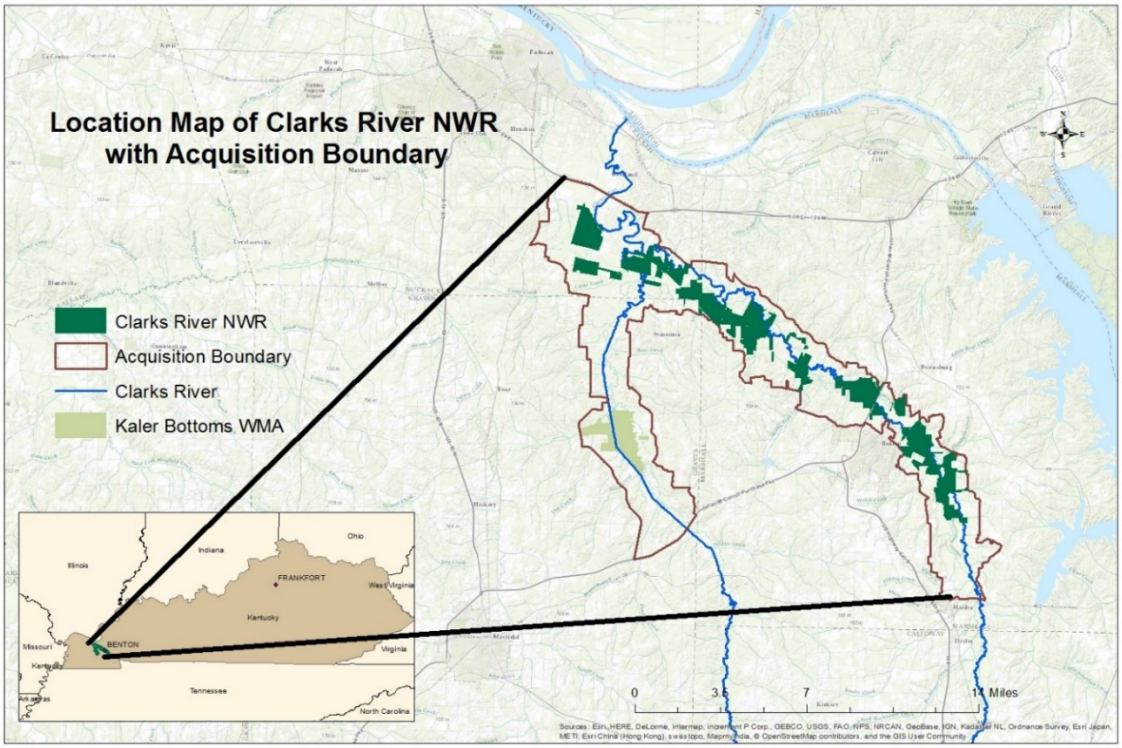
The refuge averages about two to three miles wide, extends about 20 miles from near Paducah, Kentucky to just south of Benton, Kentucky and is located in Graves, Marshall and McCracken Counties (See Figure 1) (Table 3). Clarks River NWR is located about 60 miles southeast of Cypress Creek NWR, 60 miles northeast of Reelfoot Lake NWR, 50 miles north of Tennessee NWR, 50 miles southwest of Sloughs Wildlife Management Area (WMA), 35 miles east-southeast of Ballard WMA, 8 miles west of the Kentucky Lake WMA, and 44 miles southeast of West Kentucky WMA.

Table 3. Socioeconomic summary (2017) for Marshall, McCracken, Graves Counties, KY.

	Counties in Kentucky		
Socioeconomics	Marshall	McCracken	Graves
Population	31,200	65,300	37,300
White	96.7%	83.6%	87.1%
Hispanic/Latino	1.45%	2.36%	6.1%
African American	0.699%	11.1%	4.46%
Median Age	44.8 years	42.1 years	40.3 years
Median Household Income	$49,126	$42,894	$40,369
Mean Property Value	$118,000	$134,100	$95,600
Homeownership	78.9%	67%	73.8%

The 9,300 acre Clarks River NWR was established for the conservation and enhancement of migratory birds, and other fish and wildlife management conservation and protection. The Refuge is comprised primarily of wetland forests, backwater sloughs, and open farmland with some fields of warm-season grasses and small amounts of upland forest. The East Fork of the Clarks River is comparatively slow-moving and subject to frequent, short duration, over-flow flooding from rainfall in the upper watershed. Backwater flooding is less common but occurs when the Ohio or Tennessee Rivers reach flood stage. The wetland complexes present provide habitats that support a diverse bottomland forest and an abundance of wildlife resources.

Figure 1. Location Map of Clarks River NWR



ENVIRONMENTAL CONSEQUENCES

This section analyzes the environmental consequences of the action on each affected resource, including direct and indirect effects. This EA only includes the written analyses of the environmental consequences on a resource when the impacts on that resource could be more than negligible and therefore considered an "affected resource". Any resources that will not be more than negligibly impacted by the action have been dismissed from further analyses.

Tables 4, 5, 6, 7, and 8 provide:

1. A brief description of the affected resources in the proposed action area;
2. Impacts of the alternatives on those resources, including direct and indirect effects.

Table 9 provides a brief description of the cumulative impacts of the alternatives.

Impact Types:

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

- *Cumulative impacts* result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions.

IMPACT ANALYSIS

Impacts by this action to air quality, water resources, wetlands, and floodplains have been determined to be negligible and are not further analyzed in Affected Natural Resources and Anticipated Impacts Table.

Table 4. Affected Natural Resources and Anticipated Impacts

NATURAL RESOURCES	
AFFECTED RESOURCE	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
BIG GAME Big game species would remain unchanged under Alternative A. The Kentucky Department of Fish and Wildlife Resources updates species abundance estimates periodically and adjusts harvest goals accordingly. Currently, for big game species, the Refuge adopts the State seasons and harvest limits. Clarks River NWR will coordinate with the State to adjust Refuge harvest goals accordingly, including limiting hunting opportunities if populations decrease, wildlife disturbance is an issue, public safety becomes a factor or to fulfill Refuge goals.	
White-tailed Deer White-tailed deer were nearly eliminated from Kentucky, in 1894, the Kentucky legislature passed a law making it illegal to kill a white-tailed deer from March 1 to September 1. These measures did not recover the population, and in 1912, deer hunting was closed in the State. The remaining scattered herds of white-tailed deer were not enough to establish a statewide deer population. Kentucky began a white-tailed deer restoration program and began relocating Wisconsin deer to Christian, Crittenden, Livingston, and Ballard counties. In the 1960s and 1970s, the program intensified and by 1980s, the western part of the State had a high enough population to open a hunting season. Today, the herd has recovered from fewer than 2,000 in 1945 to more than 850,000 statewide.	**Alternative A:** The primary tool for deer management in Kentucky is hunting. White-tailed deer overpopulation can have a negative impact on both the environment and humans, including damage to agriculture, landscapes, forest health and regeneration, and pose human safety risks due to vehicle collisions and serving as vectors for transmission of tick-borne diseases. The Refuge is located in Marshall, McCracken, and Graves counties in the Purchase Region of Kentucky. For white-tailed deer, these counties fall into Zone 1 which has the most liberal harvest limits in Kentucky indicating the areas with the highest deer populations. Annual white-tailed deer harvest data, from 2014-2018, reveals 21% - 23% of deer harvested within Kentucky come from the Purchase Region. Marshall, McCracken, and Graves counties combined for less than 4% of white-tailed deer harvested annually within the Purchase Region, during the same years. (2017-2018 Kentucky Deer Report). Clarks River NWR estimates 2,000 hunters annually visit for white-tailed deer hunting. Telecheck results for public land in Kentucky reports the annual harvest of white-tailed deer on Clarks River NWR. The 10-year average harvest is 163.7 white-tailed deer (54 % does and 46 % bucks) annually. Seventy-nine percent are taken using firearms, while crossbows, archery, and muzzleloader make up the other 21 %. (http://app.fw.ky.gov/harvestweb/publiclandResults.aspx) Under this

NATURAL RESOURCES	
AFFECTED RESOURCE	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
(Garland, 1998)	Alternative, no change for white-tailed deer seasons/limits at this time, therefore harvest numbers are expected to remain similar to the 10-year average. **Alternative B:** Harvest numbers and effects would not change as hunting seasons and dates remain consistent with Alternative A.
Eastern Wild Turkey An estimated 10 million wild turkeys were present on the North American continent in the early 1800s, but wild turkeys had all but disappeared from Kentucky by 1900. Year-round subsistence hunting and habitat destruction had dramatically depleted the population. Even with relocation efforts, the statewide wild turkey population was estimated at 850 birds in 1954. The first experimental stockings to the time when in-state trapping and relocation of wild turkeys ended was 65 years, with most of the restoration work taking place from 1975 to 1995. Currently, wild turkeys are abundant in all 120 Kentucky counties. (Lander, 2017)	**Alternative A:** The KDFWR has conducted wild turkey brood surveys each summer since 1984. The 2018 survey indicated a 68% increase in reproduction over 2017. As a result, fall harvest was up 27% compared to the previous fall. The 2019 spring wild turkey harvest summary reported an 8% increase in overall statewide harvest as compared to the spring of 2018. However, this statewide harvest was 3% lower than the 5-year average and 7% lower than the 10-year average. The Purchase Region has accounted for 22% to 25% of the statewide harvest of wild turkeys annually since 2014. Marshall, McCracken, and Graves counties combined for 3% or less of wild turkey harvested annually within the Purchase Region, during the same years. Clarks River NWR estimates 300 hunters annually visit for turkey hunting. Telecheck results for public land in Kentucky reports the annual harvest of eastern wild turkey on Clarks River NWR. The 10-year average harvest is 29.3 turkey (90 % during springe and 10 % fall) annually. Ninety-nine percent of turkey taken during the spring hunt are gobblers and 86 % of turkeys taken during the fall hunt are hens. Ninety-five percent are taken using firearms, while archery and muzzleloader make up the other 5 %. (http://app.fw.ky.gov/harvestweb/TurkeyPublicLandResults.aspx) Under this Alternative, no change for wild turkey seasons/limits at this time, therefore harvest numbers are expected to remain similar to the ten-year average. **Alternative B:** Harvest numbers and effects would not change as hunting seasons and dates are consistent with Alternative A.
MIGRATORY BIRDS: Frameworks for season lengths, bag limits, and areas for migratory bird hunting are established by the U. S. Fish and Wildlife Service. For each species, frameworks and seasons regulations are developed using factors such as population size and trends, geographic distribution, annual breeding effort, condition of breeding and	

NATURAL RESOURCES	
AFFECTED RESOURCE	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
wintering habitat, number of hunters, and anticipated harvest. Once the outside limits are set, each state selects hunting seasons within these frameworks. The Kentucky Department of Fish and Wildlife Resources reviews the frameworks and season regulations developed by the U. S. Fish and Wildlife Service adjusts harvest goals accordingly. Currently, for migratory birds, the Refuge either adopts the State seasons and harvest limits or is more restrictive than the State. Clarks River NWR will coordinate with the State to adjust Refuge harvest goals accordingly, including limiting hunting opportunities if populations decrease, wildlife disturbance is an issue, public safety becomes a factor or to fulfill Refuge goals.	
Ducks The total population of breeding ducks were estimated at 38.9 million birds in the traditional survey area, a 6% decrease from the 2018 estimate. However, the total duck population numbers were 10% higher than the long-term average measured since 1955.	**Ducks** **Alternative A:** The 2018 Trends in Duck Breeding Populations estimated overall duck populations at over 41 million breeding ducks (US Fish and Wildlife Service, 2018). This estimate was 13% lower than the 2017 estimate, but 17% higher than the long-term average. During the 2017-2018 hunting season, over 12 million ducks were harvested in the United States by over one million hunters. Active duck hunters in Kentucky make up approximately 1% of U.S. duck hunters. (Landers, 2018) The limited number of active duck hunters in Kentucky reduces the chances of an impact on the duck populations migrating through the Mississippi Flyway. To additionally limit impacts, morning only hunting for waterfowl will be instituted which will provide sanctuary conditions for waterfowl throughout the refuge for approximately 18 hours each day. In addition, intensively managed waterfowl areas will be closed or subject to quota hunting (i.e. 2-day hunting only, limited participants). Portions of the refuge will serve as sanctuary and will not be subject to hunting of any migratory birds or other species. Disturbance in these areas will be limited by other users of programs. Clarks River NWR estimates 800 hunters annually visit to duck hunt on the Refuge. Hunters are required to report annual harvest of these species when hunting on the public and private lands in Kentucky, Clarks River NWR estimates 1,600 ducks will be taken annually. Under this Alternative, no change for duck seasons/limits at this time, therefore harvest numbers are expected to remain similar to previous seasons. **Alternative B:** Harvest numbers and effects would not change as hunting seasons and dates are consistent with Alternative A.
Geese	**Geese, Coot, Mourning Dove, Woodcock, Snipe, and Crow**

NATURAL RESOURCES	
AFFECTED RESOURCE	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
Giant Canada goose populations were nearly extirpated in the early 1900s. The Mississippi Flyway population increased an average of 3% a year from 1998 – 2006. The 2018 Waterfowl Population Status assessment presented a mixed bag with snow geese and several species of Canada geese increasing, while other populations of Canada geese and white-fronted geese declined. In 2017, however, a 16% increase to 1.78 million geese (including the resident population) were recorded in the Mississippi Flyway. **Coot** According to Breeding Bird Surveys, the American Coot population is estimated at 6 million individuals. Over the past 40 years, the population has decreased slightly, but currently appears to be stable. **Mourning Dove** Mourning doves are common across the continental U.S. and are considered the most popular game bird. Prior to the 2017 hunting season, estimates indicated there were over 243 million mourning doves in the U.S. (Seamans, 2018) **Woodcock** The 2018 American Woodcock Population Status reported significant declines over the last ten years in both the central and eastern populations. **Snipe**	**Alternative A:** Other migratory birds in this plan include geese, coot, mourning dove, woodcock, snipe, and crow. These migratory bird populations are monitored by numerous and varied means undertaken by a wide variety of organizations. The U.S. Fish and Wildlife Service undertakes a number of surveys in conjunction with the Canadian Wildlife Service, State and Provincial wildlife-management agencies, and various other organizations. This information is used to set season structures and bag limits. Migratory bird hunting on the refuge will be in conjunction with KDFWR season structures and bag limits and subject to state and federal regulations. Hunting is limited for these species, due to lack of interest, and suitable areas where concentrations of birds can be located. Since the refuge's hunt program was initiated, season structures and bag limits for migratory birds have been in accordance with KDFWR regulations, with the exception of waterfowl (including geese and coot) which has been more restrictive. Clarks River NWR estimates 250 hunters annually visit to hunt geese, coot, dove, woodcock, snipe, and crow on the Refuge. Hunters are required to report annual harvest of these species when hunting on the public and private lands in Kentucky, Clarks River NWR estimates 300 of these species will be taken annually. Under this Alternative, no change for migratory bird seasons/limits at this time, therefore harvest numbers are expected to remain similar to previous seasons. **Alternative B:** Harvest numbers and effects would not change as hunting seasons and dates are consistent with Alternative A.

NATURAL RESOURCES	
AFFECTED RESOURCE	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
The 2006 population estimate for Common snipe was over 4 million birds. While the overall population has a declining trend, some populations are in decline, stable, or unknown. (Birdlife International 2019) **Crow** Between 1966 and 2014, American Crows are numerous and their populations were stable with estimates of a global breeding population at 27 million, with 88% spending part of the year in the U.S., and 37% in Canada. (Cornell, 2019)	
UPLAND GAME The KDFWR updates species abundance estimates periodically and adjusts harvest goals accordingly. Currently, for upland game species, the Refuge adopts the State seasons and harvest limits. Additional upland game species would be opened under Alternative A. Not only would squirrel, rabbit, quail, raccoon, opossum, and coyote be hunted, but under this Alternative, Clarks River NWR would open bobcat, skunk, otter, muskrat, mink, fox, weasel, and beaver hunting. Clarks River NWR will coordinate with the State to adjust Refuge harvest goals accordingly, including limiting hunting opportunities if populations decrease, wildlife disturbance is an issue, public safety becomes a factor or to fulfill Refuge goals. Trapping will not be permitted on the Refuge by the general public.	
Squirrels Using hunter cooperator logs, KDFWR indexed the squirrel population using squirrels seen per hour afield hunting. In reviewing this data from 1998 to 2018, the squirrel populations in Kentucky appears to rise and fall on an approximately 7 year cycle. The most recent low point in this cycle was in 2016. The population has been trending upwards since 2016, however, the population fluxes within these periods.	**Alternative A:** Squirrel population data is monitored annually by the KDFWR through annual Hunting Logs submitted by hunters and by mast survey data. This information is used to set state-wide season structures and bag limits. The population has been trending upwards since 2016, however, the population fluxes within these periods. Squirrel hunting on the refuge will coincide with KDFWR seasons and bag limits, with the exception that squirrel season is closed during all modern gun and muzzleloader deer seasons. Clarks River NWR estimates 300 hunters annually visit to hunt the Refuge to hunt squirrels. Hunters are required to report annual harvest when hunting on the public and private lands in Kentucky, Clarks River NWR estimates 1800 squirrels will be taken annually. Under this Alternative, no change for squirrel seasons/limits at this time, therefore harvest numbers are expected to remain similar to previous seasons. **Alternative B:**

NATURAL RESOURCES	
AFFECTED RESOURCE	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
	Harvest numbers and effects would not change as hunting seasons and dates are consistent with Alternative A.
Rabbits The rabbit population in Kentucky are measured using mail carrier routes and hunter cooperator surveys. According to the Kentucky Rabbit Report (2017), rabbit populations trend on a 7 year cycle. The mail carrier survey reports a 16% increase in rabbits observed statewide, however western Kentucky reports a decrease in this survey.	**Alternative A:** Rabbit population data is monitored annually by the KDFWR through annual Hunting Logs submitted by hunters, and Mail Carrier Survey. This information is used to set state-wide season structures and bag limits. The rabbit populations in Kentucky appears to rise and fall on an approximately 7-year cycle. According to the 2017 Kentucky Rabbit Report, the Mail Carrier Survey indicated a 16% statewide increase. However, the region in which Clarks River NWR reported a 24% decrease. Rabbit hunting on the refuge will coincide with KDFWR seasons and bag limits, with the exception that rabbit season is closed during all modern gun and muzzleloader deer seasons. Clarks River NWR estimates 125 hunters annually visit to hunt the Refuge to hunt rabbits. Hunters are required to report annual harvest when hunting on the public and private lands in Kentucky, Clarks River NWR estimates 500 rabbits will be taken annually. Under this Alternative, no change for rabbit seasons/limits at this time, therefore harvest numbers are expected to remain similar to previous seasons. **Alternative B:** Harvest numbers and effects would not change as hunting seasons and dates are consistent with Alternative A.
Quail Kentucky monitors quail populations using mail carrier surveys, hunter logs, and a quail wing survey. The Northern Bobwhite Populations Status Report compiles the data from each of the surveys. Review of historic data shows a cyclic population. Currently, Kentucky is on the downhill swing of the cycle. However, the Mail Carrier Survey has shown a steady statewide decline in quail population since 1960. In 2016, this survey showed a 12.5% decrease in the quail population statewide. The 2017 survey reported no change statewide, however, the	**Alternative A:** According to the Breeding Bird Survey, quail populations have declined -2.8%/year from 1966 to 1999 across its range, including the southeastern United States (Rollins and Carroll 2001). Northern bobwhite quail population data is monitored annually by the KDFWR through annual Hunting Survey Logs, Mail Carrier Survey, and Quail Wing Survey data. This information is used to set state-wide season structures and bag limits. According to the 2016-17 Northern Bobwhite Population Status Report, the mail carrier survey indicated a 12.5% statewide increase from 2015 to 2016. Overall the quail population showed no change from the 2016 to 2017 survey. However, the region in which Clarks River NWR reported a 10% decrease from 2016 to 2017 and an 82% decrease since 1960. Based on personal contact with hunters, hunting for this species is limited due to suitable areas where concentrations of birds can be located. Quail hunting on the refuge will coincide with KDFWR seasons and bag limits, with the

NATURAL RESOURCES	
AFFECTED RESOURCE	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
western region reported a 10% decline.	exception that quail season is closed during all modern gun and muzzleloader deer seasons. Clarks River NWR estimates 5 hunters annually visit to hunt the Refuge to hunt quail. Hunters are required to report annual harvest when hunting on the public and private lands in Kentucky, Clarks River NWR estimates less than 5 quail will be taken annually. Under this Alternative, no change for quail seasons/limits at this time, therefore harvest numbers are expected to remain similar to previous seasons. **Alternative B:** Harvest numbers and effects would not change as hunting seasons and dates are consistent with Alternative A.
Raccoon Kentucky opened the first hunting season on raccoons in 1948 (Lander, 2014). As pelt prices declined in the 1990s, the population of raccoons surged across North America (Gorce, 2008).	**Alternative A:** In coordination with the State of Kentucky, it was determined that furbearer population levels can sustain hunting and are relatively abundant across the State of Kentucky including western Kentucky where Clarks River NWR is located (L. Palmer, personal communication, August 14, 2019). Raccoon and opossum population data is monitored by the KDFWR. KDFWR sets state-wide season structures and bag limits. Raccoon hunting have been occurring on Clarks River NWR for almost 2 decades and overall hunting pressure throughout the season on the Clarks River NWR is considered light. However, annual events such as the Professional Kennel Club (PKC) World Hunt and the Breeders Showcase increase hunting pressure on raccoon for brief periods (i.e. approximately one week per event) during each event. Historic data of hunter harvest in KY is unavailable because the telecheck of harvested raccoon and opossum is not required. Hunter effort and harvest numbers were extrapolated from hunters who expressed interest in hunting raccoon. Raccoon hunting on the refuge will coincide with KDFWR seasons and bag limits, with the exception that hunting is allowed during hours of darkness only, and the use of dogs outside of hunting season is by special use permit only, further reducing the hunter harvest. Clarks River NWR estimates 100 hunters annually visit to hunt raccoons on the Refuge. In the best professional judgement of Clarks River NWR staff, 200 raccoon are taken annually by hunters. The Refuge has allowed raccoon hunting for almost 2 decades; and with no change to seasons or limits, little to no change is expected to local and regional populations of these species.

NATURAL RESOURCES	
AFFECTED RESOURCE	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
	Alternative B: Harvest numbers and effects would not change as hunting seasons and dates are consistent with Alternative A.
Opossum Opossum's ability to adapt to human altered habitats has made it extremely successful and widespread. Their population status is stable and their range is expanding in North America.	**Alternative A:** In coordination with the State of Kentucky, it was determined that furbearer population levels can sustain hunting and are relatively abundant across the State of Kentucky including western Kentucky where Clarks River NWR is located (L. Palmer, personal communication, August 14, 2019). Opossum population data is monitored by the KDFWR. KDFWR sets state-wide season structures and bag limits. Opossum hunting have been occurring on Clarks River NWR for almost 2 decades and overall hunting pressure throughout the season on the Clarks River NWR is considered light. . Historic data of hunter harvest in KY is unavailable because the telecheck of harvested opossum is not required. Hunter effort and harvest numbers were extrapolated from hunters who expressed interest in hunting opossum. Opossum hunting on the refuge will coincide with KDFWR seasons and bag limits, with the exception that hunting is allowed during hours of darkness only, and the use of dogs outside of hunting season is by special use permit only, further reducing the hunter harvest. Clarks River NWR estimates 10 hunters annually visit to hunt opossums on the Refuge. In the best professional judgement of Clarks River NWR staff, 20 opossums are taken annually by hunters. The Refuge has allowed opossum hunting for almost 2 decades; and with no change to seasons or limits, little to no change is expected to local and regional populations of these species. **Alternative B:** Harvest numbers and effects would not change as hunting seasons and dates are consistent with Alternative A.
Coyote Except for the eastern mountains, coyotes are now common throughout Kentucky (Servello et al, 2019). Since crossing the Mississippi River 35 years ago, coyote populations have boomed in Kentucky. Their numbers have continued to grow despite being hunted year-round with no bag limits. (Gerth 2013)	**Alternative A:** Coyotes have vastly expanded throughout the eastern United States, believed to potentially be filling the niche of the Red wolf as the apex predator in urban and forested areas. The coyote mating system is such that only the dominate pair reproduce and suppress the mating activities in subordinate individuals. When the dominate pair of coyotes is killed, the packs disbands, and the subordinate members find mates and reproduce. Because of such reproductive system, efforts throughout history to eradicate coyote populations because of damage

NATURAL RESOURCES	
AFFECTED RESOURCE	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
	to livestock, property, and other commodities has failed. It has been deemed nearly impossible to permanently reduce coyote populations (Crabtree and Sheldon 1999). Research has shown that control of coyote populations can increase the abundance of species such as rodents, rabbits, badges, bobcats, and fox (Henke and Bryant, 1999). Allowing recreational hunting of Refuge lands is predicted to have no effect on the overall population of coyotes yet could positively increase various species' abundance. In coordination with the State of Kentucky, it was determined that furbearer population levels can sustain hunting and are relatively abundant across the State of Kentucky including western Kentucky where Clarks River NWR is located (L. Palmer, personal communication, August 14, 2019). Historic data of hunter harvest in KY is unavailable because the telecheck of harvested coyotes is not required. Coyote population data is monitored by the KDFWR. KDFWR sets statewide season structures and bag limits. Hunter effort and harvest numbers were extrapolated from hunters who expressed interest in hunting coyote. Coyote hunting on the refuge will coincide with KDFWR seasons and bag limits, with the exception that coyotes may not be taken using dogs and is only permitted during daylight hours, further reducing the hunter harvest. Clarks River NWR estimates 50 hunters annually visit to hunt the Refuge to hunt coyote. In the best professional judgement of Clarks River NWR staff, 25 coyotes are taken annually by hunters. Research has shown that hunting will not affect local or regional coyote populations. **Alternative B:** Harvest numbers and effects would not change as hunting seasons and dates are consistent with Alternative A.
Bobcat Bobcats experienced drastic population declines from the 1600s to the early 1900s as a result of habitat destruction and unregulated harvest. As of 2011, bobcats are considered the most abundant and widely distributed felid of any in North America. Assessments place the bobcat population in the United States	**Alternative A:** Alternative A would open bobcat hunting on Clarks River NWR. Bobcats are a top predator in many ecosystems and can be a significant source of predation on species such as white-tailed deer and cotton rats (Roberts and Crimmins 2010). In a nation-wide study, Roberts and Crimmins reported 31 states having increasing populations of bobcats, while 15 states having stable bobcat populations, 1 state reported fluctuating bobcat populations, and Florida having a decreasing bobcat population as of 2010. In this study, Kentucky reported increasing bobcat populations. (Roberts and Crimmins, 2010) The Refuge is located in Marshall, McCracken, and

NATURAL RESOURCES	
AFFECTED RESOURCE	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
at 2.4 million to 3.6 million. (Patton, 2011)	Graves counties in the Purchase Region of Kentucky. Annual bobcat harvest data, from 2014-2018, reveals less than 4% of bobcats harvested within Kentucky come from these 3 counties. Additionally, less than 2.2% were taken via hunting. Hunting pressure on this species is dependent on pelt prices in any given year. By opening this hunting opportunity on the Refuge, it is anticipated a slight increase in the numbers of bobcats harvested within these 3 counties. In coordination with the State of Kentucky, it was determined that furbearer population levels can sustain hunting and are relatively abundant across the State of Kentucky including western Kentucky where Clarks River NWR is located (L. Palmer, personal communication, August 14, 2019). Clarks River NWR estimates 25 hunters will annually visit to hunt the Refuge to hunt bobcat. Hunters are required to report annual harvest when hunting on the public and private lands in Kentucky, Clarks River NWR estimates 5 bobcats will be taken annually. This estimate was extrapolated from the average annual hunting harvest of bobcats from 2014 through 2018 in the three counties in which Clarks River NWR is located and the percentage of acreage Clarks River NWR owns within those 3 counties. Between 2014 and 2018, hunters harvested 40.2 bobcats annually in Graves, Marshall, and McCracken counties. Clarks River NWR owns approximately 9,300 acres within the 745,100 acres making up these three counties, accounting for 0.01248 percent. Therefore, expected harvest of bobcats annually on Clarks River NWR would be 0.5 animals. However, staff realized that not all acres within the three counties would be considered habitat for bobcats, therefore using the best professional judgement of the bobcat population on the Refuge staff concluded that 5 bobcats annually may be taken by hunters on Clarks River NWR. Additionally, bobcats are considered nocturnal species and the refuge will only be allowing hunting during daylight hours, creating temporal protection for them during their most active hours and further reducing the hunter harvest. It is expected the additional take will have no negative impacts on the local and regional bobcat population. **Alternative B:** Bobcat hunting would remain closed on the Refuge under this Alternative. Thus no impact to local populations.
Skunk	**Alternative A:**

NATURAL RESOURCES	
AFFECTED RESOURCE	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
Striped skunks have a native range of Southern Canada, USA and Mexico. The population's highest densities are in the central region of the United States.(CABI, 2019)	Alternative A would open skunk hunting on Clarks River NWR. Skunks are omnivores which prefer to eat insects, particularly grasshoppers, beetles, and crickets, however, when the opportunity arises they will take mice, rats, moles, shrews, young ground squirrels and rabbits, nesting birds, nestlings, and bird or snake eggs. Based on Refuge personnel observations, striped skunks are more likely to be removed because they are a nuisance to private landowners. In coordination with the State of Kentucky, it was determined that furbearer population levels can sustain hunting and are relatively abundant across the State of Kentucky including western Kentucky where Clarks River NWR is located (L. Palmer, personal communication, August 14, 2019). Clarks River NWR staff, using their best professional judgement on furbearer populations existing on the Refuge, estimated the potential hunting pressure and harvest of skunk. Hunter effort and harvest numbers were extrapolated from hunters who expressed interest in hunting skunk. Skunk hunting on the refuge will coincide with KDFWR seasons and bag limits, with the exception that these species may not be taken using dogs and is only permitted during daylight hours, further reducing the hunter harvest. Clarks River NWR estimates 5 hunters annually visit to hunt the Refuge to hunt this species. In the best professional judgement of Clarks River NWR staff, 5 skunks will be taken annually. By opening this hunting opportunity on the Refuge, the staff anticipates a slight increase in the numbers of this species would be harvested; however, it is expected the additional take will have little to no negative impacts on the local or regional populations. **Alternative B:** Skunk hunting would remain closed on the Refuge under this Alternative. Thus no impact to local populations.
Otter River otter almost disappeared from Kentucky in the mid-1900s. The KDFWR began a restoration effort in 1991. Otters trapped from Louisiana were released on 14 sites in central and eastern Kentucky. Currently, river otter numbers are the highest in the northern third of the state, the Purchase Regions, and counties that	**Alternative A:** Alternative A would open river otter hunting on Clarks River NWR. River otters are important predators in aquatic ecosystems but may also opportunistically feed on birds and mammals (Dekar et al. 2010). The Refuge is located in Marshall, McCracken, and Graves counties in the Purchase Region of Kentucky. Annual otter harvest data, from 2014-2018, reveals less than 8.5% of otter harvested within Kentucky come from these 3 counties. Additionally, less than 0.5% were taken via hunting. Hunting pressure on this species is dependent on pelt

NATURAL RESOURCES	
AFFECTED RESOURCE	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
border the major rivers. (Landers, 2015)	prices in any given year. By opening this hunting opportunity on the Refuge, it is anticipated a slight increase in the numbers of otters harvested within these 3 counties. In coordination with the State of Kentucky, it was determined that furbearer population levels can sustain hunting and are relatively abundant across the State of Kentucky including western Kentucky where Clarks River NWR is located (L. Palmer, personal communication, August 14, 2019). Clarks River NWR estimates 20 hunters will annually visit to hunt the Refuge to hunt otter. Hunters are required to report annual harvest when hunting on the public and private lands in Kentucky, Clarks River NWR estimates less than 5 otters will be taken annually. This estimate was extrapolated from the average annual hunting harvest of otter from 2014 through 2018 in the three counties in which Clarks River NWR is located and the percentage of acreage Clarks River NWR owns within those 3 counties. Between 2014 and 2018, hunters harvested 2.2 otter annually in Graves, Marshall, and McCracken counties. Clarks River NWR owns approximately 9,300 acres within the 745,100 acres making up these three counties, accounting for 0.01248 percent. Therefore, expected harvest of otter annually on Clarks River NWR would be 0.02 animals. However, staff realized that not all acres within the three counties would be considered habitat for otters, therefore using the best professional judgement of the otter population on the Refuge staff concluded that 5 otter annually may be taken by hunters on Clarks River NWR. Additionally, otters are considered most active at night and the refuge will only be allowing hunting during daylight hours, creating temporal protection and further reducing the hunter harvest. It is expected the additional take will not have negative impacts on the local or regional population. **Alternative B:** River otter hunting would remain closed on the Refuge under this Alternative. Thus no impact to local populations.
Muskrat Muskrats are widely distributed across North America. Long-term harvest data suggests the muskrat populations in the southeastern United States are declining. (Ahlers and Heske, 2017)	**Alternative A:** Alternative A would open muskrat hunting on Clarks River NWR. Although muskrats are an important part of native ecosystems, they can damage agricultural crops, native wetlands, and water control systems. Muskrats cause damage by eating vegetation, crayfish, and mussels as well as burrowing through dams and levees. Muskrats can

NATURAL RESOURCES	
AFFECTED RESOURCE	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
	impact wetland viability and reduce habitats for other species such as waterfowl through their foraging and burrowing activities. (Miller, 2018) Hunting pressure on this species is dependent on pelt prices in any given year or the species being a nuisance to private landowners. In coordination with the State of Kentucky, it was determined that furbearer population levels can sustain hunting and are relatively abundant across the State of Kentucky including western Kentucky where Clarks River NWR is located (L. Palmer, personal communication, August 14, 2019). Clarks River NWR estimates 5 hunters will annually visit to hunt the Refuge to hunt muskrats. Hunters are required to report annual harvest when hunting on the public and private lands in Kentucky. Harvest estimates were extrapolated from using management take records of incidental take during the winter of 2018 through the spring of 2019 by staff removing beaver. Management recorded 1 muskrat incidentally taken during this period. In the best professional judgement of the staff, the majority of interest for hunting muskrat will come from private landowners attempting to control beaver(s) affecting their property. The refuge will only be allowing hunting during daylight hours. Since muskrat are considered most active at night, a temporal protection will be created during hours of darkness which will further reducing the hunter harvest. Clarks River NWR estimates 5 muskrat will be taken annually. By opening this hunting opportunity on the Refuge, the staff anticipates a slight increase in the numbers of muskrat would be harvested; however, it is expected the additional take will have little to no negative impacts on the local or regional populations of these species. **Alternative B:** Muskrat hunting would remain closed on the Refuge under this Alternative. Thus no impact to local populations.
Mink Mink are found throughout the United States, except Arizona. A decline in mink populations are not a concern (Kiiskila, 2019).	**Alternative A:** Alternative A would open mink hunting on Clarks River NWR. Mink are opportunistic carnivores. Mink will eat bird eggs, birds, frogs, fish, ducks, squirrels, rabbits, chipmunks, rats and mice, amphibians, reptiles, worms and insects. Hunting pressure on this species is dependent on pelt prices in any given year. In coordination with the State of Kentucky, it was determined that furbearer population levels can sustain hunting and are relatively abundant across the State of Kentucky including western Kentucky

NATURAL RESOURCES	
AFFECTED RESOURCE	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
	where Clarks River NWR is located (L. Palmer, personal communication, August 14, 2019). Clarks River NWR estimates 5 hunters will annually visit to hunt the Refuge to hunt mink. Hunters are required to report annual harvest when hunting on the public and private lands in Kentucky. Harvest estimates were extrapolated from using management take records of incidental take during the winter of 2018 through the spring of 2019 by staff removing beaver. Management recorded no mink incidentally taken during this period. In the best professional judgement of the staff, the majority of interest for hunting mink will come from private landowners attempting to control beaver(s) affecting their property. The refuge will only be allowing hunting during daylight hours. Since mink are considered most active at night, a temporal protection will be created during hours of darkness which will further reducing the hunter harvest. Clarks River NWR estimates 5 mink will be taken annually. By opening this hunting opportunity on the Refuge, the staff anticipates a slight increase in the numbers of mink would be harvested; however, it is expected the additional take will have little to no negative impacts on the local or regional populations of these species. **Alternative B:** Muskrat hunting would remain closed on the Refuge under this Alternative. Thus no impact to local populations.
Fox There are two species of fox native to Kentucky – red fox and gray fox. Distribution maps show that both species have not been documented in all 120 Kentucky counties. Red fox are more widely distributed throughout Kentucky while gray fox are more abundant in eastern Kentucky. (Landers, 2015)	**Alternative A:** Alternative A would open fox hunting on Clarks River NWR. Both red and gray fox are opportunistic. Fox will eat small mammals, birds, amphibians, reptiles, fish, fruits, vegetable matter, carrion and insects. (Carey 1982). Hunting pressure on this species is dependent on pelt prices in any given year. In coordination with the State of Kentucky, it was determined that furbearer population levels can sustain hunting and are relatively abundant across the State of Kentucky including western Kentucky where Clarks River NWR is located (L. Palmer, personal communication, August 14, 2019). Clarks River NWR staff, using their best professional judgement on furbearer populations existing on the Refuge, estimated the potential hunting pressure and harvest of red and gray fox. Hunter effort and harvest numbers were extrapolated from hunters who expressed interest in hunting fox. Fox hunting on the refuge will

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	coincide with KDFWR seasons and bag limits, with the exception that these species may not be taken using dogs and is only permitted during daylight hours, further reducing the hunter harvest. Clarks River NWR estimates 5 hunters annually visit to hunt the Refuge to hunt these species. In the best professional judgement of Clarks River NWR staff, 10 red or gray fox will be taken annually by hunters. By opening this hunting opportunity on the Refuge, the staff anticipates a slight increase in the numbers of these species would be harvested; however, it is expected the additional take will have little to no negative impacts on the local or regional populations. **Alternative B:** Fox hunting would remain closed on the Refuge under this Alternative. Thus no impact to local populations.
Weasel The Long-Tailed Weasel is found throughout most of the U.S. and Mexico, and portions of southwest Canada (Landers, 2016). Populations are stable across the U.S.	**Alternative A:** Alternative A would open weasel hunting on Clarks River NWR. Weasels prefer to eat small mammals such as mice, squirrels, chipmunks, shrews, moles, and rabbits, but will occasionally prey upon birds, bird eggs, amphibians, reptiles, fish, earthworms and insects. (Landers 2016). Hunting pressure on this species is dependent on pelt prices in any given year. In coordination with the State of Kentucky, it was determined that furbearer population levels can sustain hunting and are relatively abundant across the State of Kentucky including western Kentucky where Clarks River NWR is located (L. Palmer, personal communication, August 14, 2019). Clarks River NWR staff, using their best professional judgement on furbearer populations existing on the Refuge, estimated the potential hunting pressure and harvest of weasel. Hunter effort and harvest numbers were extrapolated from hunters who expressed interest in hunting weasel. Weasel hunting on the refuge will coincide with KDFWR seasons and bag limits, with the exception that these species may not be taken using dogs and is only permitted during daylight hours, further reducing the hunter harvest. Clarks River NWR estimates 5 hunters annually visit to hunt the Refuge to hunt this species. In the best professional judgement of Clarks River NWR staff, 5 weasel will be taken annually by hunters. By opening this hunting opportunity on the Refuge, the staff anticipates a slight increase in the numbers of these species would be harvested; however, it is expected

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	the additional take will have little to no negative impacts on the local or regional populations. **Alternative B:** Weasel hunting would remain closed on the Refuge under this Alternative. Thus no impact to local populations.
Beaver Prior to European settlement, beaver populations in North America were estimated at more than 100 million. Beaver pelts became economically important and were exported from North America during the Fur Trade era. Today the continental population have rebounded to levels near 100 million. (Landers, 2016)	**Alternative A:** Alternative A would open beaver hunting on Clarks River NWR. Beaver are widely known as nature's engineer. Beavers move into suitable areas and by creating an environment appropriate for their own needs, unwittingly create wetland habitats for many other species including waterfowl (Beard 1953; Nummi 1992). However, in creating these habitats, beaver can also cause damage to timber and in some cases reduce food availability for non-aquatic wildlife. Hunting pressure on this species is dependent on pelt prices in any given year or the species being a nuisance to private landowners. The staff at Clarks River NWR acknowledge that beaver ponds contribute to landscape diversity. In order to promote diverse habitats and protect downstream water quality, Clarks River NWR maintains approximately 300 acres of beaver impacted lands. However, beaver also damage forest resources used by many other species. Research has shown that browsing by beaver can reverse the progress of succession and decrease diversity of woody species (Rosell et. al. 2005). Hunting of beaver will assist in reducing timber damage and effects of beaver ponding on private landowners. In coordination with the State of Kentucky, it was determined that furbearer population levels can sustain hunting and are relatively abundant across the State of Kentucky including western Kentucky where Clarks River NWR is located (L. Palmer, personal communication, August 14, 2019). Clarks River NWR estimates 20 hunters will annually visit to hunt the Refuge to hunt beaver. Hunters are required to report annual harvest when hunting on the public and private lands in Kentucky. Harvest estimates were extrapolated from using management take records of beaver during the winter of 2018 through the spring of 2019. Management recorded 72 beaver removed during this period. Refuge staff's efforts to remove problem beaver resulted in the removal of only 4 using firearms. In the best professional judgement of the staff, the majority of interest for hunting

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	beavers will come from private landowners attempting to control beaver(s) affecting their property. Beaver are considered diurnal species and the refuge will only be allowing hunting during daylight hours, creating temporal protection for them during their most active hours. Given the known locations of landowner issues and these other factors, Clarks River NWR estimates 15 beaver will be taken annually. By opening this hunting opportunity on the Refuge, the staff anticipates a slight increase in the numbers of beavers would be harvested; however, it is expected the additional take will have little to no negative impacts on the local or regional beaver population. **Alternative B:** Beaver hunting would remain closed on the Refuge under this Alternative. Thus no impact to local populations.
	AMPHIBIANS
Bullfrogs The American Bullfrog is native to the eastern and central United States. It has been widely introduced and become invasive in the western U.S. and many countries around the world. In Kentucky, bullfrogs are a common frog species, found in all 120 counties. (Landers, 2019)	**Alternative A:** Bullfrogs primarily feed on insects, but will also consume small snakes, snails, worms, fish or even other bullfrogs. The American bullfrogs are native to the eastern and central United States but have been widely introduced across North America and many countries around the world. Because of their large size and voracious appetite, bullfrogs can outcompete many indigenous species and in many cases prey upon them. (Snow and Witmer, 2010) This species is shown to consistently carry the emerging pathogenic fungus *Batrachochytrium dendrobatidis* which has been implicated in global amphibian declines and numerous species extinctions (Garner et al. 2006). Currently, the Refuge adopts the State seasons and harvest limits for bullfrogs. Clarks River NWR will coordinate with the State to adjust Refuge harvest goals accordingly, including limiting hunting opportunities if populations decrease, wildlife disturbance is an issue, public safety becomes a factor or to fulfill Refuge goals. Clarks River NWR estimates 5 hunters annually visit to hunt the Refuge to hunt bullfrogs. Hunters are required to report annual harvest when hunting on the public and private lands in Kentucky, Clarks River NWR estimates 20 bullfrogs are taken annually. Under this Alternative, no change for bullfrog seasons/limits at this time, therefore harvest numbers are expected to remain similar to previous seasons. **Alternative B:**

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	Harvest numbers and effects would not change as hunting seasons and dates are consistent with Alternative A.
INVASIVE SPECIES	
Feral Hogs Wild pigs are not native to North America. Early European explorers brought domestic pigs to the Southeastern U.S. in the 1500's as livestock. Wild pigs were reported in the 1990's in Cumberland County and McCreary County. Localized populations are now located in all corners of the Commonwealth (KDFWR, 2019)	**Alternative A:** Feral hogs are among the most widely distributed mammals in the world with the highest reproductive output compared with other ungulates. Feral hogs are increasing in range and numbers worldwide. Feral hogs can have an impact on abundance and richness of plant and animal species, initiate crop damage, predate on livestock, cause vehicle collisions, and transmit diseases. (Massei et. al. 2011) Due to the potential of severe degradation of habitat by pest species if left unrestrained, management of pest and exotic species is vital to maintain native flora and fauna. The Tennessee Wildlife Resources Agency (TWRA) attempted to control the feral hog populations by opening a state-wide hunting season in 1999. This resulted in disjointed populations of feral hogs appeared throughout the state individuals illegally stocked feral hogs in an effort to establish local hunting populations. Once a state-wide hunting season was implemented, the feral hog populations expanded the most. In 2015, studies estimated the damage by feral hogs topped $26 million. In order to remove the incentive to relocate feral hogs, Tennessee change regulations to consider feral hog destructive species and to be controlled by methods other than sport hunting. (TWRA, https://www.tn.gov/twra/wildlife/mammals/large/wild-hog.html) Therefore, feral hogs will not be regarded as a game species on Clarks Rive NWR and control measures will be implemented to eradicate this invasive species under the Integrated Pest Management Plan, which may include a hunting option. Currently, a feral hog population has not been documented on Clarks River NWR, therefore no hunters or take are anticipated at this time. **Alternative B:** Hunting could not be used as a management tool for this invasive species under the current management plan therefore it is possible that populations could increase under Alternative B.
Other Wildlife and Aquatic Species	
The refuge supports a diversity of wildlife species of western Kentucky, including game and nongame species, reptiles, amphibians, and invertebrates, which are important contributors to the overall biodiversity on the refuge. A species list of Refuge Biota is provided in Appendix J of the 2012 Comprehensive Conservation Plan.	

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Mammals - Game mammals found on the refuge are typical of small or fragmented bottomland hardwood forests, upland forests, agricultural lands, moist soils, and native warm-season grasses. These are species that have life requirements that can be minimally achieved with the habitats available. Populations of these species appear to be stable or increasing within the habitats on the refuge. Nongame mammal population trends of these species on the refuge are currently undetermined but are expected to be consistent with regional trends. Bats are also prevalent throughout the refuge. Through combined efforts with KDFWR, the Service's Ecological Services Field Office in Kentucky, and various volunteers, refuge staff have identified at least six different species. *Birds* - Clarks River NWR straddles the Central Hardwoods and East Gulf Coastal Plain Bird Conservation Regions and serves as breeding, wintering, and migratory habitat for over 240 species of migratory birds. This includes 37% of the Birds of Conservation Concern found in the southeast region (USFWS 2008), 40% of the wetland-associated landbird Species of Continental Importance monitored by Partners in Flight (Rich et al. 2004), and 69% of the birds designated by Kentucky as Species of Greatest Conservation Need (KCWCS 2010). Many neotropical migrants breed at the refuge, whereas	**Alternative A:** Increased hunting may have temporary, localized impacts to populations of game and non-game species. The short-term direct effects of hunting include mortality, wounding, and disturbance of target and non-target species (De Long 2002). Hunting can alter behavior (e.g., foraging time), population structure, general health (e.g., weight loss), and distribution patterns of all wildlife within the hunt area (Owens 1977, Raveling 1979, White-Robinson 1982, Thomas 1983, Bartelt 1987, Madsen 1985, Cole and Knight 1990). The level of disturbance associated with hunting can be high due to the loud noises produced by guns and the rapid movement of both hunters and hunting dogs within the hunt area. Disturbance to wildlife that causes shifts in habitat use, abandonment of habitat, increased energy demands on affected wildlife, changes in nesting and reproductive success, and singing behavior (Knight and Cole 1991, Miller et al. 1998, Shulz and Stock 1993, Gill et al. 1996, Arrese 1987, Gill et al. 2001). However, disturbance is not a long-term threat to populations because the relocation is temporary. Hunters are dispersed over a large area (9,300 acres) and Clarks River NWR estimates less than 100 additional hunters will use the Refuge under this alternative. To further minimize wildlife disturbance, Clarks River NWR established no hunting zones and areas which are closed to all public entry. In order to reduce wildlife disturbance, Clarks River NWR restricts the use of hunting dogs to the following species, migratory birds, waterfowl, quail. raccoon, opossum, squirrels, rabbits, and turkey (fall season only). Additionally, Clarks River NWR restricts the use of hunting dogs outside of established seasons. Non-hunting recreational user with dogs, must have the dog on a leash or confined. At present levels of use, dogs used for this purpose are not expected to adversely impact non-target species or cause conflict with other uses. Under this Alternative, no additional use of hunting dogs is included therefore, minimal to no additional wildlife disturbance by dogs is anticipated. Hunter disturbance, especially when repeated over a period of time, compels waterfowl and other species to change foraging habits (e.g., foraging at night) or abandon areas of disturbance (Madsen 1995, Wolder 1993). In fact, studies indicate that prolonged and extensive disturbances can cause large numbers of waterfowl to leave disturbed areas and migrate elsewhere (Madsen 1995, Paulus 1984). Various studies indicate an inverse relationship between the numbers of birds using an area and hunting intensity (DeLong 2002). In Connecticut,

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shorebirds and waterfowl primarily utilize the refuge as wintering and migratory habitat. Wintering waterfowl concentrations on the refuge are highest from late-November thru February. The refuge maintains a waterfowl sanctuary that excludes access to the public, including upland game and migratory bird hunters. This area provides sanctuary and roosting areas for migratory birds and helps to off-set potential disturbance effects. *Amphibians and Reptiles* - Approximately 84 species of reptiles and amphibians may be found in western Kentucky. The refuge provides habitat for at least 10 species of salamander, 10 species of frogs and toads, 4 species of lizards, 19 species of snakes, and 9 species of turtles. So far, staff have confirmed the presence of over 50 reptiles and amphibian species. *Fish* - The lower Tennessee River basin is one of the most biologically diverse river systems in the U.S., with nearly 200 species of fish, 75 freshwater mussels, 50 aquatic snails, and 20 crayfish. The Clarks River drainage, a major tributary system in the lower Tennessee River basin, occupies nearly a quarter of the Jackson Purchase Region in western Kentucky. It is a low-gradient system consisting of two major forks that meander through a broad floodplain containing areas of contiguous bottomland hardwood forest, wetland complexes, overflow ponds, and meander cut-offs formed by the Clarks	lesser scaup were observed to forage less in areas that were heavily hunted (Cronan 1957). In California, the numbers of northern pintails on Sacramento Refuge non-hunt areas increased after the first week of hunting and remained high until the hunting season was over (Heitmeyer and Raveling 1988). Following the close of hunting season, ducks generally increased their use of the hunt area on the Refuge but use of this area was lower than before the hunting season began. Impacts to waterfowl and other species can be reduced by providing adjacent sanctuary areas where hunting does not occur and where birds can feed and rest relatively undisturbed. Sanctuaries or non-hunt areas have been identified as the most common solution to disturbance problems caused from hunting (Havera et. al 1992). In Denmark, hunting disturbance effects were experimentally tested by establishing two sanctuaries (Madsen 1995). Over a 5-year period, these sanctuaries became two of the most important staging areas for coastal waterfowl. Numbers of dabbling ducks and geese increased four to 20 fold within the sanctuary (Madsen 1995). Thus, non-hunt areas are very important to waterfowl populations subject to hunting as they ensure the continued presence of the affected species within the general vicinity of the hunt area. Another mitigation measure is requiring non-toxic shot only to be used unless hunting wildlife turkey. Usage of non-toxic shot reduces the potential of lead poisoning to waterfowl as well as up the food chain. Intermittent hunting can also be a means of minimizing disturbance, especially if rest periods in between hunting events are weeks rather than days (Fox and Madsen 1997). It is common for refuges to manage hunt programs with non-hunt days. At Sacramento Refuge, three to 16% of northern pintails were located on hunted units during non-hunt days but were almost entirely absent in those same units on hunt days (Wolder 1993). In addition, northern pintails, American wigeons, and northern shovelers reduced time spent feeding on days when hunting occurred on public shooting areas, as compared to non-hunt days (Heitmeyer and Raveling 1988). Clarks River NWR excludes waterfowl hunting activities on certain areas of the refuge specifically to provide areas of sanctuary. The Refuge also restricts the number of waterfowl hunters and hunt dates/times in some managed impoundments with no public entry outside of those days. By restricting entry on these manage impoundments to 2 half-days per week, waterfowl can use the areas as sanctuary for the majority of the winter. Outside of managed impoundment, in order to minimized additional disturbance to both

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River. This diversity is distributed among the lower mainstem (52 species), Clarks River including East and Middle forks (86 species), and West Fork (79 species). (Thomas and Brandt, 2016)	waterfowl and resident wildlife, the Refuge requires all waterfowl hunters to be out of the field prior to noon each day of the season. Disturbance to non-hunted migratory birds could have regional, local, and flyway effects. Regional and flyway effects would not be applicable to species that do not migrate such as most woodpeckers, and some songbirds including cardinals, titmice, wrens, chickadees, etc. The effects of disturbance to non-hunted migratory birds under the present/proposed action are expected to be negligible for the following reasons. Less than an additional 100 hunters are estimated to use the Refuge and most of the seasons would not coincide with the nesting season. Small mammals, including bats, are inactive during winter when hunting season occurs. These species are also nocturnal. Both of these qualities make hunter interactions with small mammals very rare. Hibernation or torpor by cold-blood reptiles and amphibians also limits their activity during the hunting season when temperatures are low. Hunters would rarely encounter reptiles and amphibians during most of the hunting season. Encounters with reptiles and amphibians in early fall are few and should not have negative effects on reptile and/or amphibian populations. Hunters during spring and summer may encounter some reptiles and amphibians, which could result in disturbance or mortality. However, the impact to the population of amphibians and reptiles during this periods is expected to be minimal and similar to that of other users. Invertebrates are also not active during cold weather and would have few interactions with hunters during the hunting season. Refuge regulations further mitigate possible disturbance by hunters to non-hunted wildlife. Vehicles are restricted to roads and the harassment or taking of any wildlife other than the game species legal for the season is not permitted. Some species of bats, butterflies and moths are migratory. Negative effects to these species at the "flyway" level should be negligible. These species are in torpor or have completely passed through western Kentucky by peak hunting season which occurs in October - January. Some hunting occurs during other months when these species are migrating; however, hunter interaction may be commensurate with that of other users. Fish are not expected to be negatively impacted by the increased hunting opportunities. Fish could be positively impacted due to a decrease in predators such as otters for this action. However, these

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	impacts are expected to be negligible due to the small number of hunters and take estimated to occur on the Refuge. During the times with the highest hunting pressure, Clarks River NWR estimates less than 3,000 users will be spread across approximately 9,300 acres. Some individuals and small groups of wildlife will be disturbed as hunters move through occupied habitat or discharge firearms. Disturbed wildlife will relocate to avoid hunters or flush and expend more energy than if they had remained at rest. While, increased hunting will have temporary, localized short-term impacts to populations of game and non-game species, as described above, disturbance is not a long-term threat to populations because the relocation is temporary and food is generally not a limiting factor. Most animals will be able to readily replace those energy reserves they use to escape from hunters. Long-term impacts are not anticipated; however, plants and wildlife will be monitored by Refuge staff to ensure that no significant damage would occur in public use areas. Overall, hunting impacts to other wildlife and their habitats and impacts to the biological diversity of the refuge will be minor. As public use levels on the refuge expand across time, unanticipated conflicts between user groups may occur. The Refuge's Visitor Services programs will be adjusted as needed to eliminate or minimize each problem and provide quality wildlife dependent recreational opportunities while promoting public safety and maintaining healthy populations of wildlife. **Alternative B:** Impacts would be similar to those described in Alternative A due to disturbance related to increased human presence and noise associated with the existing hunt program. Under this alternative, big game, some species of upland game, and migratory waterfowl will occur concurrent with state hunting regulations or be more restrictive. The likelihood of disturbance to non-target wildlife would be similar as well. To mitigate these impacts, Clarks River NWR closed some areas to hunting providing undisturbed sanctuaries and has restricted times of certain hunts to provide undisturbed resting/foraging times.
Threatened and Endangered Species and Other Special Status Species	
Northern long-eared bat - On April 2, 2015, USFWS published a final rule in	**Alternative A and Alternative B:**

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the Federal Register (80 FR 17974) designating the northern long-eared bat as a threatened species under the ESA throughout its geographic range. The northern long-eared bat uses a wide variety of forested habitats for roosting, foraging, and traveling and may also utilize some adjacent and interspersed non-forested habitat, such as emergent wetlands and edges of fields. Roosting habitat includes forested areas with live trees and/or snags with a diameter at breast height (DBH) of equal to or greater than three inches that exhibit exfoliating bark, cracks, crevices, and/or other cavities (USFWS 2017a). According to USFWS (2017b), any forest where trees equal to or greater than three inches DBH are present is considered to have potential roosting habitat for the northern long-eared bat. Indiana bat - The Indiana bat was listed as endangered by USFWS on March 11, 1967 (32 FR 4001). The presence of Indiana bats in a particular area during the summer appears to be determined largely by the availability of suitable natural roost structures. Dead trees with a combination of loose, exfoliating bark, cracks, and crevices are preferred as maternity roosts; however, live trees are often used as secondary roosts depending on microclimate conditions (USFWS 2007a). Gray bat - USFWS listed the gray bat as an endangered species on April 28, 1976 under the ESA (Public Law	An Endangered Species Act Section 7 consultation was conducted and it was determined that the proposed alternative will not conflict with the recovery and/or protection of these species. *Bats* - Northern long-eared bat (trapping and acoustical) and Indiana bat (acoustical only) have been documented to occur on CRNWR. The gray bat has not been documented on Clarks River National Wildlife Refuge (CRNWR). With respect to potential contact injury, there is little potential for direct or indirect harm to Indiana bats, Northern long-eared bats, or gray bats, as a result of hunting, since these species are not expected to be actively foraging during daylight hours when the majority of hunting would occur. Since these species roost under the loose bark or in cavities and cracks of snags and trees, some impacts could occur from placing tree stands. Further, CRNWR staff will actively coordinate with the Kentucky Ecological Services Field Office if any future proposed or candidate species are located on CRNWR in order to ensure that potential adverse effects on those species are adequately addressed. *Mussels* - Orangefoot Pimpleback; Pink Mucket; Sheepnose; Rabbitsfoot; Fat Pocketbook - None of the listed species have been documented to occur on CRNWR. However, they have been documented downstream of the Refuge at the point where Clarks River joins the Tennessee River. The threatened and endangered species listed should not be impacted by the hunting on the refuge. CRNWR staff will actively coordinate with the Kentucky Ecological Services Field Office if any future proposed or candidate species are located on CRNWR in order to ensure that potential adverse effects on those species are adequately addressed. A determination of “Not Likely to Adversely Effect” was made as the hunting seasons will not directly or indirectly affect (neither negatively nor beneficially) individuals of listed/proposed/candidate species or designated/proposed critical habitat of such species. As less than 100 hunters are estimated above the level of this use is already occurring under alternative B there would also be no effect for any federally listed threatened or endangered species or their critical habitat (Appendix 2). At this time, no impacts are anticipated for state listed species.

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93-205). The recovery plan was published by USFWS in 1982 (USFWS 1982) and has not been revised since. The gray bat is restricted in distribution to the limestone-karst areas of the eastern and southern United States (Hall 1981, Hall and Wilson 1966, USFWS 1982). The only major gray bat hibernacula in Kentucky are found near Mammoth Cave National Park. Even though gray bats require cave-like habitats, the species summer distribution occurs throughout a slightly larger geographic area than winter distribution. Gray bats can establish maternity and bachelor colonies in dams, under bridges, and in storm sewers, which enables them to venture away from karst regions. Freshwater Mussels - Orangefoot Pimpleback, Pink Mucket, Sheepnose Rabbitsfoot, Fat Pocketbook - All of these species require medium to large rivers of moderate quality for survival. This limits potential distribution within the Refuge. With the exception of the fat pocketbook, all of the listed mussels prefer coarse stable sand, gravel, and cobble substrates with moderate current to prevent sediment deposition.	
Vegetation (including vegetation of special management concern) Clarks River NWR is approximately 75% forested, 20% agricultural land, 4% open water/swamp, and 1% native warm-season grasses. The main habitat type on the refuge is bottomland hardwoods. This	**Alternative A and Alternative B:** Approximately 90% of the refuge would be open to hunting year-round. Some effects are expected to vegetation from trampling, because of the increased number of users expected. Disturbance to vegetation, water, or soils could occur while hunters are accessing hunt sites or scouting on vehicles or by foot. Potential impacts include: • Trampling, damage, and killing of vegetation from walking off trail (Kuss 1986, Roovers et al. 2004, Hammitt and Cole 1998).

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community is associated with seasonally flooded but well-drained rich soils along floodplains of medium and large rivers. The trees are fast growing and the canopy is usually closed. The mid-story is well-developed and dense in places with shrubs being common and the herbaceous under-story lush and diverse. One unique habitat associated existing on the Refuge is xerohydric flatwoods. This community type is associated with poorly drained soils containing a fragipan, a dense subsoil layer that is nearly impenetrable to water or roots, creating hydrologic conditions that alternate from very wet in the winter and spring to very dry in the summer and fall. These unusual hydrologic conditions form the foundation of a unique plant community that includes many species usually associated with dry upland sites, as well as species that are uniquely adapted to the changing hydrology. Fire and possibly grazing are thought to play an important role in this community by helping to maintain a somewhat open canopy, a weakly developed midstory and grassy under-story (Anderson et al. 1999).).	• Accidental introduction or spread of invasive plants, pathogens, or exotic invertebrates especially along forest roads which can facilitate the spread of invasive plants (Mortensen et al. 2009), and could result in habitat alterations causing short and long-term changes in wildlife communities (deMaynadier and Hunter 1995) Conversely, moderate, beneficial impacts to vegetation and to a variety of species habitat could occur due to the decrease in overabundance of deer or control of feral hogs, which could cause adverse impacts to vegetative community shifts. Additionally, hunters are dispersed over a large area (9,300 acres) and impacts to vegetation are expected to be negligible as vegetation will respond within the growing season to accommodate disturbance.
Geology & Soils Most refuge lands fall within three soil associations: -Falaya Series (0 to 2% slopes) consists of very deep somewhat poorly drained, moderately permeable soils that formed in silty alluvium from loess. They are found on level, to nearly level, wide flood plains. They	**Alternative A and Alternative B:** Disturbance to water or soils could occur while hunters are accessing hunt sites or scouting on vehicles or by foot. Potential impacts include soil compaction, soil erosion, and changes in hydrology from hiking on and off trail (Kuss 1986, Roovers et al. 2004). Hunters are dispersed over a large area (9,300 acres) and there is not concentrated use that would cause excessive impact to water or soils.

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are subject to flooding and are saturated with water at 1 to 2 feet during periods of high rainfall. Native vegetation is mixed hardwoods -Waverly Series (0 to 2% slopes) consists of nearly level, very deep, poorly drained soils that have moderate permeability. They form in silty alluvium derived from loess. The water table is at or within 1 foot of the surface during the winter and spring months in normal years. These soils are subject to occasional or frequent flooding for brief-to-long duration after heavy rainfall. Native vegetation is bottomland -Collins Series (0 to 2% slopes) consist of very deep, moderately well drained, moderately permeable soils. These soils are saturated within a depth of 20 inches for more than 30 days in normal years. The soil is subject to flooding for brief to very long durations. Native vegetation is bottomland hardwoods (USDA 1973).	

Table 5. Affected Visitor Use and Experience and Anticipated Impacts

VISITOR USE AND EXPERIENCE	
AFFECTED RESOURCE	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
The refuge is open to multiple public uses, include all six of the wildlife-dependent recreation uses; hunting and fishing, interpretation and environmental education, wildlife photography and observation. The refuge hosts an average of 50,000 recreational visits each year. People come to walk dogs, hike, hunt, fish, and observe wildlife among other activities. In an effort to minimize conflicts with priority non-hunting recreational uses outlined in the Refuge Improvement Act, and for public safety, the Refuge has identified the Environmental Education and Recreation Area as closed to hunting in order to provide outdoor recreation opportunities to the non-hunting public. The Refuge designates areas open to hunting and enforces refuge-specific regulations. The boundaries of all lands owned or managed by the Service are posted with refuge boundary signs. Areas administratively closed to hunting are clearly marked with “No Hunting Zone” or “Area Beyond This Sign Closed”.	**Alternative A and Alternative B:** All other public uses on the refuge would not change and would continue to be managed as described in current plans. Other non-hunting recreational uses are generally concentrated away from most hunting areas so that users are typically not overlapping. Overall, hunting impacts of alternatives to visitor services or other recreation opportunities are considered short-term, minor and local since other parts of the refuge are available for use by non-hunters (other wildlife-dependent recreation users). Impacts between hunters and non-hunters are anticipated to be similar in both alternatives. Because trends of the number of hunters participating in the sport is declining, providing additional opportunities will potentially increase the numbers of hunters that utilize public land for hunting recreation. The federal government owns 4.25% (1,083,104 acres) of Kentucky's total land, while the State of Kentucky owns, leases, or manages more than 85 wildlife management areas totaling over 500,000 acres (KDFWR, 2019). However, many of these Federal and State lands are located in Eastern Kentucky. Of the remainder, located Western Kentucky, public hunting is limited by quote hunting only. The majority of the Refuge in comparison is open to public hunting providing additional recreational opportunities for hunters.

Table 6. Affected Cultural Resources and Anticipated

CULTURAL RESOURCES	
AFFECTED RESOURCE	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
Kentucky has a rich and varied archaeological heritage, with archaeological sites being located in every county of the Commonwealth. Prehistoric sites include seasonal camps, villages, burial mounds, and earthworks. Native Americans occupied some of these sites more than 12,000 years ago, while they occupied others less than 300 years ago.	**Alternative A and Alternative B:** To date, there have been site-specific archaeological surveys on the refuge; however, no properties have been determined to be eligible for the National Register of Historic Places. Cultural resource surveys within the refuge have focused on areas prior to ground disturbing habitat work. Section 106 of the National Historic Preservation Act of 1966, as amended, and Section 14 of the Archaeological Resources Protection Act, require the Service to evaluate the effects of any of its actions on cultural resources (e.g., historical, architectural and archaeological) that are listed or eligible for listing in the National Register of Historic Places. In accordance with these regulations, the Service has coordinated the review of this proposal with the Kentucky State Historic Preservation Office. Neither of these alternatives will have any impacts to cultural resources. No buildings or structures exist on-site that are listed on the National Register of Historic Places. Hunting is not expected to cause ground disturbance. Any activity that might cause an effect to a historic property would be subject to a case-by-case Section 106 review.

Table 7. Affected Refuge Management and Operations and Anticipated Impacts

REFUGE MANAGEMENT & OPERATIONS	
AFFECTED RESOURCE	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
Land Use: The refuge provides valuable habitat for migratory birds as well as numerous species of resident mammals, birds, reptiles, amphibians, and fish.	**Alternative A and Alternative B:** The Kentucky Division of Water produced a Clarks River Watershed Health Report (2005) to where the impaired segments are located, describes the signs of health for each watershed. The Headwaters of Clarks River exhibited shifting habitat, reduced available cover, narrow riparian zones. These factors are important for stream shading, bank stability, erosion control and filtering runoff before it enters

REFUGE MANAGEMENT & OPERATIONS	
AFFECTED RESOURCE	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
The predominant land uses are associated with refuge management actions that support the refuge's mission for the conservation of wildlife and provide recreational opportunities. Consistent with its authorizing legislation, Clarks River Refuge conducts a broad array of activities with wildlife, recreation, and habitat management. Efforts are made to balance competing demands for natural resources, wildlife, and the public. Refuge management has made significant progress in implementing planned activities over the years since establishment. Refuge planning and management, however, are a continual work in progress and evolve over time, depending on feedback and monitoring as well as changing values, needs, and priorities in wildlife management at the refuge, regional, and national scale. The refuge's comprehensive conservation plan and associated step-down plans will provide direction for refuge habitat management programs, visitor services activities, and wildlife management programs.	the stream which resulted in elevated nutrient levels along the headwaters. Sites where habitat was measured revealed good habitat existing in the river and should be protected. Although habitat existed, available cover was inconsistent and varied throughout the watershed. Riparian zones were not as wide as ideal across the watershed, but not as reduced as many other watersheds in Kentucky. The refuge will continue to engage in current management activities during the hunting seasons to ensure the refuge meets its other management objectives including protection and enhancement of riparian areas. Impacts would be minimized by ensuring hunters, cooperators, visitors and partners are aware of each other's activities and timed to minimize conflict when possible. Management activities can generally be separated by time or area from peak hunting seasons and areas. No impacts are anticipated under Alternative A or B to habitat, buildings, infrastructure, traffic or roadways.
Administration The costs of administering and enforcing the refuge's hunting program comes out of the	**Alternative A:** Expenses inherent to the hunt program include: law enforcement-related expenditures; road, trail and parking area maintenance; information signage; brochure printing;

REFUGE MANAGEMENT & OPERATIONS	
AFFECTED RESOURCE	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
refuge's annual budget. Expenses include program management, staff resources, boundary posting, signage, brochures, parking lot construction, facility maintenance, gate installation, and other hunting specific activities. Law enforcement of refuge and State hunting regulations, trespass and other violations associated with management of the refuge is the responsibility of three Federal Wildlife Officers. Officers cooperate with, and are assisted by, state and county officers as well as state conservation officers. Ongoing coordination and communication between refuge staff and law enforcement officers is conducted throughout the year. A hunting brochure that identifies refuge specific regulations is available at the refuge office, website, and kiosks located at all parking lots and boat ramps on the refuge. The refuge also uses non-law enforcement staff to manage hunting activities. Some staff have alternate work schedules to be available during the hunting seasons to assist hunters and non-hunters and ensure that all refuge users understand where to locate areas that are open to hunting. Staff that operate the refuge's	boundary signs/paint; administrative costs associated with quota hunts; website maintenance; and addressing needs of mobility impaired hunters. Total estimated cost for refuge hunt program is $105,000. The majority of these costs are salary-related and considered administrative in nature. These costs are equivalent to approximately 1.5 full time staff. A minor increase in annual Law Enforcement operation, refuge management and administration, biological monitoring and research is anticipated under Alternative A. This increase will be covered by the refuge annual budget and refuge revenues. **Alternative B:** No additional increase in costs for administration, law enforcement, biological monitoring and research, or annual maintenance is anticipated for Alternative B.

REFUGE MANAGEMENT & OPERATIONS	
AFFECTED RESOURCE	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
education and visitor center routinely interact with and assist refuge users during the hunting season.	

Table 8. Affected Socioeconomics and Anticipated Impacts

SOCIOECONOMICS	
AFFECTED ENVIRONMENT	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
Local and regional economies Refuge staff estimates that 50,000 use-days by members of the public occur annually. This is significant when considering the limited vehicular access, limited acres in Refuge ownership, and limited visitor service facilities currently present on the Refuge. The economic area for the Refuge is the three-county area of Graves, Marshall, and McCracken Counties in Kentucky. The Refuge had about 54,000 recreational visits in 2017 which contributed to the economic effect of the Refuge. The contribution of recreational spending in local communities was associated with about 24 jobs, $691,000 in employment income, $155,000 in total tax revenue, and $2.2 million in economic output. Total expenditures were $1.6 million with non-residents accounting	**Alternative A:** Since hunting already occurs, we anticipate only a slight increase in visitation and expenditure for the additional species hunted under Alternative A. This will result in a minor impact to the local economy. **Alternative B:** Hunting of current allowed species would continue with similar visitation and expenditures. There would be no additional impact to the local economy beyond continued revenue generated from existing opportunities.

SOCIOECONOMICS	
AFFECTED ENVIRONMENT	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
for $919,000 or 57% of total expenditures. Expenditures on hunting activities accounted for 55% of all expenditures. Non-consumptive recreation accounted for about 33,000 visits with residents comprising 76% of Refuge visitation. (Banking on Nature, 2019)	
ENVIRONMENTAL JUSTICE	
Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires all Federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities.	**Alternative A and Alternative B:** The Service has not identified any potential high and adverse environmental or human health impacts from this proposed action or any of the alternatives. The Service has identified no minority or low income communities within the impact area. Minority or low income communities will not be disproportionately affected by any impacts from this proposed action or any of the alternatives

CUMULATIVE IMPACT ANALYSIS

Cumulative impacts are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 CFR 1508.7).

For more information on the national cumulative impacts of the Service’s hunting and fishing program on the National Wildlife Refuge System, see 2020-21 Cumulative Impacts Report.

Cumulative impacts from sport hunting are not anticipated; however, plants and wildlife will be monitored by Refuge staff to ensure that no significant damage would occur in public use areas. Hunting conducted in accordance with State and federal regulations is not expected to

adversely affect wildlife populations that occur on the refuge and likely assists in maintaining the biological integrity, diversity, and environmental health of the refuge. Some species, such as white-tailed deer, today occur at levels well above those thought to occur under historic conditions. Left unchecked, high numbers of such species could adversely affect biological integrity, diversity, and environmental health. Hunting is a closely monitored tool that effectively regulates wildlife populations.

Table 9. Anticipated Cumulative Impacts

Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment	Descriptions of Anticipated Cumulative Impacts
Hunting Hunting has been allowed on Clarks River NWR for over 2 decades with public hunts beginning in November 1999 by opening white-tailed deer and upland game seasons. If public use levels expand in the future, unanticipated conflicts between user groups may occur. Service experience has proven that time and space zoning can be an effective tool in eliminating conflicts between user groups. This tool is implemented at Clarks River NWR by closing high visitor use areas, such as the Environmental Education and Recreation Area to hunting.	**Alternative A:** The proposed action would have minor impacts on the environment of other hunting opportunities locally, regionally, or at the national level. The Service does not believe that increasing hunting opportunities on our land would decrease hunting opportunities on other lands near the refuge. Because trends of the number of hunters participating in the sport is declining we believe providing additional opportunities will potentially increase the numbers of hunters that utilize public land for hunting recreation. Private land hunting will not be impacted by the use of public land for hunting. The federal government owns 4.25% of Kentucky's total land, 1,083,104 acres out of 25,512,320 total acres. In addition, as of 2019, Kentucky owns, leases, or manages more than 85 wildlife management areas totaling over 500,000 acres (KDFWR, 2019). Of these state and federal lands, Kentucky has approximately 110 public hunting areas totaling 1.55 million acres (Council to Advance Hunting and the Shooting Sports, 2019). The Refuge in comparison is approximately 9,300 acres, accounting for less than 1% of the public land in Kentucky that is huntable. Cumulative impacts are likely negligible but could presumably result in more hunters participating in the sport over the long term having positive benefits for conservation. Cumulative impacts on species hunted are discussed separately. **Alternative B:** The no action alternative would have no impacts on the environment or other hunting opportunities locally, regionally or nationally as there is no increased opportunity under this alternative.
Big Game (White-tailed Deer and Eastern Wild Turkey)	**Alternative A and Alternative B:** Deer hunting does not have regional population impacts due to restricted home ranges. KDFWR estimates the average home range of a male deer in western Kentucky is 1 square mile or 640 acres. Therefore, only local impacts occur. According to KDFWR, the number of deer permits sold in Kentucky has remained stable, However, state license sales

Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment	Descriptions of Anticipated Cumulative Impacts
	decreased in the 2017-2018 season as compared to the 2016-2017 season. This decrease could be a result of the Epizootic Hemorrhagic Disease outbreak in eastern Kentucky. (Jenkins et. al., 2017) The KDFWR recorded deer harvest rates on the three counties Clarks River NWR is located. The data reports 553 square miles of available habitat in Graves County, 292 square miles of available habitat in Marshall County, and 244 square miles of available habitat in McCracken County. The average population estimate from 2010 to 2018 was 22,357 in Graves, 8,821 in Marshall, and 6, 236 in McCracken counties. The average harvest over the eight years was 2,829 for Graves, 1,002 for Marshall, and 931 for McCracken. White-tailed deer per square mile of "available habitat" (density) are 40, 30, and 26 in Graves, Marshall, McCracken counties respectively. (Sams, K. personal communication 2019). Harvest and survey data confirm that decades of deer hunting on lands surrounding the Refuge has not had a local cumulative adverse effect on the deer population. The statewide deer population estimate shows a stable to slightly decreasing trend. The 2017 statewide estimate is 855,090 deer at the start of the 2017-18 hunting season, which is a <1% decrease from 2016-17 (858,876). Approximately 136,000 deer were harvested in the 2017-2018 season with 124 recorded on Clarks River NWR. This was a decrease from the previous 3 hunting years which averaged 180 deer harvested per year. (Jenkins et. al., 2017) No additional deer are anticipated to be harvested under the proposed action, due to no changes from current management. Turkey hunting does not have regional population impacts due to restricted home ranges. KDFWR estimates the average home range of wild turkeys in western Kentucky is less than 2,000 acres. Therefore, only local impacts occur. KDFWR report wild turkey population is approximately 330,000 to 440,000. The lower end of this range assumes hunters harvest 10% of the population during the spring season, while the upper end incorporates an estimate of under-reporting by hunters. Using the spring harvest as an index to abundance, turkey populations have stabilized or are increasing in most counties including McCracken, Graves,

Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment	Descriptions of Anticipated Cumulative Impacts
	and Marshall counties. Approximately 33,000 turkeys were harvested statewide in 2017 spring turkey season with 1,918 harvested on public lands. McCracken, Marshall and Graves counties reported 224, 250, and 308 turkeys harvested during the 2017 spring turkey seasons, respectively. (Danks, 2018) Of these 802 turkeys harvested, 33 were reported to KDFWR as harvested on Clarks River NWR. No additional turkey are anticipated to be harvested under the proposed action, due to no changes from the current management.
Migratory Birds (ducks, coots, geese, woodcock, snipe, dove, crow)	**Alternative A and Alternative B:** Migratory game birds are those bird species so designated in conventions between the United States and several foreign nations for the protection and management of these birds. Under the Migratory Bird Treaty Act (16 U.S.C. 703-712), the Secretary of the Interior is authorized to determine when "hunting, taking, capture, killing, possession, sale, purchase, shipment, transportation, carriage, or export of any ... bird, or any part, nest, or egg" of migratory game birds can take place, and to adopt regulations for this purpose. These regulations are written after giving due regard to "the zones of temperature and to the distribution, abundance, economic value, breeding habits, and times and lines of migratory flight of such birds, and are updated annually (16 U.S.C. 704(a)). This responsibility has been delegated to the U.S. Fish and Wildlife Service as the lead federal agency for managing and conserving migratory birds in the United States. Because the Service is required to take abundance of migratory birds and other factors into consideration, the Service undertakes a number of surveys throughout the year in conjunction with the Canadian Wildlife Service, State and Provincial wildlife-management agencies, and others. To determine the appropriate frameworks for each species, the Service considers factors such as population size and trend, geographical distribution, annual breeding effort, the condition of breeding and wintering habitat, the number of hunters, and the anticipated harvest. After frameworks are established for season lengths, bag limits, and areas for migratory game bird hunting, migratory game bird management becomes a cooperative effort of State and Federal Governments. After Service establishment of final frameworks for hunting seasons, the States may select season dates, bag limits, and other regulatory options for the hunting seasons. States may always be more conservative

Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment	Descriptions of Anticipated Cumulative Impacts
	in their selections than the Federal frameworks but never more liberal. Season dates and bag limits for National Wildlife Refuges open to hunting are never longer or larger than the State regulations. In fact, based upon the findings of an environmental assessment developed when a National Wildlife Refuge opens a new hunting activity, season dates and bag limits may be more restrictive than the State allows. Hunting is not expected to adversely affect migratory game bird populations that occur on the refuge. The U.S. Fish and Wildlife Service works closely with state and provincial governments, as well as with the public, in a joint effort to establish annual hunting regulations for migratory birds. The programmatic document, "Second Final Supplemental Environmental Impact Statement: Issuance of Annual Regulations Permitting the Sport Hunting of Migratory Birds (EIS 20130139)," filed with the Environmental Protection Agency (EPA) on May 24, 2013, addresses NEPA compliance by the Service for issuance of the annual framework regulations for hunting of migratory game bird species. We published a notice of availability in the *Federal Register* on May 31, 2013 (78 FR 32686), and our Record of Decision on July 26, 2013 (78 FR 45376). We also address NEPA compliance for waterfowl hunting frameworks through the annual preparation of separate environmental assessments, the most recent being "Duck Hunting Regulations for 2018–19," with its corresponding May 2018, finding of no significant impact. The programmatic document, as well as the separate environmental assessment, is available on our website at *https://www.fws.gov/birds/index.php*.
Upland Game (gray and fox squirrels, eastern cottontail and swamp rabbits, raccoon, opossum, quail, coyote, bobcat, skunk, otter, muskrat, mink, gray and red fox, weasel, beaver)	**Alternative A:** In personal communication with KDFWR, furbearers are relatively abundant across Kentucky (L. Palmer, personal communication, August 14, 2019). However, trapper surveys and reports have noted a decline in gray fox in some portions of Kentucky (L. Palmer, personal communication, August 14, 2019). Hunting of the additional species of upland game on the refuge will not add significantly to the cumulative impacts on the populations of these species. As discussed in Table 4, the estimated take on the refuge would be a small fraction of the species population within the State. The refuge is pursuing alignment with state regulations and will refer to

Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment	Descriptions of Anticipated Cumulative Impacts
	KDFWR to monitor populations of these species and implement any adjustments to future harvests as needed under the existing state regulations. To mitigate long term impacts bag limits are set on an annual basis and no cumulative impacts are expected to occur. **Alternative B:** The proposed action would have no new impacts on other upland game locally, regionally or nationally as there is no increased opportunity for the additional species under this alternative.
Amphibians/Retiles (bullfrogs)	**Alternative A and Alternative B:** The proposed action would have no impacts on the environment or other hunting opportunities locally, regionally or nationally as there is no increased opportunity under the alternatives.
Feral/Invasive Species (feral hogs)	**Alternative A:** Currently, feral hogs are not present on Clarks River NWR. If they become established, Refuge management could use hunting as one management tool to assist in control of the population. However, research suggests that hunters will not be able to harvest sufficient numbers of animals on a sustained basis to reduce populations of feral swine populations because they are so prolific. Populations may need to be reduced by 70% annually just to maintain a stable population size. Increasing feral swine populations negatively impact native plant communities, wildlife, and agriculture. It is expected that hunting could have an impact on feral hogs at the beginning of establishment by helping to eradicate the invasive species. Conversely, once established, it is expected that the direct impacts to the local population would be negligible due to their prolific reproduction. Therefore, feral hogs will not be regarded as a game species on Clarks Rive NWR and control measures will be implemented to eradicate this invasive species under the Integrated Pest Management Plan, which may include a hunting option. Additionally, the can serve as vectors for a number of infectious viral and bacterial diseases which can be transferred to wildlife, livestock, and humans. (Centner and Shuman, 2015) Scaling this up to a state and regional level also results in negligible impacts. **Alternative B:**

Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment	Descriptions of Anticipated Cumulative Impacts
	Hunting could not be used as a management to for this invasive species under the current management plan therefore the it is possible that populations could increase under Alternative B.
Resident Wildlife Refuges conduct hunting programs within the framework of State and Federal regulations. Population estimates of huntable species are developed at a regional, state, flyway, and continental scale. Hunting frameworks and take limits are set based upon these estimates. The refuge hunting program rules will be the same as, or more restrictive than, hunting regulations throughout the State of Kentucky. By maintaining hunting regulations that are the same as or more restrictive than the State, individual refuges ensure that they are maintaining seasons which are supportive of management on a more local basis. Such an approach also provides consistency with large-scale population status and objectives. The refuge consistently coordinates with the State about the hunting program. Wildlife management of populations is important to ensure the health of the ecosystem and the refuge's hunt program provides minor, additional beneficial impacts to the cumulative impacts of wildlife management in the State.	**Alternative A and Alternative B:** The refuge will continue to support substantial resident wildlife populations that will be at or above the habitat's carrying capacity under both Alternatives. So, even at the local level, the refuge only adds slightly to the cumulative impacts on the resident wildlife, and a negligible amount to regional and statewide populations.
Other wildlife-dependent recreation (i.e. road and trail development and use)	**Alternative A and Alternative B:** Infrastructure, trails, and roads used for wildlife-dependent recreation on the refuge and in the local area has negatively

Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment	Descriptions of Anticipated Cumulative Impacts
Presently, less than two% of the refuge is covered by developed lands including a network of roads, trails, and the Environmental Education and Recreation Area that are causing some cumulative impacts on the local area. These impacts were disclosed when the lands were developed. However, some wildlife-dependent recreation is reliant upon those roads and trails for access. Outdoor recreation is an important component of the lives of west Kentuckians. Outdoor recreation is a socio-economic driver of the lake and forest areas of Western Kentucky. The local community thrives on opportunities to hunt, fish, hike, bike, and observe wildlife.	affected the environment, to a marginal degree, through invasive species spread, habitat fragmentation and loss, or overall disturbance. However, there are positive impacts of wildlife-dependent recreation (that is reliant upon that infrastructure for access) on the local economy. Wildlife dependent recreation in either alternative is a socio-economic driver locally, regionally, or at the state level. Future development of trails or access to support all wildlife dependent recreational opportunities on the refuge are not expected to have a cumulative impact on the environment. As projects are proposed they will go through additional environmental review.
Development and Population Between 2016 and 2017, the population has decreased in Marshall county by 0.11%, McCracken county by 0.01% and Graves county by 0.3% (https://datausa.io/profile/geo/). This population decline is minimal. However, future population projections forecast a 4% increase in population for Graves county by 2040, which will continue to place stress upon the ecosystems of the local area (Ruther et al. 2016). Both through direct loss of remaining habitats, and indirectly through fragmentation and degradation of intact remaining parcels of wildlife habitat and demands on water. Refuge management can	**Alternative A and Alternative B:** Because the refuge uses an adaptive management approach for its hunt program, reviewing the hunt program annually and revising (if necessary), the refuge's hunt program can be adjusted to ensure that it does not contribute further to the cumulative impacts of population growth and development on wildlife and ecosystems on the refuge.

Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment	Descriptions of Anticipated Cumulative Impacts
do nothing to stem population growth or declines but refuges and other tracts of habitats will become even more important as repositories of biodiversity. Development and population growth are most likely to affect migratory birds and resident wildlife. The continuing loss and fragmentation of wetland habitat to development over time will negatively affect biodiversity.	
Agricultural land uses Kentucky is a leading producer of tobacco, soybeans, corn, wheat, and chicken. Agriculture is a part of Kentucky's major commodities and produces more than $5 billion annually. Land that is currently farmed in western Kentucky is not converting to developed land, however on an annual basis crop type could vary. This variation provides resources for wildlife but is not consistent on a year to year basis.	**Alternative A and Alternative B:** Currently, the Refuge adopts the State seasons and harvest limits. Clarks River NWR will coordinate with the State to adjust Refuge harvest goals accordingly, including limiting hunting opportunities if populations decrease, wildlife disturbance is an issue, public safety becomes a factor or to fulfill Refuge goals. The refuge will use an adaptive management approach for its hunt program in an attempt to manage losses of adjacent agricultural producers by wildlife species. For example, the refuge can adjust its season dates, bag limits, shooting hours, and other options to ensure that the population does not become over-abundant on the refuge and lead to increased wildlife mortality due to the spread of disease or crop damage.
Use of lead ammunition/tackle Lead is a naturally occurring element which can be highly toxic to wildlife. Numerous sources of lead contribute to the availability of lead in the landscape including mining/smelter emissions, lead-based paint, lead fishing sinkers, and spent ammunition (Golden et al. 2016). It has been estimated that lead shot can remain in the environment for up to 300 years	**Alternative A and Alternative B:** In 1991, the United States banned lead shot for waterfowl hunting. While lead shot remained in the environment, research estimated a 64 % decline in lead shot exposure for mallards along the Mississippi Flyway (Tranel and Kimmel, 2009). In the United States, lead ammunition continues to be used in other types of hunting and shooting activities. Some of the most popular types of hunting, which contribute to lead entering the environment, is deer hunting, small game hunting, turkey hunting, dove hunting, and varmint hunting. In some cases, such as with deer, it is common practice to

Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment	Descriptions of Anticipated Cumulative Impacts
(Tranel and Kimmel, 2009). The potential exists for wildlife to encounter lead through fishing sinkers and lures; microtrash and other metal objects; lead-based paints; lead mines; shooting ranges; and ammunitions from hunting (Golden et al. 2016). Over 100 years ago, wildlife mortality for ingestion of lead shot was first reported (Tranel and Kimmel, 2009). According to Tranel and Kimmel (2009), literature has reported over 130 species of animals including upland birds, raptors, waterfowl, and reptiles as being exposed or killed by ingesting lead from ammunition. Lead ammunition enters the environment from hunting and shooting activities in the United States. While waterfowl hunting was a significant contributor to lead shot, regulations passed in 1991 restricted the use of lead shot for waterfowl hunting. Deer hunting is the most popular type of hunting in the United States, with 10.1 million participants nationwide in 2006. It is common practice to field dress game and discard the internal organs and tissues on the landscape, which may be accessed by scavenging birds and other wildlife. Other types of hunting also generate the potential for lead to enter the environment. Small game such as rabbit, squirrel, pheasant, and quail comprised about 7.5 million hunters followed by turkey with 2.6 million hunters and dove with 1.2 million hunters. (Golden	field dress game and discard the internal organs and tissues and potentially lead bullets or bullet fragments, resulting in an offal pile that may be accessed by scavenging birds and other wildlife (Golden et al. 2016). Scavengers and predators that feed on game species have a higher likelihood of being secondarily poisoned by ingesting lead shot (Tranel and Kimmel, 2009). Avian predators and scavengers can be particularly susceptible to lead poisoning if they ingest lead fragments or pellets in the tissues of animals harvested or wounded by lead ammunition. Case files from the National Wildlife Health Center which analyzed 484 bald eagles between 1982-2013 and 68 golden eagles between 1975-2013 for lead poisoning reported lead ammunition or fragments were detected in 14.2 % and 11.8 % of bald and golden eagles respectively. The demographic and pathologic data from these cases revealed lead poisoned carcasses were found in greater frequency in the late autumn and winter than spring and summer months, and lead poisoning was greater in eagles from the Mississippi and Central flyway versus the Atlantic and Pacific flyway. (Golden et al. 2016) The level of dietary lead exposure to wildlife is highly influenced by the season and local hunting intensity (Pain et al. 2009) The Administration Act, as amended, directs the Service to make refuge regulations as consistent with State regulations as practicable. We share a strong partnership with the States in managing wildlife, and, therefore, we are proceeding with the phase-out of toxic ammunition in a coordinated manner with each respective State wildlife agency. Clarks River NWR prohibits the use of lead shot for hunting all migratory birds and upland game. Under the Proposed Alternative, Clarks River NWR would continue to allow lead shot for both spring and fall turkey hunting. Many turkey hunters are beginning to use alternative types of ammunition, however as a precaution, Clarks River NWR staff assumed all harvests from the spring of 2014 through the spring of 2019 were from lead shot. Less than 150 turkeys were reported harvested on Clarks River NWR with the more than 90 % harvested in the Spring. The most reported during a single year was 35 harvested turkeys across approximately 9,000 acres of Clarks River

Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment	Descriptions of Anticipated Cumulative Impacts
et.al. 2016) Research has indicated that lead can be present in gut piles left by deer hunters after field dressing. Bald eagles and other raptors feed on the gut piles and may ingest the lead, leading to poisoning (Johnson et al, 2013).	NWR. The seasonality of spring turkey season, when most turkeys are harvested on the Refuge, is outside of a period of high hunting intensity. Additionally, unlike deer, it is not common practice to field dress game and discard the internal organs and tissues on the landscape. Other sources of lead contamination exist in the surrounding landscape; however, the allowance of turkey hunting with lead shot is unlikely to make a significant difference in the lead exposure of fish and wildlife found on Service lands. Therefore, the continued allowance of toxic shot for hunting of wild turkey is estimated to have a negligible impact on the cumulative impacts of lead in the environment in the best professional judgement of staff. The Service's continues to monitor research findings and work in coordination with the State to mitigate the cumulative impacts of lead on refuge habitats or wildlife. Clarks River NWR will continue to educate hunters about the risk to wildlife from lead ammunition. Refuge staff provide information on websites, signage and through other means to ensure hunters have relevant information regarding the use of non-toxic shot.
Climate Change Addressing uncertainty in the environment is critical to being able to anticipate and adapt to changes that may occur in the environment. For the Department of Interior (DOI), this will be reflected in how we manage access and exploitation of natural resources, protect and conserve our natural heritage, and provide for the conservation of the environment for future generations while avoiding undue restrictions on the current generation. The US Geological Survey (USGS) as the science advisory body for DOI will characterize the ranges of possible future change trajectories will provide guidance	**Alternative A and Alternative B** Under this alternative, the refuge would use an adaptive management approach for its hunt program, reviewing the hunt program annually and revising (if necessary). The Service's hunt program can be adjusted to ensure that it does not contribute further to the cumulative impacts of climate change on refuge habitats or wildlife.

Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment	Descriptions of Anticipated Cumulative Impacts
on how to estimate potential ecosystem impacts, support resource management, assist in hazards characterization and mitigation, and assist land use planning. (Reilly, 2019)	
Other Past, Present, Proposed, and Reasonably Foreseeable Hunts and Anticipated Impacts	The National Wildlife Refuge System does not allow hunting on a Refuge if it is found incompatible with that individual refuge's purposes or with the mission of the NWRS. In addition, the Service's biological integrity, diversity, and environmental health (BIDEH) policy (601 FW 3) guides decision-making with respect to management of activities on refuges, including hunting. Clarks River NWR staff consulted with State biologists to ensure sustainable populations of these species existed to support hunting on the Refuge. We carefully considered how a hunt fits with individual refuge goals, objectives, and strategies before allowing the hunt. None of the known, estimated, or projected harvests of migratory game birds, upland game, or big game species in this plan is expected to have significant adverse direct, indirect, or cumulative impacts to hunted populations, non-hunted wildlife, endangered or threatened species, plant or habitat resources, wildlife-dependent recreation, prescribed fire, air, soil, water, cultural resources, refuge facilities, solitude, or socio-economics. 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 plan has been designed so as to be sustainable through time given relatively stable conditions. Changes in refuge conditions, such as sizeable increases in refuge acreage or public use, are likely to change the anticipated impacts of the current plan and would trigger a new hunt planning and assessment process. The implementation of any of the proposed actions described in this assessment includes actions relating to the refuge hunt program (see 2020 Sport Hunting Plan for Clarks River NWR). These actions would have both direct and indirect effects however; the cumulative effects of these actions are not expected to be substantial.

Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment	Descriptions of Anticipated Cumulative Impacts
	The refuge does not foresee any changes to the proposed action in the way of increasing the intensity of hunting in the future.

MITIGATION MEASURES AND CONDITIONS

There are additional mitigation measures we established to assist in minimizing adverse effects on waterfowl. The hunting period for migratory birds will be consistent with KDFWR season framework and regulations with the exception of duck, geese and coots which may only be hunted during morning hours. To reduce disturbance, all migratory waterfowl hunting will cease, and hunters will be out of the field by 12 noon each day. Additionally, Waterfowl Hunt Unit is comprised of managed impoundments (Mallard Point, Lindsey, Wolfe, and Redhead) and hunting pressure is limited through the season. The Mallard Point will be open on Saturdays and Sundays of the statewide waterfowl season, with the exception of the modern rifle or muzzleloader deer seasons, for the drawn permit holders. The Redhead and Wolfe will be open on Tuesdays and Wednesdays of the statewide waterfowl season, with the exception of the modern rifle or muzzleloader deer seasons, for the drawn permit holders. The Lindsey is available for use by mobility impaired hunters when operational. By restricting hunt dates and times for waterfowl hunting, Clarks River NWR provides would provide 18 hours per day without direct disturbance. Additionally, the Refuge provides waterfowl sanctuaries where no human disturbance is allowed from November 1 through March 31.

To minimize adverse effects of disturbance on other wildlife species as well as in some cases for public safety, the Refuge regulates vehicle, ATV, and equine use. Vehicles are not allowed to be used on most Refuge roads. To access remote locations for hunting, hunters must walk or use bicycles, which are restricted to gravel roads and the abandoned railway. The use of ATVs is restricted to mobility-impaired hunters. Equine use is restricted to designated routes (graveled, paved roads, abandoned railroad right of way). Restrictions are also placed to equine use during modern gun and muzzleloader deer seasons. Furthermore, the Refuge restricts most hunts to daylight only, and has limits on how closely hunters can be to roads and facilities.

MONITORING

Continued annual biological monitoring of both resident and migratory wildlife and their habitats is done on the refuge in conjunction with our State partners. Clarks River NWR staff monitors species population trends to ensure that target species can be hunted on the Refuge without adversely affecting the species. These monitoring activities include direct observation of populations, consultation with State and Service species specialists, and review of current species survey information and research. In addition, the Refuge will stay appraised on the status of threatened and endangered species through consultation and local monitoring such as annual acoustical monitoring of bats. The Service will maintain compliance with hunting regulations by dispatching Service and law enforcement officers to perform field checks.

Hunters would report the harvest of big game (deer and wild turkey) through KDFWR's telecheck system. The Service can use the data in this system to monitor Refuge harvest. KDFWR would continue to monitor wildlife populations in the State to determine the response of these wildlife species to hunting management actions.

SUMMARY OF ANALYSIS

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

ALTERNATIVE A – PROPOSED ACTION ALTERNATIVE

The species that are currently hunted on the refuge would continue to be allowed. The refuge would expand to allow new hunting of bobcat, skunk, otter, muskrat, mink, gray and red fox, weasel, beaver, and feral hogs, if a hunting option is selected to control this invasive population, in the public hunting areas in accordance with or more restrictive than the laws of the State of Kentucky. Hunt areas remain the same as previously plans. Conflicts with other recreational uses on the refuge are expected to be minor due to separation in time and space.

This alternative helps meet the purpose and needs of the Service as described above, because it provides additional wildlife-dependent recreation opportunities on the refuge while also managing wildlife populations. The Service has determined that the proposed action is compatible with the purposes of the Clarks River NWR and the mission of the NWRS. The Compatibility Determination can be found in the Hunt Plan.

ALTERNATIVE B – NO ACTION ALTERNATIVE

Under this alternative, current refuge hunting opportunities for specific upland game, big game, and migratory bird species would continue and remain the same across those portions of the refuge. The refuge would continue to serve as habitat for fish and wildlife as well as provide outdoor recreational opportunities for all six priority wildlife dependent public uses.

Opportunities to create additional outdoor recreation experiences by adding additional species to hunt would be lost.

COORDINATION

LIST OF SOURCES, AGENCIES AND PERSONS CONSULTED

Kyle Sams, Wildlife Program Coordinator – Deer, KDFWR
John Morgan, Wildlife Program Coordinator – Upland Game Biologist, KDFWR
Zak Danks, Wildlife Program Coordinator – Ruffed Grouse & Wild Turkey, KDFWR
Laura Palmer, Wildlife Program Coordinator – Furbearers, KDFWR
Ecological Services, Kentucky Field Office - Frankfort

LIST OF PREPARERS

Kimberly Sykes
Jason Bayer
Stacey Hayden
Michael Johnson
Tina Blancett

STATE COORDINATION

National Wildlife Refuges, including Clarks River NWR, conduct hunting programs within the framework of state and federal regulations. All authorized hunts are at least as restrictive as the state of Kentucky. By maintaining hunting regulations that are as, or more, restrictive than the state, individual refuges ensure that they are maintaining seasons which are supportive of management on a local and regional basis. The Refuge Manager has communicated with the Regional Biologist for KDFWR regarding hunt plan changes on at least two occasions prior to October 2019. The Refuge first reached out to the State in both August and September of 2019 to discuss this Hunt Plan. We worked with the local State biologist and Regional Biologist early in the development of the plan. In early November, Clarks River NWR staff met with KDFWR Regional Biologist to discuss this plan as well as the State's Chronic Wasting Disease (CWD) Response Plan. Support was indicated for aligning the Refuge Hunt program with State seasons. In addition, it was recognized that Kentucky will have the lead on any disease which affect resident wildlife and Clarks River NWR will support the State in its' prevention and surveillance efforts. Both Clarks River NWR and the State will follow the guidance in the Association of Fish and Wildlife Agencies Technical Report on Best Management Practices for the Prevention, Surveillance, and Management of Chronic Wasting Disease and work jointly with KDFWR to implement the response plan for CWD or any other disease which surface in Kentucky. The Service sent letters regarding the proposed Hunt Plan, compatibility, regulations, and EA to the state of Kentucky on December 31, 2020. Refuge staff will continue to coordinate with KDFWR to address annual implementation of hunting activities.

TRIBAL CONSULTATION

The Service also sent letters requesting comments and consultation on November 4, 2019 to:

- Absentee Shawnee Tribe of Indians
- Chickasaw Nation
- Delaware Nation of Oklahoma
- Eastern Band of Cherokees
- Peoria Tribe of Indians of Oklahoma
- Quapaw Tribal Business Committee
- Shawnee Tribe of Oklahoma
- Stockbridge Munsee Community

On, April 9, 2020, the Service sent letters and copies of the Draft Sport Hunt Plans, Environmental Assessment, Compatibility Determination and other documents to those tribes listed above. Clarks River NWR also received a supportive letter from the Chickasaw Nation.

PUBLIC OUTREACH

The proposal has been thoroughly coordinated with all interested and/or affected parties. The Clarks River NWR Draft 2020 Sport Hunt Plan, Environmental Assessment, and Compatibility Determination were made available for public review and comment for 45 days starting on March 23, to May 6, 2020. Notice was posted at the Clarks River NWR Headquarters Office, refuge website and refuge Facebook page. Further, an information bulletin announcing the availability of the documents for public review and comment was provided to local newspapers. Additionally, public comments were requested through the Federal Register process announced on April 9, 2020 and ended on June 8, 2020 (85 FR, Number 69; Docket Number FWS-HQ-NWRS-2020-0013, FXRS12610900000-201-FF09R20000). Clarks River NWR received 5 public comments expressing general support for expanding hunting opportunities under the proposed Sport Hunt Plan. Two public comments were received in opposition to the expansion of hunting opportunities on Clarks River NWR. Clarks River NWR addressed the public comments in Appendix D.

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APPENDIX B. CLARKS RIVER NATIONAL WILDLIFE REFUGE COMPATIBILITY DETERMINATION

REFUGE NAME

Clarks River National Wildlife Refuge (NWR), hereafter referred to as the Refuge, located in Marshall, Graves, and McCracken Counties in Kentucky.

USE

Sport Hunting of Big Game, Migratory Birds, Upland Game, Amphibians/Reptiles, Invasive/Feral Species

ESTABLISHING AND ACQUISITION AUTHORITY(IES)

(1) Migratory Bird Conservation Act {16 U.S.C. 715}

(2) National Wildlife Refuge System Administration Act {16 U.S.C. 668(a)(2)

(3) Fish and Wildlife Act of 1956 {16 U.S.C. 742 (b)(1)}

(4) Refuge Recreation Act {16 U.S.C. 460 K-1}

(5) Executive Order 9670

REFUGE PURPOSE(S)

(1) "…for use as a refuge and wildlife management area for migratory birds and other wildlife…" {Executive Order 9670, dated December 28,1945}

(2) "…for us as an inviolate sanctuary, or for any other management purpose, for migratory birds" {16 U.S.C. 715 (d), Migratory Bird Conservation Act}

(3) "…for the development, advancement, management, conservation, and protection of fish and wildlife resources…" {16 U.S.C. 742 (b)(1)}

(4) "…incidental fish and wildlife-oriented recreational development" {16 U.S.C. 460k-1; Refuge Recreation Act}

(5) "the protection of natural resources" {16 U.S.C. 460k-1; Refuge Recreation Act}

(6) "the conservation of endangered or threatened species…" {16 U.S.C. 460k-1; Refuge Recreation Act}

NATIONAL WILDLIFE REFUGE SYSTEM MISSION

The mission of the 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?*

This use is the public hunting of migratory birds, big game, upland game, amphibians/reptiles, and/or feral/invasive species, if a hunting option is selected to control invasive populations. This wildlife-dependent recreational use is recognized as priority 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).

(b) *Where would this use be conducted?*

Clarks River NWR has primarily forested habitat, being approximately 8,700 acres of forest on about 9,300 acres of land owned by the Fish & Wildlife Service. The use will be conducted within the refuge's boundary except for areas closed to the public or closed to hunting. (Figure 1)

(c) *When would this use be conducted?*

Sport hunting is conducted year-round. For upland game, big game, and migratory birds the Refuge is open from two hours prior to sunrise until two hours after sunset unless bullfrog, raccoon, or opossum hunting which are authorized night-time activities. For waterfowl, the Refuge is open from two hours prior to sunset until noon. All waterfowl hunters must be out of the field by noon. Sport hunting is subject to regulations established by the State of Kentucky or more restrictive depending on refuge goals and objectives. The Refuge annual hunting and fishing permit is required to hunt on the Refuge.

(d) *How would this use be conducted?*

Sport hunting is permitted, as provided by refuge special regulations and those published in Title 50, Code of Federal Regulations. The Refuge annual hunting and fishing brochure is required to hunt on the Refuge. Specific Hunting season, date, bag limits, and refuge-specific regulations are described in Table 1. To achieve the objectives set forth by the Sport Hunt Plan, on occasion, it may be necessary to deviate from state season structures, adjust bag limits or implement other restrictions. Determinations will be based on safety, public use levels, management actions, disease transmission, minimum viable populations, or wildlife disturbance. Adjustments will be made in coordination with Kentucky Department of Fish and Wildlife Resources and will ensure achievement of the primary goal of the National Wildlife Refuge System.

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

This compatibility determination considers sport hunting, which is one of the six priority wildlife-dependent recreation activities. The primary objectives of the hunting program (archery, firearm, handicapped and youth) on Clarks River NWR would be to: 1) provide a high-quality recreational and educational experience for a diverse audience through a varied hunt program; 2) provide an opportunity for the youth of Kentucky to engage in hunting, instill a basic understanding of conservation measures, and the role of the U.S. Fish & Wildlife Service in the conservation picture; 3) foster support and knowledge of refuge goals and objectives by working in close association with the general public, Kentucky Department of Fish and Wildlife Resources through their assistance with the harvest and thus management of resident species on the refuge while providing safe, educational, and instructive opportunities; 4) allow for the harvest of big game, upland game, and migratory birds on the refuge to help maintain healthy population levels and facilitate maintenance of quality habitat for endangered species, migratory birds, and native flora and fauna; and 5) to help control nuisance and exotic wildlife.

Clarks River NWR provides annual archery, primitive weapons, and firearms hunts for white-tailed deer and turkey, quota hunts for waterfowl, and upland game hunts for various other species. All regular hunts are by refuge permit only and are conducted during specific periods within the state's hunting seasons (general hunting seasons) for Marshall, McCracken, and Graves counties. Over 9,000 acres are currently open to public big game and upland game hunting. Three designated periods are open to youth for hunts for white-tailed deer, squirrel, and turkey on the refuge.

The U.S. Fish and Wildlife Service (Service) is proposing to open/expand hunting opportunities for upland game (coyote, bobcat, skunk, otter, muskrat, mink, gray and red fox, weasel, beaver) and feral/invasive species (feral hogs), if a hunting option is selected to control this invasive population, on the Clarks River NWR in accordance with the refuge’s Clarks River NWR 2020 Sport Hunt Plan which is a step-down plan from 2012 Clarks River NWR Comprehensive Conservation Plan. In order to become more aligned with the State of Kentucky’s regulations and seasons, Clarks River NWR is proposing to open or expand hunting opportunities on approximately 9,000 acres.

Additionally, sport hunting can be used as a tool to maintain wildlife populations at an acceptable level. The State establishes hunting seasons and bag limits to meet population objectives and to offer the public an opportunity to experience a traditional outdoor recreational activity. Game species population objectives are determined by a number of factors such as habitat limitations and landowner tolerances, and each year the seasons and bag limits are designed to remove the harvestable surplus without long-term negative impacts to the population. The ability to effectively manage game species populations depends in large part on the availability of land with quality habitat. Providing hunting opportunities on the refuge will aid the State in meeting its management objectives and preserve a wildlife-dependent priority public use long associated with this land.

The Service intends to continue the tradition of wildlife-dependent recreation on the refuge by allowing hunting in compliance with State regulations. By allowing this use to continue, hunters can experience this traditional recreational activity, utilize a sustainable, renewable resource, aid the refuge and State in maintaining acceptable game species population levels, gain a better appreciation of the refuge's high-quality wildlife habitats, observe wildlife, and become better informed about the refuge and the National Wildlife Refuge System.

Table 1. Clarks River NWR Hunting Regulations

TYPE	SEASON DATES/ BAG LIMITS	REFUGE SPECIFIC REGULATIONS
Duck Goose Coot	Same as State Waterfowl Seasons and Bag Limits.	-Hunting will cease and hunters will be out of the field by 12 noon each day. -Only portable and temporary blinds are permitted. -Decoys and blinds must be removed each day. -Only nontoxic shot permitted. -Access to the refuge is two hours before sunrise. -The use of dogs for retrieving purposes or in the pursuit of migratory birds is permitted. *Waterfowl hunting on Clarks River Waterfowl Units by Quota Permit only.
Dove Woodcock Snipe Crow Quail	Same as State Seasons and Bag Limits. Closed during all refuge modern gun and muzzleloader deer seasons	-Only nontoxic shot permitted -Access to the refuge is two hours before sunrise to two hours after sunset. -The use of dogs for retrieving purposes or in the pursuit of migratory birds is permitted. -Centerfire weapons prohibited.
Squirrel Rabbit	Same as State Season and Bag Limits. Closed during all refuge modern gun and muzzleloader deer seasons.	-Only nontoxic shot permitted -Use of centerfire weapons is prohibited -Access to the refuge is two hours before sunrise to two hours after sunset. -The use of dogs for retrieving purposes or in the pursuit of gray and fox squirrels, eastern cottontail and swamp rabbits is permitted.
Raccoon Opossum	Same as State Season and Bag Limits	-Only nontoxic shot permitted -The use of dogs in the pursuit of raccoon and opossum is permitted in accordance with State regulations. -Use of dogs outside hunting season is by special use permit only. - Access to the refuge after sunset is permitted
Coyote Bobcat Fox Skunk Otter Muskrat Mink Weasel Beaver	Same as State Season and Bag Limits (Bobcat and Otter taken on Refuge will be telechecked through State 1-800-245-4263 with public land code for Clarks River NWR)	-Only nontoxic shot permitted -Use of dogs is not permitted. -Access to the refuge is two hours before sunrise to two hours after sunset. - May only be taken during daylight hours
White-tail Deer	Same as State Season and Bag Limits for Zone 1 (Deer taken on Refuge will be telechecked through State 1-800-245-4263 with public land code for Clarks River NWR)	- Pursuit of white-tailed deer with dogs is prohibited. -Construction or use of any permanent tree stand is prohibited. Only climbing and/or portable stands may be used. - Tree stands may be placed in the field no earlier than two weeks prior to the opening of season and must be removed from the field within one-week after the season closes. -All stands left in the field must be identified by hunter's State hunting license identification number.

		It is not required but he owner may provide the owner's name, address and phone number instead of the hunting identification number. If each stand does not contain information, it will be confiscated. -Safety belts are required at all times with use of tree stand. -Hunters may not hunt by organized deer drives of two or more hunters. -Hunting of deer by the aid of or distributing any feed, salt, minerals or other ingestible attractants is prohibited -Access to the refuge is two hours before sunrise to two hours after sunset. -Ground blinds are permitted but must be removed when not in use. -During modern gun, muzzleloader, and youth firearm ground blinds must display 1 square foot (144 square inches) of solid unbroken hunter orange visible from all sides.
Turkey	Same as State Seasons and Bag Limits (Turkey taken on Refuge will be telechecked through State 1-800-245-4263 with public land code for Clarks River NWR)	- Access to the refuge is two hours before sunrise to two hours after sunset. -The use of dogs for retrieving purposes or in the pursuit of wild turkey is permitted in accordance with KDFWR regulations
Bullfrogs	Same as State Seasons and Bag Limits	-Hunting of bullfrogs at the Environmental Education Recreation Area is prohibited. -Access to the refuge after sunset is permitted -Collection, hunting, and/or harm of all other species of reptiles and amphibians on the Refuge is prohibited.
Feral Hogs	Feral hogs will not be regarded as a game species on Clarks Rive NWR and control measures will be implemented to eradicate this invasive species, which may include a hunting option.	Feral hogs will not be regarded as a game species on Clarks Rive NWR and control measures will be implemented to eradicate this invasive species, which may include a hunting option.
Sandhill Crane Groundhog	Closed	Closed

Other refuge-specific regulations regarding hunting and public used are located at the following website:

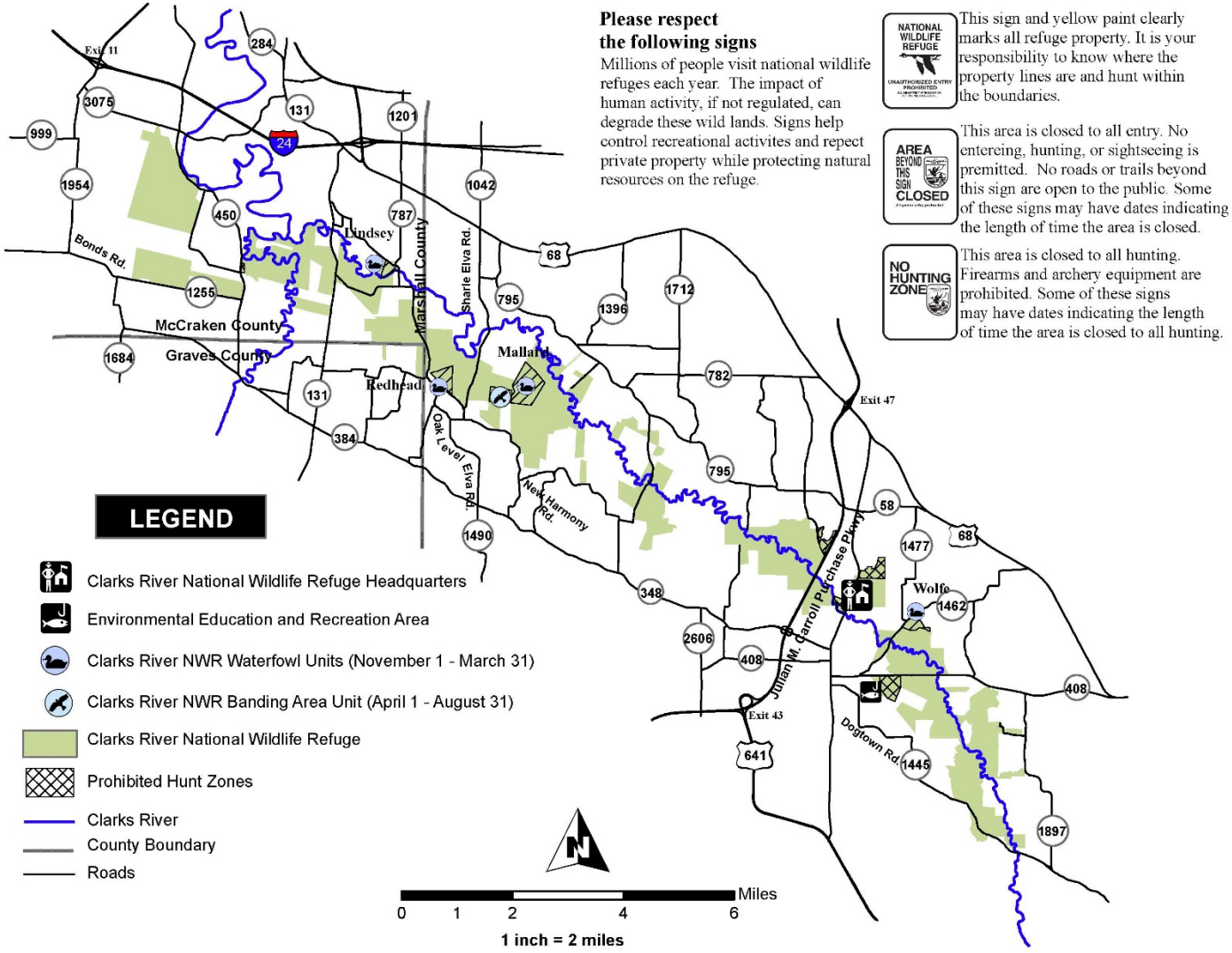
- Electronic Code of Federal Regulations

Regulations for the State of Kentucky in regard to hunting are located at the following websites:

- KRS CHAPTER 150 FISH AND WILDLIFE RESOURCES Section 010-999 https://apps.legislature.ky.gov/law/statutes/chapter.aspx?id=37729

- TITLE 301 - TOURISM, ARTS AND HERITAGE CABINET - DEPARTMENT OF FISH AND WILDLIFE RESOURCES Chapter 1-6 https://apps.legislature.ky.gov/law/kar/TITLE301.HTM

Figure 1. Clarks River NWR Hunt Map with Access and Locations



AVAILABILITY OF RESOURCES

Resources involved in the administration and management of the use includes personnel time of all 6 full-time employees (FTEs) of Clarks River NWR for administration and law enforcement. Expenses inherent to the hunt program include: law enforcement-related expenditures; road, trail and parking area maintenance; information signage; brochure printing; boundary signs/paint; administrative costs associated with quota hunts; website maintenance; and addressing needs of mobility impaired hunters. Total estimated cost for refuge hunt program is $105,000. The majority of these costs are salary-related and considered administrative in nature. These costs are equivalent to approximately 1.5 full time staff. Existing staffing and funding are adequate to support these activities.

No special equipment, facilities, or improvements are necessary to support the uses. Maintenance costs are not directly attributable to these incidental uses on the refuge.

The refuge staff monitors public use impacts as part of the daily, routine administration of the refuge lands and infrastructure. Refuge staff report issues noticed during daily trips through out the refuge and report any issues to management and/or law enforcement. Therefore, minimal costs are associated with these uses to monitor consequences of public having access to the refuge, such as degree of littering and vandalism. Plants and wildlife will continue to be monitored to determine any impacts as a result of public use.

Since 1981, the U.S. Fish and Wildlife Service (Service) has had authority to collect recreation fees. Since 1997, the Service has been able to retain fees collected at the station level, first under the Recreation Fee Demonstration Program and then, in 2004, under the authority of Federal Lands Recreation Enhancement Act (FLREA). Clarks River NWR was authorized to implement a recreational fee program in 2017. The cost structure is as follows: $15 for an annual hunting and fishing permit (free to youth under 16 and $5.00 for individuals 65 and over); and $50.00 minimum fee for an annual Recreational Special Use Permit authorizing commercial recreational activities to be conducted on Clarks River National Wildlife Refuge. A recreational fee is in the process of being implemented, which could off-set costs. Collected fees will be used to maintain and promote visitor amenities on the CRNWR. These amenities include activities such as road and parking lot maintenance, informational brochures, public education programs, law enforcement support, etc.

ANTICIPATED IMPACTS OF THE USE

Short-term Impacts:

Direct effects of hunting include mortality, wounding, and disturbance of target and non-target species (De Long 2002). Hunting can alter behavior (e.g., foraging time), population structure, general health (e.g., weight loss), and distribution patterns of all wildlife within the hunt area (Owens 1977, Raveling 1979, White-Robinson 1982, Thomas 1983, Bartelt 1987, Madsen 1985, Cole and Knight 1990).

The level of disturbance associated with hunting can be high due to the loud noises produced by guns and the rapid movement of both hunters and hunting dogs within the hunt area. This disturbance, especially when repeated over a period of time, compels waterfowl and other species to change foraging habits (e.g., foraging at night) or abandon areas of disturbance (Madsen 1995, Wolder 1993). In fact, studies indicate that prolonged and extensive

disturbances can cause large numbers of waterfowl to leave disturbed areas and migrate elsewhere (Madsen 1995, Paulus 1984). Various studies indicate an inverse relationship between the numbers of birds using an area and hunting intensity (DeLong 2002). In Connecticut, lesser scaup were observed to forage less in areas that were heavily hunted (Cronan 1957). In California, the numbers of northern pintail on Sacramento NWR non-hunt areas increased after the first week of hunting and remained high until the hunting season was over (Heitmeyer and Raveling 1988). Following the close of hunting season, ducks generally increased their use of the hunt area on the Refuge but use of this area was lower than before the hunting season began.

Impacts to waterfowl and other species can be reduced by providing adjacent sanctuary areas where hunting does not occur and where birds can feed and rest relatively undisturbed. Sanctuaries or non-hunt areas have been identified as the most common solution to disturbance problems caused from hunting (Havera et. al 1992). In Denmark, hunting disturbance effects were experimentally tested by establishing two sanctuaries (Madsen 1995). Over a 5-year period, these sanctuaries became two of the most important staging areas for coastal waterfowl. Numbers of dabbling ducks and geese increased four to 20 fold within the sanctuary (Madsen 1995). Thus, non-hunt areas are very important to waterfowl populations subject to hunting as they ensure the continued presence of the affected species within the general vicinity of the hunt area.

Intermittent hunting can also be a means of minimizing disturbance, especially if rest periods in between hunting events are weeks rather than days (Fox and Madsen 1997). It is common for refuges to manage hunt programs with non-hunt days. At Sacramento Refuge, three to 16 percent of northern pintails were located on hunted units during non-hunt days but were almost entirely absent in those same units on hunt days (Wolder 1993). In addition, northern pintail, American wigeon, and northern shoveler reduced time spent feeding on days when hunting occurred on public shooting areas, as compared to non-hunt days (Heitmeyer and Raveling 1988).

The refuge may exclude hunting activities on portions of certain refuge units. Certain areas of the refuge may not be hunted specifically to provide areas of sanctuary. In some locations, special hunts may be used to manage hunting pressure and overall harvest at appropriate levels.

Dogs are permitted for hunting migratory birds, raccoon, opossum, squirrel, and rabbit. At present levels of use, dogs used for this purpose are not expected to adversely impact non-target species or cause conflict with other uses. As public use levels on the refuge expand across time, unanticipated conflicts between user groups may occur. The Refuge's Visitor Services programs will be adjusted as needed to eliminate or minimize each problem and provide quality wildlife dependent recreational opportunities that include promoting public safety.

Uncontrolled feral and invasive exotic species, specifically feral hogs, degrade, change or displace native habitats and compete with native wildlife to the point of causing harm to fish, wildlife, and plant resources. Due to the potential of severe degradation of habitat by pest species if left unrestrained, management of pest and exotic species is vital to maintain native flora and fauna. The Tennessee Wildlife Resources Agency (TWRA) attempted to control the feral hog populations by opening a state-wide hunting season in 1999. This resulted in disjointed populations of feral hogs appeared throughout the state individuals illegally stocked feral hogs in an effort to establish local hunting populations. Once a state-wide hunting season

was implemented, the feral hog populations expanded the most. In 2015, studies estimated the damage by feral hogs topped $26 million. In order to remove the incentive to relocate feral hogs, Tennessee change regulations to consider feral hog destructive species and to be controlled by methods other than sport hunting. (TWRA, https://www.tn.gov/twra/wildlife/mammals/large/wild-hog.html). Therefore, feral hogs will not be regarded as a game species on Clarks Rive NWR and control measures will be implemented to eradicate this invasive species under the Integrated Pest Management Plan, which may include a hunting option. Currently, a feral hog population has not been documented on Clarks River NWR.

Long-term Impacts:
Long-term impacts are not anticipated; however, plants and wildlife will be monitored by Refuge staff to ensure that no significant damage would occur in public use areas. Hunting is not expected to adversely affect migratory game bird populations that occur on the refuge. The U.S. Fish and Wildlife Service works closely with state and provincial governments, as well as with the public, in a joint effort to establish annual hunting regulations for migratory birds. The Service's Division of Migratory Birds establishes regulation frameworks to manage all migratory bird hunting in the United States. These regulations establish limitations by which States can then create season lengths, bag limits and areas of migratory bird hunting.

Regulations on migratory bird hunting are determined through the assessment of annual surveys, waterfowl banding data, and hunter harvest data. Survey data is obtained through aerial surveys of the North American Flyways, which count birds, ponds and nests, and provide information for analyzing population and habitat conditions. Hunter surveys and questionnaires determine the number of hunters participating yearly and the impacts they have on waterfowl. Recommendations from the Flyway Council are considered when original rules are created. Rules are presented to the public through the Federal Register and followed by a series of public meetings for any recommendations. The final regulations are assessed based on a collective analysis of all factual information as well as council and public recommendations. The State of Kentucky annually reviews hunting seasons and bag limits and modifies them to avoid any long-term population declines. Hunting is not expected to adversely impact deer, turkey, or any other game species populations.

Cumulative Impacts:
Cumulative impacts are not anticipated; however, plants and wildlife will be monitored by Refuge staff to ensure that no significant damage would occur in public use areas. Hunting conducted in accordance with State and federal regulations is not expected to adversely affect wildlife populations that occur on the refuge and likely assists in maintaining the biological integrity, diversity, and environmental health of the refuge. Some species, such as white-tailed deer, today occur at levels well above those thought to occur under historic conditions. Left unchecked, high numbers of such species could adversely affect biological integrity, diversity, and environmental health. Hunting is a closely monitored tool that effectively regulates wildlife populations. Overall, the cumulative impact of hunting on other wildlife-dependent recreation or public safety at the refuge is expected to be minor.

DETERMINATION (CHECK ONE BELOW)

_____ Use is not compatible

___X___ Use is compatible, with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY

The refuge will manage the six priority public uses (hunting, fishing, wildlife observation, photography, environmental education, and interpretation) with Federal and State regulations and review it annually to ensure wildlife and habitat goals are achieved and that these programs are providing safe, high-quality experiences for participants. Stipulations for this activity will be located in Title 50 Code of Federal Regulations and Clarks River NWR Hunting and Fishing Regulations (annual). Clarks River NWR Hunting and Fishing Regulations (annual) permits will be required for anyone who is also required to have Kentucky State hunting license and is engaged in hunting activities on the Refuge.

The following stipulations will help ensure the refuge hunting program is compatible with refuge purposes.

- This use must be conducted in accordance with state and federal regulations, and special refuge regulations published in the annual refuge Hunting Regulations and Public Use Regulations brochures.
- This use is subject to modification if on-site monitoring by refuge personnel or other authorized personnel results in a determination that hunting is causing unanticipated negative impacts to natural communities, wildlife species, or their habitats.
- Hunting seasons may be more restrictive than state seasons and regulations to ensure compliance with visitor safety, reduce wildlife disturbance, and facilitate high-quality hunting.
- Law Enforcement Officer(s) will promote compliance with refuge regulations, monitor public use patterns and public safety, and document visitor interactions. Law Enforcement personnel will monitor all areas and enforce all applicable state and federal Regulations.

JUSTIFICATION

Sport hunting on Clarks River NWR is clearly justified by law and policy. The Refuge Recreation Act of 1962 (16 U.S.C. 460K) authorizes the Secretary of the Interior to administer refuges, hatcheries, and other conservation areas for recreational use. The Refuge Recreation Act requires: 1) that any recreational use permitted will not interfere with the primary purpose for which the area was established and 2) that funds are available for the development, operation, and maintenance of the permitted forms of recreation.

The National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57) is an amendment to the National Wildlife Refuge Administration Act of 1966 and is fundamental to the management of lands within the National Wildlife Refuge System (System). The NWRSIA provides a mission for the System and clear standards for its management, use, planning, and growth. The NWRSIA recognizes that wildlife-dependent recreational uses, including hunting, fishing, wildlife observation and photography, environmental education and interpretation, can be allowed when determined to be appropriate and compatible with the mission of the System and purposes of the Refuge. These six compatible wildlife-dependent recreational uses, known as the “Big 6”, are the priority general public uses of the System and shall receive priority consideration in planning and management over other uses. Hunting, as specified in this plan, is

a Big 6 wildlife-dependent recreational use and the law states that as such, it “shall receive priority consideration in National Wildlife Refuge planning and management.” The Big 6 wildlife-dependent recreational uses are automatically considered appropriate uses. The Secretary of the Interior may then permit hunting on a refuge if it is determined that the use is also compatible and does not materially interfere with the primary purpose for which the refuge was established. The continuation of Sport Hunting on Clarks River NWR will not interfere with or detract from the fulfillment of the National Wildlife Refuge System mission. In fact, by helping to balance certain wildlife populations and connecting people to nature, hunting facilitates and is complimentary to the mission of the System and the establishing purpose of Clarks River NWR.

Pubic hunting on National Wildlife Refuges is supported by Executive Order No. 13443 Facilitation of Hunting Heritage and Wildlife Conservation. The purpose of the Executive Order is to “direct Federal agencies that have programs and activities that have a measurable effect on public land management, outdoor recreation, and wildlife management, including the Department of the Interior and the Department of Agriculture, to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat.

Public hunting on National Wildlife Refuges is further supported by the March 2, 2017 Secretarial Order No. 3347 regarding Conservation Stewardship and Outdoor Recreation. The purpose of this Order is to enhance conservation stewardship, increase outdoor recreation, and improve the management of game species and their habitat. Secretarial Order No. 3347 contains language that has specific application to public hunting on Clarks River NWR in Section (4) Part (C): (1) Identify specific actions to expand access significantly for recreational hunting and fishing on public lands as may be appropriate; (2) Identify specific actions to improve sport hunting and fishing cooperation, consultation, and communication with state wildlife managers; (3) Identify specific actions to improve habitat for fish and wildlife; (4) Identify specific actions to manage predators effectively and efficiently; and (5) Encourage, promote, and facilitate greater public access to all Department lands consistent with applicable laws.

According to Kentucky Department of Fish and Wildlife Resources, early in the 20th century, the deer population in the state of Kentucky was believed to number at 2,600 individuals. After almost 90 years, 50 of which contained active restoration efforts, the deer herd now exceeds 750,000 individuals statewide. The overall herd estimate shows a stable to slightly increasing trend. The 2015-2016 white-tailed deer report estimated 827,355 deer statewide, post 2015-16 hunting season, which is a 3% increase from 2014-15. The 2015-16 deer harvest was one for the ages with a harvest of 155,734 deer, beating the previous record (144,409 in 2013-14) by 11,325 deer. It was a 12% increase from the 2014-15 season (138,899) and was an 8% increase from 2013-14 season (144,409).

Table 1. The 5-year white-tailed deer harvest results for Marshall, McCracken, and Graves Counties, KY.

Year	Marshall	McCracken	Graves	3 Counties Total	State Total
2014	1300	854	2766	4920	145,753
2015	1332	818	2703	4853	136,026
2016	1216	809	2857	4882	139,450
2017	1258	823	2857	4938	155,730

2018	1193	808	2964	4965	138,898

The Kentucky Wild Turkey Population Status Report (2018) estimates the wild turkey population in Kentucky to be approximately 330,000 to 440,000. According to the report, wild turkey population trends from 2008 to 2017 are stable for Marshall, McCracken, and Graves Counties.

Table 2. The 5-year wild turkey harvest results for Marshall, McCracken, and Graves Counties, KY.

Year	Marshall	McCracken	Graves	3 Counties Total	State Total
2014	202	188	479	869	32580
2015	212	280	430	922	35201
2016	221	237	445	903	33655
2017	261	242	559	1062	34970
2018	195	178	437	810	29624

Suitable populations and habitat should exist on acquired refuge lands to support hunting. The viability of the game species populations to be hunted will be evaluated for negatively affects by hunting according to state season guidelines, bag limits, and regulations in the Sport Hunt Plan. This use is being permitted because it is a priority public use. It will not diminish the primary purposes for which the refuge was established. It also meets the mission of the National Wildlife Refuge System by providing renewable resources for the benefit of the American public while conserving viable populations of fish, wildlife and plant resources on these lands.

By allowing this use, the refuge would be providing opportunities and facilitating refuge programs in a manner and location that offer high quality, wildlife-dependent recreation and maintain the level of current wildlife values. The harvest of surplus animals is one tool used to manage wildlife populations at a level compatible with the environment, while providing wholesome recreational opportunities. Any new lands purchased as part of Clarks River NWR can be open to hunting depending on the manager's discretion using professional judgment, as long as there is no significant negative impact to natural resources or visitor services.

In order to remove the incentive to relocate feral hogs to establish a huntable population, feral hogs will not be regarded as a game species on Clarks Rive NWR and control measures will be implemented to eradicate this invasive species under the Integrated Pest Management Plan, which may include a hunting option. Currently, a feral hog population has not been documented on Clarks River NWR.

The refuge manager may, upon annual review of the hunting program and in coordination with the State, impose further restrictions on hunting, recommend that the refuge be closed to hunting, or further liberalize hunting regulations within the limits of state seasons and regulations, or as otherwise approved by State. Hunting restriction may be implemented if it conflicts with other, higher priority refuge programs or endangers refuge resources or public safety. This activity will not materially interfere with, or detract from, the mission of the Refuge System or the purpose for which the refuge was established.

PUBLIC REVIEW AND COMMENT

The proposal has been thoroughly coordinated with all interested and/or affected parties. The Service sent letters regarding the Draft Hunt Plan, compatibility, regulations, and EA to the state of Kentucky on December 31, 2019. Refuge staff will continue to coordinate with KDFW to address annual implementation of hunting activities. The Service also sent letters requesting comments and consultation on November 4, 2019 to:

- Absentee Shawnee Tribe of Indians
- Chickasaw Nation
- Delaware Nation of Oklahoma
- Eastern Band of Cherokees
- Peoria Tribe of Indians of Oklahoma
- Quapaw Tribal Business Committee
- Shawnee Tribe of Oklahoma
- Stockbridge Munsee Community

On, April 9, 2020, the Service sent letters and copies of the Draft Sport Hunt Plans, Environmental Assessment, Compatibility Determination and other documents to those tribes listed above. Clarks River NWR also received a supportive letter from the Chickasaw Nation.

The Clarks River NWR Draft 2020 Sport Hunt Plan, Environmental Assessment, and Compatibility Determination were made available for public review and comment for 45 days starting on March 23, to May 6, 2020. Notice was posted at the Clarks River NWR Headquarters Office, refuge website and refuge Facebook page. Further, an information bulletin announcing the availability of the documents for public review and comment was provided to local newspapers. Additionally, public comments were requested through the Federal Register process announced on April 9, 2020 and ended on June 8, 2020 (85 FR, Number 69; Docket Number FWS-HQ-NWRS-2020-0013, FXRS12610900000-201-FF09R20000). Clarks River NWR received 5 public comments expressing general support for expanding hunting opportunities under the proposed Sport Hunt Plan. Two public comments were received in opposition to the expansion of hunting opportunities on Clarks River NWR. Clarks River NWR addressed the public comments in Appendix D.

NEPA Compliance for Refuge Use Description: *Place an X in appropriate space.*

_____ Categorical Exclusion without Environmental Action Statement
_____ Categorical Exclusion and Environmental Action Statement
___X__ Environmental Assessment and Finding of No Significant Impact
_____ Environmental Impact Statement and Record of Decision

APPROVAL FOR COMPATIBILITY DETERMINATION

SIGNATURE:

REFUGE MANAGER: MICHAEL JOHNSON Digitally signed by MICHAEL JOHNSON Date: 2020.07.24 14:06:58 -05'00'

(Signature and date)

REVIEW:

REFUGE SUPERVISOR: SARAH CLARDY Digitally signed by SARAH CLARDY Date: 2020.07.28 07:54:04 -04'00'

(Signature and date)

REGIONAL COMPATIBILITY COORDINATOR: PAMALA WINGROVE Digitally signed by PAMALA WINGROVE Date: 2020.07.29 13:31:40 -04'00'

(Signature and date)

CONCURRENCE:

REGIONAL CHIEF: BRETT HUNTER Digitally signed by BRETT HUNTER Date: 2020.07.30 14:29:11 -04'00'

(Signature and date)

MANDATORY 15-YEAR REEVALUATION DATE: July 30, 2035

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APPENDIX C. US FISH AND WILDLIFE SERVICE INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION FORM

Originating Person: Kimberly Sykes
Telephone Number: 270-527-5770 **E-Mail: Kimberly_Sykes@fws.gov**
Date: September 20, 2019

PROJECT NAME: Clarks River NWR Hunt Plan - Increase Hunting Season Structure and Alignment

The purpose of this proposed action is to provide compatible wildlife-dependent recreational opportunities on Clarks River NWR. The need of the proposed action is to meet the Service's priorities and mandates as outlined by the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (NWRSIA) to "recognize compatible wildlife-dependent recreational uses as the priority general uses of the NWRS" and "ensure that opportunities are provided within the NWRS for compatible wildlife-dependent recreational uses." 16 U.S.C. 668dd(a)(4)).

All Clarks River NWR public activities are designed to contribute to or be compatible with all refuge objectives. Clarks River NWR will continue to provide high quality, wildlife-oriented recreation to the general public and the opportunity to utilize a valuable renewable resource. A well-managed public use program will protect and preserve wildlife resources and habitats as well as maintain refuge resources by minimizing negative impacts and enhancing wildlife populations and habitat diversity. Public hunting on Clarks River NWR is an appropriate and compatible form of wildlife oriented public recreation, which is compatible with the purpose for which the Refuge was established. Hunting, being a viable management tool when used wisely, often prevents the overpopulation of species within a given habitat community and can provide for greater wildlife diversity.

Public hunts on the Clarks River NWR began in November 1999, in conjunction with the State-wide opening of white-tailed deer and small game seasons. Turkey hunting was opened the following spring on the Refuge. Archery season was opened in September of 2001. The Refuge provides the visitor with an additional recreational opportunity where hunting opportunities on public lands are limited. The Proposed Action Alternative will better align Clarks River NWR hunt program with the State of Kentucky, provide an additional means of managing certain wildlife populations, and provide additional opportunities for hunters by opening huntable species to include bobcat, skunk, otter, muskrat, mink, gray and red fox, weasel, beaver and feral/invasive species (feral hogs) if a hunting option is selected to control this invasive population.

I. Service Program:
___ Ecological Services
___ Federal Aid
___ Clean Vessel Act
___ Coastal Wetlands
___ Endangered Species Section 6
___ Partners for Fish and Wildlife
___ Sport Fish Restoration
___ Wildlife Restoration

___ Fisheries
_X__ Refuges/Wildlife

II. State/Agency: U.S. Fish and Wildlife Service

III. Station Name: Clarks River National Wildlife Refuge

IV. Description of Proposed Action:

Under this Alternative, hunting opportunities for upland game species permitted on Clarks River NWR would be opened to include bobcat, skunk, otter, muskrat, mink, gray and red fox, weasel, beaver and feral/invasive species (feral hogs), if a hunting option is selected to control this invasive population. Refuge-specific regulations will be published in the Federal Register as part of the 2020-2021 Refuge-Specific Hunting and Sport Fishing Regulations.

Table 1. Overview of the Proposed Action Alternative.

TYPE	SEASON DATES/ BAG LIMITS	REFUGE SPECIFIC REGULATIONS
Duck Goose Coot	Same as State Waterfowl Seasons and Bag Limits.	-Hunting will cease and hunters will be out of the field by 12 noon each day. -Only portable and temporary blinds are permitted. -Decoys and blinds must be removed each day. -Only nontoxic shot permitted. -Access to the refuge is two hours before sunrise. -The use of dogs for retrieving purposes or in the pursuit of migratory birds is permitted. *Waterfowl hunting on Clarks River Waterfowl Units by Quota Permit only.
Dove Woodcock Snipe Crow Quail	Same as State Seasons and Bag Limits. Closed during all refuge modern gun and muzzleloader deer seasons	-Only nontoxic shot permitted -Access to the refuge is two hours before sunrise to two hours after sunset. -The use of dogs for retrieving purposes or in the pursuit of migratory birds is permitted.
Squirrel Rabbit	Same as State Season and Bag Limits. Closed during all refuge modern gun and muzzleloader deer seasons.	-Only nontoxic shot permitted -Use of centerfire weapons is prohibited --Access to the refuge is two hours before sunrise to two hours after sunset. -The use of dogs for retrieving purposes or in the pursuit of gray and fox squirrels, eastern cottontail and swamp rabbits is permitted.
Raccoon Opossum	Same as State Season and Bag Limits	-Only nontoxic shot permitted

		-The use of dogs in the pursuit of raccoon and opossum is permitted in accordance with State. -Use of dogs outside hunting season is by special use permit only.
Coyote Bobcat Fox Skunk Otter Muskrat Mink Weasel Beaver	Same as State Season and Bag Limits (Bobcat and Otter taken on Refuge will be telechecked through State 1-800-245-4263 with public land code for Clarks River NWR)	-Only nontoxic shot permitted -Use of dogs is not permitted. - Access to the refuge is two hours before sunrise to two hours after sunset. - May only be taken during daylight hours
White-tail Deer	Same as State Season and Bag Limits for Zone 1 (Deer taken on Refuge will be telechecked through State 1-800-245-4263 with public land code for Clarks River NWR)	- Pursuit of white-tailed deer with dogs is prohibited. -Construction or use of any permanent tree stand is prohibited. Only climbing and/or portable stands may be used. - Tree stands may be placed in the field no earlier than two weeks prior to the opening of season and must be removed from the field within one-week after the season closes. - All stands left in the field must be identified by hunter's State hunting license identification number. It is not required but the owner may provide the owner's name, address and phone number instead of the hunting identification number. If stand does not contain information it will be confiscated. -Safety belts are required at all times with use of tree stand. -Hunters may not hunt by organized deer drives of two or more hunters. -Hunting of deer by the aid of or distributing any feed, salt, minerals or other ingestible attractants is prohibited -Access to the refuge is two hours before sunrise to two hours after sunset. -Ground blinds are permitted but must be removed when not in use. -During modern gun, muzzleloader, and youth firearm ground blinds must display 1 square foot (144 square inches) of solid unbroken hunter orange visible from all sides.
Turkey	Same as State Seasons and Bag Limits (Turkey taken on Refuge will be telechecked through State 1-	- Access to the refuge is two hours before sunrise to two hours after sunset. -The use of dogs for retrieving purposes or in the pursuit of wild turkey is permitted in accordance with KDFWR regulations

	800-245-4263 with public land code for Clarks River NWR)	
Bullfrogs	Same as State Seasons and Bag Limits	-Hunting of bullfrogs at the Environmental Education Recreation Area is prohibited. -Collection, hunting, and/or harm of all other species of reptiles and amphibians on the Refuge is prohibited.
Feral Hogs	Feral hogs will not be regarded as a game species on Clarks Rive NWR and control measures will be implemented to eradicate this invasive species, which may include a hunting option.	Feral hogs will not be regarded as a game species on Clarks Rive NWR and control measures will be implemented to eradicate this invasive species, which may include a hunting option.
Sandhill Crane Groundhog	Closed	Closed

Mitigation Measures to Avoid Conflicts:

- Designated areas are closed to hunting for public, volunteer, and staff safety and/or as wildlife sanctuaries
- Target practice or non-hunting discharge of a weapon is prohibited to avoid wildlife disturbance and for the safety of visitors as well as prohibited by 50 CFR 27.41.
- Hunting within 100 feet of residence.
- Discharging a firearm within 200 feet of residence, gravel road, or portions of the abandoned railroads.
- Use or possession of lead shot (shot shells) for all species with the exception of turkey to reduce the likelihood of lead poisoning to waterfowl and their natural predators as well as prohibited by 50 CFR 32.2(k).
- Hunting waterfowl after noon (12:00 PM CST) is prohibited to allow waterfowl time to feed and rest without disturbance.
- Hunting raccoon or opossum with pursuit dogs outside of hunting season is only authorized by special use permit to decrease wildlife disturbance.
- Entering quota waterfowl management units from November 1st through March 31th without quota permit on drawn hunt days is prohibited to allow waterfowl time to feed and rest without disturbance.
- Hunting dove, woodcock, snipe, crow, quail, gray and fox squirrels, and eastern cottontail and swamp rabbits is prohibited during muzzleloader and modern gun deer seasons for safety issues and to reduce user conflict.
- Use of all-terrain vehicles by non-mobility impaired hunters is prohibited to reduce wildlife and visitor disturbance from noise.
- Mule or horse use off of designated routes (graveled, paved roads, abandoned railroad right of way), for activities other than those identified as wildlife dependent activities is prohibited to protect native plants, reduce disturbance, and limit erosion/compaction of soils. During muzzleloader or modern gun deer seasons this use is prohibited on the refuge for safety of both the riders and animals.
- Bicycle use off of designated routes (graveled, paved roads, abandoned railroad right of way), or for activities other than those identified as wildlife-dependent activities is

prohibited to protect native plants, reduce disturbance, and limit erosion/compaction of soils

- Use of dogs in the pursuit of white-tailed deer, coyote, bobcat, fox, skunk, muskrat, mink, weasel, beaver, and feral hogs, if a hunting option is selected to control this invasive population, is prohibited to reduce wildlife disturbance and for user safety.

Under this Alternative, Clarks River NWR will continue to provide high quality, wildlife-oriented recreation to the general public and the opportunity to utilize a valuable renewable resource. Public hunting on Clarks River NWR is an appropriate and compatible form of wildlife oriented public recreation, which is compatible with the purpose for which the Refuge was established. Hunting, being a viable management tool when used wisely, often prevents the overpopulation of species within a given habitat community and can provide for greater wildlife diversity. In this way, the environment is managed for the benefit of a variety of wildlife. This alternative provides a recreational experience to the general public while maintaining a well-managed public use program which protects and preserves wildlife resources and their habitats as well as maintain refuge resources by minimizing negative impacts and enhancing wildlife populations and habitat diversity.

V. Pertinent Species and Habitat:

A. Include species/habitat occurrence map:

Complete the following table:

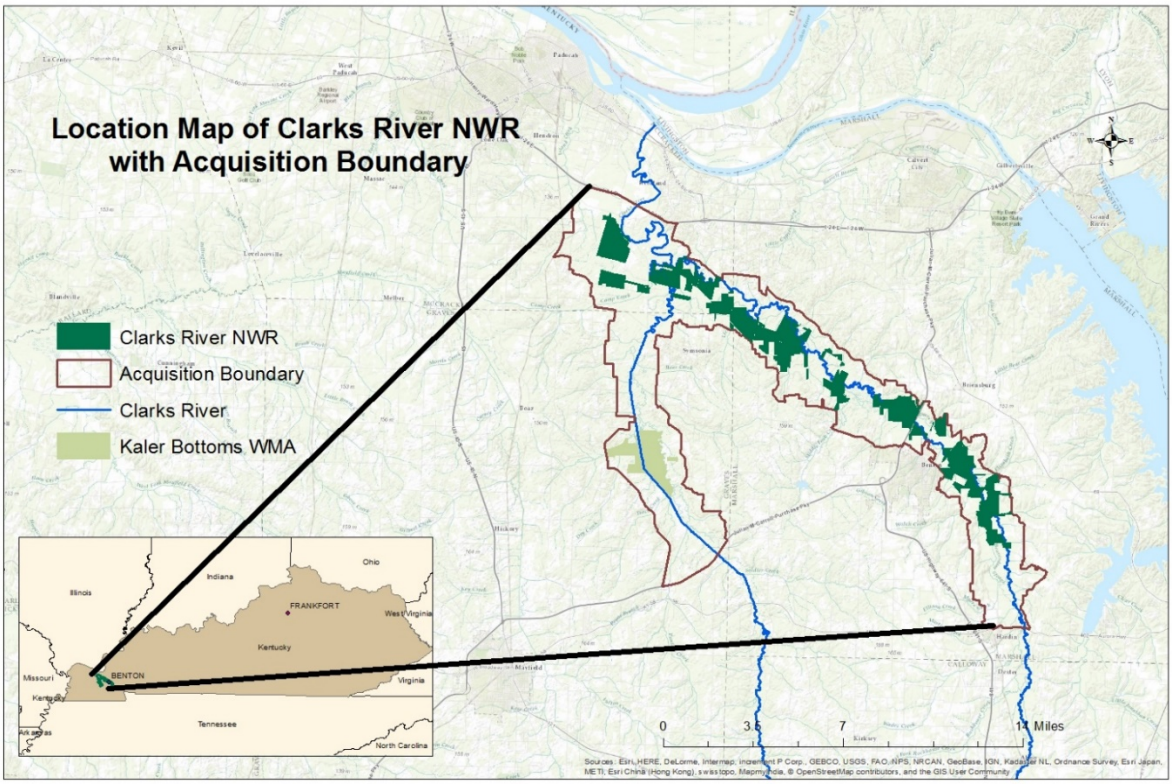
SPECIES/CRITICAL HABITAT	STATUS[1]
Indiana Bat (*Myotis sodalis*)	E
Northern Long-Eared Bat (*Myotis septentrionalis*)	T
Gray Myotis (*Myotis grisescens*)	E
Orangefoot Pimpleback (*Plethobasus cooperianus*)	E
Pink Mucket (*Lampsilis abruta*)	E
Sheepnose (*Plethobasus cyphyus*)	E
Rabbitsfoot (*Quadrula c. cylindrical*)	T
Fat Pocketbook (*Potamilus capax*)	E

[1]STATUS: E=endangered, T=threatened, PE=proposed endangered, PT=proposed threatened, CH=critical habitat, PCH=proposed critical habitat, C=candidate species

** American Burying Beetle (*Nicriphorus americanus*) is considered extinct in Kentucky and therefore not listed.

***Northern long-eared bat (trapping and acoustical) and Indiana bat (acoustical only) have been documented to occur on CRNWR and the gray myotis is believed to use CRNWR habitats.

****None of the listed mussel species have been documented to occur on CRNWR. However, they have been documented downstream of the Refuge at the point where Clarks River joins the Tennessee River.



VI. Location (attach map):

A. Ecoregion Number and Name: Lower Tennessee/Upper Cumberland

B. County and State: Marshall, McCracken, and Graves Counties in Kentucky

C. Section, township, and range (or latitude and longitude):
36° 55’ lat. / 88° 27’ long.

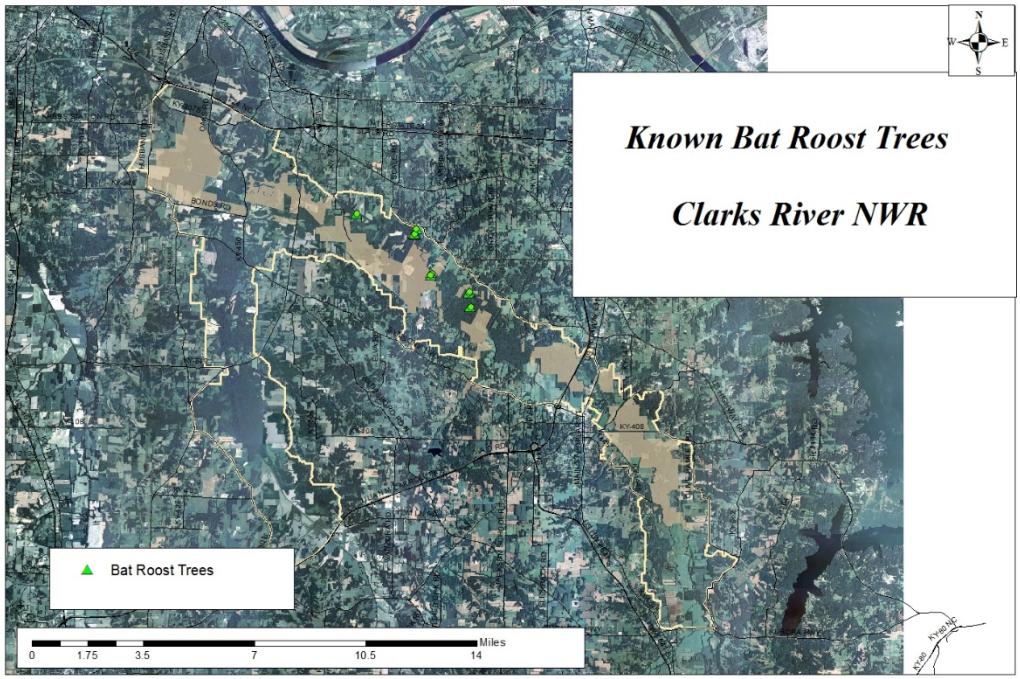
D. Distance (miles) and direction to nearest town: Between 0.5 and 16 miles from Benton, Kentucky

E. Species/habitat occurrence: Riparian Forests and Aquatic Habitats

VII. Determination of Effects:

A. Explanation of effects of the action on species and critical habitats in item V. B (attach additional pages as needed):

SPECIES/CRITICAL HABITAT	IMPACTS TO SPECIES/CRITICAL HABITAT
Indiana Bat (*Myotis sodalis*) Northern Long-Eared Bat (Myotis septentrionalis) Gray Myotis (*Myotis grisescens*)	Northern long-eared bat (trapping and acoustical) and Indiana bat (acoustical only) have been documented to occur on CRNWR. With respect to potential contact injury, there is little potential for direct or indirect harm to Indiana bats, Northern long-eared bats, or gray bats, since these species are not expected to be actively foraging during daylight hours when the majority of hunting would occur. Gray bats are likely to be roosting in caves. Acoustical monitoring has recorded Indiana bats and Northern long-eared bats on Clarks River NWR. Since these species roost under the loose bark or in cavities and cracks of snags and trees, some impacts could occur if hunters place climbing trees stands on trees with loose bark. Further, CRNWR staff will actively coordinate with the Kentucky Ecological Services Field Office if any future proposed or candidate species are located on CRNWR in order to ensure that potential adverse effects on those species are adequately addressed.
Orangefoot Pimpleback (*Plethobasus cooperianus*) Pink Mucket (*Lampsilis abruta*) Sheepnose (*Plethobasus cyphyus*) Rabbitsfoot (*Quadrula c. cylindrical*) Fat Pocketbook (*Potamilus capax*)	None of the listed species have been documented to occur on CRNWR. However, they have been documented downstream of the Refuge at the point where Clarks River joins the Tennessee River. The threatened and endangered species listed should not be impacted by hunting on the refuge. Further, CRNWR staff will actively coordinate with the Kentucky Ecological Services Field Office if any future proposed or candidate species are located on CRNWR in order to ensure that potential adverse effects on those species are adequately addressed.



B. Explanation of actions to be implemented to reduce adverse effects:

SPECIES/CRITICAL HABITAT	ACTIONS TO MITIGATE/MINIMIZE IMPACTS
Indiana Bat (*Myotis sodalis*) Northern Long-Eared Bat (Myotis septentrionalis) Gray Myotis (*Myotis grisescens*)	CRNWR has identified a series of actions related to wildlife habitat management that, along with the additional requirement to consult with the Kentucky Ecological Services Field Office on habitat removal or habitat alteration projects, will minimize impacts to these species. These actions are: • The use of nails, wire, screws or bolts to attach a stand to a tree, or hunting from a tree into which a metal object has been driven to support a hunter. • No cutting or trimming of trees or branches are permitted

SPECIES/CRITICAL HABITAT	ACTIONS TO MITIGATE/MINIMIZE IMPACTS
Orangefoot Pimpleback (*Plethobasus cooperianus*) Pink Mucket (*Lampsilis abruta*) Sheepnose (*Plethobasus cyphyus*) Rabbitsfoot (*Quadrula c. cylindrical*) Fat Pocketbook (*Potamilus capax*)	No impacts to these species are anticipated by hunting.

VIII. Effect Determination and Response Requested:

SPECIES/ CRITICAL HABITAT	DETERMINATION[1]			RESPONSE[1] REQUESTED
Indiana Bat (*Myotis sodalis*)		X		
Northern Long-Eared Bat (Myotis septentrionalis)		X		
Gray Myotis (*Myotis grisescens*)		X		
Orangefoot Pimpleback (*Plethobasus cooperianus*)		X		
Pink Mucket (*Lampsilis abruta*)		X		
Sheepnose (*Plethobasus cyphyus*)		X		
Rabbitsfoot (*Quadrula c. cylindrical*)		X		
Fat Pocketbook (*Potamilus capax*)		X		

[1]DETERMINATION/RESPONSE REQUESTED:
NE = no effect. This determination is appropriate when the proposed action will not directly, indirectly, or cumulatively impact, either positively or negatively, any listed, proposed, candidate species or designated/proposed critical habitat. Response Requested is optional but a "Concurrence" is recommended for a complete Administrative Record.

NA = not likely to adversely affect. This determination is appropriate when the proposed action is not likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat or there may be beneficial effects to these resources. Response Requested is a "Concurrence".

AA = likely to adversely affect. This determination is appropriate when the proposed action is likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat. Response Requested for listed species is "Formal Consultation". Response Requested for proposed or candidate species is "Conference".

Signature (Clarks River NWR) date 9/19/19

I. Reviewing Ecological Services Office Evaluation:

A. Concurrence __x Nonconcurrence ___

B. Formal consultation required_ _

C. Conference required_ _

D. Informal conference required__ _

E. Remarks (attach additional pages as needed):

VIRGIL Digitally signed by VIRGIL ANDREWS Date: 2019.09.23 11:34:30 -04'00'

Signature date

Field Supervisor KY ES FO

Title

APPENDIX D. SERVICE'S RESPONSE TO PUBLIC COMMENTS

The Clarks River NWR Draft 2020 Sport Hunt Plan, Environmental Assessment, and Compatibility Determination were made available for public review and comment for 45 days starting on March 23, to May 6, 2020. Notice was posted at the Clarks River NWR Headquarters Office, refuge website and refuge Facebook page. Further, an information bulletin announcing the availability of the documents for public review and comment was provided to local newspapers. Additionally, public comments were requested through the Federal Register process announced on April 9, 2020 and ended on June 8, 2020 (85 FR, Number 69; Docket Number FWS-HQ-NWRS-2020-0013, FXRS12610900000-201-FF09R20000). The Service's responses to comments received through the Federal Register rulemaking process were published in the final rule in the Federal Register. Clarks River NWR received 5 public comments expressing general support for expanding hunting opportunities under the proposed Sport Hunt Plan. Two public comments were received in opposition to the expansion of hunting opportunities on Clarks River NWR.

Under NEPA, the Service must respond to substantive comments. For purposes of this planning process, a substantive comment is one that was submitted during the public review and comment period, which was within the scope of the proposed action, was specific to the proposed action, had a direct relationship to the proposed action, and included reasons for the Service to consider it. For example, a substantive comment could be that the document referenced 500 individuals of a particular species, but that current research found 600. In such a case, the Service would likely update the document to reflect the 600, citing the current research. While a comment that would not be considered substantive would be, "We love the proposal." Comments outside the scope of the proposal were not addressed.

Comment: Clarks River NWR received 6 comments expressing general support for the proposed opening of additional species within the hunting program. These comments of general support expressed appreciation for the increased hunting opportunities.

Service Response: Hunting and fishing on U.S. Fish and Wildlife Service lands is a tradition that dates back to the early 1900s. In passing the Improvement Act, Congress reaffirmed that the Refuge System was created to conserve fish, wildlife, plants, and their habitats, and would facilitate opportunities for Americans to participate in compatible wildlife-dependent recreation, including hunting and fishing on Refuge System lands. We prioritize wildlife-dependent recreation, including hunting and fishing, when doing so is compatible with the purpose of the refuge and the mission of the NWRS. Hunting or fishing on hatcheries, unlike Refuge System lands, is authorized "when such activity is determined not to be detrimental to the propagation and distribution of fish or other aquatic wildlife" (50 CFR 71.1). We did not make any changes to the rule as result of these comments

Comment: The Service is required to take a hard look at the expansion of hunting on national wildlife refuges and must consider all cumulative impacts. The Service should complete a comprehensive EIS.

Service Response: The Service disagrees with the assertion that we should prepare an EIS before proposing expanded hunting and fishing opportunities on refuges or hatcheries. We completed individual environmental assessments for or applied categorical exclusions to 106 refuges and hatcheries, in compliance with NEPA, to evaluate the impacts of opening or expanding hunting and fishing opportunities on the stations through this rulemaking. These environmental assessments and categorical exclusions underwent regional and national review to address and consider these actions from a local, regional, multi-State and/or flyway perspective, and to consider the cumulative impacts from this larger geographical context. The 2020-2021 cumulative impacts report concludes, after

analyzing the impacts of these 106 environmental assessments and categorical exclusions collectively, that the rule would not have significant impacts at the local, regional, or national level. The commenters who have raised these environmental analysis concerns have provided no additional information that would change this analysis or our conclusion. As discussed above, we annually conduct management activities on refuges and hatcheries that minimize or offset impacts of hunting and fishing on physical and cultural resources, including establishing designated areas for hunting; restricting levels of use; confining access and travel to designated locations; providing education programs and materials for hunters, anglers, and other users; and conducting law enforcement activities.

In this rulemaking, the Service is expanding opportunities for recreational hunting and fishing. Expanding opportunities does not necessarily result in increased impacts to the refuge resources. We anticipate that for some refuges, these expansions will not result in changes in usage of the refuge. In other cases, these expansions may lead to some increase in use of refuges, but these changes would likely by minor. Opening of new refuges may attract people to the refuge, but these hunters and/or anglers were likely already participating elsewhere on state or other federal lands. Overall, considering the decreasing trends in hunting and fishing generally, and decreasing trends of these activities on refuges specifically, we do not expect this final rule to have a significant impact on the environment. As noted in our cumulative impacts report, hunter participation trends have been generally declining, especially near some “Urban National Wildlife Refuges;” and some refuges attract a very small number of participants, and often participation rates decline over the course of a season.

Finally, a federal court found that this approach, using a bottom-up analysis to assess the cumulative impact of increased hunting and fishing across the entire refuge system, was an appropriate way for the Service to analyze the impacts of the rule in compliance with NEPA (see Fund for Animals v. Hall, 777 F. Supp. 2d 92, 105 (D.D.C. 2011)). We did not make any changes to the rule as result of these comments.

Comment: Ensure that the biological integrity, diversity, and environmental health of the system are maintained.

Service Response: We do not allow hunting on the Refuge if it is found incompatible with that individual refuge's purposes or with the mission of the NWRS. In addition, the Service's biological integrity, diversity, and environmental health (BIDEH) policy (601 FW 3) guides decision-making with respect to management of activities on refuges, including hunting. Clarks River NWR staff consulted with State biologists to ensure sustainable populations of these species existed to support hunting on the Refuge. We carefully considered how a proposed hunt fits with individual refuge goals, objectives, and strategies before allowing the hunt. None of the known, estimated, or projected harvests of migratory game birds, upland game, or big game species in this plan is expected to have significant adverse direct, indirect, or cumulative impacts to hunted populations, non-hunted wildlife, endangered or threatened species, plant or habitat resources, wildlife-dependent recreation, prescribed fire, air, soil, water, cultural resources, refuge facilities, solitude, or socio-economics. Clarks River NWR staff analyze these impacts not only in the refuge's NEPA document, but also the Service analyzed these impacts in the 2019-2020 cumulative impacts report. We did not make any changes to the rule as result of these comments.

Comment: Hunting of rare or ecologically important animals, including bobcat, otter, and beaver

Service Response: Clarks River NWR acknowledges that bobcat, otter, and beaver can be important predators or contribute to landscape diversity, respectively. Bobcats are a top predator in many ecosystems and can be a significant source of predation on some species. River otters are important predators in aquatic ecosystems but may also opportunistically feed on other species. Beavers move into suitable areas and by creating an environment appropriate for their own needs, unwittingly create wetland habitats. The majority of these species are harvested by trapping. Under the Improvement Act, trapping is not considered a priority wildlife-dependent recreational use of the Refuge System. Public trapping is prohibited on Clark River NWR. Refuge staff, volunteers, or contractors are permitted to trap beaver to accomplish wildlife management objectives. The Administration Act, as amended, directs the Service to make refuge regulations as consistent with State regulations as practicable. These three species are relatively abundant across the State of Kentucky. Additionally, furbearer population levels were determined by the State to be able to sustain public hunting. Clarks River NWR staff, using the best available data, made reasonable and precautionary estimates of harvest levels that may occur on the Refuge. Under the NEPA process, using these estimates, it was determined that would not have significant impacts at the local or regional populations of these species. We did not make any changes to the rule as result of these comments.

Comment: Take the "hard look" required under NEPA on the use of lead; nor does the authorization of lead ammunition for turkey hunting comport with this duty to maintain the environmental health of the system. Copious science demonstrates the harm that lead poisoning causes eagles and other wildlife that live on this refuge.

Service Response: The Service shares commenters concerns regarding the bioavailability of lead in the environment. Historically, the principal cause of lead poisoning in waterfowl was the collection of high densities of lead shot in wetland sediments associated hunting activities. In 1991, as a result of high bird mortality, the Service instituted a nationwide ban on the use of lead shot for hunting waterfowl and coots (50 CFR 32.2(k)). However, there remains a concern about the bioavailability of spent lead ammunition (bullets) on the environment, endangered and threatened species, birds, mammals, and humans or other fish and wildlife susceptible to biomagnification. Although there is not a Service-wide ban on lead ammunition for non-migratory bird hunting activities, Clarks River NWR prohibits the use of lead shot for hunting all migratory birds and upland game. Clarks River NWR and other refuges within the National Wildlife Refuge System have been educating hunters about the risk to wildlife from lead ammunition. Refuge staff provide information on websites, signage and through other means to ensure hunters have relevant information regarding the use of non-toxic shot. The Service will continue to research this issue and engage with States and other partners to promote the use of non-lead ammunition. The Administration Act, as amended, directs the Service to make refuge regulations as consistent with State regulations as practicable. We share a strong partnership with the States in managing wildlife, and, therefore, we are proceeding with the phase-out of toxic ammunition in a coordinated manner with each respective State wildlife agency. Non-toxic shot is required for migratory bird hunting on all Federal Lands, including national wildlife refuges. Clarks River NWR requires all hunters to use non-toxic shot with the exception of hunting turkey during state seasons.

Clarks River NWR additionally analyzed the use of lead shot from turkey hunting in the Final Environmental Assessment as part of the NEPA process. This analysis incudes the amount of turkeys harvested on Clarks River NWR. From the spring of 2014 through the spring of 2019, less than 150 turkeys were reported harvested on Clarks River NWR. The most reported during a single year was 35 harvested turkeys across approximately 9,000 acres of Clarks River NWR. Additionally, unlike deer, it is not common practice to field dress game and discard the internal organs and tissues on the landscape. Other sources of lead contamination exist in the surrounding landscape; however,

the allowance of turkey hunting with lead shot is unlikely to make a significant difference in the lead exposure of fish and wildlife found on Service lands. Therefore, the continued allowance of toxic shot for hunting of wild turkey is estimated to have a negligible impact on the cumulative impacts of lead in the environment in the best professional judgement of staff. The Service's continues to monitor research findings and work in coordination with the State to mitigate the cumulative impacts of lead on refuge habitats or wildlife. We did not make any changes to the rule as result of these comments, but updated the Environmental Assessment with this information.

Comment: Bobcats. Trophy Hunting of Bobcats is Inhumane and Not Biologically Supported, No Explanation of Harvest Estimate

Service Response: The Service does not attempt to define or authorize "trophy hunting" in any of our laws, regulations, or policies concerning hunting. We follow State hunting and fishing regulations, except for where we are more restrictive on individual stations, including State regulations concerning responsible hunting, or prohibitions on wanton waste (defined as "to intentionally waste something negligently or inappropriately"). We only allow hunting on refuges when we have determined that the opportunity is sustainable and compatible.

Bobcats are a top predator in many ecosystems and can be a significant source of predation on species such as white-tailed deer and cotton rats (Roberts and Crimmins 2010). In a nation-wide study, Roberts and Crimmins reported 31 states having increasing populations of bobcats, while 15 states having stable bobcat populations, 1 state reported fluctuating bobcat populations, and Florida having a decreasing bobcat population as of 2010. In this study, Kentucky reported increasing bobcat populations (Roberts and Crimmins, 2010). The Refuge is located in Marshall, McCracken, and Graves counties in the Purchase Region of Kentucky. Annual bobcat harvest data, from 2014-2018, reveals less than 4% of bobcats harvested within Kentucky come from these 3 counties. Additionally, less than 2.2% were taken via hunting. Hunting pressure on this species is dependent on pelt prices in any given year. By opening this hunting opportunity on the Refuge, it is anticipated a slight increase in the numbers of bobcats harvested within these 3 counties.

In coordination with the State of Kentucky, it was determined that furbearer population levels can sustain hunting and are relatively abundant across the State of Kentucky including western Kentucky where Clarks River NWR is located (L. Palmer, personal communication, August 14, 2019). Clarks River NWR estimates 25 hunters will annually visit to hunt the Refuge to hunt bobcat. Hunters are required by the State to report annual harvest when hunting on the public and private lands in Kentucky, Clarks River NWR estimates 5 bobcats will be taken annually. This estimate was extrapolated from the average annual hunting harvest of bobcats from 2014 through 2018 in the three counties in which Clarks River NWR is located and the percentage of acreage Clarks River NWR owns within those 3 counties. Between 2014 and 2018, hunters harvested 40.2 bobcats annually in Graves, Marshall, and McCracken counties. Clarks River NWR owns approximately 9,300 acres within the 745,100 acres making up these three counties, accounting for 0.01248 percent. Therefore, expected harvest of bobcats annually on Clarks River NWR would be 0.5 animals. However, staff realized that not all acres within the three counties would be considered habitat for bobcats, therefore using the best professional judgement of the bobcat population on the Refuge staff concluded that 5 bobcats annually may be taken by hunters on Clarks River NWR. Additionally, bobcats are considered nocturnal species and the refuge will only be allowing hunting during daylight hours, creating temporal protection during their most active hours and further reducing the hunter harvest. It is expected the additional take will have no negative impacts on the local and regional bobcat population. We did not make any changes to the rule as result of these comments, but updated the Environmental Assessment with this information.

Comment: Otter. No Explanation of Harvest Estimate

Service Response: River otters are important predators in aquatic ecosystems but may also opportunistically feed on birds and mammals (Dekar et al. 2010). The Refuge is located in Marshall, McCracken, and Graves counties in the Purchase Region of Kentucky. Annual otter harvest data, from 2014-2018, reveals less than 8.5% of otter harvested within Kentucky come from these 3 counties. Additionally, less than 0.5% were taken via hunting. Hunting pressure on this species is dependent on pelt prices in any given year. By opening this hunting opportunity on the Refuge, it is anticipated a slight increase in the numbers of otters harvested within these 3 counties.

In coordination with the State of Kentucky, it was determined that furbearer population levels can sustain hunting and are relatively abundant across the State of Kentucky including western Kentucky where Clarks River NWR is located (L. Palmer, personal communication, August 14, 2019). Clarks River NWR estimates 20 hunters will annually visit to hunt the Refuge to hunt otter. Hunters are required by the State to report annual harvest when hunting on the public and private lands in Kentucky, Clarks River NWR estimates less than 5 otters will be taken annually. This estimate was extrapolated from the average annual hunting harvest of otter from 2014 through 2018 in the three counties in which Clarks River NWR is located and the percentage of acreage Clarks River NWR owns within those 3 counties. Between 2014 and 2018, hunters harvested 2.2 otter annually in Graves, Marshall, and McCracken counties. Clarks River NWR owns approximately 9,300 acres within the 745,100 acres making up these three counties, accounting for 0.01248 percent. Therefore, expected harvest of otter annually on Clarks River NWR would be 0.02 animals. However, staff realized that not all acres within the three counties would be considered habitat for otters, therefore using the best professional judgement of the otter population on the Refuge staff concluded that 5 otter annually may be taken by hunters on Clarks River NWR. Additionally, otters are considered most active at night and the refuge will only be allowing hunting during daylight hours, creating temporal protection and further reducing the hunter harvest. It is expected the additional take will not have negative impacts on the local or regional population. We did not make any changes to the rule as result of these comments, but updated the Environmental Assessment with this information.

Comment: Beaver. Hunting of Beaver Could Reduce Diversity; No Explanation of Harvest Estimate

Response: Beavers move into suitable areas and by creating an environment appropriate for their own needs, unwittingly create wetland habitats for many other species including waterfowl (Beard 1953; Nummi 1992). However, in creating these habitats, beaver can also cause damage to bottomland hardwood forests and in some cases reduce food availability for non-aquatic wildlife. Hunting pressure on this species is dependent on pelt prices in any given year or the species being a nuisance to private landowners. The staff at Clarks River NWR acknowledge that beaver ponds contribute to landscape diversity. In order to promote diverse habitats and protect downstream water quality, Clarks River NWR maintains approximately 300 acres of beaver impacted lands. However, beaver also damage forest resources used by many other species. Research has shown that browsing by beaver can reverse the progress of succession and decrease diversity of woody species (Rosell et. al. 2005). Hunting of beaver will assist in reducing timber damage and effects of beaver ponding on private landowners.

In coordination with the State of Kentucky, it was determined that furbearer population levels can sustain hunting and are relatively abundant across the State of Kentucky including western Kentucky where Clarks River NWR is located (L. Palmer, personal communication, August 14, 2019). Clarks

River NWR estimates 20 hunters will annually visit to hunt the Refuge to hunt beaver. Hunters are required to report annual harvest when hunting on the public and private lands in Kentucky. Harvest estimates were extrapolated from using management take records of beaver during the winter of 2018 through the spring of 2019. Management recorded 72 beaver removed during this period. Refuge staff's efforts to remove problem beaver resulted in the removal of only 4 using firearms. In the best professional judgement of the staff, the majority of interest for hunting beavers will come from private landowners attempting to control beaver(s) affecting their property. Beaver are considered diurnal species and the refuge will only be allowing hunting during daylight hours, creating temporal protection for them during their most active hours. Given the known locations of landowner issues and these other factors, Clarks River NWR estimates 15 beaver will be taken annually. By opening this hunting opportunity on the Refuge, the staff anticipates a slight increase in the numbers of beavers would be harvested; however, it is expected the additional take will have little to no negative impacts on the local or regional beaver population. We did not make any changes to the rule as result of these comments, but updated the Environmental Assessment with this information.

Comment: Coyote. Hunting Coyotes is Cruel and Not Biologically Supported, and Should Not Be Permitted on National Wildlife Refuges; No Explanation of Harvest Estimate

Service Response: Coyotes have vastly expanded throughout the eastern United States, believed to potentially be filling the niche of the Red wolf as the apex predator in urban and forested areas. The coyote mating system is such that only the dominate pair reproduce and suppress the mating activities in subordinate individuals. When the dominate pair of coyotes is killed, the packs disbands, and the subordinate members find mates and reproduce. Because of such reproductive system, efforts throughout history to eradicate coyote populations because of damage to livestock, property, and other commodities has failed. It has been deemed nearly impossible to permanently reduce coyote populations (Crabtree and Sheldon 1999). Research has shown that control of coyote populations can increase the abundance of species such as rodents, rabbits, badges, bobcats, and fox (Henke and Bryant, 1999). Allowing recreational hunting of Refuge lands is predicted to have no effect on the overall population of coyotes yet could positively increase various species' abundance. In coordination with the State of Kentucky, it was determined that furbearer population levels can sustain hunting and are relatively abundant across the State of Kentucky including western Kentucky where Clarks River NWR is located (L. Palmer, personal communication, August 14, 2019). Historic data of hunter harvest in KY is unavailable because the telecheck of harvested coyotes is not required. Coyote population data is monitored by the KDFWR. KDFWR sets statewide season structures and bag limits. Hunter effort and harvest numbers were extrapolated from hunters who expressed interest in hunting coyote. Coyote hunting on the refuge will coincide with KDFWR seasons and bag limits, with the exception that coyotes may not be taken using dogs and is only permitted during daylight hours, further reducing the hunter harvest. Clarks River NWR estimates 50 hunters annually visit to hunt the Refuge to hunt coyote. In the best professional judgement of Clarks River NWR staff, 25 coyotes are taken annually by hunters. Research has shown that hunting will not affect local or regional coyote populations. We did not make any changes to the rule as result of these comments, but updated the Environmental Assessment with this information.

Comment: Other furbearers (muskrat, mink, red and gray fox, weasel, skunk, raccoon, opossum). No Explanation of Harvest Estimate

Service Response for muskrat and mink: Although muskrats are an important part of native ecosystems, they can damage agricultural crops, native wetlands, and water control systems. Muskrats cause damage by eating vegetation, crayfish, and mussels as well as burrowing through dams and levees. Muskrats can impact wetland viability and reduce habitats for other species such as waterfowl through their foraging and burrowing activities (Miller, 2018). Mink are opportunistic

carnivores. Mink will eat bird eggs, birds, frogs, fish, ducks, squirrels, rabbits, chipmunks, rats and mice, amphibians, reptiles, worms and insects. Hunting pressure on these species is dependent on pelt prices in any given year or the species being a nuisance to private landowners.

In coordination with the State of Kentucky, it was determined that furbearer population levels can sustain hunting and are relatively abundant across the State of Kentucky including western Kentucky where Clarks River NWR is located (L. Palmer, personal communication, August 14, 2019). Clarks River NWR estimates 5 hunters will annually visit to hunt the Refuge to hunt either muskrat or mink. Hunters are required to report annual harvest when hunting on the public and private lands in Kentucky. Harvest estimates were extrapolated from using management take records of incidental take during the winter of 2018 through the spring of 2019 by staff removing beaver. Management recorded 1 muskrat and no mink incidentally taken during this period. In the best professional judgement of the staff, the majority of interest for hunting muskrat or mink will come from private landowners attempting to control beaver(s) affecting their property. The refuge will only be allowing hunting during daylight hours. Since muskrat and mink are considered most active at night, a temporal protection will be created during hours of darkness which will further reducing the hunter harvest. Clarks River NWR estimates 5 muskrat or mink will be taken annually. By opening this hunting opportunity on the Refuge, the staff anticipates a slight increase in the numbers of muskrat or mink would be harvested; however, it is expected the additional take will have little to no negative impacts on the local or regional populations of these species. We did not make any changes to the rule as result of these comments, but updated the Environmental Assessment with this information.

Service Response for raccoon and opossum: In coordination with the State of Kentucky, it was determined that furbearer population levels can sustain hunting and are relatively abundant across the State of Kentucky including western Kentucky where Clarks River NWR is located (L. Palmer, personal communication, August 14, 2019). Raccoon and opossum population data is monitored by the KDFWR. KDFWR sets state-wide season structures and bag limits. Raccoon and opossum hunting have been occurring on Clarks River NWR for almost 2 decades and overall hunting pressure throughout the season on the Clarks River NWR is considered light. However, annual events such as the Professional Kennel Club (PKC) World Hunt and the Breeders Showcase increase hunting pressure on raccoon for brief periods (i.e. approximately one week per event) during each event.

Historic data of hunter harvest in KY is unavailable because the telecheck of harvested raccoon and opossum is not required. Hunter effort and harvest numbers were extrapolated from hunters who expressed interest in hunting raccoon and opossum. Raccoon and opossum hunting on the refuge will coincide with KDFWR seasons and bag limits, with the exception that hunting is allowed during hours of darkness only, and the use of dogs outside of hunting season is by special use permit only, further reducing the hunter harvest. Clarks River NWR estimates 100 hunters annually visit to hunt raccoons and 10 hunters annually visit to hunt opossums on the Refuge. In the best professional judgement of Clarks River NWR staff, 200 raccoon and 20 opossums are taken annually by hunters. The Refuge has allowed raccoon and opossum hunting for almost 2 decades; and with no change to seasons or limits, little to no change is expected to local and regional populations of these species.

We did not make any changes to the rule as result of these comments, but updated the Environmental Assessment with this information.

Service Response for red and gray fox, weasel, and skunk: In coordination with the State of Kentucky, it was determined that furbearer population levels can sustain hunting and are relatively abundant across the State of Kentucky including western Kentucky where Clarks River NWR is located (L. Palmer, personal communication, August 14, 2019). Clarks River NWR staff, using their

best professional judgement on furbearer populations existing on the Refuge, estimated the potential hunting pressure and harvest of red and gray fox, weasel, and skunk.

Hunter effort and harvest numbers were extrapolated from hunters who expressed interest in hunting fox, weasel, and skunk. Fox, weasel, and skunk hunting on the refuge will coincide with KDFWR seasons and bag limits, with the exception that these species may not be taken using dogs and is only permitted during daylight hours, further reducing the hunter harvest. Clarks River NWR estimates 5 hunters annually visit to hunt the Refuge to hunt each of these species. In the best professional judgement of Clarks River NWR staff, 5 skunk and weasel will be taken annually and 10 red or gray fox will be taken annually by hunters. By opening this hunting opportunity on the Refuge, the staff anticipates a slight increase in the numbers of these species would be harvested; however, it is expected the additional take will have little to no negative impacts on the local or regional populations. We did not make any changes to the rule as result of these comments, but updated the Environmental Assessment with this information.

Comment: Muzzleloader Rifles Are Harmful to Wildlife and Dangerous to Hunters

Service Response: The Administration Act, as amended, stipulates that hunting (along with fishing, wildlife observation and photography, and environmental education and interpretation), if found to be appropriate and compatible, is a legitimate and priority general public use of a refuge and should be facilitated. The Service has adopted policies and regulations implementing the requirements of the Administration Act that refuge managers comply with when considering hunting and fishing programs.

We allow hunting of resident wildlife on NWRs only if such activity has been determined appropriate and compatible with the established purpose(s) of the refuge and the mission of the Refuge System as required by the Administration Act. Hunting of resident wildlife on NWRs generally occurs consistent with State regulations, including species, seasons, and bag limits. Refuge-specific hunting regulations can be more restrictive (but not more liberal) than State regulations and often are more restrictive in order to help meet specific refuge objectives consistent with the Clarks River NWR Comprehensive Conservation Plan (USFWS 2012). These objectives include resident wildlife population and habitat objectives as further stepped down the Clarks River NWR Habitat Management Plan (USFWS 2013), minimizing disturbance impacts to wildlife, maintaining high-quality opportunities for hunting and other wildlife-dependent recreation, eliminating or minimizing conflicts with other public uses and/or refuge management activities, and protecting public safety. Clarks River NWR additionally analyzed the use of muzzleloader for hunting in the Environmental Assessment (EA) as part of the Sport Hunting Plan (USFWS 2020). This analysis includes the amount of white-tailed deer harvested by muzzleloader on Clarks River NWR.

We believe the effects to both hunted and non-hunted species on Clarks River NWR as a result of use of muzzleloading firearms would be negligible, for the following reasons:

1. The percentage of hunters that use muzzleloaders is low. The 2016 National Survey of Hunting and Fishing reported that 12 percent of all hunters reported using muzzleloaders. Therefore the number of hunters on the refuge using muzzleloaders would be expected to be very small. From the 2014 through 2018, less than 65 of over 800 deer were reported harvested on Clarks River NWR by muzzleloader. The most reported during a single year was 16 deer harvested by muzzleloader across approximately 9,000 acres of Clarks River NWR.

2. Noise produced by muzzleloading and modern rifles and shotguns of the same caliber and barrel length are similar in decibel range (approximately 150-160 dB for shotguns). However,

the noise produced by these weapons has quite different characteristics. Black powder used in muzzleloaders makes a much lower frequency noise of longer duration. Noise disturbance was evaluated in the Clarks River NWR Sport Hunt Plan EA under Other Wildlife and Aquatic Species section of Table 4 (USFWS 2020). Clarks River NWR staff acknowledge that muzzleloaders will make noise which can disturb other wildlife species. The level of disturbance associated with hunting can be high due to the loud noises produced by guns and the rapid movement of both hunters and hunting dogs within the hunt area. Disturbance to wildlife that causes shifts in habitat use, abandonment of habitat, increased energy demands on affected wildlife, changes in nesting and reproductive success, and singing behavior (Knight and Cole 1991, Miller et al. 1998, Shulz and Stock 1993, Gill et al. 1996, Arrese 1987, Gill et al. 2001). However, this disturbance is not a long-term threat to populations because the relocation is temporary. Hunters are dispersed over a large area (9,300 acres) and Clarks River NWR estimates that less than 20 muzzleloader hunters will use the Refuge. To further minimize wildlife disturbance, Clarks River NWR established no hunting zones and areas which are closed to all public entry.

3. Muzzleloading weapons have a shorter effective range and require a closer approach to game than needed if using modern firearms. In addition, the long reloading time of muzzleloaders (approximately 30 seconds) means that hunters typically wait for better opportunities, and fewer shots are fired.

4. Muzzleloaders use a variety of propellants, including black powder, a mixture of potassium nitrate, charcoal, and sulfur. Black powder does produce relatively large quantities of smoke when fired. If combustion of black powder is complete, smoke would contain primarily nitrogen and carbon dioxide. However, since combustion is incomplete, black powder combustion produces hydrogen sulfide, sulfur oxides, carbon monoxide, and nitrogen oxides (Del'Aria and Opperman 2017). These compounds are toxic if breathed in high concentrations, however in field conditions encountered when hunting, black power smoke disperses rapidly. Total amounts produced as a result of hunting activity, and therefore effects to wildlife would be negligible. The Service's continues to monitor research findings and work in coordination with the State to mitigate the cumulative impacts on refuge habitats or wildlife.

5. Muzzleloaders do take significantly more knowledge to operate than modern firearms, and involve greater risk; however, A Political and Social Research Firearm Injury Surveillance Study, which accumulated data from 1993 to 2008, reported that firearm-related incidents (all firearms) occurred in only 9 per 1 million hunting days (Loder and Farren 2014). In 2017, there were over 17 million hunters with firearms according to the NSGA (National Sporting Goods Association), and only 35 injuries occurred per 100,000 participants, of which a vast majority were non-serious injuries. Thus, while hunting with any type of firearm involves risk, overall it is an extremely safe activity. Therefore, the continued allowance of muzzleloader hunting is estimated to have a negligible impact on public safety, hunters, wildlife, and air in the best professional judgement of staff.

We did not make any changes to the rule as result of these comments, but updated the Environmental Assessment with this information.

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APPENDIX E. FINDING OF NO SIGNIFICANT IMPACT AND DECISION ON CLARKS RIVER NATIONAL WILDLIFE REFUGE 2020 SPORT HUNTING PLAN

The U.S. Fish and Wildlife Service (Service) is opening additional hunting opportunities on the Clarks River National Wildlife Refuge (NWR or Refuge) in accordance with the refuge's Big Game, Migratory Birds, Upland Game, Amphibians/Reptiles, and Invasive/Feral Species Sport Hunt Plan. Public hunts on the Clarks River NWR began in November 1999. In addition to current hunting seasons, the hunting for bobcat, skunk, otter, muskrat, mink, gray and red fox, weasel, beaver and feral/invasive species (feral hogs) will be opened on approximately 9,000 acres of the Refuge. These additional hunting seasons and species will bring Clarks River NWR into better alignment with the State of Kentucky's hunting regulations.

Selected Action

Alternative A—Proposed Action Alternative

The Proposed Action Alternative is to increase hunting season structure and alignment with the State of Kentucky. The Proposed Action Alternative including refuge-specific regulations are described in the table below. Under this Alternative, hunting opportunities for upland game species permitted on Clarks River NWR would be opened to include bobcat, skunk, otter, muskrat, mink, gray and red fox, weasel, beaver and feral/invasive species (feral hogs – if hunting is an option that is selected to control invasive species) in addition to current hunting seasons (Table 1). Refuge-specific regulations will be published in the Federal Register as part of the 2020-2021 Refuge-Specific Hunting and Sport Fishing Regulations.

Table 1. Overview of the Proposed Action Alternative.

TYPE	SEASON DATES/ BAG LIMITS	REFUGE SPECIFIC REGULATIONS
Duck Goose Coot	Same as State Waterfowl Seasons and Bag Limits.	-Hunting will cease and hunters will be out of the field by 12 noon each day. -Only portable and temporary blinds are permitted. -Decoys and blinds must be removed each day. -Only nontoxic shot permitted. -Access to the refuge is two hours before sunrise. -The use of dogs for retrieving purposes or in the pursuit of migratory birds is permitted. *Waterfowl hunting on Clarks River Waterfowl Units by Quota Permit only.
Dove Woodcock Snipe Crow Quail	Same as State Seasons and Bag Limits. Closed during all refuge modern gun and muzzleloader deer seasons	-Only nontoxic shot permitted -Access to the refuge is two hours before sunrise to two hours after sunset. -The use of dogs for retrieving purposes or in the pursuit of migratory birds is permitted. -Centerfire weapons prohibited.

TYPE	SEASON DATES/ BAG LIMITS	REFUGE SPECIFIC REGULATIONS
Squirrel Rabbit	Same as State Season and Bag Limits. Closed during all refuge modern gun and muzzleloader deer seasons.	-Only nontoxic shot permitted -Use of centerfire weapons is prohibited -Access to the refuge is two hours before sunrise to two hours after sunset. -The use of dogs for retrieving purposes or in the pursuit of gray and fox squirrels, eastern cottontail and swamp rabbits is permitted.
Raccoon Opossum	Same as State Season and Bag Limits	-Only nontoxic shot permitted -The use of dogs in the pursuit of raccoon and opossum is permitted in accordance with State regulations. -Use of dogs outside hunting season is by special use permit only. -Access to the refuge after sunset is permitted
Coyote Bobcat Fox Skunk Otter Muskrat Mink Weasel Beaver	Same as State Season and Bag Limits (Bobcat and Otter taken on Refuge will be telechecked through State 1-800-245-4263 with public land code for Clarks River NWR)	-Only nontoxic shot permitted -Use of dogs is not permitted. -Access to the refuge is two hours before sunrise to two hours after sunset. - May only be taken during daylight hours
White-tail Deer	Same as State Season and Bag Limits for Zone 1 (Deer taken on Refuge will be telechecked through State 1-800-245-4263 with public land code for Clarks River NWR)	- Pursuit of white-tailed deer with dogs is prohibited. -Construction or use of any permanent tree stand is prohibited. Only climbing and/or portable stands may be used. - Tree stands may be placed in the field no earlier than two weeks prior to the opening of season and must be removed from the field within one-week after the season closes. -All stands left in the field must be identified by hunter's State hunting license identification number. It is not required but the owner may provide the owner's name, address and phone number instead of the hunting identification number. If stand does not contain this information it will be confiscated. -Safety belts are required at all times with use of tree stand. -Hunters may not hunt by organized deer drives of two or more hunters. -Hunting of deer by the aid of or distributing any feed, salt, minerals or other ingestible attractants is prohibited -Access to the refuge is two hours before sunrise to two hours after sunset.

TYPE	SEASON DATES/ BAG LIMITS	REFUGE SPECIFIC REGULATIONS
		-Ground blinds are permitted but must be removed when not in use. -During modern gun, muzzleloader, and youth firearm ground blinds must display 1 square foot (144 square inches) of solid unbroken hunter orange visible from all sides.
Turkey	Same as State Seasons and Bag Limits (Turkey taken on Refuge will be telechecked through State 1-800-245-4263 with public land code for Clarks River NWR)	- Access to the refuge is two hours before sunrise to two hours after sunset. -The use of dogs for retrieving purposes or in the pursuit of wild turkey is permitted in accordance with Kentucky Department of Fish and Wildlife Resources (KDFWR) regulations
Bullfrogs	Same as State Seasons and Bag Limits	-Hunting of bullfrogs at the Environmental Education Recreation Area is prohibited. -Access to the refuge after sunset is permitted -Collection, hunting, and/or harm of all other species of reptiles and amphibians on the Refuge is prohibited.
Feral Hogs	Feral hogs will not be regarded as a game species on Clarks Rive NWR and control measures will be implemented to eradicate this invasive species, which may include a hunting option.	Feral hogs will not be regarded as a game species on Clarks Rive NWR and control measures will be implemented to eradicate this invasive species, which may include a hunting option.
Sandhill Crane Groundhog	Closed	Closed

This alternative was selected over the other Alternative because it offers the best opportunity for public hunting that would result in a minimal impact on physical and biological resources, while meeting the Service's mandates under the National Wildlife Refuge System Administration Act (NWRSAA) and Secretarial Orders 3347 and 3356.

Other Alternative Considered and Analyzed

Alternative B—[No Action Alternative]

This alternative, commonly referred to as "No Action" is "Continue Current Management" which allows hunting of Migratory Birds, Big Game, and some species of Upland Game. Under this alternative, coyote hunting would be limited to approximately 60 days. Hunting of Bobcat, Fox, Skunk, Furbearers (Otter, Muskrat, Mink, Weasel), and Beaver would not be permitted on Clarks River NWR. In additions, hunting could not be used as a management tool to reduce Feral Hog populations if they became established on the Refuge.

This alternative was not selected, because the existing hunting program at Clarks River NWR did not align with the State of Kentucky hunting season structure. Not aligning with State regulations caused increased hunter confusion on Clarks River NWR. Additionally, this alternative does not fully fulfill the Service's mandates under the NWRSAA and Secretarial Orders 3347 and 3356.

Summary of Effects of the Selected Action

An Environmental Assessment (EA) was prepared in compliance with the National Environmental Policy Act (NEPA) to provide decision-making framework that 1) explored a reasonable range of alternatives to meet project objectives, 2) evaluated potential issues and impacts to the refuge, resources and values, and 3) identified mitigation measures to lessen the degree or extent of these impacts. The EA evaluated the effects associated with [xxx alternatives/proposed action (if no alternatives)]. It is incorporated as part of this finding.

Implementation of the agency's decision would be expected to result in the following environmental, social, and economic effects:

During the times with the highest hunting pressure, Clarks River NWR estimates less than 3,000 users will be spread across approximately 9,300 acres. Some individuals and small groups of wildlife will be disturbed as hunters move through occupied habitat or discharge firearms. Disturbed wildlife will relocate to avoid hunters or flush and expend more energy than if they had remained at rest. While, increased hunting will have temporary, localized short-term impacts to populations of game and non-game species, disturbance is not a long-term threat to populations because the relocation is temporary, and food is generally not a limiting factor. Most animals will be able to readily replace those energy reserves they use to escape from hunters. Less than an additional 100 hunters, above the current level of hunting already occurring on Clarks River NWR, are estimated to hunt upland game proposed to be opened under this Alternative. To mitigate these impacts, Clarks River NWR will continue to closed some areas to hunting providing undisturbed sanctuaries and has restricted times of certain hunts to provide undisturbed resting/foraging times for waterfowl.

Long-term impacts are not anticipated; however, plants and wildlife will be monitored by Refuge staff to ensure that no significant damage would occur in public use areas.

Overall, the anticipated impacts of the small increase of hunters to other wildlife and their habitats and impacts to the biological diversity of the refuge will be minor. As public use levels on the refuge expand across time, unanticipated conflicts between user groups may occur. The Refuge's Visitor Services programs will be adjusted as needed to eliminate or minimize each problem and provide quality wildlife dependent recreational opportunities while promoting public safety and maintaining healthy populations of wildlife.

Refuge staff estimates that 50,000 use-days by members of the public occur annually. This is significant when considering the limited vehicular access, limited acres in Refuge ownership, and limited visitor service facilities currently present on the Refuge.

The Service anticipates only a slight increase in visitation and expenditure for the additional species proposed under Alternative A, resulting in a minor impacts to the local economy.

Cumulative impacts on wildlife populations that result from any increase in hunter activity that may occur as a result of the additional hunting opportunities in the 2020 Sport Hunt Plan will not rise to a significant cumulative effect locally, regionally, or nationally. Since the Refuge uses an adaptive

management approach for its hunt program, reviewing the hunt program annually and revising annually if necessary, the Refuge's hunt program can be adjusted to ensure that it does not contribute further to the cumulative impacts of human population growth, land use changes, or climate change on wildlife.

This alternative would allow new hunting opportunities as described in the Hunting Plans within the Refuge by expanding hunting areas, seasons and species hunted. These new hunting opportunities would attract hunters currently not using the Refuge, thus affording an opportunity for the Refuge to engage new segments of the public to promote natural resources conservation, environmental education and natural resources stewardship. Opportunities to create additional outdoor recreation experiences would be consistent with goals and priority uses identified by the National Wildlife Refuge System Improvement Act of 1997 and Secretarial Orders 3347 and 3356. The Service has determined that these changes in the Hunting Plan is compatible with the purposes of the Clarks River NWR and the mission of the NWRS.

The Refuge Manager may establish specific regulations for individual species or portions of the Refuges depending on conflicts with other wildlife dependent recreation priorities. Permanent or periodic hunting closures for specific species or closures of portions of the Refuges may be necessary if the Refuge Manager determines that there is specific habitat, wildlife protection and/or public safety requirements. The need to implement mitigation measures will be evaluated annually. All hunting would be conducted in accordance with all applicable State, Refuge and federal regulations. Coordination with the public and Refuge stakeholders including KDFWR will promote continuity and understanding of Refuges and Service resource goals and objectives, and will help assure that the decision-making process takes into account all interests.

Measures to Mitigate and Minimize Adverse Effects

Measures to mitigate and/or minimize adverse effects have been incorporated into the selected action. These measures include:

- Designated areas are closed to hunting for public, volunteer, and staff safety and/or as wildlife sanctuaries
- Target practice or non-hunting discharge of a weapon is prohibited to avoid wildlife disturbance and for the safety of visitors as well as prohibited by 50 CFR 27.41.
- Hunting within 100 feet of a residence is prohibited.
- Discharging a firearm within 200 feet of residence, gravel road or maintained trail is prohibited for the safety of visitors and local residents.
- Use or possession of lead shot (shot shells) is prohibited for all species with the exception of turkey to reduce the likelihood of lead poisoning to waterfowl and their natural predators as well as prohibited by 50 CFR 32.2(k).
- Hunting waterfowl after noon (12:00 PM CST) is prohibited to allow waterfowl time to feed and rest without disturbance.
- Hunting raccoon or opossum with pursuit dogs outside of hunting season is only authorized by special use permit to decrease wildlife disturbance.
- Entering waterfowl management units from November 1st through March 31th without quota permit on drawn hunt days is prohibited to allow waterfowl time to feed and rest without disturbance.
- Hunting dove, woodcock, snipe, crow, quail, gray and fox squirrels, and eastern cottontail and swamp rabbits is prohibited during muzzleloader and modern gun deer seasons for safety issues and to reduce user conflict.

- Use of all-terrain vehicles by non-mobility impaired hunters is prohibited to reduce wildlife and visitor disturbance from noise.
- Mule or horse use off of designated routes (graveled, paved roads, abandoned railroad right of way), for activities other than those identified as wildlife dependent recreation activities is prohibited to protect native plants, reduce disturbance, and limit erosion/compaction of soils. During muzzleloader or modern gun deer seasons this use is prohibited on the refuge for safety of both the riders and animals.
- Bicycle use off of designated routes (graveled, paved roads, abandoned railroad right of way), or for activities other than those identified as wildlife-dependent recreation activities is prohibited to protect native plants, reduce disturbance, and limit erosion/compaction of soils
- Use of dogs in the pursuit of white-tailed deer, coyote, bobcat, fox, skunk, muskrat, mink, weasel, beaver, and feral hogs, if a hunting option is selected to control this invasive population, to reduce wildlife disturbance and for user safety.

Public Review

The proposal has been thoroughly coordinated with all interested and/or affected parties. The Service sent letters regarding the Draft Hunt Plan, compatibility, regulations, and EA to the state of Kentucky on December 31, 2019. Refuge staff will continue to coordinate with KDFWR to address annual implementation of hunting activities. The Service also sent letters requesting comments and consultation on November 4, 2019 to:

- Absentee Shawnee Tribe of Indians
- Chickasaw Nation
- Delaware Nation of Oklahoma
- Eastern Band of Cherokees
- Peoria Tribe of Indians of Oklahoma
- Quapaw Tribal Business Committee
- Shawnee Tribe of Oklahoma
- Stockbridge Munsee Community

On, April 9, 2020, the Service sent letters and copies of the Draft Sport Hunt Plans, Environmental Assessment, Compatibility Determination and other documents to those tribes listed above. Clarks River NWR also received a supportive letter from the Chickasaw Nation.

The Clarks River NWR Draft 2020 Sport Hunt Plan, Environmental Assessment, and Compatibility Determination were made available for public review and comment for 45 days starting on March 23, to May 6, 2020. Notice was posted at the Clarks River NWR Headquarters Office, refuge website and refuge Facebook page. Further, an information bulletin announcing the availability of the documents for public review and comment was provided to local newspapers. Additionally, public comments were requested through the Federal Register process announced on April 9, 2020 and ended on June 8, 2020 (85 FR, Number 69; Docket Number FWS-HQ-NWRS-2020-0013, FXRS12610900000-201-FF09R20000). Clarks River NWR received 5 public comments expressing general support for expanding hunting opportunities under the proposed Sport Hunt Plan. Two public comments were received in opposition to the expansion of hunting opportunities on Clarks River NWR. Clarks River NWR addressed the public comments in Appendix D.

Finding of No Significant Impact

While refuges, by their nature, are unique areas managed for conservation of fish, wildlife and habitat, the proposed action will not have a significant impact on refuge resources and uses for several reasons:

- In the context of local/State/refuge hunting/fishing programs, the proposed action will only result in slight increase in the number of additional upland game species harvested and no negative impacts to the local populations. The Service works closely with the State to ensure that additional species harvested on a refuge are within the limits set by the State to ensure healthy populations of the species for present and future generations of Americans.
- The action will result in beneficial impacts to the human environment, including the biodiversity and ecological integrity of the refuge, as well as the wildlife-dependent recreational opportunities and socioeconomics of the local economy, with only negligible adverse impacts to the human environment as discussed above.
- The adverse direct and indirect effects of the proposed action on air, water, soil, habitat, wildlife, aesthetic/visual resources, and wilderness values are expected to be minor and short-term. The benefits to long-term ecosystem health that these efforts will accomplish far outweigh any of the short-term adverse impacts discussed in this document.
- The NWRS uses an adaptive management approach to all wildlife management on refuges, monitoring and re-evaluating the hunting and fishing opportunities on the refuge on an annual basis to ensure that the hunting and fishing programs continue to contribute to the biodiversity and ecosystem health of the refuge and these opportunities do not contribute to any cumulative impacts to habitat or wildlife from climate change, population growth and development, or local, State, or regional wildlife management.
- The action, along with proposed mitigation measures, will ensure that there is low danger to the health and safety of refuge staff, visitors, and the hunters/fishers themselves.
- The action is not in an ecologically sensitive area;
- The action is not likely to adversely affect any threatened or endangered species; or any Federally-designated critical habitat;
- The action will not impact any cultural or historical resources;
- The action will not impact any wilderness areas;
- There is no scientific controversy over the impacts of this action and the impacts of the proposed action are relatively certain.
- The proposal is not expected to have any significant adverse effects on wetlands and floodplains, pursuant to Executive Orders 11990 and 11988 because: The areas proposed for expanding hunting already are open to some form of hunting. This proposed package only expands the list of species available to be taken.

Based upon a review and evaluation of the information contained in the EA as well as other documents and actions of record affiliated with this proposal, the Service has determined that the proposal to implement the Clarks River NWR 2020 Sport Hunt Plan does not constitute a major Federal action significantly affecting the quality of the human environment under the meaning of section 102 (2) (c) of the National Environmental Policy Act of 1969 (as amended). As such, an environmental impact statement is not required.

Decision

The Service has decided to open hunting opportunities for bobcat, skunk, otter, muskrat, mink, gray and red fox, weasel, beaver and feral/invasive species (feral hogs), in addition to current hunting

seasons on Clarks River NWR. This action is compatible with the purposed of the refuge and the mission of the National Wildlife Refuge System. See attached Compatibility Determination (Appendix B).

The action is consistent with applicable laws and policies.

BRETT HUNTER Digitally signed by BRETT HUNTER
Date: 2020.07.30 14:31:31 -04'00'

Regional Chief, National Wildlife Refuge System/Date