

Draft Environmental Assessment

for Hunting on Kirwin National Wildlife Refuge

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Draft Environmental Assessment for Hunting on Kirwin National Wildlife Refuge

Date: March 2020

This Environmental Assessment (EA) is being prepared to evaluate the effects associated with this proposed action and complies with the National Environmental Policy Act (NEPA) in accordance with Council on Environmental Quality regulations (40 Code of Federal Regulations [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 proposed actions on the natural and human environment.

1.0 Introduction

1.1 Proposed Action

The U.S. Fish and Wildlife Service (Service) is proposing to open or expand hunting opportunities for upland game including state-defined furbearers (fox, raccoon, badger, bobcat, mink, muskrat, weasel, opossum, and striped skunk), coyotes, grey squirrels, jackrabbits, migratory birds (crow, rail, and woodcock), and turkeys on the Kirwin National Wildlife Refuge (NWR) in accordance with the refuge’s Proposed Kirwin National Wildlife Refuge 2020 Hunting and Fishing Plan. The refuge is located in north-central Kansas, near Phillipsburg, in Phillips County (Figure 1).



Figure 1. National Wildlife Refuge Locations in Kansas.

The proposed action is a step-down management plan of the refuge comprehensive conservation plan (CCP) of 2006, which can be found here: www.fws.gov/mountain-prairie/refuges/refugesUpdate/completedPlanPDFs_F-L/krw_2006_ccpfinal_all.pdf. The action supports a national effort to expand hunting opportunities on public lands (Secretarial Orders 3347 and 3356). Hunting opportunities have occurred for many years on the refuge and were evaluated during development of the CCP. Therefore, existing hunting uses will continue, and more opportunities are proposed in this EA (Figure 2). Trapping and running are not considerations in the plan or associated EA. Hunting opportunities have already been approved as public use activities in development of the CCP, but a more detailed plan (Proposed Action Alternative below) is required before more opportunities can be implemented.

Hunting on the refuge is permitted on approximately 5,800 refuge acres, in accordance with the applicable federal and state regulations. The refuge's hunting and fishing plan and associated EA propose to:

Open Hunting Opportunities for New Species: upland game (furbearers including fox, raccoon, badger, bobcat, mink, muskrat, weasel, opossum, and striped skunk), grey squirrels, jackrabbits, and migratory birds (crow, rail, and woodcock).

- No new hunting acres are being proposed.
- Regulations for proposed opportunities would vary by unit (open and closed areas).
- Proposed revisions to season dates include new seasons associated with new species occurring during a period of September 1 through April 30.
- Changes to the administration are being proposed (for example, the Service would control hunts but would coordinate with state programs).

Expand Hunting Opportunities: archery-only season for turkey.

- Archery-only turkey hunting allowed on 2,095 acres is being proposed.
- Regulations for proposed opportunities would vary by unit (open and closed areas).
- No revision to season dates is being proposed. The refuge would still be open to hunting September 1 through April 30.
- No revision to the bag limit is being proposed (except associated with new hunts and new species).
- No changes to the administration of the hunt are being proposed (besides new hunts mentioned above).
- No changes to opportunities for targeted demographics are being proposed. Youth and disabled seasons for other species are already allowed.

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 draft 2020–2021 Refuge-Specific Hunting and Sport Fishing Regulations. The Service cannot open a refuge to hunting until a final rule has been published in the Federal Register formally opening the refuge to hunting.

1.2 Background

National wildlife refuges are guided by the mission and goals of the National Wildlife Refuge System (Refuge System), 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 (NWRSA), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Improvement Act), Refuge Recreation Act of 1962, and selected portions of the CFR and U.S. Fish and Wildlife Service Manual.

The refuge was established under the following authorities and for these purposes:

- “. . . for use as an inviolate sanctuary, or for any other management purpose, for migratory birds” (Migratory Bird Conservation Act 1929 [16 U.S. Code 715d]).
- “. . . for the development, advancement, management, conservation, and protection of fish and wildlife resources” (Fish and Wildlife Act of 1956 [16 U.S. Code 742fa4]).
- “. . . for the benefit of the Service, in performing its activities and services” (Fish and Wildlife Act of 1956 [16 U.S. Code 742fb1]).
- NWRSA, as amended
- Improvement Act

The mission of the Refuge System, as outlined by the NWRSA, as amended by the Improvement Act (16 U.S. Code 668dd et seq.), 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.”

The NWRSA mandates the Secretary of the Interior in administering the Refuge System to (16 U.S. Code 668dd[a][4]):

- provide for the conservation of fish, wildlife, plants, and their habitats within the Refuge System;
- ensure that the biological integrity, diversity, and environmental health of the Refuge System are maintained for the benefit of present and future generations of Americans;
- ensure that the mission of the Refuge System described at 16 U.S. Code 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 Refuge System are located;
- assist in the maintenance of adequate water quantity and water quality to fulfill the mission of the Refuge System and the purposes of each refuge;
- recognize compatible wildlife-dependent recreational uses as the priority public uses of the Refuge System through which the American public can develop an appreciation for fish and wildlife;

- ensure that opportunities are provided within the Refuge System for compatible wildlife-dependent recreational uses;
- 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, when those opportunities are compatible with the purposes for which the refuge was established and the mission of the Refuge System.

The refuge has special designations demonstrating its importance to natural resource conservation:

- Solomon-River Grasslands Research Natural Area (1967);
- American Bird Conservancy Important Bird Area Program (2002) (www.landscape.org/focus/understand/audubon_iba/).

The refuge supports habitat used by several federal- and state-listed species and other resources of conservation concern. The abundant and diverse resources of the refuge are a draw for multiple public use activities. Therefore, management promotes a wildlife-first mission and a balance of compatible wildlife-dependent public use opportunities.

In considering hunting regulations, primary factors in decision-making on the refuge were public safety and the protection of species of conservation concern. With these in mind, the following information is relevant and provides context in evaluating proposed actions. Public lands comprise 0.74 percent of Kansas (Kansas Department of Wildlife, Parks and Tourism [KDWPT] 2018), which is a small area for conservation of natural resources and providing multiple public use opportunities. While the refuge is a popular destination in Kansas, different visitor uses occur within the boundaries. There are no fees or registration associated with visiting the refuge, and it is open to public access with the exception of indicated closures (such as signs) for species, habitat, or public protection. This 10,778-acre refuge supports diverse wildlife habitat, including grasslands, wooded riparian areas, open water, and wetlands. Therefore, different hunting and other public use opportunities exist and have the potential to be in close proximity. Also, several commercial hunting operations surround the refuge.

The refuge is widely recognized as a premiere fishing destination each spring. Many professional and experienced photographers visit the refuge on a regular basis in pursuit of picturesque wildlife and the general appreciation of natural resources and scenic views. Peak visitation usually occurs in spring and fall during bird migration and when peak fishing occurs. Annual visitation has recently been estimated at 40,000 to 90,000, not including public outreach events and environmental educational programs.

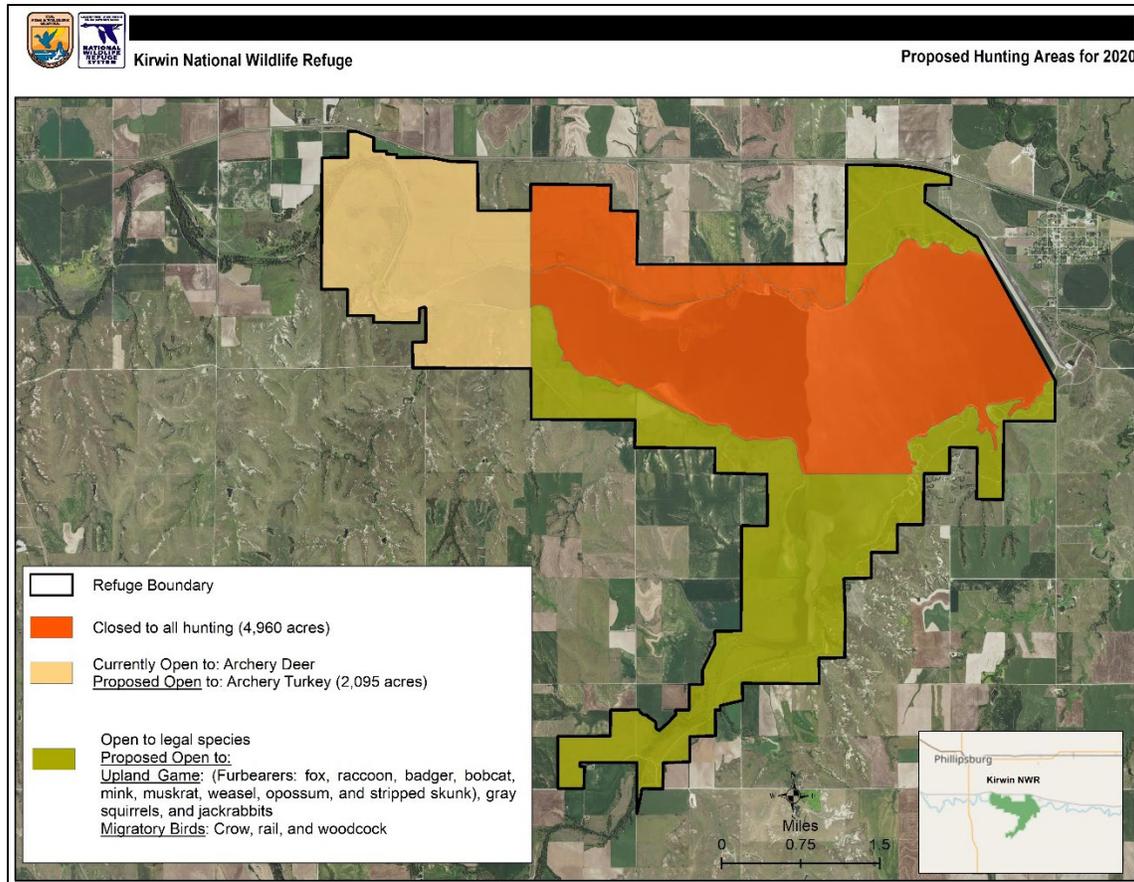


Figure 2. Current and Proposed Hunting Opportunities at Kirwin National Wildlife Refuge.

1.3 Purpose and Need for the Proposed Action

The purpose of this proposed action is to expand compatible wildlife-dependent recreational opportunities on the refuge. The need of the proposed action 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 Refuge System” and “ensure that opportunities are provided within the Refuge System for compatible wildlife-dependent recreational uses” (16 U.S. Code 668dd[a][4]). The focus of this proposal is to provide new and expanded opportunities to hunt upland game that include state-defined furbearers (fox, raccoon, badger, bobcat, mink, muskrat, weasel, opossum, and striped skunk), coyotes, grey squirrels, jackrabbits, migratory birds (crow, rail, and woodcock), and turkeys (Figure 2).

The Service received a lot of feedback on proposed activities during the development of the CCP. Collectively, the public comments and discussions with interested parties demonstrated the need for an appropriate balance of consumptive and non-consumptive compatible uses and interests associated with the refuge. The Service stated, “When evaluating public use activities on the refuge, we applied an objective approach by placing discussions within the context of Refuge System laws, policies, and guidance. Key considerations were the Refuge System mission, priorities found in the Improvement Act, and the purposes of the refuge. Applying these principles included, but was not limited to, (1) reducing risk to threatened, endangered, and

protected species; (2) considering the safety of refuge staff and the public, which is mission critical; and (3) carrying out actions that ensure compliance with laws and regulations.” In accordance with the recent CCP in expanding hunting opportunities, the Service considers the potential effects on other wildlife using refuge land; multiple co-occurring public use activities; and impacts on wildlife populations and habitat by expanding hunting opportunities to include refuge lands. The proposed actions support accomplishment of hunting goals and objectives as part of the 2006 refuge CCP (www.fws.gov/mountain-prairie/refuges/refugesUpdate/completedPlanPDFs_F-L/krw_2006_ccpfinal_all.pdf).

2.0 Alternatives

2.1 Alternatives Considered

Alternative A – Expand Hunting Opportunities – Proposed Action Alternative

The Service has prepared a hunting and fishing plan, which is presented in this document as the Proposed Action Alternative. Hunting opportunities are provided for new species and methods of use and seasons on the refuge.

Open hunting opportunities for new species:

Upland game (furbearers including fox, raccoon, badger, bobcat, mink, muskrat, weasel, opossum, and striped skunk), grey squirrels, jackrabbits, and migratory birds (crow, rail, and woodcock).

- No new hunting acres are being proposed.
- Regulations for proposed opportunities would vary by unit (open and closed areas).
- Proposed revisions to season dates include new seasons associated with new species occurring during a period of September 1 through April 30.
- Changes to the administration are being proposed (for example, the Service would control hunts but would coordinate with State programs).

Expand hunting opportunities:

Archery-only season for turkey.

- Archery-only turkey hunting allowed on 2,095 acres is being proposed.
- Regulations for proposed opportunities would vary by unit (open and closed areas).
- No revision to season dates is being proposed. The refuge would still be open to hunting September 1 through April 30.
- No revision to the bag limit is being proposed (except associated with new hunts and new species).
- No changes to the administration of the hunt are being proposed (besides new hunts mentioned above).
- No changes to opportunities for targeted demographics are being proposed. Youth and disabled seasons for other species are already allowed.

For clarification, the use of the term “special hunt” is used below in accordance with how the State recognizes special hunts. The Service usually considers a hunt to be a special hunt if it occurs outside of a regular season. The special hunts proposed below occur within regular State seasons but may differ in the time (days, months) regularly allowed.

No Changes are Being Proposed to the Following:

Methods of Take (Overall)

- No changes are proposed for the following prohibited methods of take: centerfire rifle, rimfire rifle, pistol or handgun, trapping, running coyote or furbearers, and hunting from vehicles. These activities are still prohibited. The refuge permits nontoxic shot only. The refuge does not allow falconry as a method of take for any species. Specific methods of take by species, or group of species, are identified under “Species To Be Taken” and regulations described in more detail below.

Areas to Be Opened or Closed to Hunting

- Parts of the refuge are posted as hunting areas and are shown on the map in the brochure. Hunting is not permitted outside the hunt area or from across roads, trails, or parking areas.
- Refuge hunting areas are open for hunting activities occurring September 1 through April 30, as described in the hunting and fishing plan.

Hunting Hours

- While the refuge is open 24 hours per day, hunting hours are only during daylight when game is visible and closes at sunset (except deer or furbearers that allow legal take hours other than daytime). Therefore, the refuge is open to hunting 1.5 hours before sunrise to 1.5 hours after sunset. Hunting hours follow state regulations but only within the refuge open hours. No night hunting is allowed. There is no waiting or setup during hunt closed hours; otherwise, it is considered camping, which is not permitted.

Parking, Camping, Fires, and Boating

- Motorized vehicles are permitted only on developed roads and parking areas. Driving off roads or on roads marked as closed by signs or barriers is prohibited. Parking in front of gates or on bridges or water-control structures is prohibited.
- Overnight camping is not permitted.
- Fires of any type are not permitted.
- The use of boats, canoes, and other watercraft is permitted 24 hours per day from April 1 to October 1 on designated areas of the reservoir, with the possibility to be open after October 1 if the water level in the reservoir is at or above 1,722 feet. Permitted watercraft use may continue throughout the winter, or until the pool elevation drops below 1,722 feet.

Refuge and Cultural Resources

- All government property, including natural items such as antlers, plants, historic, and archaeological features are protected by federal law. Searching for or removal of objects of antiquity or other value is strictly prohibited.

Closures

- The refuge supports many species of conservation concern. All areas on the refuge may be closed to hunting for the protection of whooping cranes or other species, habitat, or the public as determined by the Service. Closed area signs apply to all public use activities. The Service may close hunting of species on the refuge if there is a concern about a long-term decline or sudden decline in the population at regional, state, or larger scales, though the state traditionally adjusts hunting regulations based on population trends.

Species to Be Taken – Migratory Gamebirds (State-Defined)

- The Service proposes to continue to allow the current migratory gamebirds hunted on the refuge, but would add crow, woodcock, and rail. Migratory gamebirds may be hunted during state seasons starting September 1 through April 30 (all hunting is prohibited on the refuge from May through August). Hunting sandhill crane is not permitted under either alternative. Methods of take for approved species are bow and arrow or shotgun no larger than 10 gauge. Shotguns must not be capable of holding no more than three shells while hunting migratory gamebirds.

Species to Be Taken – Upland Gamebird (Pheasant and Quail [Bobwhite])

- Maintain current hunting regulations. Overall, permitted methods of take would be shotguns and muzzleloading shotguns no larger than 10 gauge with (nontoxic) shot only, and bow and arrow in concurrence with state regulations.

Species to Be Taken – Small Game (Squirrel and Rabbit)

- The refuge is currently open to hunting of fox, squirrel, and cottontail rabbit.
- Methods of take permitted are shotgun and muzzleloading shotgun no larger than 10 gauge with nontoxic shot and archery. All methods of take are the same under both alternatives.
- Use of bait is not permitted.
- Use of decoys and calls is permitted, consistent with state regulations and refuges in Kansas.
- Maintain current seasons for the refuge (state seasons that start before September would be allowed starting September 1 and running through the legal season or until April 30, whichever comes first, excluding May through August).
- Note: Cottontail are common, but squirrel and jackrabbit have been fairly uncommon on the refuge in the last decade.

Changes are Being Proposed to the Following:

Methods of Take (Overall)

- A new method of take is proposed for hunting turkey in an area that did not permit turkey hunting before. Archery would be allowed for turkey in the archery deer-hunting unit on the western portion of the refuge.
- For all deer-hunting opportunities, the Service is authorized to maintain control and flexibility in limiting the number of hunters and access permits, the days of hunting, and the methods of take with the use of programs. Administration would be coordinated with the state.

Species to Be Taken – Turkey

- Turkey hunting would be allowed in the archery deer-hunting unit, a change from current conditions. This area includes the area west of Solomon Bend and Quillback Cove (2,095-acre hunt unit).
- For all turkey-hunting opportunities, the Service is authorized to maintain control and flexibility in limiting the number of hunters and access permits, the days of hunting, and the methods of take with the use of programs. Administration would be coordinated with the state.
- Methods of take include archery and shotgun (nontoxic shot only), in concurrence with state regulations.
- Use of a trained dog for fall turkey hunting is permitted in concurrence with state regulations, but the handler must always have control of the dog.

Species to Be Taken – Coyote

- Coyote hunting would be permitted, a change from current conditions.
- Hunting is permitted September through February when refuge hunt areas are open within the fall and winter hunting seasons.
- Limit of take in concurrence with state regulations (currently no limit).
- Methods of take are shotgun, muzzleloader loaded with shot only, or archery.
- No use of vehicles, radios, dogs, or bait.

Species to Be Taken – Upland Game (Known as Furbearer Under State-Defined Kansas Statute 115-25-11 Hunted Species That Include: Badger, Bobcat, Red Fox, Grey Fox, Swift Fox, Mink, Muskrat, Opossum, Raccoon, Striped Stripped Skunk, and Weasel)

- New upland game (state-defined furbearer) species permitted to be hunted on the refuge include badger, bobcat, fox, mink, muskrat, opossum, raccoon, striped skunk, and weasel.
- At any time, the Service may limit hunting opportunities to special hunts or programs to maintain control of the furbearer species allowed to be taken, number of access permits, the days of hunting, and methods of take. Otherwise, the Service would allow the state-defined limits (currently none) and the season described below.

- State-defined season excluding February 16 through August. Currently, state-defined as November 13 to February 15.
- The use of electronic calls is permitted.
- No hunting at night. The refuge is open for hunting 1.5 hours before sunrise to 1.5 hours after sunset following state-permitted take hours for each game species that is authorized for harvest on the refuge.
- Methods of take include archery, muzzleloader shotgun, and conventional shotgun with nontoxic shot only.
- No use of dogs would be allowed to pursue or chase on the refuge.
- Note: Raccoons and striped skunks are common furbearers on the refuge. Daytime observations of other furbearers are not common in the recent decade. Although weasels have never been reported on the refuge, they are still a legal species for take by hunting.

Species to Be Taken – Migratory Gamebirds (State-Defined)

- Rail, woodcock, and crow are new species of migratory gamebirds that may be hunted.
 - Limited season to align with state-specified seasons (starting in September), but extending only through April 30 for crow. The refuge is closed to all hunting May through August.
 - Methods of take allowed on the refuge are bow and arrow and shotgun no larger than 10 gauge, incapable of holding more than three shells.
 - Take limit (currently none) in concurrence with state regulations.
 - Note: Crows are not common on the refuge and are only occasionally seen in winter.
 - Note: Woodcock have not been seen on the refuge.
 - Note: Sora and Virginia rail do use vegetated wetland areas on the refuge. However, annual varying water levels typically increase or reduce the amount of habitat available.

Of note, as a result of public comment, state input, and guidance through the CCP development, the factors in the bulleted list below were considered in development of the proposed alternative.

- Management of the refuge will support native flora and fauna mentioned throughout the CCP (2006).
- Hunting activities would be closed in specific hunt units to protect the federally endangered whooping crane as determined by the Service. However, the Service would consider some exceptions related to special, controlled, permitted hunts, such as the limited use of archery in specially designated hunting areas (such as deer).

Under the proposed alternative, the Service would largely support the actions above but with minor changes to satisfy new efforts to improve alignment with state hunting regulations while preserving wildlife-compatible uses. For example, some newly proposed hunting regulations cover species that are rarely observed or not particularly abundant for hunting on the refuge, such as crow, mink, and badger. In these cases, refuge hunting effects on those species' populations

would be negligible. Migratory bird, upland game (including furbearer), and turkey hunting opportunities are expanded, but limited in area, season, and method of take. Further, refuge closures are permitted for the protection of species, habitat, and the public as determined by the Service. The area proposed for new hunts are the same as the current hunt area (see Figure 4), which is nearly within the area approved in the CCP. A slight boundary adjustment would be made largely to facilitate administration of multiple public uses and to promote public safety.

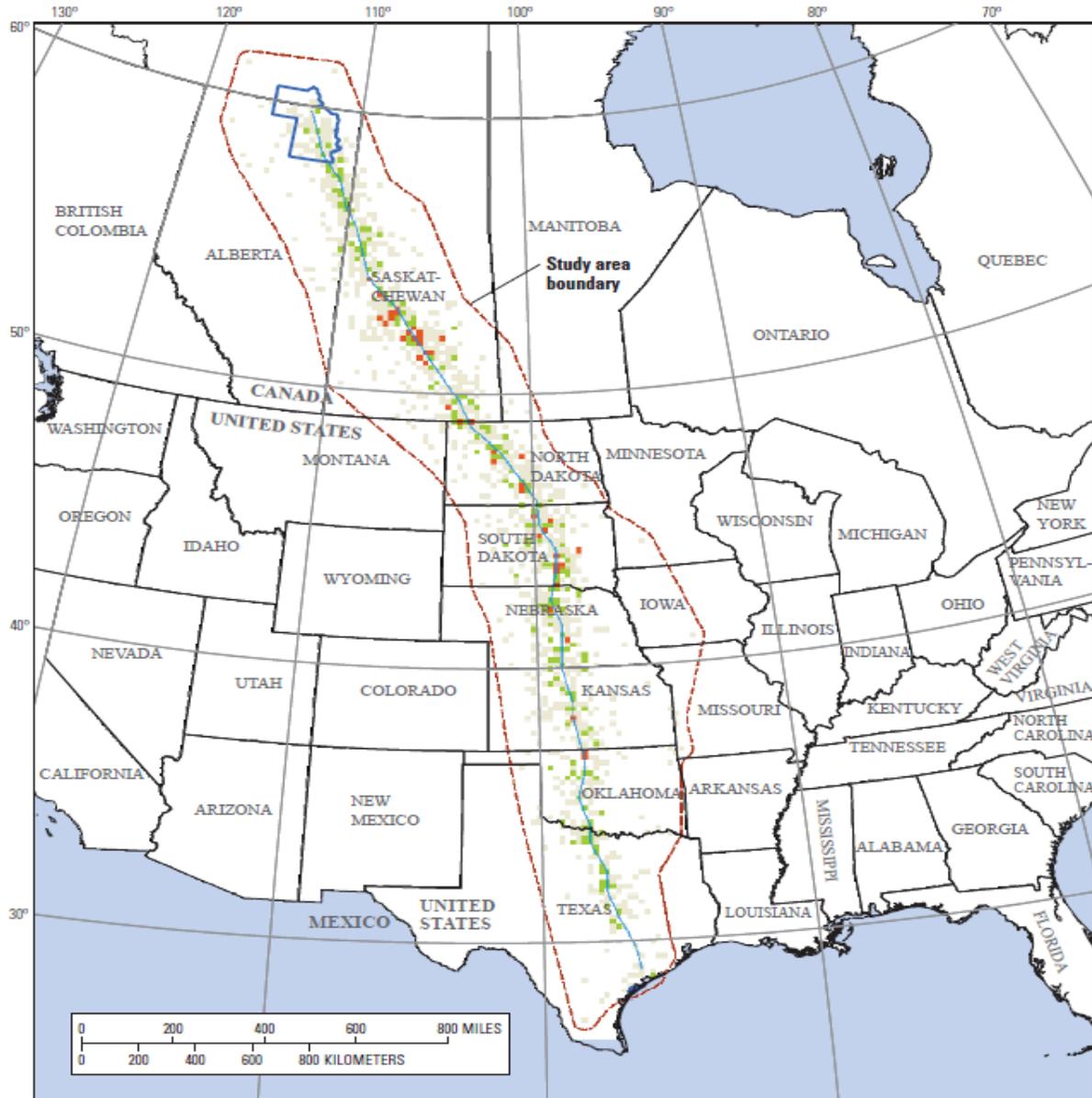
Mitigation Measures to Avoid Conflicts

Under the proposed action alternative, expanded hunting opportunities would attract hunters not currently using the refuge. Outdoor experiences on refuges often lead to a greater appreciation for natural resources and conservation action. After thoughtful consideration, the Service has determined that the hunting and fishing plan is compatible with the purposes of the refuge and mission of the Refuge System.

The Service is able to establish regulations for individual species or portions of the Refuge depending on conflicts with other wildlife-dependent priority uses. Hunting may be permanently or periodically closed to species or to areas of the refuge if the Service determines it is needed for wildlife, habitat, or public protection. Hunting opportunities are limited in season, area, and methods of take to provide safe recreational experiences that are compatible with habitat goals and objectives and state and federal regulations. Implementation of the hunting and fishing plan would support applicable federal, refuge, and state regulations, and evaluation of mitigation measures would be conducted regularly.

Biological Conflicts

The Service reduces biological conflicts with regulations and management. Hunting activities would be limited or not allowed where there are significant biological concerns. Monitoring of species and habitat conducted by the state, Service, and others would be periodically reviewed with a primary interest in natural resource protection. Areas on the refuge are closed to hunting to provide sanctuary, and temporary closures and limitations in seasons and methods of take reduce hunting pressure and increase protection during specific wildlife events. For example, closures occur for the primary bird breeding season in the spring and early summer and also for the protection of whooping cranes during migration potentially fall and spring because the refuge is identified as an extended-use core intensity site in Kansas for this species (Figure 3). Many of the proposed hunting opportunities occur in late fall and winter in upland habitat when upland-associated wildlife abundance and diversity are low relative to breeding and peak migration seasons and are limited to the refuge hunt unit during open hours (not at night).



Base map from Esri and is used herein under license (500 meter resolution).
 Universal Transverse Mercator projection, zones 13-14 N
 North American Datum of 1983 (NAD 83)

EXPLANATION

- Whooping crane migration corridor
- Low intensity
- Core intensity
- Extended-use core intensity
- Centerline

Figure 3. Site Use and Intensity of Areas within the Migration Corridor of the Aransas-Wood Buffalo Population of Whooping Cranes are Depicted, Adapted from Pearse et al. (2015).

Note: The refuge is identified as an extended-use core intensity site in Kansas, which may cause temporary closures on the refuge when these birds are present.

Refuge lands and management support many federally listed species. Below are species identified as federally threatened, endangered, or under a proposed listing or under review status for Phillips County, Kansas.

- Whooping crane (*Grus americana*): An endangered species listed for Phillips County, Kansas uses the refuge habitats during spring and fall migration (primary occurrence in March to April, and October to November)
- Interior least tern (*Sterna antillarum*): An endangered species listed for Phillips County, Kansas. It is an occasional visitor to the refuge. Nesting has been confirmed in the past with young produced in 1974, 1976, and 1980. Most of the suitable nesting habitat is on the east end of the reservoir. Fledging and dispersal activities mainly occur July to August when the refuge is closed to hunting activities.
- Piping plover (*Charadrius melodus*): A threatened species in Kansas, but the species occasionally stops at the refuge during migration. Peak population migration in spring is mid-April and, in fall, most birds arrive on the wintering grounds by August. Therefore, occurrence on the refuge would typically take place during closure of hunting activities.
- Red knot (*Calidris canutus rufa*): A threatened species wherever it is found. It has not been observed on the refuge. Reports of occurrence throughout the Midwest have been from mid-April through June and August through September. Hunting is closed on the refuge for most of the migration period. In September (when hunting activities are permitted), desired habitat conditions are not common.
- Northern long-eared bat (*Myotis septentrionalis*): A threatened species listed for possibly occurring in Phillips County, but on the western edge of its range. This bat overwinters in caves and mines, which do not occur on the refuge. It is thought that potential use on the refuge might be for roost sites (under tree bark, in hollow trees) along riparian areas or for foraging for insects. Most known reports are in north-central Kansas, but there are no known maternity roost trees or hibernacula on the refuge. Refuge management would be mindful of conservation measures under the interim 4(d) rule, including “cutting or destroying knowingly occupied roost trees during the pup season (June 1–July 31) will be avoided.” This period of use occurs when the refuge is closed to hunting.
- Lesser prairie chicken (*Tympanuchus pallidicinctus*): The status of this species is under review across its range, which includes Phillips County and the refuge. Occurrence on the refuge is rare and is not observed every year, unlike the greater prairie chicken. Historic range distribution of greater and lesser prairie chickens overlapped in areas south of the refuge.

An Endangered Species Act Section 7 consultation would be conducted before the hunting and fishing plan is approved or finalized. Other species in review as part of the Endangered Species Act process in the area of the refuge include:

- Monarch butterfly: Petitioned, 12-month finding planned for fiscal year 2021. Monarchs are common on the refuge, especially during fall migration in September. Often, 300 to 400 monarchs are tagged on the refuge at that time.
- Regal fritillary: Petitioned, 12-month finding planned for fiscal year 2022. This species does occur on the refuge, but it is not as common as the monarch.

- Tri-colored bat: Petitioned, 12-month finding planned for fiscal year 2021. This species is not known to occur on the refuge. A bat survey has been conducted on the refuge.
- Little brown bat: Discretionary status review, fiscal year 2023. A bat survey has not been conducted on the Refuge. If it occurs, then it is most likely on the refuge in summer when trees and water (insects) would be desirable habitat components.
- Golden-winged warbler: Petitioned, 12-month finding planned for fiscal year 2023. This has been reported as an accidental species on the refuge.

An Endangered Species Act Section 7 consultation would be conducted before the hunting and fishing plan is approved or finalized. These species would not be part of the Section 7 consultation associated with the current plan but might influence management decisions in the future, depending on status and protection determinations.

Public Use Conflicts

The Service reduces potential public use conflicts among hunting activities and other compatible recreational uses on the refuge through the designation of open and closed areas to hunting and with implementation of state, federal, and refuge-specific regulations. Areas administratively open to hunting are shown on refuge hunt and fish brochures and signs show areas closed. In addition, limitations in hunt seasons and methods of take further promote public safety and an appropriate balance of multiple hunting activities and other compatible visitor opportunities. Overall, it is not anticipated that conflicts under this alternative would be greatly changed from current conditions, largely because some hunting has already been permitted in upland and wetland habitats on the refuge hunt units from September 1 to April 30. If conflicts occur, the Service expects those instances to generally be minor, temporary, and limited to local impacts.

Administrative Use Conflicts

The greatest potential for administrative use conflicts relates to the implementation of refuge habitat management activities in areas and seasons open to hunting. In instances of prescribed burning, the Service checks the area for visitors and monitors access roads during the burn activity. Water and other management activities and refuge monitoring may cause temporary closures of an area to hunting or cause temporary interruption to visitor use activities.

Management activities that are unusual and conducted over a long time period (such as construction), are typically posted to the refuge Web site or otherwise communicated to the public (by phone, news release, or temporary signage).

This alternative offers increased opportunities for public hunting and fulfills the Service's mandate under the Improvement Act. The Service has determined that the hunting and fishing plan is compatible with the purposes of the refuge and the mission of the Refuge System.

Alternative B – Current Hunting Opportunities – No Action Alternative

Hunting opportunities already exist on the refuge (Figure 4). Hunting is permitted on 5,734 acres of refuge lands that do not include the lake acres in some areas so the total area open to hunting varies annually because the pool elevations in the reservoir vary annually. Hunting of waterfowl (teal, ducks, coots, mergansers, and geese), pheasant, quail, dove, fox squirrel, deer, turkey, and cottontail rabbit is currently allowed (and will continue to be) during regular state seasons that occur within the period of September 1 through April 30, in accordance with applicable federal

and state regulations. Light Goose Spring Conservation Order season is open on the refuge from February 17 to April 30 each year.

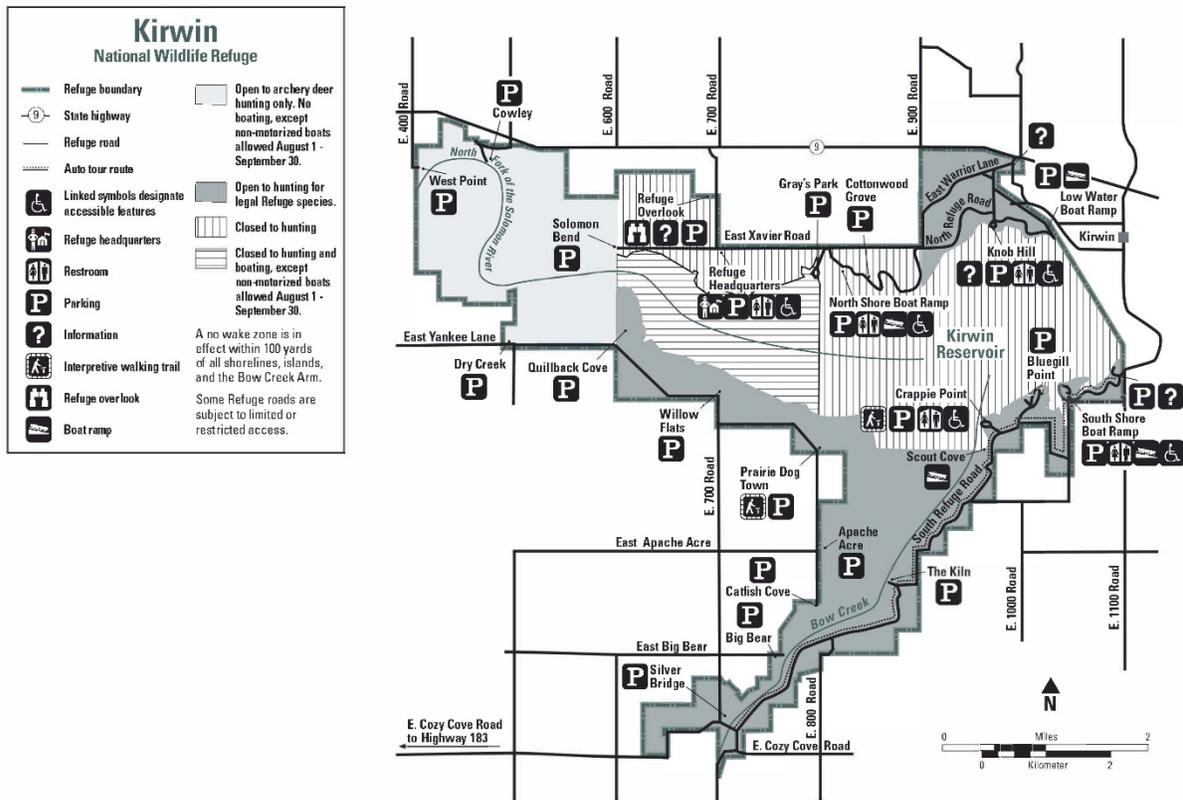


Figure 4. Current Hunting and Closed Areas Occurring on Kirwin National Wildlife Refuge.

Prohibited hunting activities including the use of rifles, pistols, and falconry would remain prohibited under both alternatives. Current regulations do not afford opportunities to hunt furbearers, coyotes, jackrabbits, grey squirrels, or three additional migratory birds: woodcocks, rail, and crows. Hunting is an approved use of the refuge as described in the CCP, but a step-down management plan with more detail (Proposed Action Alternative) is needed for implementation of any changes to the current hunting opportunities. Therefore, these above-listed species are currently not legal game animals on the refuge in accordance with Service policy.

Besides hunting, many other public uses occur on the refuge that are generally associated with environmental education, interpretation, natural resource observation, and photography. These uses would continue under both alternatives, but the hunting area would be shared with increased hunting opportunities from September 1 through April 30.

Refuge management activities, such as prescribed burning, prescribed grazing, wetland water-level manipulation, invasive species control, rest, and habitat reconstruction and restoration,

would continue under both alternatives using strategies consistent with recent CCP habitat-based goals and objectives (2006).

Alternative(s) Considered but Dismissed from Further Consideration

The Service allows hunting of greater prairie chicken on the refuge. Recent trends in harvest do cause some concern about the population status and may invoke closure discussions in the future (see harvest trends below in Figure 5; KDWPT 2019c). The refuge is near (one county south) the state-closed southwest prairie chicken unit. Historically, lesser and greater prairie chicken distribution ranges overlapped in the area of the refuge. Currently, lesser prairie chicken status is under review, which may affect the future of hunting prairie chickens on the refuge. Refuge habitat management supports native communities and conditions preferred by prairie chickens, encouraging future prairie chicken use of the refuge.

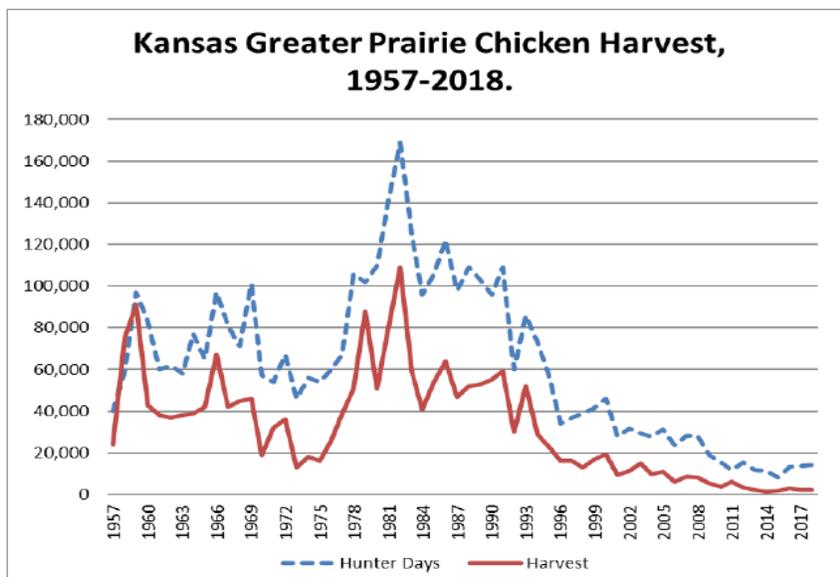


Figure 5. Greater Prairie Chicken Harvest in Kansas (KDWPT 2019c).

3.0 Affected Environment and Environmental Consequences

3.1 Affected Environment

This overlay refuge consists of approximately 10,778 acres in Phillips County, Kansas (see Figure 4). The refuge is primarily a prairie grassland, cropland, open water, shoreline, wetland, and wooded riparian complex. The Service does not regulate water levels because the water is managed by the Bureau of Reclamation and the Kirwin Irrigation District to support water recreation activities and cropping.

The larger landscape setting is dominated by agricultural uses, both cropland and rangeland. In recent decades, corn and wheat fields are common around the refuge and rangeland is primarily for cattle. Hunting activities occur on, in areas next to, and near refuge lands. Waterfowl and big game hunting are common on surrounding private lands.

For more detailed information regarding the affected environment, refer to Chapter 3 (Refuge Resources and Description) of the refuge's CCP (2006), which can be found here:

www.fws.gov/mountain-prairie/refuges/refugesUpdate/completedPlanPDFs_F-L/krw_2006_ccpfinal_all.pdf.

Tables 1 through 6 provides brief descriptions of each resource affected by the proposed action.

3.2 Environmental Consequences of the Action

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 would have a less than negligible impact by the proposed action have been dismissed from further evaluation.

Tables 1 through 5 provide:

- a brief description of the affected resources in the proposed action area;
- impacts of the proposed action and any alternatives on those resources, including direct and indirect effects.

Table 6 provides a brief description of the cumulative impacts of the proposed action and any alternatives.

Impact Types:

- *Direct effects* are those that are caused by the action and occur at the same time and place.
- *Indirect effects* are those that 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.

The refuge’s completed EA, which can found at www.fws.gov/mountain-prairie/refuges/refugesUpdate/completedPlanPDFs_F-L/krw_2006_ccpfinal_all.pdf, was included in the development of a CCP (2006). The CCP and associated EA public comments were considered in development of the refuge hunting and fishing plan and this EA. This current EA provides details and specific analyses of the proposed action as a step-down plan of the CCP.

Table 1. Affected Natural Resources and Anticipated Direct and Indirect Impacts of the Proposed Action and Any Alternatives.

Affected Resources	<u>Alternative A (Proposed Action)</u> <i>Hunting opportunities would be opened or expanded for upland game including furbearers, coyotes, grey squirrels, jackrabbits, migratory birds, and turkeys on Kirwin NWR.</i>	<u>Alternative B (No Action)</u> <i>Hunting opportunities would continue at existing levels at Kirwin NWR.</i>
Turkey		
<p>Turkey populations have increased on the refuge since establishment but are not considered abundant. According to personal communications with the state, turkey populations have seen regional (the refuge is in the northcentral turkey unit) and statewide declines in 2018 based on roadside survey data (KDWPT 2019b; see Figure 6). However, state hunting regulations are typically adjusted to manage changes in population status and trends.</p>	<p><i>Archery turkey estimated take:</i> fewer than 15 annually, at least at current population levels in the archery-only unit. The Service would allow turkey hunting but maintains the ability to limit hunting. The Service would have the ability to address concerns of population trends or compatibility issues. Hunting would be limited to the refuge hunt in the archery-only unit to the fall season. Hunting of deer is already permitted within the hunt unit during this time. Impacts would be negligible.</p>	<p>This alternative would have neutral effects on the population because hunting is permitted under current conditions and very few turkeys can be found on the refuge.</p>
Coyote		
<p>Coyote are common on the refuge. Coyotes are often seen foraging on birds on the frozen marshes in winter, small rodents, and other resident species in the summer.</p> <p>The 2015 Kansas Summer Roadside Survey Report (KDWPT 2015) shows increasing trends of coyote statewide (Figure 7). Furthermore, the coyote hunter activity report estimates 2,710 hunters pursuing coyote with 7 percent of the statewide harvest occurring in the northern high plains area (that includes the refuge) in 2018–2019 (KDWPT 2019c).</p>	<p><i>Refuge harvest estimate:</i> Based on an estimated average of 0.40 coyote per day over a 240-day refuge season, projected refuge harvest is estimated at 96 coyotes. We do not expect coyote hunting would occur every day of the season, nor do coyote hunters want to pursue this species unless the weather is favorable to harvest a coyote without using a rifle or pistol that are illegal weapons on the refuge. Also, considering the refuge hunt limitations (such as no use of vehicles or artificial lights, no dogs, and the hours) and the relatively small size of the hunt areas, it is expected that the actual take would be fewer than 25 animals annually.</p>	<p>This alternative would have neutral effects on the population because hunting is not permitted under current conditions.</p>

Affected Resources	<u>Alternative A (Proposed Action)</u> <i>Hunting opportunities would be opened or expanded for upland game including furbearers, coyotes, grey squirrels, jackrabbits, migratory birds, and turkeys on Kirwin NWR.</i>	<u>Alternative B (No Action)</u> <i>Hunting opportunities would continue at existing levels at Kirwin NWR.</i>
Small Game		
<p>Cottontails are common on the refuge and statewide harvest appears to be stable (KDWPT 2019c).</p> <p>Both species of squirrel and black-tailed jackrabbit are not very abundant on the refuge. However, statewide squirrel and black-tailed jackrabbit observations have both shown a steady increase from 1998 to 2008 (KDWPT 2008). Yet harvest based on hunter activity data show a steady decline in squirrel harvest (KDWPT 2019c; see statewide harvest below) and jackrabbit harvest in the Northern High Plains area estimate 250 total animals with fewer than 300 hunters perusing this species (KDWPT 2019c), suggesting that opening the hunting season for these species would have a very low cumulative impact.</p>	<p>Hunting would continue to be allowed with the addition of grey squirrel and black-tailed jackrabbit. With new species and expanded opportunities, there is potential for hunting impact to be slightly more than the No Action Alternative. Still, effects on regional and state populations are expected to be negligible (see under cumulative impacts).</p>	<p>Hunting is currently permitted and has not had adverse impacts on local populations.</p>
Upland Game (State-Defined Furbearers)		
<p>(Hunted species: badger, bobcat, red fox, grey fox, swift fox, mink, muskrat, opossum, raccoon, striped skunk, and weasel.)</p> <p>Furbearers that seem most common or abundant on the refuge are raccoon and striped skunk. It is possible that bobcats are common, but sightings are uncommon during daylight hours. Mink are rarely seen on the refuge and opossum sightings are uncommon. Badger and muskrat are only seen occasionally during daylight hours.</p> <p>The 2015 Kansas Summer Roadside Survey Report (KDWPT 2015) show increasing trends of furbearer species statewide based on roadside indexes from 1986 to 2015 (Figures 8, 9, and 10).</p>	<p><i>Refuge harvest estimate:</i> Hunter participation in fur harvest is estimated at 22.2 percent (n = 1,398) of all fur harvest license holders (5,627 in the 2017–2018 season). Other refuges in Kansas have reported low rates of furbearer hunting in recent years and similar participation is expected. Considering low abundance of many furbearer species and refuge hunt limitations (such as hours, weapons, no dogs), the potential take would likely be negligible in proportion to regional or state numbers.</p>	<p>This alternative would have neutral effects on the population because hunting is not permitted under current conditions.</p>

Affected Resources	<u>Alternative A (Proposed Action)</u> <i>Hunting opportunities would be opened or expanded for upland game including furbearers, coyotes, grey squirrels, jackrabbits, migratory birds, and turkeys on Kirwin NWR.</i>	<u>Alternative B (No Action)</u> <i>Hunting opportunities would continue at existing levels at Kirwin NWR.</i>
	State-defined hunted furbearer species that are most common on the refuge might have a greater likelihood of being affected by hunting include raccoon, bobcat, and striped skunk. Populations of these furbearer species are generally stable or increasing statewide. If a slight decline in local populations occurs, it may have positive impacts on bird populations (such as decreased predation on eggs as a food source) and other prey species that occur on the refuge. Also, the Service maintains the ability to limit hunting, in part, to have the ability to address concerns about declining population trends or compatibility issues.	
Upland Gamebird (Pheasant, Bobwhite)		
Ring-necked pheasant and bobwhite quail are common on the refuge. Numbers for many wildlife species decreased in the region following an extended extreme drought period (2011–2012). Statewide survey data from 2019 are depicted in Figures 11 and 12 for pheasant and bobwhite, respectively. Results of the Kansas 2019 Pheasant Crowing Survey by region (the refuge is in the Northern High Plains) are presented below in Figure 13 (KDWPT 2019a) and upland bird brood counts (KDWPT 2019b). The refuge occurs in the Northern High Plains. In Kansas, these surveys are an indication of breeding production potential because winters often are mild and do not adversely affect populations.	No change under the proposed alternative.	Hunting of pheasant and bobwhite already occurs on the refuge. The refuge is located in a region with some of the highest densities of pheasant and bobwhite in Kansas.

Affected Resources	<u>Alternative A (Proposed Action)</u> <i>Hunting opportunities would be opened or expanded for upland game including furbearers, coyotes, grey squirrels, jackrabbits, migratory birds, and turkeys on Kirwin NWR.</i>	<u>Alternative B (No Action)</u> <i>Hunting opportunities would continue at existing levels at Kirwin NWR.</i>
Crow		
American crows are widespread and long-term population trends continue to increase nationally and worldwide (Verbeek and Caffrey 2002; https://birdsna.org/Species-Account/bna/species/amecro/introduction). However, crows are not often observed on the refuge during the hunting season.	Under the proposed alternative, permitted hunting of crows is expected to have negligible impacts because they are uncommon during the hunting season.	This alternative would have neutral effects on the population because hunting is not permitted under current conditions.
Other Wildlife and Aquatic Species		
The refuge is widely known for supporting an abundance and diversity of wildlife species in northcentral Kansas. Overall peak numbers of migratory birds occur in spring and fall, but high numbers of individual species or groups vary within that period. Many species occurring on the refuge are of conservation concern, and several of these occur during the breeding season. Some species associated with the open water area of the refuge occur year-round, while others for only parts of the life cycle. More detailed descriptions are available in the refuge CCP (2006).	Impacts described under the Proposed Action Alternative also apply to the No Action Alternative. Though the area and season of combined hunting opportunities is not different between alternatives, there could be disturbance related to increased human presence and noise associated with hunting. However, the Service maintains the ability to mitigate potential conflicts through limitations of hunting access permits, days of hunting, and methods of take for many opportunities permitted under this alternative. With the frequency of hunting activity likely increasing under this alternative, the Service expects minor impacts on nontarget wildlife on parts of the refuge during the hunting season. Minor to moderate beneficial impacts are anticipated with respect to declines in predators of many nongame species, and increased exposure to outdoor experiences that have the potential to include observations and educational opportunities related to nongame species.	The entire refuge is not open to hunting in part to provide sanctuary for wildlife and to allow multiple outdoor experiences to appreciate wildlife and other natural resources. The largest concentrations of waterfowl occur within the closed areas that cover the main lake and the western portions of the lake. Many migratory songbirds breed and winter on the refuge, but preferred habitat conditions are available in areas closed to hunting. Some hunting is limited in October and November when neotropical birds and whooping cranes migrate through the area.

<p style="text-align: center;">Affected Resources</p>	<p style="text-align: center;"><u>Alternative A (Proposed Action)</u></p> <p><i>Hunting opportunities would be opened or expanded for upland game including furbearers, coyotes, grey squirrels, jackrabbits, migratory birds, and turkeys on Kirwin NWR.</i></p>	<p style="text-align: center;"><u>Alternative B (No Action)</u></p> <p><i>Hunting opportunities would continue at existing levels at Kirwin NWR.</i></p>
		<p>With many birding activities occurring throughout the year, observations of significant adverse long-term impacts from hunting on nongame wildlife are not known to have been reported by the public or refuge staff. Otherwise, those reports have been few and impacts seem temporary or limited.</p> <p>In the area open to hunting, allowable seasons are limited and disturbances are largely temporary. The spring conservation order allows hunting light geese from February through April and hunting is allowed on the refuge. However, very few hunters pursue this species on the refuge during the conservation order so the impacts to nongame wildlife are limited.</p> <p>The Service has the ability to close areas for the protection of wildlife to mitigate possible conflicts. This has been demonstrated in closing areas to protect nesting eagles and migrating whooping cranes. Furthermore, federal regulations are enforced for the protection of wildlife and the public.</p>

<p style="text-align: center;">Affected Resources</p>	<p style="text-align: center;"><u>Alternative A (Proposed Action)</u></p> <p><i>Hunting opportunities would be opened or expanded for upland game including furbearers, coyotes, grey squirrels, jackrabbits, migratory birds, and turkeys on Kirwin NWR.</i></p>	<p style="text-align: center;"><u>Alternative B (No Action)</u></p> <p><i>Hunting opportunities would continue at existing levels at Kirwin NWR.</i></p>
<p>Threatened and Endangered Species and Other Special Status Species</p>		
<p>The following species are threatened, endangered, proposed to be listed, or have a status under review in Phillips County: whooping crane (endangered), interior least tern (endangered), piping plover (threatened), red knot (threatened), northern long-eared bat (threatened), and lesser prairie chicken (status under review).</p> <p>The northern long-eared bat is not known to occur on the refuge. Lesser prairie chicken may have historically occurred on the refuge, but there have been no known occurrences in recent decades. Current management is providing habitat conditions that would encourage future use by prairie chicken species that may include the lesser prairie chicken.</p> <p>Interior least tern use the water areas on the refuge in low numbers during the breeding season. Main occurrence time for least terns is June through August.</p> <p>Piping plover have been observed on the shoreline near hunt areas during migration seasons. Peak migration for piping plover in spring is mid-April, so there could be hunting activity until May 1. It is unlikely that there would be any fall conflicts with hunting activities because most birds arrive on the wintering grounds by August.</p> <p>Red knot is another possible species that might occur on the refuge in wetland or along the shoreline of the reservoir. Occurrence of red knot passing through Kansas has been from mid-April to June and from August to September.</p>	<p>Impacts of hunting vary as a result of the permitted number of hunters, the hunt area, the season, hours, and methods of take. Shooting impacts include noise disturbance and take. Noise can have impacts beyond the hunt areas and take has associated risk of being incidental or accidental take. Therefore, mitigating actions may be necessary for the protection of listed species when they are using the refuge at a time when hunting season is open.</p> <p>Overall, current and proposed hunting activities are limited similarly in terms of area (hunt unit) and time (no hunting permitted May through August). The Service has the authority to close areas to hunting for the protection of listed species, such as whooping crane use within a hunt unit, to reduce possible effects of accidental take to insignificant or acceptable risk levels. In addition, state and refuge employees continue to educate hunters on identification of whooping cranes and other species to improve the potential to avoid accidental take. Other indirect measures that reduce accidental take include the use of nontoxic shot, closure during the primary nesting season, and the ability of management to adapt to the current needs associated with areas open to hunting and the potential negative impacts on threatened and endangered species.</p>	<p>A Section 7 consultation determined that current management consistent with the CCP would affect but not likely adversely affect species and critical habitat (USFWS 2006). Since CCP approval, whooping crane populations and use of the refuge have continued to increase with the presence of hunting and other public use activities, and there have been no incidences of take.</p>

<p style="text-align: center;">Affected Resources</p>	<p style="text-align: center;"><u>Alternative A (Proposed Action)</u></p> <p><i>Hunting opportunities would be opened or expanded for upland game including furbearers, coyotes, grey squirrels, jackrabbits, migratory birds, and turkeys on Kirwin NWR.</i></p>	<p style="text-align: center;"><u>Alternative B (No Action)</u></p> <p><i>Hunting opportunities would continue at existing levels at Kirwin NWR.</i></p>
<p>Whooping cranes represent the greatest concern of any listed species in terms of risk associated with hunting seasons. It is one of the rarest species in North America, and the Aransas-Wood Buffalo population is the only naturally migrating population of whooping cranes in the world. There are slightly more than 500 individuals in the population (USFWS 2018–2019 winter survey estimate). Long-term temporal shifts in migration have been reported, occurring earlier in spring and later in fall (Jorgensen and Bomberger Brown 2017), which can coincide with many of the fall hunting seasons that extend into December, and the spring light goose conservation order. Past habitat use on the refuge has occurred mostly in the areas closed to hunting.</p>	<p>Impacts of hunting on listed species, especially using the refuge from September through April, have the potential to increase with increased hunting opportunities under the proposed action. However, mitigation measures mentioned above are applied under this alternative as well and are expected to limit impacts of hunting to acceptable risk levels (minor). The main noticeable difference between alternatives may be the increased noise and human presence factors associated with the proposed alternative.</p> <p>Close monitoring of whooping crane use of the refuge during migration (recovery plan action) would continue and actions would be adjusted for the protection (and recovery) of the species.</p>	
<p>Vegetation</p>		
<p>There are no plants that are listed as threatened or endangered on the refuge. Detailed vegetation descriptions are included in the refuge CCP (USFWS 2006).</p> <p>Another concern is that hunting activities may introduce or increase the cover and distribution of invasive or exotic species throughout the hunting area, and with increased vehicle traffic through the refuge.</p>	<p>The hunting area and breeding season months when hunting is not permitted on the refuge remain the same under both alternatives. However, with an expected increase in the number of hunters using the refuge under this alternative, there is a higher potential for impacts of trampling, formation of trails, and spread of invasive species, but these impacts are expected to be dispersed due to the nature of hunting activity and temporary due to the limited hunting season. Moderate, beneficial impacts to vegetation may result with less deer browsing.</p>	<p>Negligible effects on vegetation have occurred from trampling by hunters, partly because of the area and time limited to hunting. However, it is not known if hunting impacts have influenced the spread of invasive species on the refuge.</p>

<p style="text-align: center;">Affected Resources</p>	<p style="text-align: center;"><u>Alternative A (Proposed Action)</u></p> <p><i>Hunting opportunities would be opened or expanded for upland game including furbearers, coyotes, grey squirrels, jackrabbits, migratory birds, and turkeys on Kirwin NWR.</i></p>	<p style="text-align: center;"><u>Alternative B (No Action)</u></p> <p><i>Hunting opportunities would continue at existing levels at Kirwin NWR.</i></p>
	<p>Hunting of species that dig burrows (badger) and influence vegetation coverage (muskrat) could have impacts on vegetation, habitat, and other wildlife that use the burrows and muskrat houses. However, these species are not considered abundant on the refuge and mortality of badger and muskrat is expected to be low in number due to proposed hunting limitations (such as refuge hunting hours, no trapping, only certain areas and months). Therefore, vegetation impacts associated with hunting of badger and muskrat are expected to be negligible.</p>	

Key: CCP = Comprehensive Conservation Plan; NWR = National Wildlife Refuge

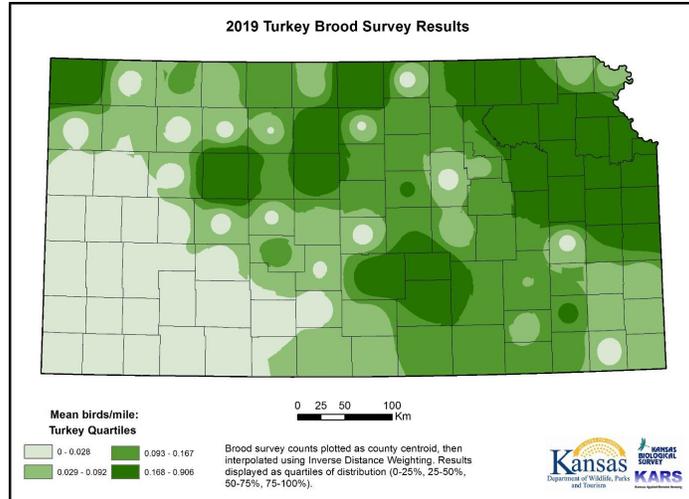


Figure 6. Relative Turkey Densities Estimated from Brood Survey Routes in Kansas, 2019 (KDWPT 2019b).

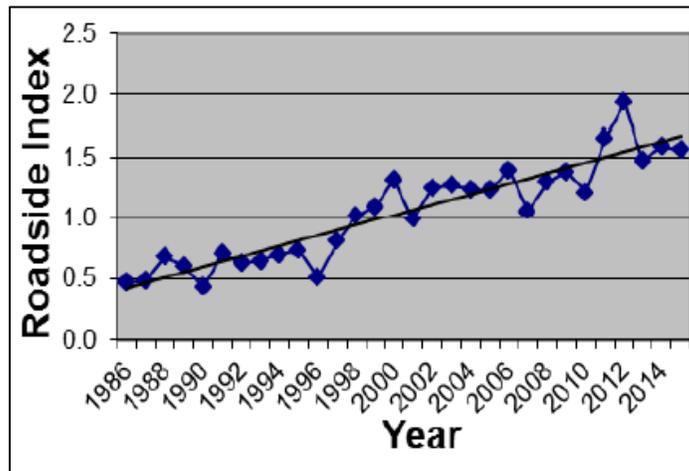


Figure 7. Coyote Population Trend Based on Roadside Surveys Completed across Kansas (KDWPT 2019c).

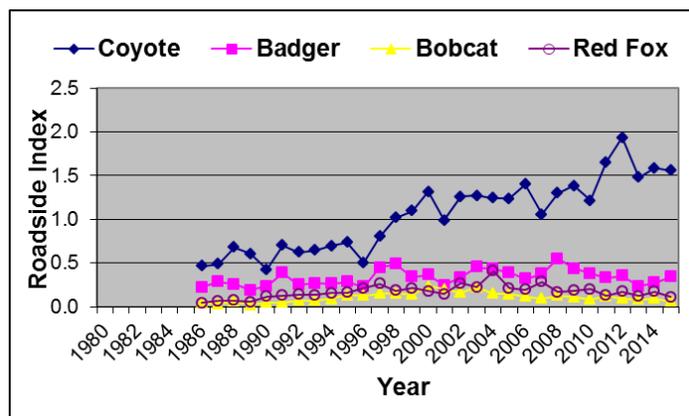


Figure 8. Population Trends of Coyote, Badger, Bobcat, and Red Fox in Kansas Based on Annual Roadside Indices (KDWPT 2015).

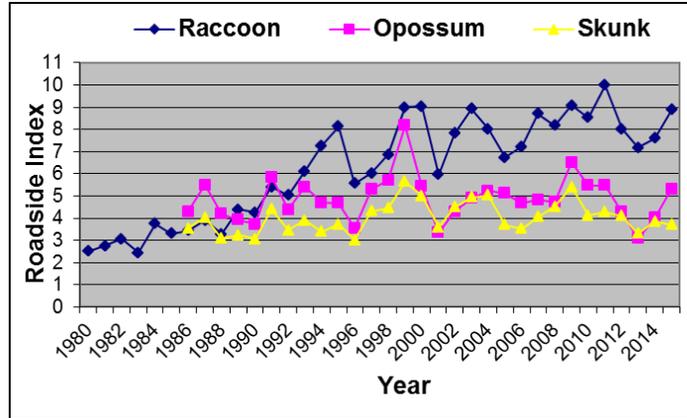


Figure 9. Population Trends for Raccoon, Opossum, and Skunk in Kansas Based on Annual Roadside Indices (KDWPT 2015).

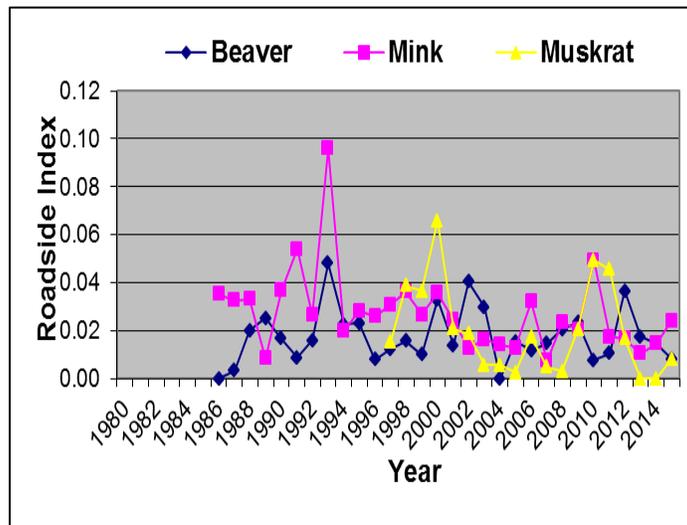


Figure 10. Population Trends for Beaver (Will Not be Hunted on the Refuge), Mink, and Muskrat in Kansas Based on Annual Roadside Indices (KDWPT 2015).

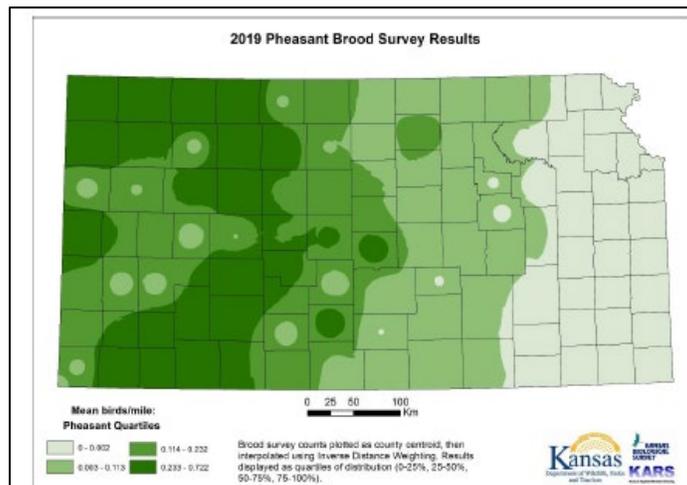


Figure 11. Relative Ring-Necked Pheasant Densities Estimated from Brood Survey Routes in Kansas, 2019 (KDPWT 2019b).

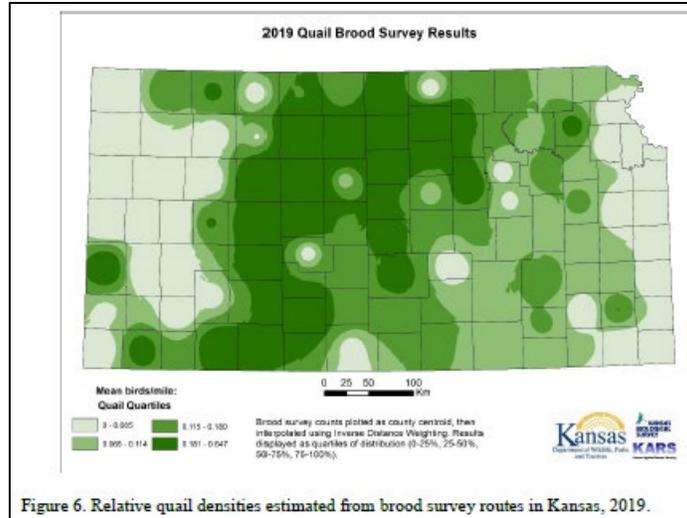


Figure 6. Relative quail densities estimated from brood survey routes in Kansas, 2019.

Figure 12. Relative Bobwhite Quail Densities Estimated from Brood Survey Routes in Kansas, 2019 (KDWPT 2019b).

Note: The refuge is in the Smoky Hills region and surveys indicate high densities occur within the vicinity of the refuge (KDWPT 2019b).

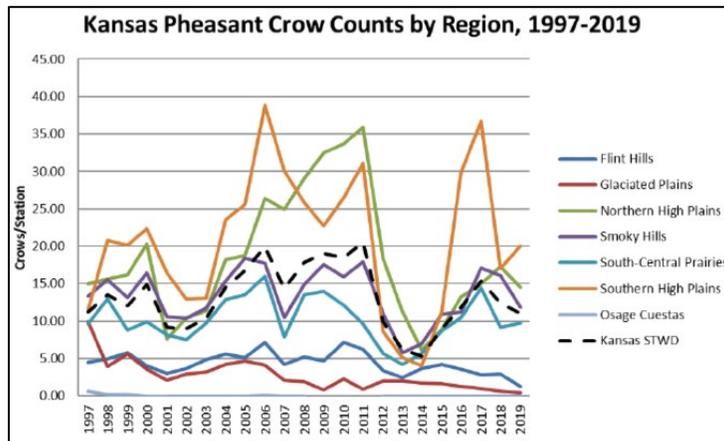


Figure 13. Kansas Pheasant Crow Counts by Regions.

Note: The refuge is in the Northern High Plains.

Table 2. Affected Visitor Use and Experience and Anticipated Direct and Indirect Impacts of the Proposed Action and Any Alternatives.

<p align="center">Affected Resources</p>	<p align="center"><u>Alternative A (Proposed Action)</u></p> <p align="center"><i>Hunting opportunities would be opened or expanded for upland game including furbearers, coyotes, grey squirrels, jackrabbits, migratory birds, and turkeys on Kirwin NWR.</i></p>	<p align="center"><u>Alternative B (No Action)</u></p> <p align="center"><i>Hunting opportunities would continue at existing levels at Kirwin NWR.</i></p>
<p>National wildlife refuges are public lands for all people and future generations to enjoy, and less than 1 percent of Kansas is public lands. Therefore, management decisions have significance within and beyond state boundaries. The refuge is visited by residents, nonresidents from across the United States, and those from other countries.</p> <p>Based on a 2011 survey, 1.2 million Kansas residents and nonresidents 16 years or older participated in wildlife-related recreation in Kansas (USFWS 2011). Of the participants sampled, wildlife watching was, by far, of the greatest interest compared to hunting activities (Figure 14). Most wildlife watching activities occurred near home. Of those participating in wildlife watching away from home, observation of wildlife was of greatest interest, followed by wildlife photography (Figure 15).</p> <p>The refuge’s primary responsibility is natural resource conservation, but it also supports compatible wildlife-based recreational opportunities. Therefore, a careful balance of these management priorities is desired. It is estimated that 10,788 visitors use the refuge in a year. The refuge is open to public access, except beyond area closed signs. Yet, outside a planned refuge public use or educational event, a large percentage of visitors spend most of their time in vehicles, viewing and photographing wildlife from the roads. The most recent visitor-use surveys conducted at the refuge showed general satisfaction. Currently, hunting of waterfowl, upland bird hunting, and archery deer hunting seem to capture the greatest public interest.</p>	<p>The proposed new hunt species, area, and season limitations align with CCP goals and objectives and resolve to balance or avoid conflicts among compatible wildlife-dependent recreational activities. For example, some hunting activities have limited seasons to allow both hunting and nonconsumptive public uses. Birdwatching and photography are also extremely common activities on the refuge. Neotropical migrants and many other birds occur in hunt areas especially during October and November. Therefore, special hunts, or use of other state-supported hunting programs, in September and January promotes wildlife conservation and the occurrence of both hunting and nonconsumptive uses. These state-supported hunting programs also support recreational opportunities for different hunter groups (such as archery-only and shotgun).</p>	<p>Visitor use and experience have been described in the CCP (USFWS 2006), which has an EA. Public input showed few conflicts between consumptive and nonconsumptive uses. Under current conditions, noise and visual impacts related to hunting are temporary. While shooting occurs on surrounding private lands, the impacts of noise on and off the refuge are short term and temporary, occurring in the early morning hours during the hunting season.</p>

Key: CCP = Comprehensive Conservation Plan; EA = Environmental Assessment; NWR = National Wildlife Refuge

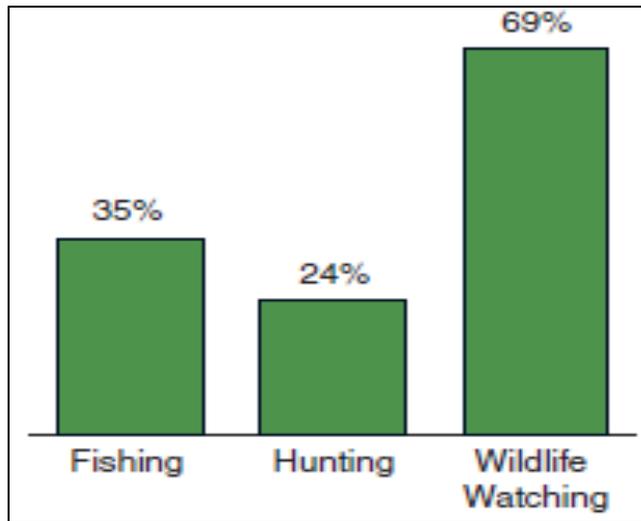


Figure 14. Proportional Recreational Activity of 1.2 Million Participants in a Kansas Survey in 2011.

Away-From-Home Wildlife-Watching Participation in Kansas (State residents and nonresidents 16 years old and older)	
Participants, total	169 thousand
Observe wildlife	158 thousand
Photograph wildlife	60 thousand
Feed wildlife
Days, total	1.0 million
Observe wildlife	927 thousand
Photograph wildlife	253 thousand
Feed wildlife
... Sample size too small (less than 10) to report data reliably.	
Note: Detail does not add to total because of multiple responses.	
Source: Table 25.	

Figure 15. Away-from-Home Wildlife-Watching Participation in Kansas in 2011.

Table 3. Affected Cultural Resources and Anticipated Direct and Indirect Impacts of the Proposed Action and Any Alternatives.

<p style="text-align: center;">Affected Resources</p>	<p style="text-align: center;"><u>Alternative A (Proposed Action)</u></p> <p style="text-align: center;"><i>Hunting opportunities would be opened or expanded for upland game including furbearers, coyotes, grey squirrels, jackrabbits, migratory birds, and turkeys on Kirwin NWR.</i></p>	<p style="text-align: center;"><u>Alternative B (No Action)</u></p> <p style="text-align: center;"><i>Hunting opportunities would continue at existing levels at Kirwin NWR.</i></p>
<p>Cultural resources were described in the CCP (USFWS 2006). In recent years, compliance checks of areas have been conducted as part of refuge management. There have been no known impacts to cultural resources as a result of hunting activities.</p>	<p>Because of the temporary and superficial use of refuge habitats during hunting activities, there should be no direct or indirect impacts to cultural resources under this alternative from visitors engaged in hunting activities, as delineated in the hunting and fishing plan. The Service has determined that, in accordance with the implementing regulations for section 106 of the National Historic Preservation Act (36 CFR 800), “the undertaking is a type of activity that does not have the potential to cause effects on historic properties, assuming such historic properties were present, [and] the agency official has no further obligations under section 106 or 36 CFR 800.3(a)(1).”</p>	<p>Under this alternative, there would be no change to existing environmental conditions; subsequently, no direct or indirect impacts to cultural resources are anticipated under this alternative.</p>

Key: CCP = Comprehensive Conservation Plan; CFR = Code of Federal Regulations; NWR = National Wildlife Refuge

Table 4. Affected Refuge Management and Operations and Anticipated Direct and Indirect Impacts of the Proposed Action and Any Alternatives.

<p style="text-align: center;">Affected Resources</p>	<p style="text-align: center;"><u>Alternative A (Proposed Action)</u></p> <p style="text-align: center;"><i>Hunting opportunities would be opened or expanded for upland game including furbearers, coyotes, grey squirrels, jackrabbits, migratory birds, and turkeys on Kirwin NWR.</i></p>	<p style="text-align: center;"><u>Alternative B (No Action)</u></p> <p style="text-align: center;"><i>Hunting opportunities would continue at existing levels at Kirwin NWR.</i></p>
<p>Land Use</p>		
<p>Refuge operations are most affected by management of multiple consumptive and nonconsumptive recreational uses in conjunction with the protection of species and associated habitat. With high interest in birding, nature-based photography, observation, and hunting opportunities, different perspectives remain, and balancing interests would continue to be a challenge. Many federal and state threatened, endangered, proposed, or in-review species use refuge resources, as well as many other species of conservation concern. As populations, habitat conditions, and status change at many spatial scales, shifts would occur in the balance of species needs and human-related impacts. Management would continue to provide habitat conditions in areas closed and open to hunting to support focal species of conservation concern, consistent with the CCP biological goals and objectives (under any alternative).</p> <p>Signs, brochures, and other forms of communication (such as, the Internet) would continue to be necessary requirements of operations for the protection of wildlife, habitat, and the public (and Service staff). These strategies are not only needed to communicate federal and state regulations, but also for educational opportunities (for example, to educate the public of the status and identification of protected species, the requirements of native species and those of conservation concern, and the potential for invasive species control or prevention in the spread of exotic species).</p> <p>Weather conditions influence road maintenance requirements; however, many roads on and surrounding the refuge are the responsibility of the county or township (not Service-owned roads).</p>	<p>Habitat management activities would be similar under both alternatives (CCP 2006), but there may be increased conflicts under the proposed action with greater hunting opportunities.</p> <p>The types of impacts under this alternative would be similar to current conditions, but the frequency and number of impacts might increase. For example, it is presumed that management would have to allocate more resources to enforce federal and state regulations that require the control of incidental spread of introduced and invasive species. With higher public use, there may be increased maintenance needs associated with parking lots, hunt units, road maintenance, and communication requirements (such as brochures in kiosks). Also, under this alternative, there would be a decreased ability to assess and monitor refuge resources and implementation of management strategies without interference of public use activities. It is expected that refuge operations and public use experiences would both be periodically affected with increased public use opportunities.</p>	<p>Most known impacts of the hunt and fish program on refuge lands and property are generally minor. Occasional violations occur, such as illegal take of fish and wildlife, camping, littering, and destruction of property (such as fences and signs). Also, hunting activities increase the potential for the spread of invasive species via vehicles, clothes and footwear, equipment, and travel. This affects refuge operations in efforts to control invasive and introduced species. Invasive species management causes great cost to the Service in staff time, budget, and loss of habitat. However, more important is the loss of native plant community, typically for extended periods of time.</p> <p>Current hunting opportunities do not suggest that significant issues with hunter traffic and other public use activities have occurred.</p>

<p style="text-align: center;">Affected Resources</p>	<p style="text-align: center;"><u>Alternative A (Proposed Action)</u></p> <p style="text-align: center;"><i>Hunting opportunities would be opened or expanded for upland game including furbearers, coyotes, grey squirrels, jackrabbits, migratory birds, and turkeys on Kirwin NWR.</i></p>	<p style="text-align: center;"><u>Alternative B (No Action)</u></p> <p style="text-align: center;"><i>Hunting opportunities would continue at existing levels at Kirwin NWR.</i></p>
<p>Administration</p>		
<p>The administrative organization, number of staff, and budget of the refuge have changed since described in the CCP (USFWS 2006). The refuge is now complexed with the Rainwater Basin Wetland Management District in Nebraska.</p> <p>On the refuge, there has been a noticeable decrease in the number of staff. However, there is a full-time law enforcement officer on the refuge who promotes safety through education and enforcement of regulations. The district has one biologist responsible for assessing wildlife and habitat conditions and making biological recommendations for use in management decision-making for both the district and the refuge. The refuge has a visitor use specialist who supports multiple use activities, public use events, educational programs, and various forms of public communications (such as website updates). All employees on the refuge (seven permanent, full-time) contribute to the recreational activities associated with the refuge through maintenance of infrastructure, visitor use interactions (such as phone, visitor center administration), and hunting program implementation (open and closed area signage).</p>	<p>Similar activities are involved for both alternatives. However, under the proposed alternative, it is estimated that law enforcement activity may require 30 to 35 hours per week during the hunting seasons. There would be more time and money spent with public communications and the coordination and administration with the state regarding new hunting opportunities. Monitoring would involve assessment of more species, but much of the information would be used from state surveys and volunteer efforts (such as roadside wildlife surveys).</p>	<p>Hunting activities require a lot of time and money. It is estimated that law enforcement may involve about 15 hours per week from September 1 through April 30. Transportation costs associated with law enforcement are estimated at nearly \$200 per week but fluctuate with fuel and maintenance costs. Operation of open and closed signs and communication related to the protection of whooping cranes (or other species of concern or public safety) requires an estimated 8 to 10 hours in a season. Monitoring and management of whooping cranes are not all hunting related; it is also of interest to nonconsumptive uses and required for biological purposes (such as Recovery Act Action).</p>

<p style="text-align: center;">Affected Resources</p>	<p style="text-align: center;"><u>Alternative A (Proposed Action)</u></p> <p><i>Hunting opportunities would be opened or expanded for upland game including furbearers, coyotes, grey squirrels, jackrabbits, migratory birds, and turkeys on Kirwin NWR.</i></p>	<p style="text-align: center;"><u>Alternative B (No Action)</u></p> <p><i>Hunting opportunities would continue at existing levels at Kirwin NWR.</i></p>
		<p>However, more time is spent checking whooping cranes with hunting, an estimated 2 hours per week during migration. Many hours are required to provide information to the public (such as by phone, website, visitor's center, brochures, news releases) throughout the hunting season. Costs are associated with printing hunting information for kiosks and the visitor center, and with maintenance of refuge infrastructure (such as roads, parking lots, facilities). Monitoring related to other species (such as waterfowl) involves at least 150 hours per year.</p>

Key: CCP = Comprehensive Conservation Plan; NWR = National Wildlife Refuge

Table 5. Affected Socioeconomics and Anticipated Direct and Indirect Impacts of the Proposed Action and Any Alternatives.

<p>Affected Resources</p>	<p><u>Alternative A (Proposed Action)</u> <i>Hunting opportunities would be opened or expanded for upland game including furbearers, coyotes, grey squirrels, jackrabbits, migratory birds, and turkeys on Kirwin NWR.</i></p>	<p><u>Alternative B (No Action)</u> <i>Hunting opportunities would continue at existing levels at Kirwin NWR.</i></p>
<p style="text-align: center;">Local and Regional Economies</p>		
<p>As part of the CCP (USFWS 2006) development, socioeconomic factors were described. However, it is likely that some parameters have changed since that time.</p> <p>A report examined economic contributions of recreational visits to national wildlife refuges in 2017 and found about 86 percent of recreational activity expenditures were related to non-consumptive uses on refuges (Caudill and Carver 2019). Most of those expenditures (83 percent) came from visitors traveling more than 50 miles. Overall, expenditures from recreational activities on refuges totaled about \$229 million in tax revenue at the local, county, and state.</p> <p>A survey of participation in wildlife-based recreational activities in Kansas reported \$208 million in wildlife-watching expenditures and \$401 million in hunting expenditures (USFWS 2011; Figure 16). Figure 17 shows comparative hunting expenditures further defined by the type of hunting.</p>	<p>Based on the available information, an increase in wildlife-based recreational opportunities is expected to provide improved benefits to the local, regional, and state economy compared to current conditions. However, in a landscape dominated by agricultural land use, the relative benefits to the overall state economy are likely minor. Compared to current conditions, with more hunt-related experiences offered on the refuge, there would be potentially more visitation expenditures in the area and an increase in the number of state permit sales.</p>	<p>Based on the available information, little to no change in wildlife-based recreational opportunities are expected under current conditions. In comparison to the proposed alternative, there would be potentially fewer benefits to the local, regional, and state economy due to fewer visitation expenditures in the area and a lower number in state hunting permit sales.</p>
<p style="text-align: center;">Environmental Justice</p>		
<p>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 finding and addressing disproportionately high or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities.</p>		

<p style="text-align: center;">Affected Resources</p>	<p style="text-align: center;"><u>Alternative A (Proposed Action)</u></p> <p style="text-align: center;"><i>Hunting opportunities would be opened or expanded for upland game including furbearers, coyotes, grey squirrels, jackrabbits, migratory birds, and turkeys on Kirwin NWR.</i></p>	<p style="text-align: center;"><u>Alternative B (No Action)</u></p> <p style="text-align: center;"><i>Hunting opportunities would continue at existing levels at Kirwin NWR.</i></p>
<p>According to the Kansas Health Institute (Hunt and Panas 2018), population growth in Kansas from 2000 to 2016 has been among minority populations, an increase of 52.5 percent. Projected growth of minority populations, barring any unexpected impacts on current population patterns, is expected to increase even more.</p> <p>The minority, income, and poverty data shown in Figure 18 is provided to help improve the understanding of Kansas demographics.</p> <p>Based on 2014 data, Kansas had an overall poverty rate of 13.6 percent (ranked 31 in the United States) (Figure 19), while county information (2015 data) suggests that Phillips County has lower poverty rates than the statewide mean (Figure 20).</p>	<p>Within the spirit and intent of Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations, and Low-Income Populations, no actions being considered in this EA would disproportionately place any adverse environmental, economic, social, or health effects on minority or low-income populations when compared with the public.</p> <p>The Service is committed to ensuring that all members of the public have equal access to the Nation’s fish and wildlife resources, as well as equal access to information that would enable them to take part meaningfully in activities and policy shaping.</p>	<p>Impacts would be the same as described under the Proposed Action Alternative.</p>

Key: CCP = Comprehensive Conservation Plan; EA = Environmental Assessment; NWR = National Wildlife Refuge

Wildlife-Watching Expenditures in Kansas (State residents and nonresidents 16 years old and older)	
Total	\$208 million
Trip-related	\$46 million
Equipment	\$57 million
Wildlife watching	\$51 million
Auxiliary and special	\$6 million
Other	\$106 million
Source: Table 31.	
Hunting Expenditures in Kansas (State residents and nonresidents 16 years old and older)	
Total	\$401 million
Trip-related	\$150 million
Equipment	\$72 million
Hunting	\$62 million
Auxiliary and special	\$10 million
Other	\$180 million
Source: Table 20.	

Figure 16. Wildlife-Watching and Hunting Expenditures in Kansas.

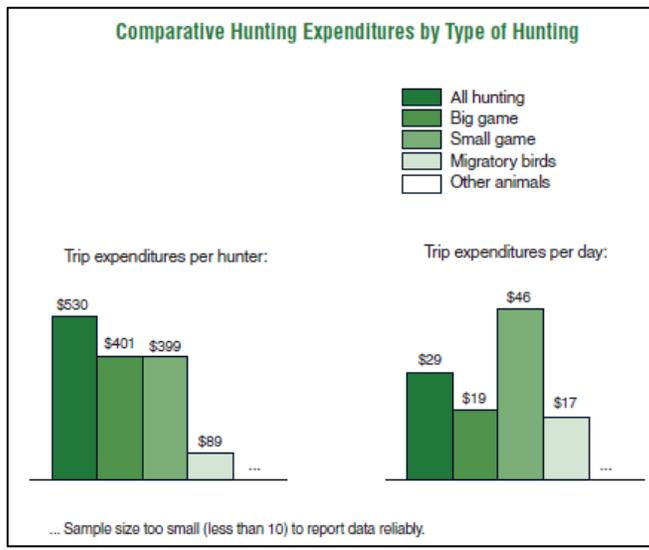


Figure 17. Comparative Hunting Expenditures by Type of Hunting.

Kansas	2016	2036	2016–2036 % Change	2066	2016–2066 % Change
Total Population	2,907,289	3,220,161	10.8%	3,637,037	25.1%
Age Group					
Age 14 and under	595,053	627,855	5.5%	694,996	16.8%
Age 15 to 24	417,031	424,321	1.7%	472,809	13.4%
Age 25 to 64	1,458,212	1,523,208	4.5%	1,728,517	18.5%
Age 65 and over	436,993	644,778	47.5%	740,715	69.5%
Race/Ethnicity					
White, Non-Hispanic	2,254,581	2,118,722	-6.0%	1,765,981	-21.7%
Black, Non-Hispanic	192,710	235,597	22.3%	271,921	41.1%
Other/Multiple Races, Non-Hispanic	121,517	185,141	52.4%	289,622	138.3%
Hispanic, Any Race	338,481	680,701	101.1%	1,309,513	286.9%

Source: 2016 Kansas Population Projections by Race and Ethnicity, Center for Economic Development and Business Research at Wichita State University.

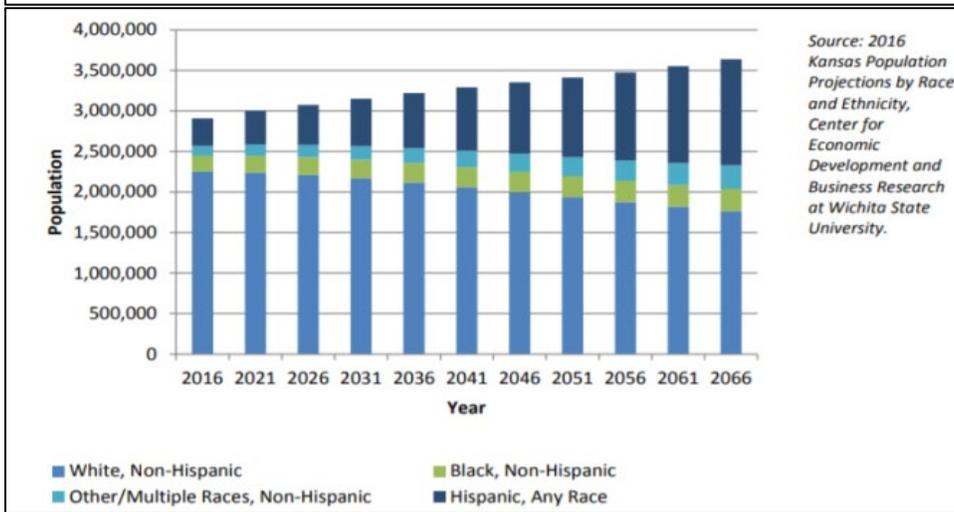


Figure 18. Population Projections by Total Population, Age, Group, and Race and Ethnicity in Kansas, 2016–2066.

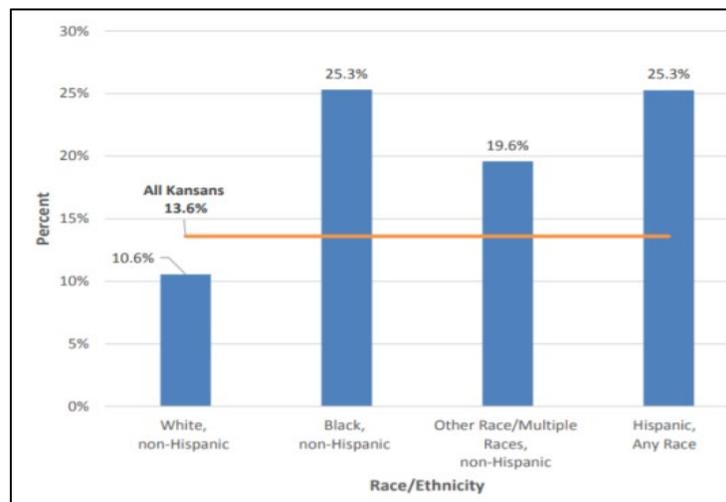


Figure 19. Five-Year Mean Poverty Levels by Race and Ethnicity.

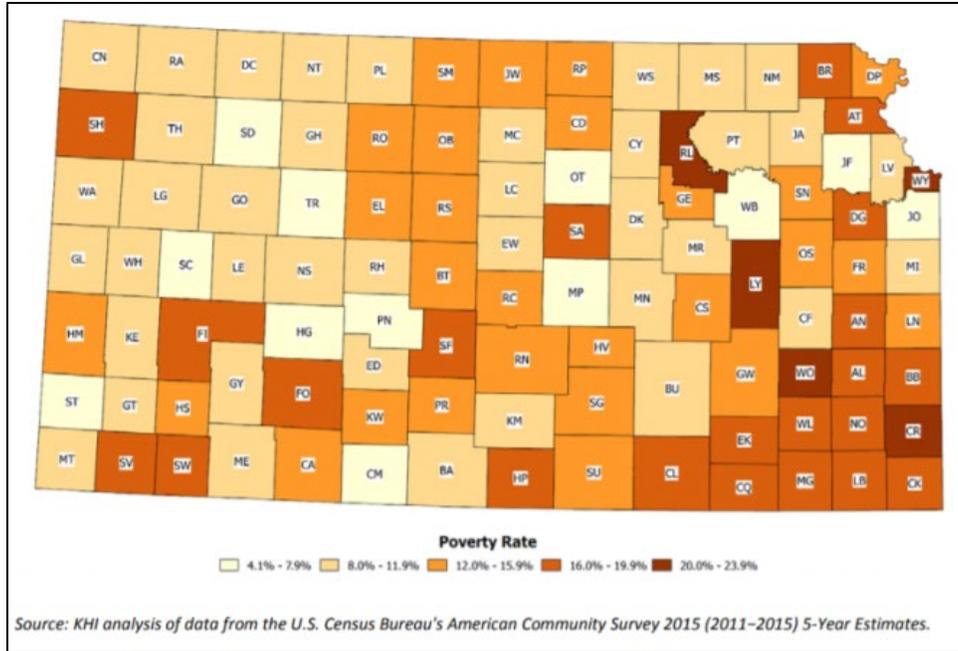


Figure 20. Poverty Rate by County in Kansas, 2015.

3.3 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).

Table 6. Anticipated Cumulative Impacts of the Proposed Action and Any Alternatives.

Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment	Descriptions of Anticipated Cumulative Impacts
Hunting	
<p>Trends of harvest in Kansas follow for many species (KDWPT 2018, 2018b, 2019c).</p> <p>The first modern deer-hunting season in Kansas was held in 1965 (Figure 21). Kansas statewide deer harvest show the largest harvest occurred in 2000 (111,159) and the lowest occurred in 1965 (1,504).</p> <p>KDWPT reported an increase in archery take of deer from 2010 to 2017 (Figure 22) but identified crossbow as a legal weapon during the archery season a contentious issue.</p> <p>Kansas statewide squirrel harvest estimates show a declining rate of harvest (Figure 23), yet the roadside surveys show a stable or increasing population (KDWPT 2018c).</p> <p>Kansas statewide cottontail harvest estimates show a declining rate of harvest, yet the roadside surveys indicate a stable or increasing population (KDWPT 2019c).</p> <p>Kansas statewide cottontail harvest estimates show a declining rate of harvest (Figure 24), yet the roadside surveys indicate a stable or increasing population (KDWPT 2019c).</p> <p>For furbearer species, Figure 25 shows harvest participation data during the 2017-2018 harvest season (KDPWT 2018c).</p> <p>Kansas pheasant and bobwhite harvest trends are shown in Figures 26 and 27 (KDPWT 2019c).</p>	<p>Similar to other national wildlife refuges, the refuge conducts hunting programs within the framework of state and federal regulations. Population estimates of hunted species are developed at multiple spatial scales and used to determine take limits, hunting seasons, and methods of take. The proposed refuge hunting program rules would be the same as, or more restrictive than, hunting regulations throughout the State of Kansas. The refuge will regularly coordinate with the state and support hunting regulations that are the same as or more restrictive than the state for the protection of natural resources and the public.</p> <p>The proportion of harvest on the refuge would be a very small portion of the total annual state and regional harvest. Examples below.</p> <p>Regional and state estimates are provided below (KDWPT 2018b, 2019c).</p> <p>Deer (Figures 21 and 22)</p> <p>For 2017–2018 season:</p> <p>Total permits issued = 182,632</p> <p>Success rate = 49.6 percent</p> <p>Total state harvest = 79,567</p> <p>Total harvest in unit 3 = 4,266</p> <p><i>Estimated refuge harvest</i> = No changes are proposed to deer hunting. Harvest on the refuge is low relative to state and regional harvest numbers and therefore negligible.</p>

Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment	Descriptions of Anticipated Cumulative Impacts
(Hunting continued)	<p><i>Coyote</i></p> <p>For 2018–2019 Northern High Plains unit (KDPWT 2018):</p> <p>Est. total hunters = 2,710</p> <p>Est. total days = 17,343</p> <p>Est. total harvest = 7,421 +/- 4,541</p> <p>Est. season days per hunter = 6.4</p> <p>Est. season bags per hunter = 2.74</p> <p>Est. average bags per day = 0.40</p> <p><i>Estimated refuge harvest</i> = Based on an estimated average 0.40 coyote per day over a 240-day refuge season, projected refuge harvest is estimated at 96 coyotes. We do not expect coyote hunting to occur every day of the season, nor would coyote hunters want to pursue this species unless the weather is favorable to harvest a coyote without using a rifle or pistol, which are illegal weapons on the refuge. Also, considering the refuge hunt limitations (such as no use of vehicles or artificial lights, no dogs, the hours) and the relatively small size of the hunt areas, it is expected that the actual take would be fewer than 25 animals annually.</p> <p><i>Small Game: Squirrel (Figure 23)</i></p> <p>For 2018–2019, Northern High Plains unit:</p> <p>Est. total hunters = 83 (10,756 in Kansas)</p> <p>Est. total days = 1,793 (71,082 in Kansas)</p> <p>Est. total harvest = 292 +/- 2,649 (67,664 +/-10,133 in Kansas)</p> <p>Est. season days per hunter = 21.5 (6.61 in Kansas)</p> <p>Est. season bags per hunter = 3.5 (6.29 in Kansas)</p> <p>Est. average bags per day = 0.24 (1.23 in Kansas)</p> <p><i>Estimated refuge harvest</i> = Based on an estimated average of 0.24 squirrel per day over a 181-day refuge season, potential harvest is about 43 squirrels annually. In reality, hunting could not occur every day of the season. In recent years, there has been little to no interest in squirrel hunting on the refuge (staff interactions with public), and squirrels are not very common on the refuge. Also, considering the refuge has limited squirrel habitat, it is expected that the actual take would be much fewer than estimated. This level of take would have negligible impacts on regional and statewide harvest populations.</p>

Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment	Descriptions of Anticipated Cumulative Impacts
(Hunting continued)	<p><i>Small Game: Cottontail (Figure 24)</i></p> <p>For 2018–2019 Northern High Plains unit:</p> <p>Est. total hunters = 1,376 (13,841 hunters in Kansas)</p> <p>Est. total days = 8,422 (79,337 days in Kansas)</p> <p>Est. total harvest = 5,128 +/- 2,155 (63,203 harvest in Kansas)</p> <p>Est. season days per hunter = 6.12 (5.73 in Kansas)</p> <p>Est. season bags per hunter = 3.73 (4.57 in Kansas)</p> <p>Est. average bags per day = 0.80 (0.96 in Kansas)</p> <p><i>Estimated refuge harvest</i> = Rabbit season is year-long in Kansas so the hunt days are based on the days that would be open to hunting. Based on an estimated average 0.80 cottontail per day over a 242-day refuge season, potential harvest is estimated at 194 cottontails annually. In reality, it is not expected that cottontail hunting would occur every day of the season. Also, considering the refuge hunt limitations (such as no trapping), it is expected that the actual take would be much fewer. This level of take has negligible impacts on regional and statewide harvest numbers.</p> <p><i>Small Game: Jackrabbit</i></p> <p>For 2018–2019 Northern High Plains unit,</p> <p>Est. total hunters = 292</p> <p>Est. total days = 2,710</p> <p>Est. total harvest = 250</p> <p>Est. season days/hunter = 9.29</p> <p>Est. season bag/hunter = 0.86</p> <p>Est. average bag/day = 0.43</p> <p><i>Estimated refuge harvest</i> = Rabbit season is yearlong in Kansas, so the hunt days are based on the days that would be open to hunting. Based on an estimated average 0.43 jackrabbits per day over a 242-day refuge season, potential harvest is estimated at 104 jackrabbits. In reality, it is not expected that hunting could occur every day of the season. Also, considering the refuge hunt limitations (such as no trapping, the hours, etc.), it is expected that the actual take would be much fewer. This level of take has negligible impacts on regional and statewide harvest numbers.</p>

Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment	Descriptions of Anticipated Cumulative Impacts
(Hunting continued)	<p><i>Upland Game: Furbearers (Figure 25)</i> <i>Estimated refuge harvest</i> = Hunter participation in fur harvest is estimated at 22.2 percent (n=1,398) of all fur harvest license holders (5,627 in the 2017–2018 season). Other refuges in Kansas have reported low rates of furbearer hunting in recent years and similar participation is expected. Considering low abundance of many furbearer species and refuge hunt limitations (such as hours, weapons, no dogs), the potential take would likely be negligible in proportion to regional or state numbers (see Figure 22).</p> <p><i>Upland Game Bird: Pheasant (Figure 26)</i> For 2018–2019 Northern High Plains Unit: Est. total hunters = 16,468 (80,421 in Kansas) Est. total days = 79,587 (337,069 in Kansas) Est. total harvest = 87,675 +/- 10,937 (343,947 in Kansas) Est. season days per hunter = 4.83 (4.19 for Kansas) Est. season bags per hunter = 4.12 (4.28 for Kansas) Est. average bags per day = 1.16 (1.11 for Kansas) <i>Estimated refuge harvest</i> = Based on an estimated average 1.16 pheasant per day over an 85-day refuge season (including youth), potential harvest is about 99 pheasants. Also, considering refuge hunt limitations (such as area), it is expected that the actual take would be much fewer. This level of take has negligible impacts on regional and statewide harvest numbers.</p> <p><i>Upland Game Bird: Quail (Figure 27)</i> For 2018–2019 Northern High Plains unit: Est. total hunters = 6,921 (66,038 in Kansas) Est. total days = 34,4361 (30,131 in Kansas) Est. total harvest = 57,325 +/- 10,487 (488,489 in Kansas) Est. season days per hunter = 4.98 (4.56 in Kansas) Est. season bags per hunter = 8.28 (7.40 in Kansas) Est. average bags per day = 1.39 (1.50 in Kansas) <i>Estimated refuge harvest</i> = Based on an estimated average 1.39 bags per day over an 85-day refuge season (including youth), potential harvest is about 118 bobwhites. Also, considering refuge hunt limitations (such as area), it is expected that the actual take would be much fewer. This level of take has negligible impacts on regional and statewide harvest numbers.</p>

Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment	Descriptions of Anticipated Cumulative Impacts
(Hunting continued)	<p><i>Migratory Birds</i></p> <p>Crow is a new migratory bird species proposed to be hunted under the Proposed Action Alternative. American crow are widespread and long-term population trends continue to increase nationally and worldwide (Verbeek and Caffrey 2002; https://birdsna.org/Species-Account/bna/species/amecro/introduction). Harvest of crow on the refuge would be negligible in the context of cumulative impacts to the population at regional and larger landscape scales. Most of the harvest is in the southeast portion of Kansas.</p> <p>Data for 2018–2019 for the Northern High Plains unit is not available so statewide data is shown below (KDWPT 2019c).</p> <p>Est. total hunters = 2,001 Est. total days = 5,878 Est. total harvest = 14,133 +/- 4,809 Est. season days per hunter = 2.94 Est. season bags per hunter = 7.06 Est. average bags per day = 2.68</p> <p>Rail is a new migratory bird species proposed to be hunted under the Proposed Action Alternative. Both sora and Virginia rail occur on the refuge and flyway-wide populations appear to be stable. Data for 2018–2019 for the Northern High Plains unit is not available so statewide data is shown below (KDWPT 2019c).</p> <p>Est. total hunters = 83 Est. total days = 208 Est. total harvest = 83 +/- 1,059 Est. season days per hunter = 2.5 Est. season bags per hunter = 1.00 Est. average bags per day = 1.00</p> <p><i>Woodcock</i> is a new migratory bird species proposed to be hunted under the Proposed Action Alternative. There are no known observations of woodcock on the refuge. Data for 2018–2019 for the Northern High Plains unit is not available so statewide data is used below (KDWPT 2019c), which shows very few participants and very low harvest, presumably on the eastern side of Kansas.</p> <p>Est. total hunters = 83 Est. total days = 250 Est. total harvest = 83 Est. season days per hunter = 3.00 Est. season bags per hunter = 1.00 Est. average bags per day = 0.38</p>

Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment	Descriptions of Anticipated Cumulative Impacts
Other Wildlife-Dependent Recreation	
<p>There are roads and trails on and around the refuge that contribute to cumulative impacts. The wildlife-dependent recreation accounts for 98 percent of the use at the refuge. Consumptive use accounts for an estimated 46 percent of the use.</p> <p>As mentioned elsewhere in the EA, interior roads fragment the refuge and any increase in use may contribute to wildlife disturbance due to more frequent traffic and human activity.</p>	<p>Roads and trails on the refuge contribute to cumulative impacts on the environment. Roads and trails fragment habitat, increasing the potential for the spread of invasive species and human-wildlife interaction (thereby disturbance). However, many roads are township or county roads, or those associated with oil and gas activities, and are not maintained by the refuge. No newly developed roads or trails are planned under the proposed alternative.</p>
Development and Population Increase	
<p>According to the Kansas Health Institute (Hunt and Panas 2018), population growth in Kansas from 2000 to 2016 has been slow relative to U.S. rates. In general, Kansas demographics show a trend of becoming older, more urban, and more diverse (Hunt and Panas 2018). Information from the Kansas Health Institute Report is provided below. The National Center for Health Statistics' April 1, 2000 bridged-race population estimates, the June 2017 vintage, and the July 2016 bridged-raced population estimates show declines in humans for northwest Kansas (Figure 28).</p>	<p>It is uncertain how projected population and development trends in Kansas would influence species and hunting impacts. Because most growth is expected to occur in urban areas, it is unlikely that local development would affect areas around the refuge in the near future. The refuge is located in a rural landscape dominated by agricultural activities. However, urban expansion may adversely affect natural resources surrounding cities through additional decreases in the availability of habitat and increasing demands on water resources.</p> <p>Increases in the number of visitors would likely be experienced with increasing populations. Currently, for example, resident hunters from Wichita visit the refuge for use opportunities. Impacts would in part be influenced by changing societal interests and other developments (such as transportation and equipment).</p> <p>The use of an adaptive management approach allows the refuge to periodically review and adjust the hunt and fish program to ensure that it does not contribute to the cumulative impacts of population growth and development on species.</p>
Agricultural Land Uses	
<p>Land use in the region is dominated by agricultural activities. Wildlife have benefited from agricultural activities as a source of forage and habitat. However, increased concentration of wildlife has the potential to facilitate depredation of crops, the spread of disease, and adverse impacts of contamination.</p>	<p>Increased hunting under the proposed alternative may not impact local agricultural uses, in part due to common off-refuge hunting, and the current refuge hunt area remains unchanged.</p>

Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment	Descriptions of Anticipated Cumulative Impacts
Use of Lead Ammunition	
<p>The Service permits nontoxic shot only and does not allow rifles or handguns. Nationally, instances of lead mortality in birds (scavengers) have been linked to contamination resulting from toxic shot and ammunition in prey (Golden et al. 2016). There is high use of refuge lands by bald eagles. For example, point-in-time eagle counts in winter have exceeded 150 on the refuge, mostly attracted to the high numbers of migratory and wintering waterfowl that concentrate as ice forms. It is not unusual to observe more than 40 to 60 bald eagles foraging on the refuge in winter. Also, nesting eagles have been documented on the refuge in recent years.</p>	<p>No impact because the Service permits nontoxic shot only.</p>
Climate Change	
<p>It is reported that temporal shifts are occurring in species' migration patterns in response to climate change and available food resources at higher latitudes. Of relevance to this EA and hunting and fishing plan are reports of temporal shifts in migration of the whooping cranes (Jorgensen and Bomberger Brown 2017).</p> <p>Climate change refers to the increasing changes in the measures of climate over a long period of time, including precipitation, temperature, and wind patterns (USGS 2019). Although climate change is a naturally occurring phenomenon and temperature and precipitation changes are anticipated, there are many unknowns. Consequently, we do not fully understand the potential impacts that climate change may have on terrestrial and aquatic habitats and the associated wildlife species.</p>	<p>Using available and emerging science, the Service continues to assess predictions of these complex effects and use an adaptive management approach to ensure that it does not add to the impacts of climate change on the environment. Hunt programs and mitigation measures would adapt with changing conditions to conserve natural resources and balance compatible recreational uses.</p>

Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment	Descriptions of Anticipated Cumulative Impacts
<p>Based on the National Oceanic and Atmospheric Administration’s summary of potential climate change effects on Kansas (Frankson et al. 2017; https://statesummaries.ncics.org/chapter/ks/), Kansas may experience warmer winter and spring temperatures. The number of cold (minimum temperature below zero degrees Fahrenheit) nights may decrease. Annual precipitation predictions are uncertain. The intensity of droughts is expected to increase; however, deluge events may also become more frequent.</p>	

Key: EA = Environmental Assessment;

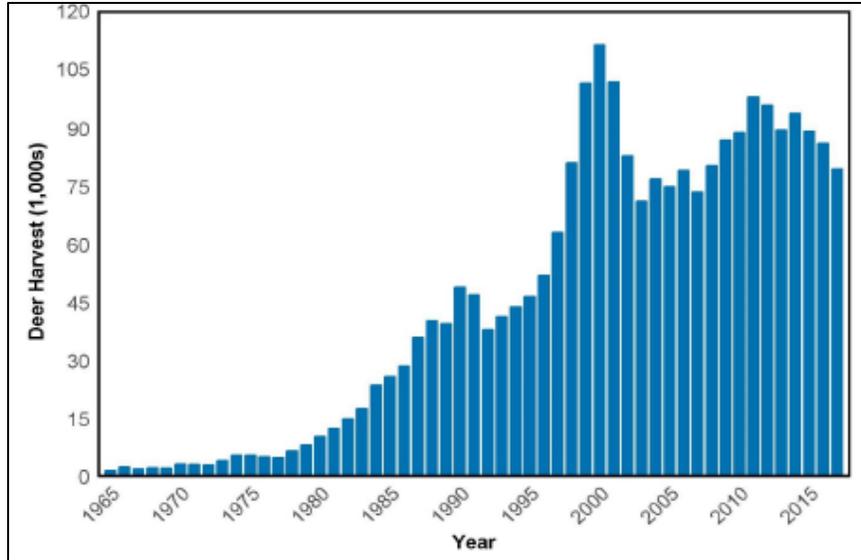


Figure 21. Statewide Deer Harvest Trends from 1965–2015.

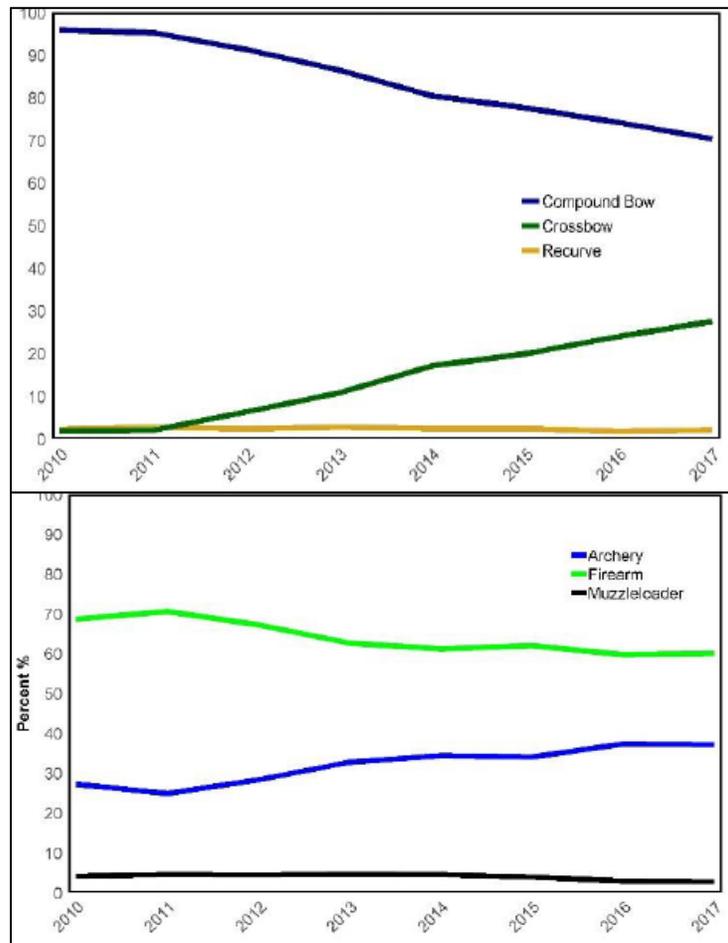


Figure 22. Kansas Deer Harvest by Weapon Category (Bottom) and for Archery-Only (Top).

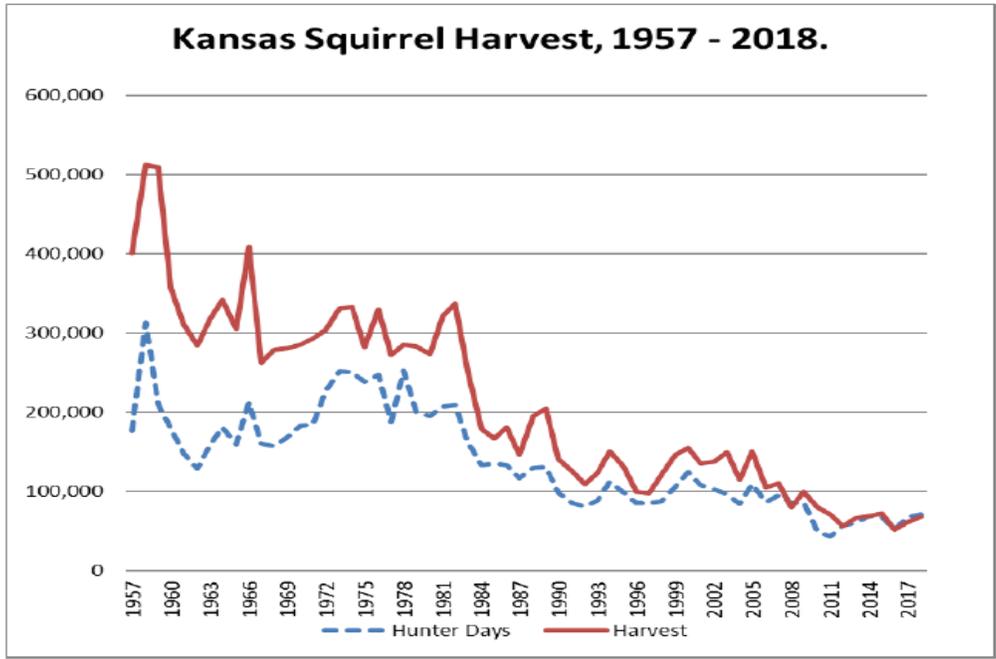


Figure 23. Kansas Statewide Squirrel Harvest Estimates from 1957–2018.

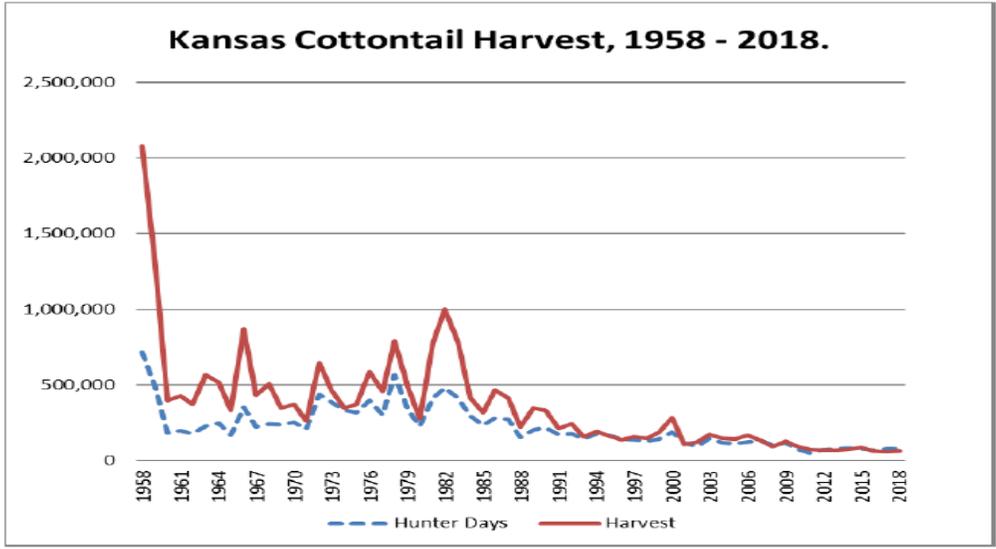


Figure 24. Kansas Statewide Cottontail Harvest from 1958–2018.

Species	Survey Respondents Who Pursued	Estimated Harvest	Harvest/100 Days	Maximum Est. Harvest
Badger	35	91	13.8	2
Bobcat	310	728	10.1	7
Red Fox	44	122	10.3	20
Gray Fox	19	4	0.2	1
Swift Fox	11	4	1.5	1
Opossum	55	980	32.4	40
Raccoon	218	10,378	109.8	100
Skunk	22	153	60.6	6

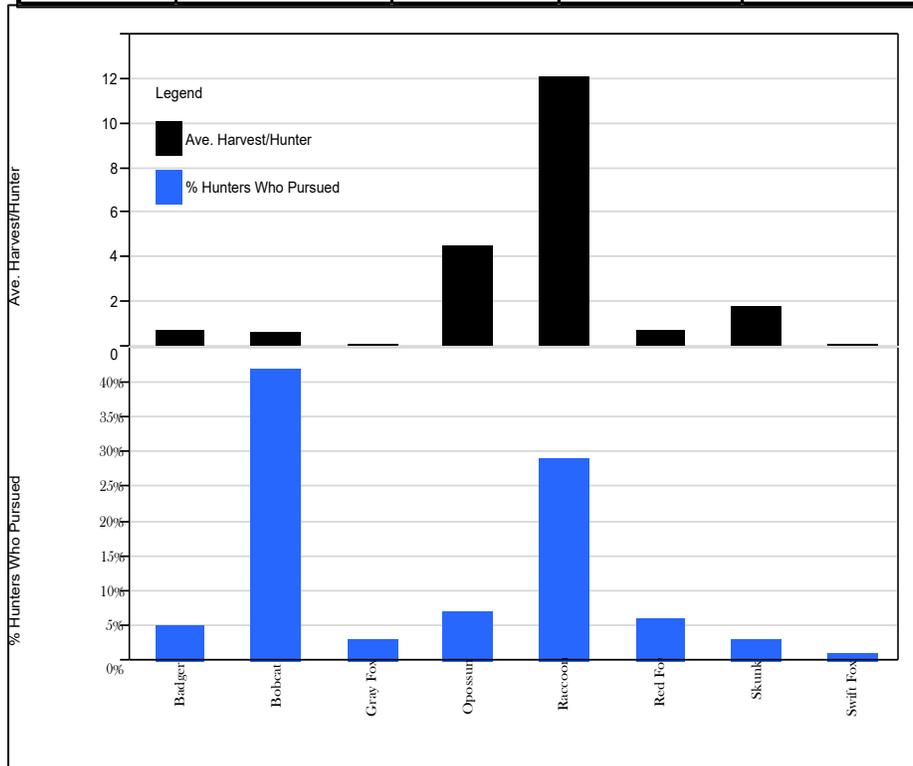


Figure 25. Harvest Participation and Activity Levels for Hunters in Kansas during the 2017–2018 Harvest Season (KDPWT 2018c).

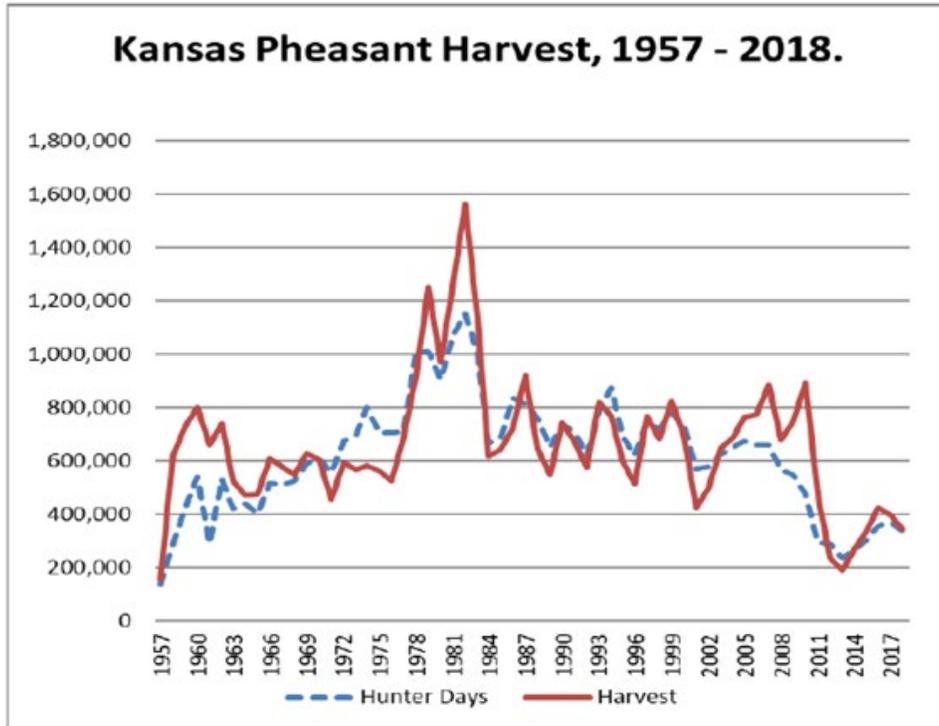


Figure 26. Kansas Pheasant Harvest Appears to Follow Population Changes as do the Hunter Participation Days (KDPWT 2019c).

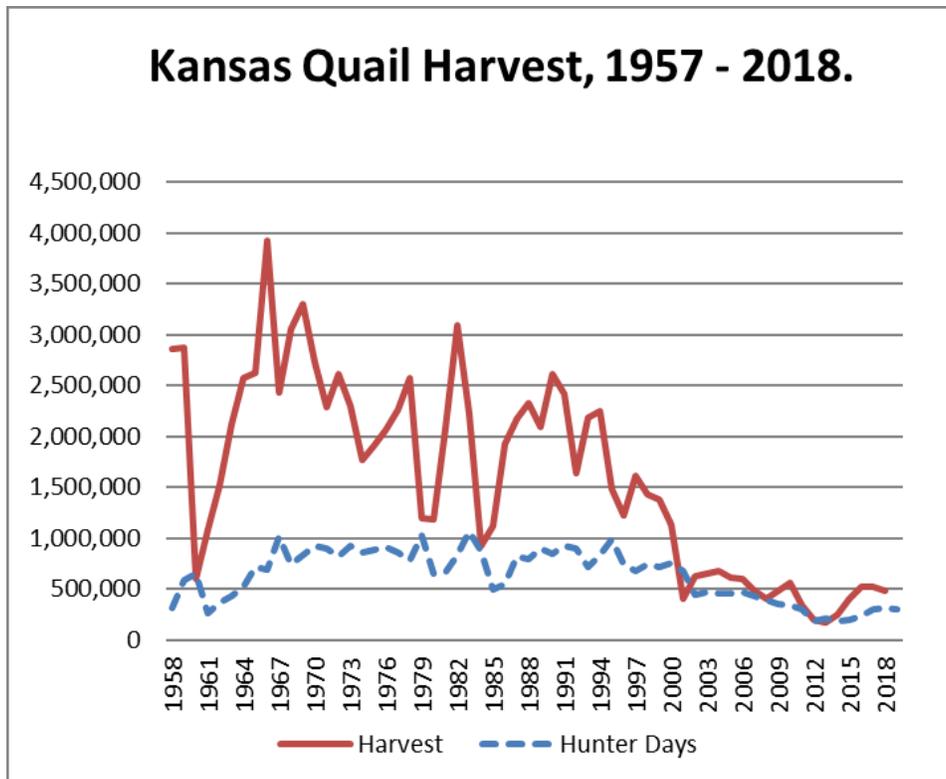


Figure 27. Kansas Quail Harvest and Hunter Participation Days (KDPWT 2019c).

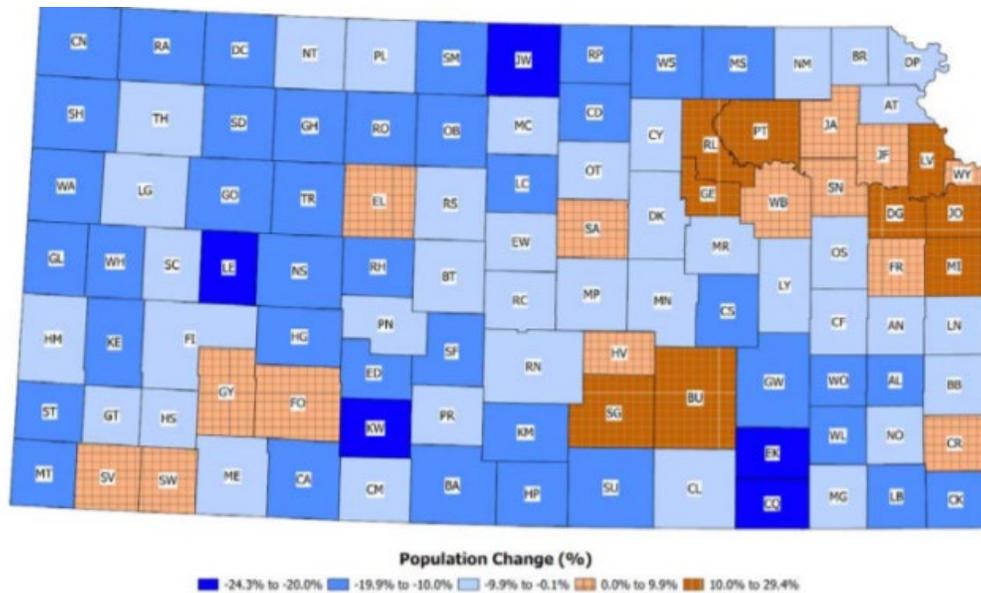


Figure 28. Population Change in Kansas.

3.4 Additional Mitigation Measures and Conditions

Mitigation measures include:

- closing areas to hunting and the public use due to recurrence of prohibited activities, such as public contact water use—monitoring equipment;
- limiting hunting opportunities or access to areas to allow the recovery or improvement of refuge or local species populations or habitat conditions;
- adjusting hunting opportunities to address concerns related to disease or contaminants;
- adjusting hunting opportunities to address safety concerns or conflicts associated with multiple hunting uses, non-consumptive uses, and Service staff activities;
- rectifying impacts by repairing, rehabilitating, or restoring the affected environment.

3.5 Monitoring

The State of Kansas conducts and uses surveys to facilitate decision-making related to hunting activities (<https://ksoutdoors.com/Services/Research-Publications/Wildlife-Research-Surveys>). The refuge would rely heavily on the same information, such as what was used in this proposed EA and hunting and fishing plan. Local or refuge-specific information would be used to supplement statewide surveys or reports.

3.6 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 or a Finding of No Significant Impact.

Alternative A – Proposed Action Alternative

As described above, the impacts of this alternative are that comparatively more use opportunities would be available for hunting. There would be increased number of species allowed to be hunted, as well as associated seasons and methods of take to satisfy different hunting user groups. Under the new proposed action, the refuge would expand opportunities to hunt more species that include coyotes, state-defined furbearers, grey squirrels, jackrabbits, crows, rails, and woodcocks. New hunting experiences would include archery-only hunting area for turkey (currently, this area only allows archery deer), and a youth and disabled season for archery deer hunting. Again, the challenge of balancing multiple consumptive and non-consumptive uses, all while supporting the conservation of natural resources, would persist. However, refuge hunting mitigation measures and periodic assessments would allow adjustments in hunt and fish activities under both alternatives. In the years since CCP approval (2006), current conditions have offered hunting opportunities as whooping cranes and other threatened and endangered species continue to safely increase use of the refuge. This trend would be expected to continue.

This alternative meets the purpose and needs of the Service as described above but with expanded wildlife-dependent recreation opportunities. We expect these other hunting opportunities to have similar negligible impacts to cultural resources. However, administratively, it would take more time, resources, and staff and has the potential to create more conflicts between user groups on the refuge, specifically wildlife observation and photography and hunting groups. With limitations to hunting area and seasons, and with the use of temporary closures, opportunities on the refuge for these compatible uses would continue.

The Service has determined that the proposed action is compatible with the purposes of the refuge and the mission of the Refuge System. The compatibility determination is located at <https://www.fws.gov/mountain-prairie/huntfish.php#>.

Alternative B – No Action Alternative

As described above, the impacts of this alternative would continue to provide the same opportunities for hunters that have occurred in the past. Current conditions do not allow opportunities to hunt coyotes, state-defined furbearers, grey squirrels, jackrabbits, crows, rails, or woodcocks. The challenge of balancing multiple consumptive and non-consumptive uses, all while supporting the conservation of natural resources, would persist. However, refuge hunting mitigation measures and periodic assessments would allow adjustments in hunt and fish activities under both alternatives. In the years since CCP approval (2006), current conditions have offered hunting opportunities as whooping cranes continue to safely increase use of the refuge. This trend would be expected to continue based on use areas and in publicly accessible areas.

This alternative meets the purpose and needs of the Service as described above, except it limits additional potential wildlife-dependent recreation opportunities. Hunting typically causes very little threat to cultural resources on the refuge. Administratively, it would take less time and resources and staff and create fewer conflicts between user groups on the refuge.

3.7 List of Sources, Agencies, and Persons Consulted

- Kansas Department of Wildlife, Parks, and Tourism; Pratt, Kansas
- Barbara Boyle, Refuge Supervisor, USFWS U.S. Department of the Interior Region 5

- Aaron Mize, Hunt and Fish Coordinator, U.S. Department of the Interior Regions 5 and 7
- Bernardo Garza, Hunt and Fish Coordinator; U.S. Department of the Interior Regions 5 and 7
- Craig Mowry, Project Leader, USFWS Kansas NWR Complex

The USFWS Ecological Services program Kansas Field Supervisor was contacted (via phone and follow-up email) about the Kansas National Wildlife Refuge Complex hunt plans on November 24, 2019. A request was made by the national wildlife refuges to review the list of species threatened, endangered, proposed, and under review as part of the environmental assessment Section 7 consultation requirement associated with the hunt plans.

3.8 List of Preparers

Kirwin NWR staff, Rainwater Basin Wetland Management District staff (complex), and regional office planners and editors contributed to the development of this EA.

3.9 State Coordination

Representatives of the Kansas NWR Complex (Flint Hills, Marais des Cygnes, and Kirwin NWRs) met with the secretary of KDWPT and a KDWPT wildlife research supervisor migratory bird specialist about potential future hunting opportunities on the refuges on October 30, 2019 in Hartford, Kansas. The state shared organization and public interests and responded to proposed hunting opportunities at the meeting and in follow-up verbal and written communications. Overall, the state was supportive of the Service's proposals of expanded hunting opportunities and both agencies confirmed the continuance of a strong partnership.

3.10 Tribal Consultation

The Service mailed an invitation for comments to all tribes potentially affected by initiating an EA to expand hunting opportunities at the refuge. The Service extended an invitation to engage in government-to-government consultation in accordance with Executive Order 13175.

3.11 Public Outreach

Public scoping opportunities and input from tribes, state, and local individuals and agencies, nongovernment organizations, and Service staff occurred as part of a recently developed CCP. KDWPT participated as part of the planning team. Comments throughout the planning process were considered in development of the hunting and fishing plan.

The public will have a period of 30 days for review of the Draft Kirwin NWR Hunting and Fishing Plan and associated EA. The draft hunting and fishing plan and EA will be available at www.fws.gov/mountain-prairie/huntfish.php#. Hard copies will be available upon request.

3.12 Determination

This section will be filled out upon completion of any public comment period and at the time of finalization of the EA.

- The Service’s action will not result in a significant impact on the quality of the human environment. See the attached “**Finding of No Significant Impact.**”
- The Service’s action **may significantly affect** the quality of the human environment and the Service will prepare an Environmental Impact Statement.

Preparer Signature: _____ Date: _____

Name/Title/Organization: _____

Reviewer Signature: _____ Date: _____

Name/Title: _____

3.13 References

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APPENDIX A OTHER APPLICABLE STATUTES, EXECUTIVE ORDERS, AND REGULATIONS

Statutes, Executive Orders, and Regulations
Cultural Resources
<p>American Indian Religious Freedom Act, as amended, 42 U.S. Code 1996–1996a; 43 CFR Part 7</p> <p>Antiquities Act of 1906, 16 U.S. Code 431–433; 43 CFR 3</p> <p>Archaeological Resources Protection Act of 1979, 16 U.S. Code 470aa–470mm; 18 CFR 1312; 32 CFR 229; 36 CFR 296; 43 CFR 7</p> <p>National Historic Preservation Act of 1966, as amended, 16 U.S. Code 470–470x-6; 36 CFR 60, 63, 78, 79, 800, 801, and 810</p> <p>Paleontological Resources Protection Act, 16 U.S. Code 470aaa–470aaa-11</p> <p>Native American Graves Protection and Repatriation Act, 25 U.S. Code 3001–3013; 43 CFR 10</p> <p>Executive Order 11593 – Protection and Enhancement of the Cultural Environment, 36 Federal Register 8921 (1971)</p> <p>Executive Order 13007 – Indian Sacred Sites, 61 Federal Register 26771 (1996)</p>
Fish and Wildlife
<p>Bald and Golden Eagle Protection Act, as amended, 16 U.S. Code 668–668c, 50 CFR 22</p> <p>Endangered Species Act of 1973, as amended, 16 U.S. Code 1531–1544; 36 CFR 13; 50 CFR 10, 17, 23, 81, 217, 222, 225, 402, and 450</p> <p>Fish and Wildlife Act of 1956, 16 U.S. Code 742 a–m</p> <p>Lacey Act, as amended, 16 U.S. Code 3371 et seq.; 15 CFR 10, 11, 12, 14, 300, and 904</p> <p>Migratory Bird Treaty Act, as amended, 16 U.S. Code 703–712; 50 CFR 10, 12, 20, and 21</p> <p>Executive Order 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds, 66 Federal Register 3853 (2001)</p>
Natural Resources
<p>Clean Air Act, as amended, 42 U.S. Code 7401–7671q; 40 CFR 23, 50, 51, 52, 58, 60, 61, 82, and 93; 48 CFR 23</p> <p>Wilderness Act, 16 U.S. Code 1131 et seq.</p> <p>Wild and Scenic Rivers Act, 16 U.S. Code 1271 et seq.</p> <p>Executive Order 13112 – Invasive Species, 64 Federal Register 6183 (1999)</p>
Water Resources
<p>Coastal Zone Management Act of 1972, 16 U.S. Code 1451 et seq.; 15 CFR 923, 930, and 933</p> <p>Federal Water Pollution Control Act of 1972 (commonly referred to as Clean Water Act), 33 U.S. Code 1251 et seq.; 33 CFR 320–330; 40 CFR 110, 112, 116, 117, 230–232, 323, and 328</p> <p>Rivers and Harbors Act of 1899, as amended, 33 U.S. Code 401 et seq.; 33 CFR 114–116, 321, 322, and 333</p> <p>Safe Drinking Water Act of 1974, 42 U.S. Code 300f et seq.; 40 CFR 141–148</p> <p>Executive Order 11988 – Floodplain Management, 42 Federal Register 26951 (1977)</p> <p>Executive Order 11990 – Protection of Wetlands, 42 Federal Register 26961 (1977)</p>

Key: CFR = Code of Federal Regulations