

Final Environmental Assessment

for Hunting and Fishing on Quivira National Wildlife Refuge

July 2020

Prepared by

Craig Mowry, Project Leader, Kansas
National Wildlife Refuge Complex,
Quivira NWR
1434 NE 80th Street, Stafford, KS 67578
620-410-4030

Cost of Preparation of this Environmental Assessment: \$19,279.91

Table of Contents

1.0	Introduction.....	4
1.1	Proposed Action	4
1.2	Background	5
1.3	Purpose and Need for the Proposed Action.....	8
2.0	Alternatives.....	8
2.1	Alternatives Considered	8
	Alternative A – Expand Hunting Opportunities – Proposed Action Alternative.....	8
	Alternative B – Current Conditions – No Action Alternative	14
2.2	Alternative(s) Considered, But Dismissed from Further Consideration	16
3.0	Mitigation Measures to Avoid Conflicts	16
3.1	Biological Conflicts.....	17
3.2	Public Use Conflicts	20
3.3	Administrative Use Conflicts	20
4.0	Affected Environment and Environmental Consequences	21
4.1	Affected Environment	21
4.2	Environmental Consequences of the Action	21
4.3	Cumulative Impact Analysis	47
4.4	Additional Mitigation Measures and Conditions	58
4.5	Monitoring.....	58
4.6	Summary of Analysis	58
	Alternative A – Proposed Action Alternative.....	58
	Alternative B – No Action Alternative	59
4.7	List of Sources, Agencies and Persons Consulted	60
4.8	List of Preparers	60
4.9	State Coordination.....	60
4.10	Tribal Consultation.....	60
4.11	Public Outreach.....	61
4.12	Determination.....	70
4.13	References	71

List of Figures

Figure 1. National Wildlife Refuge Locations in Kansas.	4
Figure 2. Quivira National Wildlife Refuge Areas Open and Closed to Hunting.	15
Figure 3. Harvest Trends of Greater Prairie Chicken.	16
Figure 4. Site Use and Intensity of Areas within the Migration Corridor of the Aransas-Wood Buffalo Population of Whooping Cranes. Identifies Quivira National Wildlife Refuge as an Extended-use Core Intensity Site in Kansas.	18
Figure 5a–f. Population Trends of Furbearers in Kansas Based on Annual Roadside Indices (KDWPT 2015).	33
Figure 6a–b. Results of the Kansas 2019 Pheasant Crowing Survey by Region are Presented (KDWPT 2019a) and Upland Bird Brood Counts (KDWPT 2019b).	34
Figure 7a–c. Bobwhite Whistle Stop Survey Results for the State and South-Central Prairies Region of Kansas (KDWPT 2018).	35
Figure 8. Total Number of Participants for Wildlife-Dependent Recreational Activities, Fishing, Hunting, and Wildlife Watching.	38
Figure 9. Most Popular Wildlife-Watching Activities in Kansas and Number of Days Individuals Took Part in Each Activity.	38
Figure 10a–c. A Survey of Participation in Wildlife-based Recreational Activities in Kansas. ..	45
Figure 11a–b. The Kansas Health Institute Report Provided Insight into Local Demographics, including the Minority Population and Changes in Income/Poverty.	46
Figure 12. Southeast Kansas has the Highest Poverty Rates, but Stafford County has a Comparable Poverty Rate.	46
Figure 13. Minority Groups in 2015 had the Highest Rate of Poverty in Kansas.	46
Figure 14a–e. (a) Trends of Deer Harvest in Kansas from 1945 to 2015 (Report of deer harvest, KDWPT 2018); (b) Quail Harvest from 1957 to 2018; (c) Pheasant Harvest from 1957 to 2018; (d) Cottontail Harvest from 1957 to 2018; and (e) Squirrel Harvest from 1957 to 2018 (Small game hunter activity survey—2018b, KDWPT 2019c).	55
Figure 15a–b. KDWPT Reported an Increase in Archery as a Method of Take Used in Deer Harvest from 2010 to 2017 but Identified Crossbow as a Legal Weapon.	56
Figure 16. Inline Muzzleloaders Have Higher Use Than Traditional.	56
Figure 17. Total Population Change (Percent) by County in Kansas, Between 2000 and 2016. ..	57
Figure 18. Population Projections from 2016 to 2066 by Demographic Groups.	57

List of Tables

Table 1. Affected Natural Resources and Anticipated Direct and Indirect Impacts of the Proposed Action and Any Alternatives.	23
Table 2. Affected Visitor Use and Experience and Anticipated Direct and Indirect Impacts of the Proposed Action and Any Alternatives.....	36
Table 3. Affected Cultural Resources and Anticipated Direct and Indirect Impacts of the Proposed Action and Any Alternatives.....	39
Table 4. Affected Refuge Management and Operations and Anticipated Direct and Indirect Impacts of the Proposed Action and Any Alternatives.....	40
Table 5. Affected Socioeconomics and Anticipated Direct and Indirect Impacts of the Proposed Action and Any Alternatives.	43
Table 6. Anticipated Cumulative Impacts of the Proposed Action and Any Alternatives.	47
Table 7. Harvest, Participation, and Activity Levels for Hunters in Kansas During the 2017–2018 Harvest Season (KDWPT 2018c).	56

Appendices

Appendix A	Other Applicable Statutes, Executive Orders, and Regulations	73
Appendix B	Compatibility Determination	74
Appendix C	Section 7 Biological Evaluation Form	79
Appendix D	Finding of No Significant Impact.....	82

Final Environmental Assessment for Hunting and Fishing on Quivira National Wildlife Refuge

Date: July 2020

This environmental assessment (EA) was prepared to evaluate the effects associated with the 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] 1500-1508) and Department of the Interior (43 CFR 46; 516 DM 8) and United States (U.S.) Fish and Wildlife Service (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 Service is proposing to open or expand hunting opportunities for deer, turkey, furbearer, coyote, and crow on the Quivira National Wildlife Refuge (NWR) in accordance with the 2020 Quivira NWR Hunting and Fishing Plan. The refuge is in south-central Kansas, in parts of Stafford, Reno, and Rice Counties (Figure 1).

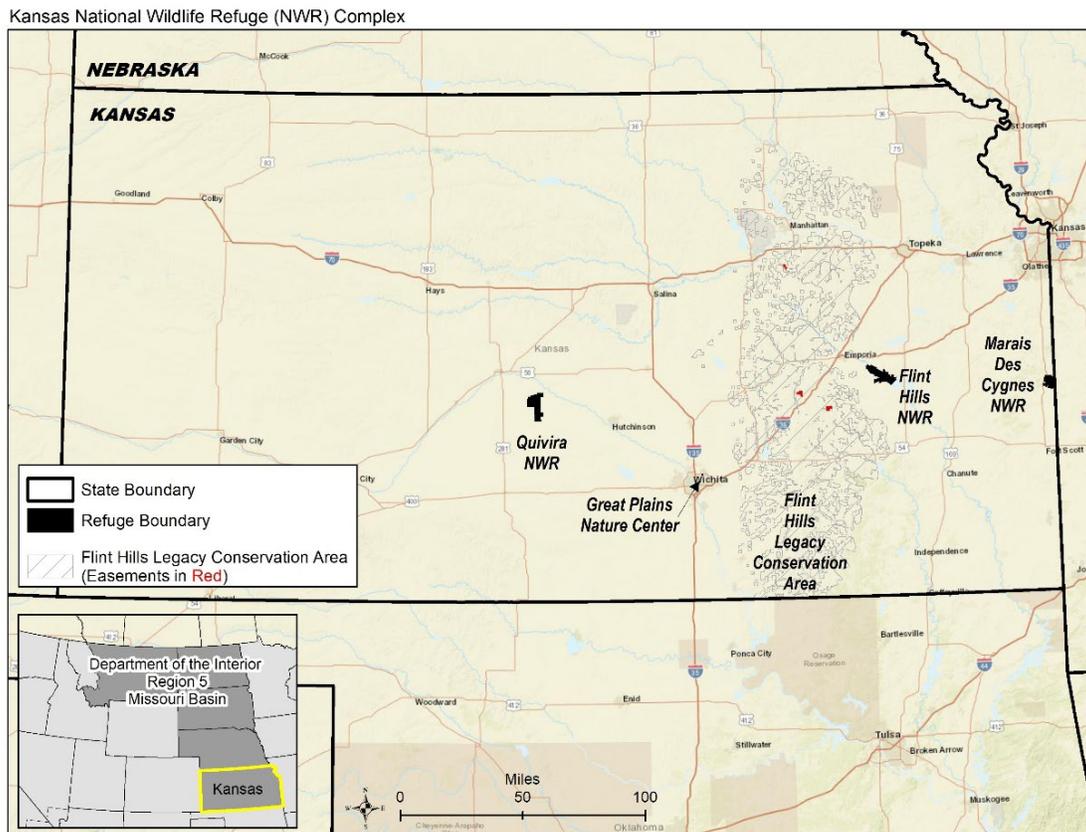


Figure 1. National Wildlife Refuge Locations in Kansas.

1.2 Background

The proposed action is a step-down management plan of the recently developed comprehensive conservation plan (CCP) for the refuge (2013; www.fws.gov/mountain-prairie/planning/ccp/ks/qvr/documents/qvr_final/qvr_ccpfinal_all.pdf). The action supports a national effort to expand hunting and fishing opportunities on public lands (Secretarial Orders [S.O.] 3347 and 3356). Hunting and fishing opportunities have occurred for many years on the refuge and were recently evaluated during development of the CCP. Therefore, existing fishing and hunting uses would continue and additional opportunities are proposed in the EA. Trapping and running are not considerations in the plan or associated EA. Deer and turkey hunting have already been approved as public use activities in development of the CCP, but a more detailed plan is required before these actions are carried out.

Hunting on the refuge is permitted on more than 8,000 refuge acres, in accordance with the applicable federal and state regulations. The refuge hunting and fishing plan and associated EA proposes:

Open Hunting Opportunities for New Species

White-tailed deer, mule deer, turkey, coyote, furbearers (state-defined hunted species: badger, bobcat, fox, mink, muskrat, opossum, raccoon, striped skunk, and weasel), and crow:

- No new hunting acres are being proposed.
- Regulations for proposed opportunities would vary by unit (open and closed areas).
- Revisions to season dates, such as new seasons associated with new species, or other dates from September through February.
- Revisions to methods of take, such as muzzleloader rifle and musket for deer, coyote, and furbearers.
- Revisions to bag limit, such as the Service determining the number of permits for deer, turkey, coyote, and furbearers.
- Changes to the administration, such as the Service controlling hunts but coordinating with state programs.
- Proposed opportunities for targeted demographics, such as a youth and disabled season for deer.

Expanded Hunting Opportunities

Muzzleloader season (for deer); archery-only season (for deer); new youth and disabled season for deer; muzzleloader rifle and musket method of take (for deer, coyote, and furbearers):

- No new hunting acres are being proposed.
- Regulations for proposed opportunities would vary by unit (open and closed areas).
- No revision to season dates; that is, the refuge would still be open to hunting September through February and closed March through August.
- Revision to methods of take, such as muzzleloader rifle and musket.

- No revision to bag limit (except associated with new hunts/new species).
- No changes to the administration of the hunt (besides new hunts mentioned above).
- No changes to opportunities for targeted demographics outside of deer, mentioned above (already allow youth and disabled seasons for other species).

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 is 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 or fishing, or both, until a final rule has been published in the Federal Register formally opening the refuge to hunting and or fishing, or both.

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 guide national wildlife refuges. Relevant guidance covers 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 parts of the Code of Federal Regulations and U.S. Fish and Wildlife Service Manual.

On May 3, 1955, Quivira NWR in central Kansas (Figure 1) 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 Section 715d]).
- “. . . for the development, advancement, management, conservation, and protection of fish and wildlife resources” (Fish and Wildlife Act of 1956 [16 U.S. Code Section 742f(a)(4)]).
- “. . . for the benefit of the United States Fish and Wildlife Service, in performing its activities and services” (Fish and Wildlife Act of 1956 [16 U.S. Code Section 742f(b)(1)]).

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 System to (16 U.S. Code 668dd[a][4]):

- provide for the conservation of fish, wildlife, and 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; and
- monitor the status and trends of fish, wildlife, and plants in each refuge.

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

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

- Ramsar Wetland of International Importance www.ramsar.org/;
- Western Hemisphere Shorebird Reserve Network site www.whsrn.org/about-whsrn/;
- Audubon Globally Important Bird Area www.landscape.org/focus/understand/audubon_iba/;
- critical habitat for the last naturally migrating population of endangered whooping cranes;
- state critical habitat for snowy plover, interior least terns, and Arkansas darter;
- one of the Eight Wonders of Kansas; and
- part of the Kansas Wetlands & Wildlife National Scenic Byway.

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 (KDWP 2018 [Report of deer harvest 2017–2018]), 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 narrow boundaries, only two miles wide on the southern half, with many interior public (county, township) and Service roads and including a commonly used 14-mile auto tour route. There are no fees or registration associated with visiting the refuge, and it is open to public access except for as shown through signs, closures for species, habitat, or public protection. Further, except for

some sandhills, habitat on the refuge is generally level and open. Wetland and upland habitat are interspersed (mixed) throughout the 22,135-acre refuge. Therefore, different hunting opportunities and other public uses in uplands and wetlands have the potential to be near. Also, much hunting occurs on private lands immediately surrounding the refuge.

The refuge is widely recognized as a premiere birdwatching site in Kansas and nationally, such as at the following websites: (1) www.travelks.com/things-to-do/parks-and-nature/bird-watching/, and (2) <https://ebird.org/hotspots>. Many professional and experienced photographers visit the refuge on a regular basis for birds, deer, and general appreciation of natural resources and scenic views. Peak visitation usually occurs in spring and fall during bird migration. Annual visitation has recently been estimated to be about 65,000, not including public outreach events and environmental educational programs.

1.3 Purpose and Need for the Proposed Action

The purpose of this proposed action is to provide expanded compatible wildlife-dependent recreational opportunities on Quivira NWR. The need of the proposed action is to meet the Service's priorities and mandates as outlined by the NWRSA to "recognize compatible wildlife-dependent recreational uses as the priority general uses of the NWRS" and "ensure that opportunities are provided within the NWRS for compatible wildlife-dependent recreational uses" (16 U.S. Code 668dd[a][4]).

The Service received much feedback on proposed activities during development of the CCP. Collectively, the public comments and discussions with interested parties showed 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 effects on wildlife populations and habitat by expanding hunting opportunities to include refuge lands. The proposed actions support accomplishment of Hunting and Fishing, Landscape Conservation, and Native Ecological Community Conservation goals and objectives as part of the refuge CCP (2013; www.fws.gov/mountain-prairie/planning/ccp/ks/qvr/documents/qvr_final/qvr_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

White-tailed deer, mule deer, turkey, coyote, furbearers (state-defined hunted species: badger, bobcat, fox, mink, muskrat, opossum, raccoon, striped skunk, and weasel), and crow.

- No new hunting acres are being proposed.
- Regulations for proposed opportunities would vary by unit (open and closed areas).
- Revisions to season dates, such as new seasons associated with new species, or more dates from September through February.
- Revisions to methods of take, such as muzzleloader rifle and musket for deer, coyote, and furbearers.
- Revisions to bag limit, such as the Service deciding the number of permits for deer, turkey, coyote, and furbearers.
- Changes to the administration, such as the Service controlling hunts but coordinates with state programs.
- Proposed opportunities for targeted demographics, such as a youth and disabled season for deer.

Expanded Hunting Opportunities

Muzzleloader season (for deer); archery-only season (for deer); new youth/disabled season for deer; muzzleloader rifle/musket method of take (for deer, coyote, and furbearers).

- No new hunting acres are being proposed.
- Regulations for proposed opportunities would vary by unit (open and closed areas).
- No revision to season dates; that is, the refuge would still be open to hunting September through February and closed March through August.
- Revision to methods of take, such as muzzleloader rifle and musket.
- No revision to bag limit (except associated with new hunts/new species).
- No changes to the administration of the hunt (besides new hunts mentioned above).
- No changes to opportunities for targeted demographics outside of deer, mentioned above (already allow youth/disabled seasons for other species).

For clarification, the use of the term “special hunt” in this document is in accordance with how the state recognizes special hunts. The Service traditionally considers a hunt to be a special hunt if it occurs outside of a regular season, while the state recognizes special hunts that occur within regular state seasons that may differ in the time, such as days or months regularly allowed. A special hunt or draw and other state-used programs with use of a state-issued refuge access permit allows the Service to limit or control the number of hunters, amount of take by species, hunt area, time, and method of take, but it is typically administered through the state.

No Changes Are Being Proposed to the Following:

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 through February, as described in the hunting and fishing plan and newly published CFR associated with the hunting and fishing plan.

Hunting Hours

- The refuge is open to the public 1½ hours before sunrise to 1½ hours after sunset. Hunting hours follow state regulations, but only within the refuge open hours. No night hunting or waiting, or set-up during refuge closed hours, which would otherwise be considered camping.

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 prohibited.
- Fires of any type are prohibited within the refuge.
- The use of boats, canoes, and any other watercraft is prohibited.

Refuge and Cultural Resources

Federal law protects all government property, including natural items such as antlers, plants, historic, and archaeological features. Searching for or removing 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 decided 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 and fishing regulations based on population trends.

Species to Be Taken – Migratory Game Birds (State-Defined)

The Service would propose no difference between the alternatives for other migratory game bird species, besides crow, that may be hunted on the refuge as described in the hunting and fishing plan: duck, coot, goose, and mourning dove in refuge hunt unit during state seasons from September through February (all hunting is prohibited on the refuge in March through August). The Service would not propose the Light Goose Spring Conservation Order season on the refuge under either alternative. Hunting of rail, common snipe, woodcock, and sandhill cranes would

not be permitted under either alternative. Methods of take are bow and arrow or shotgun no larger than 10-gauge. Shotguns must be incapable of holding more than three shells.

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

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

Species to Be Taken – Small Game (Squirrel, Rabbit [Cottontail, Jackrabbit])

- The refuge would permit hunting of squirrel and rabbit (cottontail, jackrabbit), which is not a change from current conditions.
- Methods of take permitted are shotgun and muzzleloading shotgun no larger than 10-gauge with nontoxic ammunition (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 the Kansas NWR Complex.
- Continue current seasons for the refuge (state seasons that fall within September through February and exclude March through August).
- Note: Cottontail are common, but squirrel and jackrabbit are rarely observed during the daytime on the refuge in the recent decade.

Changes Are Being Proposed to the Following:

Methods of Take

A new method of take is proposed for hunting activities, the use of muzzleloader rifle and musket, such as for deer, coyote, and furbearer. No changes are proposed for the following prohibited methods of take: centerfire rifle, rimfire rifle, pistol and handgun, trapping, running coyote or furbearers, and hunting from vehicles. The refuge permits nontoxic ammunition (shot and bullets) 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.

Species to Be Taken – Deer (State-Defined: White-Tailed Deer and Mule Deer)

- Deer would be permitted to be hunted, which is a change from current conditions.
- As authorized in a state-issued refuge access permit, a Deer Youth/Disabled Hunt Season would occur during the second weekend or week in September (now, September 7 through 15). Allowable methods of take would include archery, muzzleloader rifle and musket, and shotgun, according to state regulations with use of nontoxic ammunition (shot and bullets).
- Special hunts, as defined by the state, or use of state-used programs that require a state-issued refuge access permit, would be used for Deer Muzzleloader Hunt and Archery-Only Season. These are opportunities to occur in September, following the youth and disabled season. The Service would decide the number of hunters or access permits, days

open to hunting, and weapon choice. The Service administers with consideration of state programs and seasons.

- As authorized in a state-issued refuge access permit, a Deer Extended Firearm Whitetail Antlerless-only season would occur in January with muzzleloader rifle and musket (as described above) and shotgun method of take.
- As authorized in a state-issued refuge access permit, a Deer Extended Archery Whitetail Antlerless-only season would occur in January in concurrence with state regulations.
- For all deer hunting opportunities, the Service is authorized to have control and flexibility in hunting regulations, such as limiting the number of hunters and access permits, the days of hunting, and the methods of take with the use of a state-issued refuge access permit. Administration would be coordinated with the state.

Species to Be Taken – Turkey

- Turkey would be allowed to be hunted, a change from current conditions.
- For all turkey hunting opportunities, the Service is authorized to have control and flexibility in hunting regulations, such as limiting the number of hunters and access permits, the days of hunting, and the methods of take with a state-issued refuge access permit. Administration would be coordinated with the state.
- A state-issued refuge access permit required as part of a special hunt or other state-used program would provide opportunities during the fall season. Now, the second split is December 16 through January 31. The refuge is closed to all hunting during the spring season (April).
- As authorized in a state-issued refuge access permit, methods of take include archery and shotgun (nontoxic shot only), in concurrence with state regulations.
- Use of dogs for turkey hunting is prohibited.

Species to Be Taken – Coyote

- Coyote would be permitted to be hunted, a change from current conditions.
- The Service would limit hunting opportunities to state-used programs and special hunts that require a state-issued refuge access permit to maintain authority (flexibility) of hunting regulations, such as coyote take, number of access permits, the days of hunting, and methods of take.
- Under a state-issued refuge access permit, hunting would be permitted at a determined time between September through February when refuge hunt areas are open.
- As authorized in a state-issued refuge access permit, allowable methods of take would be shotgun, muzzleloader rifle and musket with the use of nontoxic ammunition; or archery.
- No use of vehicles, radios, dogs, or bait.

Species to Be Taken – Furbearers (State-Defined Hunted Species: Badger, Bobcat, Red Fox, Gray Fox, Swift Fox, Mink, Muskrat, Opossum, Raccoon, Striped Skunk, and Weasel)

- New state-defined furbearer species permitted to be hunted on the refuge include badger, bobcat, fox, mink, muskrat, opossum, raccoon, striped skunk, and weasel.
- The Service would limit hunting opportunities to state-used programs and special hunts that require a state-issued refuge access permit to maintain authority (flexibility) of hunting regulations, such as furbearer take, number of access permits, the days of hunting, and methods of take.
- As authorized in a state-issued refuge access permit, allowable seasons occur within the state-defined season, which is now November 13 through February 15 and excluding March through August.
- As authorized in a state-issued refuge access permit, the use of calls may be permitted.
- No hunting at night. The refuge is open 1½ hours before sunrise to 1½ hours after sunset.
- As authorized in a state-issued refuge access permit, methods of take include archery, muzzleloader rifle and musket, and shotgun with the use of nontoxic ammunition.
- No use of dogs.
- Note: raccoon and striped skunk are common furbearers on the refuge. Daytime observations of other furbearers are not common in the recent decade. Weasel have never been reported on the refuge, and there are no known reports of fox on the refuge in the past decade.

Species to Be Taken – Migratory Game Birds (State-Defined)

- Crow is a new species of migratory game bird that may be hunted.
- Limited season would align with state season, starting in mid-November but extending only through February. The refuge is closed to all hunting March through August.
- Method of take allowed on the refuge covers bow and arrow and shotgun no larger than 10-gauge and incapable of holding more than three shells (nontoxic ammunition only).
- Take limit, of which there is now none, in concurrence with state regulations.
- Note: Crows are not common on the refuge and are only occasionally seen in winter.

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

- Management of the refuge would support conservation of focal species, which were described in the CCP (pages 72–79) as native communities.
- Hunting of certain bird species that are rarely observed, species of conservation concern, or species closely associated with those of conservation concern, would not be hunted species on the refuge, such as rail, woodcock, snipe, sandhill crane, and prairie chicken species.

- Hunting activities would be closed to protect federally endangered whooping crane as decided by the Service. However, the Service would consider some exceptions related to special, controlled, permitted hunts, such as the limited use of archery for deer in specially designated upland areas.
- Furbearer hunting would only be allowed under a special use permit within the same area permitted for deer hunting.
- The Service would consider archery-only deer hunting for youth and wounded warriors within a proposed deer and turkey hunt area.
- Consideration would be given to balancing deer hunting opportunities and traditional quality observation and photography experiences.

Under the proposed alternative, the Service would largely support the actions above, but with minor changes to support a national effort to expand hunting and fishing opportunities on public lands (S.O. 3347 and 3356, which satisfies new efforts to improve alignment with state hunting regulations while preserving wildlife-compatible uses. For example, deer, turkey, coyote, and furbearer hunting opportunities are expanded, but limited in number, area, season, and method of take. The Service maintains the option to control aspects of hunting deer, turkey, coyote, and furbearers through state-issued refuge access permits. While a special use permit would not be required for furbearer hunting, a state-issued refuge access permit would have the same resulting effect in terms of the Service's ability to determine hunting regulations. Trapping is not considered in the proposed hunt plan, which would have required a special use permit mentioned in the CCP. Further, refuge closures are permitted for the protection of species, habitat and the public as decided by the Service. The area proposed for deer, turkey, coyote, and furbearer hunting is the same as the current hunt area, which is nearly within the area approved in the CCP. A slight boundary adjustment made largely to facilitate administration of multiple public uses and to promote public safety.

Alternative B – Current Conditions – No Action Alternative

Hunting and fishing opportunities already exist on Quivira NWR (CCP 2013). Hunting is permitted on more than 8,000 acres of refuge lands, and all waters are open to sport fishing in accordance with state fishing regulations and with some exceptions (see Figure 2).

Hunting of waterfowl (ducks, coot, and geese), pheasant, quail, mourning dove, squirrel, and rabbit is (and would continue to be) permitted during regular state seasons that occur within the period of September 1 through February, in accordance with applicable federal and state regulations. Light Goose Spring Conservation Order season is excluded under both alternatives. Use of rifles, pistols, and falconry is prohibited under both alternatives. Current conditions do not allow opportunities to hunt coyote and crow. Deer and turkey hunting and limited furbearer hunting (with a special use permit) are approved uses of the refuge as described in the CCP, but a step-down management plan with additional detail, such as the Proposed Action Alternative, is needed to carry out those actions. Therefore, current conditions do not allow opportunities to hunt deer, turkey, coyote, state-defined furbearers, or crow. Under this alternative, hunting experiences would be limited with prohibited use of a muzzleloader rifle and musket, and there would be no muzzleloader, archery-only, or youth and disabled opportunities for deer.



U.S. Fish & Wildlife Service

Quivira National Wildlife Refuge

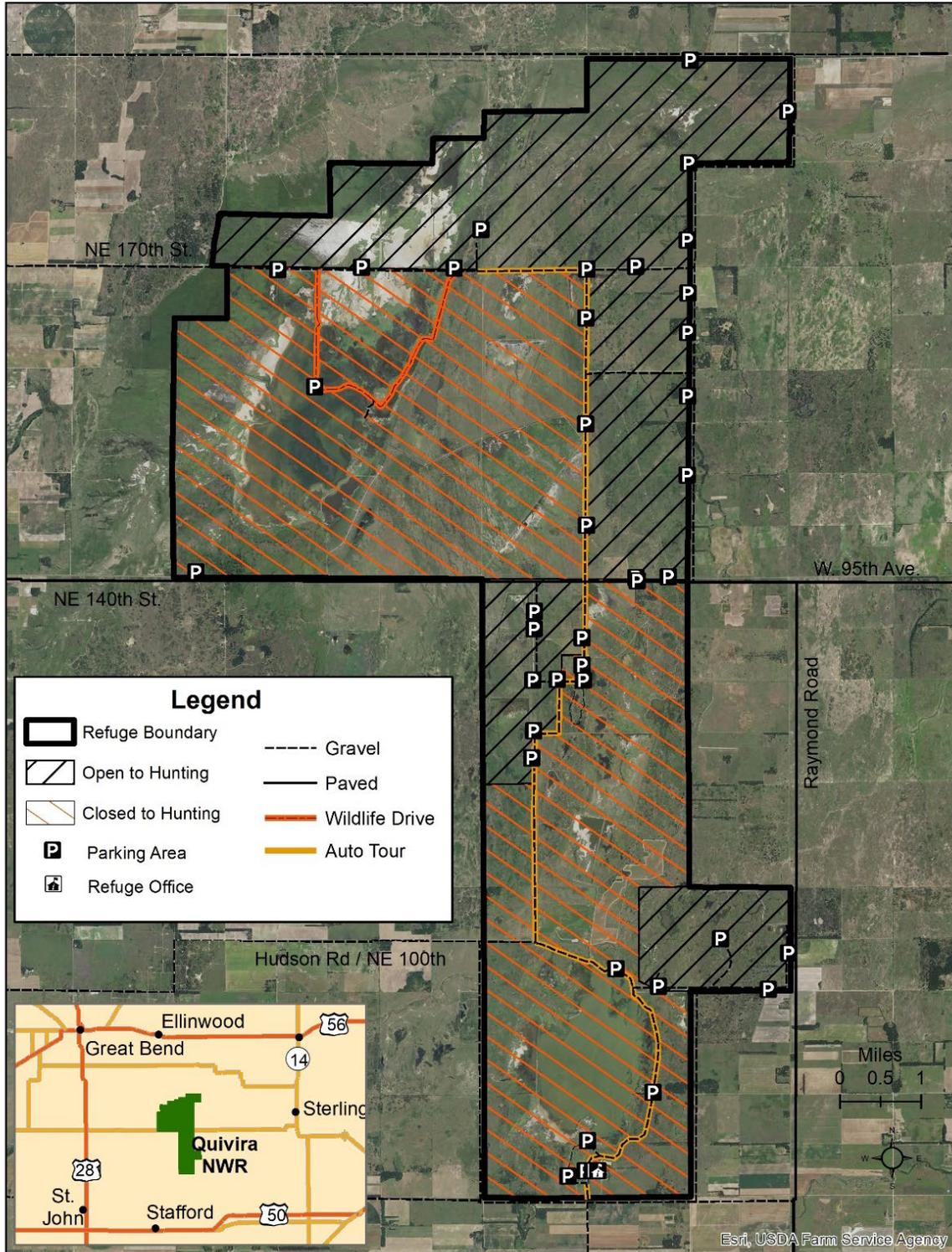


Figure 2. Quivira National Wildlife Refuge Areas Open and Closed to Hunting.

Besides hunting and fishing, 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 through February.

Refuge management activities, such as using prescribed fire, 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 (2013).

2.2 Alternative(s) Considered, But Dismissed from Further Consideration

The Service considered allowing hunting of greater prairie chicken (see Figure 3; KDWPT 2019c) but dismissed it after careful consideration and review of public input received during development of the recent CCP. The refuge is near (within the same county as) the state-closed prairie chicken unit. Historically, lesser and greater prairie chicken distribution ranges overlapped in the area of the refuge, but recent sightings of prairie chicken species have been irregular (one to few and not every year). Now, lesser prairie chicken status is under review. Refuge habitat management supports native communities and conditions preferred by prairie chickens, encouraging future prairie chicken use of the refuge. While hunting of prairie chicken would not be permitted, other outdoor experiences and educational opportunities would support an appreciation of prairie chickens and other natural resources.

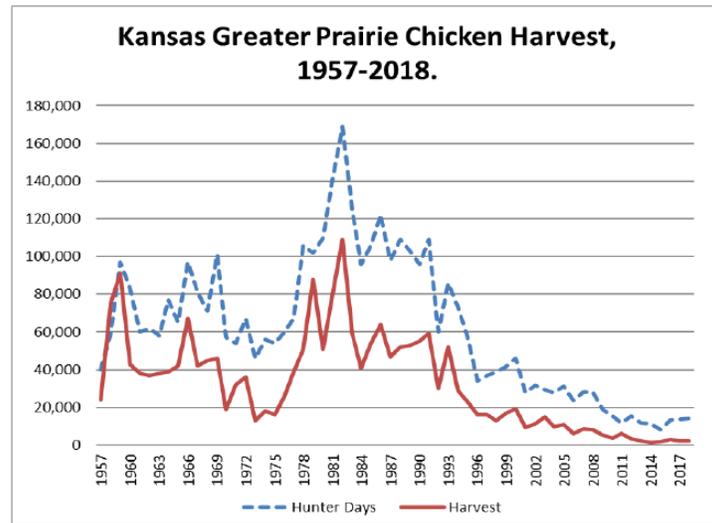


Figure 3. Harvest Trends of Greater Prairie Chicken.

3.0 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 found that the hunting and fishing plan is compatible with the purposes of the refuge and mission of the Refuge System.

The Service can establish regulations for individual species or parts 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 decides it is needed for wildlife, habitat, or public protection. Hunting opportunities are limited, such as 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. Carrying out the hunting and fishing plan would support applicable federal, refuge, and state regulations, and evaluation of mitigation measures would be conducted regularly.

3.1 Biological Conflicts

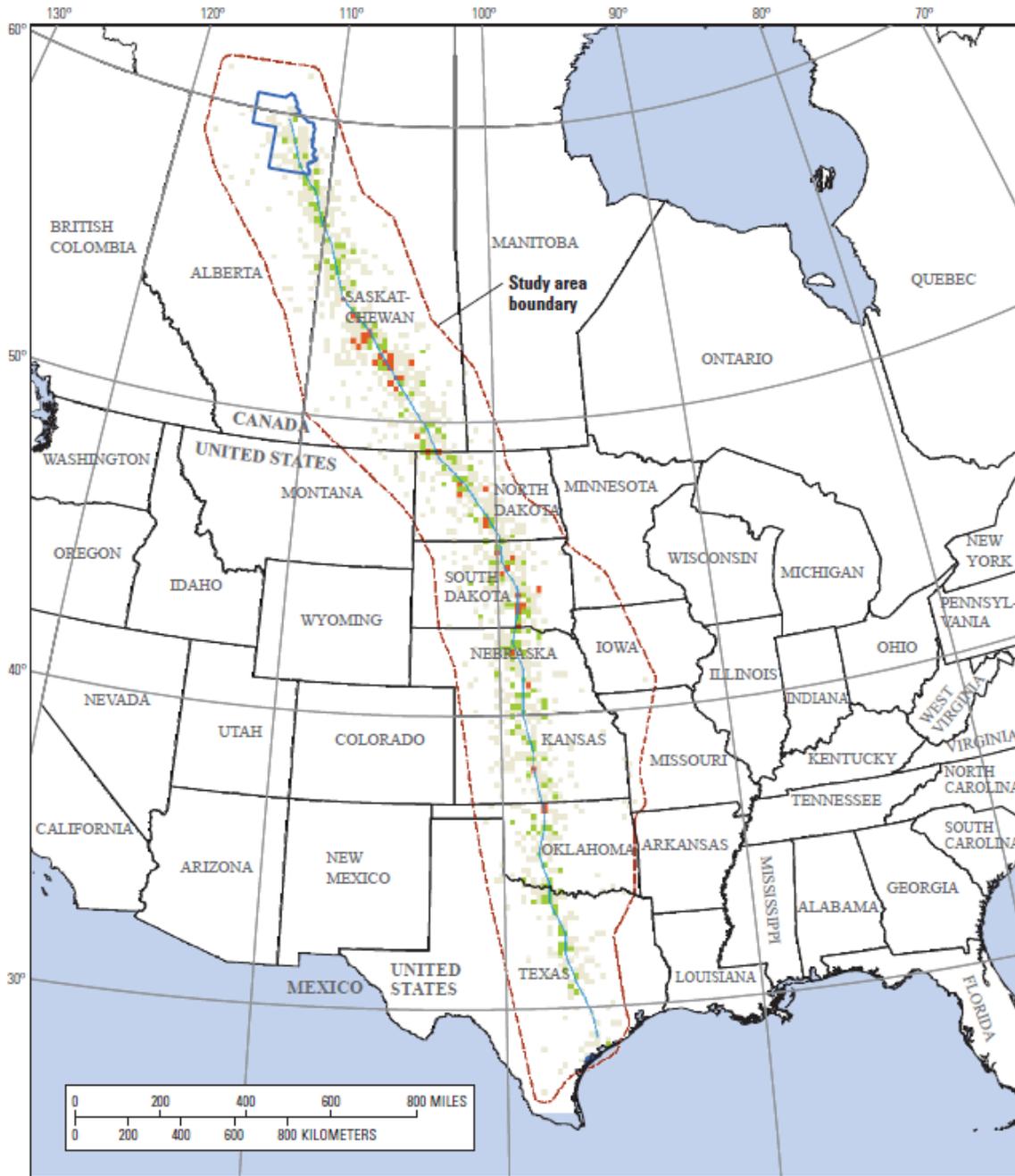
The Service reduces biological conflicts with regulations and management. Hunting activities would be limited or not allowed where there are significant biological concerns. Monitoring of species and habitat conducted by the state, Service, and others would be periodically reviewed with a primary interest 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 decrease hunting pressure and increase protections during specific wildlife events, including closures during the main bird breeding season or for the protection of whooping cranes during migration. Many of the proposed hunting opportunities occur in late fall and winter in upland habitat when upland-associated wildlife abundance and diversity is low relative to breeding and peak migration seasons and is limited to the refuge hunt unit during open hours (not at night).

Refuge lands and management support many federally listed species. Below are species identified as federally threatened, endangered, under a proposed listing or under review status for Stafford, Reno, and Rice Counties in Kansas. Most refuge lands are in Stafford County.

Whooping Crane (Grus americana) – An endangered species listed for Stafford, Reno, and Rice Counties, Kansas, that occurs mostly in the Stafford county part of the refuge during spring and fall migration. Primary occurrence is in March, April, October, November, and sometimes into December. Nearly a quarter of the Aransas-Wood Buffalo population may use the refuge in a season. The refuge is designated critical habitat and has been characterized as an extended-use core intensity stopover site in Kansas (see Figure 4; Pearse et al. 2015).

Interior Least Tern (Sterna antillarum) – An endangered species listed for Stafford, Reno, and Rice Counties, Kansas, that occurs mostly in the Stafford county part of the refuge. The interior least tern breeds on the refuge in low numbers (in recent decade, generally less than 30–40 adults). All lands and waters within the refuge are state-designated critical habitat. The Service does not list critical habitat because of the dynamic nature of preferred habitat conditions, such as sandbars and beach areas along rivers. Fledging and dispersal activities mainly occur in July and August, when the refuge is closed to hunting activities.

Piping Plover (Charadrius melodus) – A threatened species in Kansas that occurs in low numbers on 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.



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 4. Site Use and Intensity of Areas within the Migration Corridor of the Aransas-Wood Buffalo Population of Whooping Cranes. Identifies Quivira National Wildlife Refuge as an Extended-use Core Intensity Site in Kansas.

Red Knot (Calidris canutus rufa) – A threatened species wherever it is found. It is not often observed in the area. Reports of occurrence 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 occur in areas closed to hunting, most notably the Big Salt Marsh, Wildlife Drive area, and the Little Salt Marsh that collectively receive most shorebird use on the refuge.

Northern Long-eared Bat (Myotis septentrionalis) – A threatened species listed for possibly occurring in Reno and Rice Counties, but not in Stafford county. This area is at the western edge of the species distribution range. This bat overwinters in caves and mines, which do not occur on the refuge. It is thought that potential use might be for roost sites, such as under tree bark or in hollow trees, along riparian areas or for foraging for insects. Most known reports are in north-central Kansas. Reports of northern long-eared bat occurrence on the refuge are unknown. However, refuge management would be mindful of conservation measures under the interim 4(d) rule, “cutting or destroying knowingly occupied roost trees during the pup season (June 1–July 31) would be avoided.” This period of use occurs when the refuge is closed to hunting.

Eastern Black Rail (Laterallus jamaicensis jamaicensis) – This species is proposed to be listed as a threatened species. While the Service would not be designating critical habitat, it is widely known that this species occurs on the refuge during the breeding season. The Service prohibits hunting of rail under any alternative. Further, known occurrence of the species during hunting season would be protected with temporary area closures.

Lesser Prairie Chicken (Tympanuchus pallidicinctus) – The status of this species is under review for Stafford county. Occurrence on the refuge is rare and not observed every year. Historic range distribution of greater and lesser prairie chickens overlapped in area of the refuge. The refuge CCP ecological goals and objectives, recent conservation efforts, and the current status has caused the Service not to allow hunting of prairie chicken.

Peppered Chub (Macrhybopsis tetranema) – The status of this species is under review for Stafford, Reno, and Rice Counties. This species is not known to occur on the refuge.

An Endangered Species Act Section 7 consultation will be conducted before the hunting and fishing plan is approved or finished.

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, 300–400 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 not 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 this species occurs on the refuge, 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.

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.

3.2 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 by carrying out state, federal, and refuge-specific regulations. Areas administratively open to hunting are showed 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. For example, public and state input expressed high interest in both hunting deer and maintaining periods where hunting did not affect deer observation and photography. Therefore, deer hunting seasons are permitted in September and January and hunting activities in October through December would not affect other non-consumptive deer-related uses. 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 in the refuge hunt unit in September through February. If conflicts occur, the Service expects those instances to generally be temporary, minor, and local effects.

3.3 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 fire, the Service checks the area for visitors and monitors access roads during the burn activity. Public interference with water control structures may occur, but this is no change from current management. If it becomes a greater problem, the Service has the authority to close areas for the protection of species, habitat, and the public. 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 website or otherwise communicated to the public, such as through phone or a news release.

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

4.0 Affected Environment and Environmental Consequences

4.1 Affected Environment

The refuge consists of approximately 22,135 acres in Stafford, Reno, and Rice Counties, Kansas. (Figure 1). Quivira NWR is primarily a sand prairie-wetland complex. The Rattlesnake and Salt Creeks meander through refuge lands. There are two inland salt marshes that are more than 900 and 1,200 acres in size, and more than 30 wetland units occur throughout the refuge with water management control structures. Other wetlands naturally occur throughout the upland habitat, mostly composed of warm season-dominated mixed and tallgrass prairie with lesser amounts of shrub and tree communities. Common shrubs are plum, sumac, currant, and dogwood. Less abundant wooded areas mostly consist of small riparian areas dominated by cottonwood and willow and isolated shelterbelts and planted groves occurring mostly along the refuge boundary.

Both cropland and rangeland agricultural uses dominate the larger landscape. In recent decades, corn and wheat fields are common around the refuge and rangeland is primarily for cattle. Hunting activities occur in areas near refuge lands. Waterfowl and big game hunting are common on surrounding private lands. Some neighboring land use allows expansion of red cedar in prairie, assumed for specific hunting experiences.

For more detailed information about the affected environment, refer to chapter 3, Refuge Resources and Description of the refuge's comprehensive conservation plan (2013), which can be found here: www.fws.gov/mountain-prairie/planning/ccp/ks/qvr/documents/qvr_final/qvr_ccpfinal_all.pdf.

The proposed action is in the current designated hunt area (see Figure 2).

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

4.2 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 covers the written analyses of the environmental consequences on a resource when the effects on that resource could be more than negligible and therefore considered an "affected resource". Any resources that would not be more than negligibly affected by the action have been dismissed from further analyses.

Tables 1 through 5 provide:

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

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

Impact Types:

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

- *Cumulative impacts* result from the incremental effect 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 recently completed an EA, which can be found at www.fws.gov/mountain-prairie/refuges/planningPDFs/qvr_ccpdraft_all.pdf, as part of development of a CCP (www.fws.gov/mountain-prairie/planning/ccp/ks/qvr/documents/qvr_final/qvr_ccpfinal_all.pdf).

The CCP and associated EA and public comments were considered in development of the refuge hunting and fishing plan and this EA. This current EA associated with the hunting and fishing plan covers details and specific analyses of the proposed action, 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.

<p>Affected Resources</p>	<p><u>Alternative A (Proposed Action)</u> <i>Quivira NWR would be open to more hunting opportunities and the hunting or new species, like a muzzleloader and a disabled season for deer and allowed hunting of deer, turkey, coyote, state-defined furbearers, and crow.</i></p>	<p><u>Alternative B (No Action)</u> <i>This alternative would be a continuation of the existing hunting and fishing program.</i></p>
<p>Deer (White-Tailed Deer, Mule Deer)</p>		
<p>Since refuge establishment, overall deer populations have increased dramatically (CCP; USFWS 2013). Monitoring of deer populations on and off the refuge has been conducted for many years. Since extended extreme drought and poaching incidents (at a time without a law enforcement officer) about 8 to 9 years ago, white-tailed deer populations have been recovering from a temporary decline (Conard, unpublished reports). It is uncertain if and how Chronic Wasting Disease has affected the population, having only been in the area of the refuge in recent years. It is now thought that population levels are appropriate for a healthy population (~3 deer/square mile estimated in 2018 to 2019) and presumed slightly higher than that of hunted private lands. However, browse lines are evident and vehicle collisions are not unusual.</p> <p>Mule deer are rarely seen on the refuge, and not seen every year. At the state level, mule deer hunting is more restrictive than white-tailed deer hunting, and the public and state desire an increase in mule deer populations (Mule Deer Working Group, Western Association of Fish and Wildlife Agencies, 2019 Range-wide status of black-tailed and mule deer, 43 p.).</p>	<p>Estimated take: Likely less than 30 per year initially.</p> <p>Over the long-term, that is, decades, likely no more than 100 per year, considering potential population increases and uncertain needs of herd health management.</p> <p>Under the Proposed Action Alternative, new deer hunting opportunities would be permitted. There would be limited mortality of deer with minor effects on the local deer population and negligible effects on the statewide population. However, if hunting on the refuge encourages increased movement of deer on and off refuge lands, there may be enough combined mortality with hunting on private lands to alleviate effects of disease, deer-vehicle collisions, and other potential effects of high-density deer populations. The greatest effect of deer hunting on the refuge may be the effect on deer behavior, such as the distribution, in response to hunting activities, and possibly a change in the doe: buck ratio of the population (estimated 6.38 doe:1 buck in 2018–2019; Conard, unpublished report). The Service has the ability to limit hunting regulations, such as the number of access permits, days of hunting, methods of take, through state-issued refuge access permits as part of special hunts (as defined by the state) and state-used programs.</p>	<p>Deer hunting would not occur on the refuge under this alternative. Under these current conditions, the local deer population would continue to be hunted on surrounding private lands, and the refuge would be a sanctuary for deer during parts of the hunting season. However, it is suspected that movements occur to private lands for parts of the hunting season, for example to forage on wheat fields or bait stations. Poaching and deer-vehicle collisions occur and may be more common under this alternative compared to the Proposed Action Alternative. Otherwise, there would be no direct effects (mortality) from take of deer by humans under current conditions. Indirect effects may potentially occur if deer populations continue to increase, such as adverse effects on habitat because of increased forage demand, influence on plant species composition, and as facilitation in the spread of disease.</p>

Affected Resources	<u>Alternative A (Proposed Action)</u> <i>Quivira NWR would be open to more hunting opportunities and the hunting or new species, like a muzzleloader and a disabled season for deer and allowed hunting of deer, turkey, coyote, state-defined furbearers, and crow.</i>	<u>Alternative B (No Action)</u> <i>This alternative would be a continuation of the existing hunting and fishing program.</i>
Deer (White-Tailed Deer, Mule Deer) continued		Studies of the refuge deer population have shown that hunting on private lands under current conditions affected deer harvest, affecting bucks on the refuge much more than does (Blecha et al. 2011).
Turkey		
Turkey populations have increased on the refuge since establishment but are not considered abundant. Based on personal communications with the state, turkey populations have shown declining trends both regionally and statewide in recent years. However, state hunting regulations are typically adjusted to manage changes in population status and trends.	Estimated take: Less than 20, at least at current population levels. The Service would allow turkey hunting, but has the ability to limit hunting. The Service would have the ability to address concerns of population trends and compatibility issues. Hunting would be limited to the refuge hunt unit during the fall season. Hunting of other species already occurs within the hunt unit during this time. Effects are expected to be negligible.	Neutral effects on the population because hunting is not permitted under current conditions.
Coyote		
Coyote are common on the refuge. The 2015 Kansas Summer Roadside Survey Report (Peek, M.; KDWPT; 2015) shows increasing trends of coyote statewide based on roadside indexes (Figure 5).	Coyote hunting would only be allowed with a state-issued refuge access permit, which allows the Service control (flexibility) in hunting regulations, such as the amount of take, season, and methods of take. A slight (minor) decrease in the local population of coyotes is expected under the proposed action, but negligible effects on the increasing statewide population. If a slight decline in local populations occurs, it may have positive effects on bird populations and other forms of prey. Coyotes are commonly seen foraging on birds on the frozen marshes in winter (see cumulative impacts below for regional and state population and harvest information).	Neutral effects on the population because hunting is not permitted under current conditions.

<p>Affected Resources</p>	<p><u>Alternative A (Proposed Action)</u></p> <p><i>Quivira NWR would be open to more hunting opportunities and the hunting or new species, like a muzzleloader and a disabled season for deer and allowed hunting of deer, turkey, coyote, state-defined furbearers, and crow.</i></p>	<p><u>Alternative B (No Action)</u></p> <p><i>This alternative would be a continuation of the existing hunting and fishing program.</i></p>
<p align="center">Small Game (Squirrel, Rabbit [Cottontail, Hare or Black-tailed Jackrabbit])</p>		
<p>Cottontail are common on the refuge. Squirrel and black-tailed jackrabbit are not abundant on the refuge. See additional information below (state and regional harvest data) under cumulative impacts.</p>	<p>Hunting would continue to be allowed. With new species and expanded opportunities, there is potential for hunting effect to be slightly more than the No Action Alternative. Based on an estimated average 0.33 bag per day over a 181-day refuge season, potential harvest is about 60 hare or jackrabbits.</p> <p>However, it is not expected that hunting would occur every day of the season. Also, considering the refuge hunt limitations, such as prohibitions on and limitation on hours and rarity of jackrabbit occurrence on the refuge, it is expected that the actual take would be much less. This level of take has negligible effects on regional and statewide harvest numbers.</p> <p>Small game have important functions in the ecosystem. They are an important prey base for other wildlife, such as raptors. Hunting is not allowed at night and is limited to the hunt unit. This allows some part of the population to be unaffected by hunting.</p>	<p>Hunting is currently permitted and has not had adverse effects on local populations.</p>

Affected Resources	<u>Alternative A (Proposed Action)</u> <i>Quivira NWR would be open to more hunting opportunities and the hunting of new species, like a muzzleloader and a disabled season for deer and allowed hunting of deer, turkey, coyote, state-defined furbearers, and crow.</i>	<u>Alternative B (No Action)</u> <i>This alternative would be a continuation of the existing hunting and fishing program.</i>
Furbearers		
<p>Furbearers that seem most common or abundant on the refuge are raccoon and striped skunk. It is possible that bobcat are common, but sightings are uncommon during daily hours.</p> <p>There are no known reports of weasel on the refuge. Red fox is the only fox species with reported historic occurrence on the refuge over past decades, but there have been no known observations in recent years. Mink and opossum are seldomly observed on the refuge. Badger and muskrat are only seen occasionally during daylight hours.</p> <p>The 2015 Kansas Summer Roadside Survey Report (Peek, M.; KDWPT; 2015) show increasing trends of furbearer species statewide based on roadside indexes from 1986–2015 (Figure 5).</p>	<p>Furbearer hunting would require a state-issued refuge access permit as part of a state-used programs and/or special hunt, which allows the Service the ability to determine aspects of hunting (e.g., species, amount of take, season, and methods of take). Considering limited observations of many furbearer species and refuge hunt limitations, such as the area and hours, the potential take is likely negligible in proportion to regional or state numbers.</p> <p>State-defined hunted furbearer species that are most common on the refuge, and therefore might have a greater likelihood of being affected by hunting, are raccoon, bobcat, and striped skunk. Populations of these furbearer species are increasing statewide. If a slight decline in local populations occurs, it may have positive effects on bird populations, which provide a food source through eggs, as well as other forms of prey. The Service has the ability to limit hunting, in part to have the ability to address concerns of population trends and compatibility issues.</p>	<p>Neutral effects on the population because hunting is not permitted under current conditions.</p>
Upland Game Bird (Pheasant, Bobwhite)		
<p>Ring-necked pheasant and bobwhite are common on the refuge. Numbers for many wildlife species decreased in the region following an extended extreme drought period (2011–2012). Results of the Kansas 2019 Pheasant Crowing Survey by region are presented below (KDWPT 2019a) and upland bird brood counts (KDWPT 2019b) (Figure 6, Figure 7). The refuge occurs in the south-central prairies. In Kansas, these surveys are an indication of breeding production potential because winters often are mild and do not adversely affect populations.</p>	<p>The refuge is in a region with some of the highest densities of pheasant and bobwhite in Kansas. No changes under the Proposed Action Alternative.</p>	<p>Hunting of pheasant and bobwhite already occurs on the refuge.</p>

Affected Resources	<u>Alternative A (Proposed Action)</u> <i>Quivira NWR would be open to more hunting opportunities and the hunting or new species, like a muzzleloader and a disabled season for deer and allowed hunting of deer, turkey, coyote, state-defined furbearers, and crow.</i>	<u>Alternative B (No Action)</u> <i>This alternative would be a continuation of the existing hunting and fishing program.</i>
Crow		
<p>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). However, crows are not often observed on the refuge during the hunting season.</p>	<p>Under the Proposed Action Alternative, permitted hunting of crow is expected to have negligible effect because they are uncommon during the hunting season.</p>	<p>Neutral effects on the population because hunting is not permitted under current conditions.</p>
Migratory Game Birds (Besides Crow, such as Waterfowl, Dove)		
<p>The refuge was established to provide and protect vital habitat for migratory waterfowl in the Central Flyway. A purpose of the refuge is as an inviolate sanctuary. In accordance with Service policy, if a refuge, or part thereof, has been designated, acquired, reserved, or set apart as an inviolate sanctuary, we may only allow hunting of migratory game birds on no more than 40 percent of that refuge, or part, at any one time unless we find that taking of any such species in more than 40 percent of such area would be beneficial to the species (16 U.S. Code 668dd(d)(1)(A), NWRSA; 16 U.S. Code 703-712, Migratory Bird Treaty Act; and 16 U.S. Code 715a-715r, Migratory Bird Conservation Act).</p> <p>From September to December, up to 800,000 Canada geese and ducks pass through the refuge on their way to wintering grounds along the Gulf Coast and in Mexico. Other migratory birds, such as sandhill cranes and shorebirds, also migrate through the refuge on their way to wintering grounds.</p>	<p>As an inviolate sanctuary, the Service has limited the hunting area, seasons, and other aspects to support compatible wildlife-dependent uses. Areas on the refuge are closed to hunting to provide sanctuary. Temporary closures, limitations in seasons, and restrictions on methods of take, decrease hunting pressure and increase protections during specific wildlife events, such as closures during the main bird breeding season and closures for the protection of whooping cranes during migration.</p> <p>Many of the proposed hunting opportunities occur in late fall and winter in upland habitat when upland-associated wildlife abundance and diversity is low relative to breeding and peak migration seasons and is limited to the refuge hunt unit during open hours (not at night).</p>	<p>Same as the Proposed Action Alternative.</p>

<p style="text-align: center;">Affected Resources</p>	<p style="text-align: center;"><u>Alternative A (Proposed Action)</u></p> <p><i>Quivira NWR would be open to more hunting opportunities and the hunting or new species, like a muzzleloader and a disabled season for deer and allowed hunting of deer, turkey, coyote, state-defined furbearers, and crow.</i></p>	<p style="text-align: center;"><u>Alternative B (No Action)</u></p> <p><i>This alternative would be a continuation of the existing hunting and fishing program.</i></p>
<p>Other Wildlife and Aquatic Species</p>		
<p>The refuge is widely known for supporting an abundance and diversity of wildlife species in central Kansas. The refuge has many designations demonstrating the importance to waterfowl, shorebirds, and other birds and wetland-associated wildlife. 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.</p> <p>Species associated with the unique sandy and salt marsh environments of the refuge occur year-round, while others occur for only parts of the life cycle. More detailed descriptions are available in the refuge CCP (2013).</p>	<p>Effects described under the Proposed Action Alternative apply to the No Action Alternative. Though the area and season of combined hunting opportunities is not different between alternatives, there would be disturbance related to increased human presence and noise associated with hunting. However, the Service has 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 to moderate effects on non-target wildlife on parts of the refuge during the hunting season.</p> <p>Minor to moderate beneficial effects are anticipated with respect to slight declines in predators of many non-game species and increased exposure to outdoor experiences that have the potential to include observations and educational opportunities related to non-game species.</p>	<p>About 8,062 of the refuge’s 22,135 acres are within the hunting area. 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 water birds occur in the Big Salt Marsh and Wildlife Drive (south of 170th St.) and the Little Salt Marsh, which are within the area closed to hunting.</p> <p>Many migratory songbirds migrate, breed and winter on the refuge, but preferred habitat conditions are available in areas closed to hunting and at times the refuge is closed to hunting. Some hunting is limited in October and November when neotropical migrants and whooping cranes migrate through the area. With many birding activities occurring throughout the year, the public and refuge staff are not known to report observations of significant adverse long-term effects of hunting on non-game wildlife. Otherwise, those reports have been few and effects seem temporary or limited.</p>

<p style="text-align: center;">Affected Resources</p>	<p style="text-align: center;"><u>Alternative A (Proposed Action)</u></p> <p><i>Quivira NWR would be open to more hunting opportunities and the hunting or new species, like a muzzleloader and a disabled season for deer and allowed hunting of deer, turkey, coyote, state-defined furbearers, and crow.</i></p>	<p style="text-align: center;"><u>Alternative B (No Action)</u></p> <p><i>This alternative would be a continuation of the existing hunting and fishing program.</i></p>
<p>Other Wildlife and Aquatic Species continued</p>		<p>In the area open to hunting, allowable seasons are limited, and disturbances are largely temporary. Hunting is not allowed during the overall peak spring bird migration period and breeding seasons, occurring March through August.</p> <p>The Service can close areas for the protection of wildlife to mitigate possible conflicts. This has been shown in closing areas to protect nesting eagles and migrating whooping cranes.</p> <p>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>Quivira NWR would be open to more hunting opportunities and the hunting or new species, like a muzzleloader and a disabled season for deer and allowed hunting of deer, turkey, coyote, state-defined furbearers, and crow.</i></p>	<p style="text-align: center;"><u>Alternative B (No Action)</u></p> <p><i>This alternative would be a continuation of the existing hunting and fishing program.</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 Stafford, Reno, or Rice Counties: whooping crane (endangered), Interior least tern (endangered), piping plover (threatened), red knot (threatened), northern long-eared bat (threatened), eastern black rail (proposed threatened), lesser prairie chicken (status under review), and peppered chub (status under review).</p> <p>The northern long-eared bat and peppered chub are not known to occur on the refuge. Lesser prairie chicken historically occurred on the refuge, but there may have been one or few occurrences in recent decades. Management favors habitat conditions that would encourage future use by prairie chicken species.</p> <p>Interior least tern and eastern black rail use the refuge in low numbers during the breeding season. Main occurrence time for least terns is June through August. Occurrence of black rail, a much more secretive bird, is associated with some uncertainty. Based on existing information, arrival on the refuge is primarily in April and the flightless period following breeding may extend into September. However, there have not been many reports of occurrence at that time. Areas traditionally used occur in areas closed and open to hunting.</p> <p>Piping plover and red knot occur in low numbers (if at all) during spring and fall migration.</p>	<p>Effects of hunting vary as a result of the permitted number of hunters, the hunt area, the season, hours, and methods of take. Shooting effects include noise disturbance and take. Noise can have effects beyond the hunt areas and take has associated risk of being incidental or accidental take. Therefore, mitigating actions are necessary for the protection of listed species.</p> <p>Overall, current and proposed hunting activities are limited similarly in terms of area (hunt unit) and time (no hunting permitted March through August). The Service does not allow hunting of prairie chicken on the refuge. Also, the Service has the authority to close areas to hunting for the protection of listed species, such as is regularly done for the whooping crane to reduce possible effects of accidental take to insignificant or acceptable risk levels. In addition, state and refuge staff continue to educate hunters on identification of whooping cranes and other species to improve the potential to avoid accidental take.</p> <p>Hunting activities under any alternative do not directly affect those species occurring during the March through August closed period, such as least tern. In part, potential indirect effects of hunting are mitigated through federal regulations, such as the permitting of nontoxic shot. While shotgun shells are supposed to be collected after shooting, many uncollected shells have been found littering areas that listed species use.</p> <p>Effects of hunting on listed species, especially using the refuge from September through February, 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 effects 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 Action Alternative.</p>	<p>A Section 7 consultation found that current management consistent with the CCP would affect, but not likely adversely affect, species and critical habitat (USFWS 2013). 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>Quivira NWR would be open to more hunting opportunities and the hunting or new species, like a muzzleloader and a disabled season for deer and allowed hunting of deer, turkey, coyote, state-defined furbearers, and crow.</i></p>	<p style="text-align: center;"><u>Alternative B (No Action)</u></p> <p><i>This alternative would be a continuation of the existing hunting and fishing program.</i></p>
<p>Observations could occur in areas closed and open to hunting. Peak migration for piping plover in spring is mid-April and, in fall, most birds arrive on the wintering grounds by August. Reports of occurrence of red knot have been from mid-April through June and August through September. The Big Salt Marsh, Wildlife Area, and Little Salt Marsh have the most abundant shorebird use and are closed to hunting.</p> <p>Of the listed species, whooping cranes are of greatest concern as far as risk and potential effects during 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 now slightly more than 500 individuals in the population (USFWS 2018–2019 winter survey estimate). Whooping crane use the refuge in high numbers during spring and fall migration, at times nearly 20 to 30 percent of the population in fall. Primary times of occurrence of whooping cranes on the refuge is March, April, October, November, and only sometimes in December. However, long-term temporal shifts in migration have been reported, occurring earlier in spring and later in fall (Jorgensen and Bomberger Brown 2017).</p> <p>Habitat use on the refuge occurs in areas open and closed to hunting, except when the Service decides that hunting is not permitted at times for the protection of whooping cranes. Most sightings have occurred on the Big and Little Salt Marshes and in the Wildlife Drive, all outside the hunting area. However, whooping cranes regularly use an area within the hunting area, north of 170th St and other high use areas that are adjacent or within a half-mile of hunting areas.</p>	<p>Close monitoring of whooping crane and 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 style="text-align: center;">Affected Resources</p>	<p style="text-align: center;"><u>Alternative A (Proposed Action)</u></p> <p><i>Quivira NWR would be open to more hunting opportunities and the hunting or new species, like a muzzleloader and a disabled season for deer and allowed hunting of deer, turkey, coyote, state-defined furbearers, and crow.</i></p>	<p style="text-align: center;"><u>Alternative B (No Action)</u></p> <p><i>This alternative would be a continuation of the existing hunting and fishing program.</i></p>
Vegetation		
<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 2013).</p> <p>Of most relevance to the hunting and fishing plan are concerns of effects on areas with habitat managed for specific rules that have the potential to be affected by hunter or high public access. For example, some species of conservation concern have vegetation structure requirements, such as a tall, dense meadow with canopy layers. Heavy public use may form trails or trample vegetation in a way that causes habitat conditions to be less desirable or species that use the area more susceptible to predation. At the same time, minimal effects could be helpful for species that use trails.</p> <p>Another concern would be an increase in the cover and distribution of invasive exotic species throughout the hunting area, and with increased vehicle traffic through the refuge.</p>	<p>The hunting area, as well as the 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, there would be a higher potential for effects from trampling, formation of trails, and spread of invasive species. Trampling of vegetation is temporary and dispersed because of the nature of hunting and the limited hunting season. Moderate, helpful effects to vegetation may result with less deer browsing.</p> <p>Hunting of species that dig burrows (badger) and influence vegetation coverage (muskrat) could affect vegetation and 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 because of proposed hunting limitations, including limiting to daytime hours, no trapping, only certain areas and months, and number of hunters as part of a state-issued refuge access permit.</p> <p>Therefore, vegetation effects associated with hunting of badger and muskrat is expected to negligible.</p>	<p>Trampling by hunters have caused negligible effects on vegetation, partly because of the area and time limited to hunting. However, it is not known if hunting effects have influenced the spread of invasive species on the refuge.</p>

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

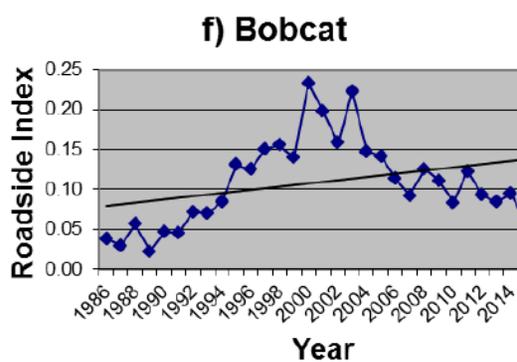
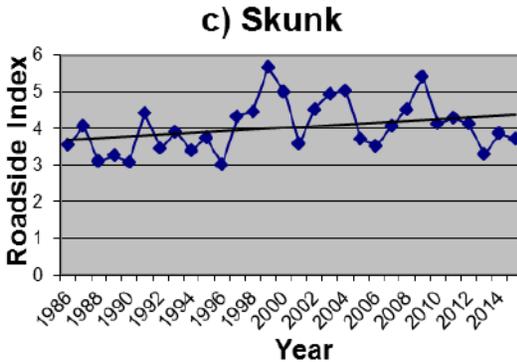
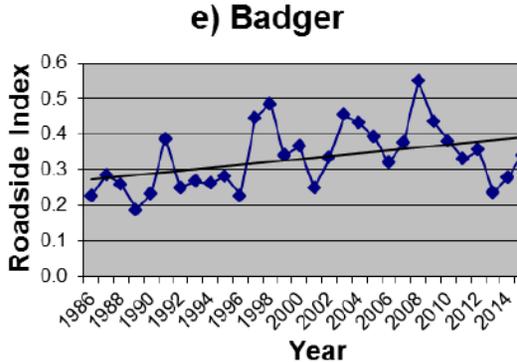
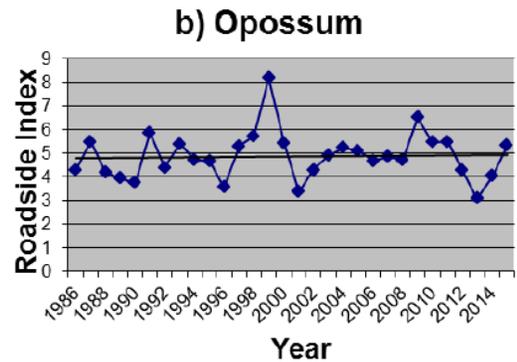
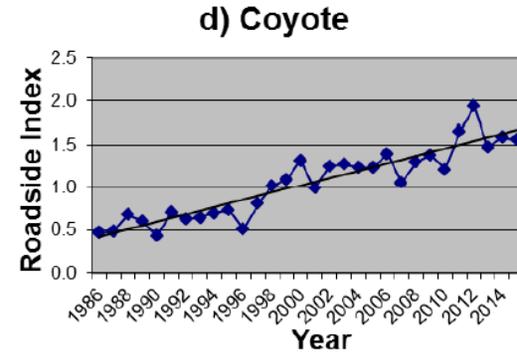
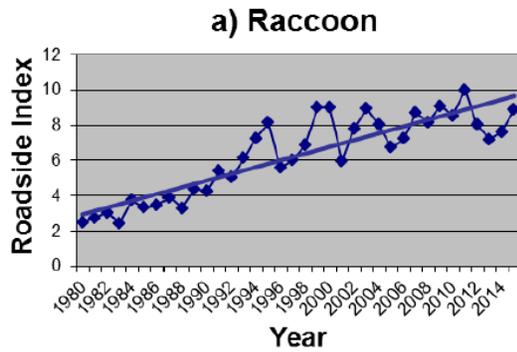
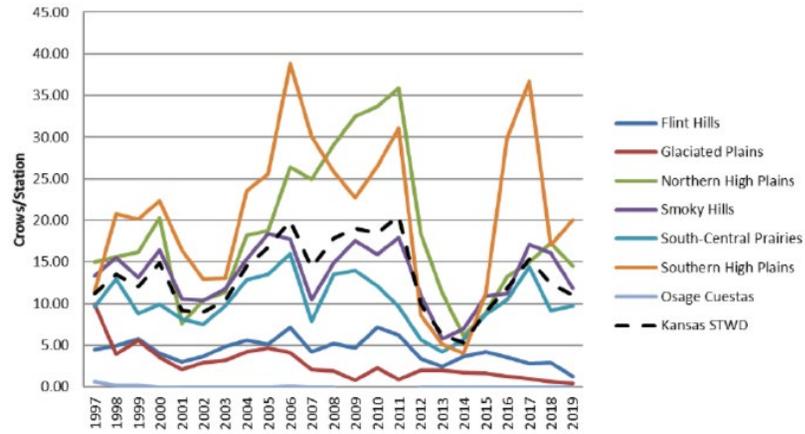
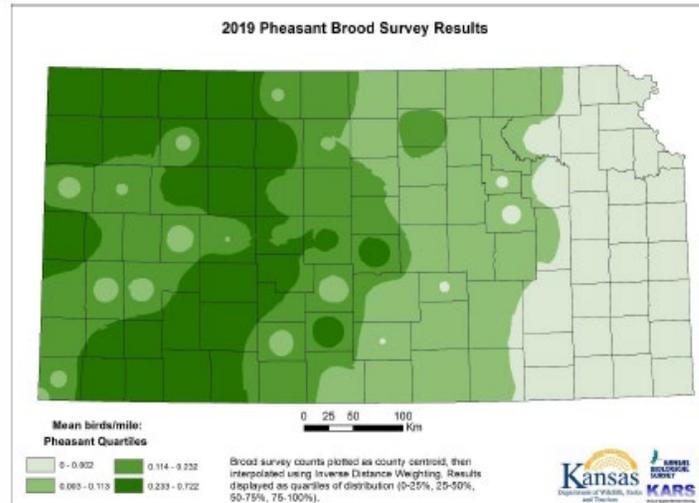


Figure 5a-f. Population Trends of Furbearers in Kansas Based on Annual Roadside Indices (KDWPT 2015). At the Time, Furbearers Were Stable or Increasing for the Region (South-Central Kansas).

Kansas Pheasant Crow Counts by Region, 1997-2019

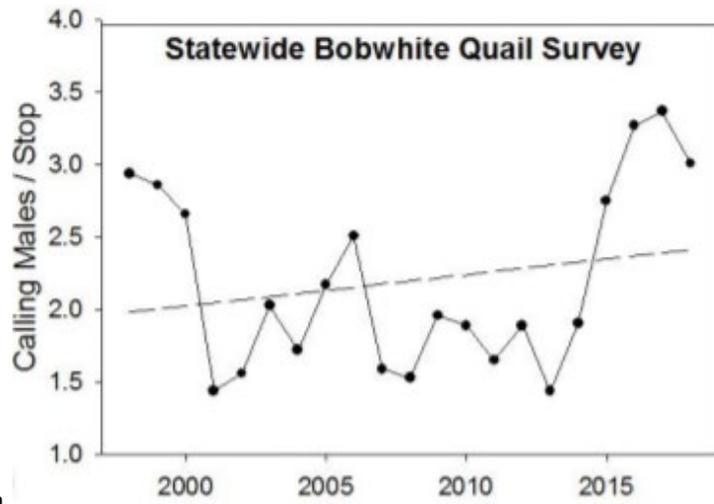


a.

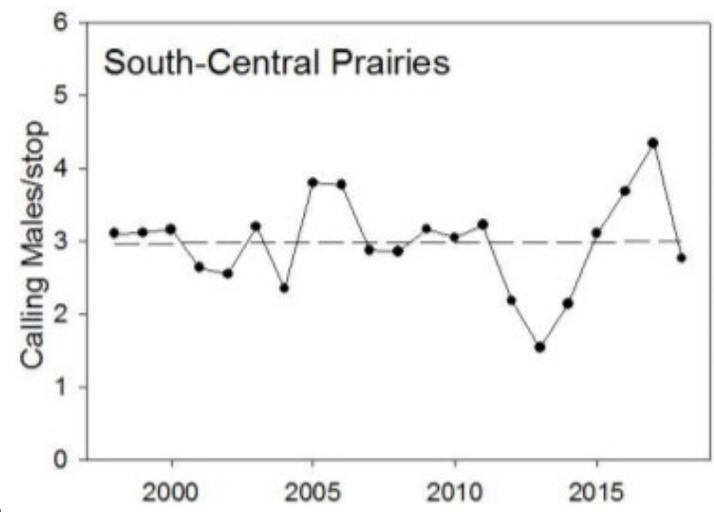


b.

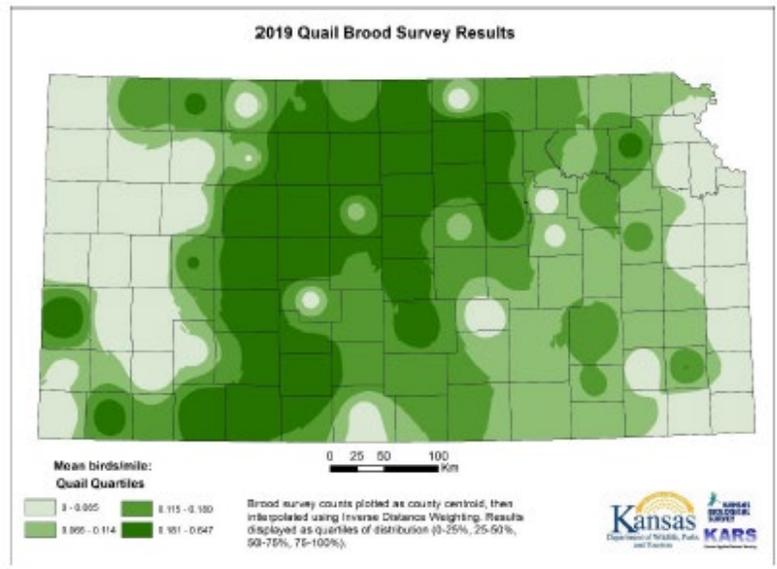
Figure 6a–b. Results of the Kansas 2019 Pheasant Crowing Survey by Region are Presented (KDWPT 2019a) and Upland Bird Brood Counts (KDWPT 2019b).



a.



b.



c.

Figure 7a–c. Bobwhite Whistle Stop Survey Results for the State and South-Central Prairies Region of Kansas (KDWPT 2018).

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

<p>Affected Resources</p>	<p><u>Alternative A (Proposed Action)</u></p> <p><i>Quivira NWR would be open to more hunting opportunities and the hunting of new species, like a muzzleloader and a disabled season for deer and allowed hunting of deer, turkey, coyote, state-defined furbearers, and crow.</i></p>	<p><u>Alternative B (No Action)</u></p> <p><i>This alternative would be a continuation of the existing hunting and fishing program.</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. Residents and non-residents from across the U.S. and from other countries visit Quivira NWR.</p> <p>Based on a 2011 survey, 1.2 million Kansas residents and non-residents 16 years or older took part in wildlife-related recreation in Kansas (USFWS 2011). Of the participants sampled, wildlife watching was by far of greatest interest compared to fishing and hunting activities. However, results showed participation in fishing activities increased up to 72 percent, when including individuals 6–15 years old (Figure 8).</p> <p>Most wildlife watching activities occurred around the home. Of those participating in wildlife watching away from home, observation of wildlife was of greatest interest, followed by wildlife photography (Figure 9).</p>	<p>Under the Proposed Action Alternative, noise and visual effects related to hunting would remain temporary but would be more frequent or greater in comparison to current conditions. Visual effects are more restricted than noise effects of shooting. While shooting occurs on surrounding private lands, cumulative effects of noise on and off the refuge may be considered of moderate or intermediate effect, at least in the most active morning hours at certain times during the season, such as during the opening day of a hunt. Of course, perceived effects vary by user tolerance and interests.</p> <p>Proposed 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 non-consumptive public uses. While deer hunting is popular in Kansas, deer observation and photography are traditionally common uses on the refuge.</p>	<p>Visitor use and experience has been described in the recently developed CCP (USFWS 2013), which already involved an EA. Public input showed conflicts between consumptive and non-consumptive uses. There was perceived favoritism from both groups. Based on input, all use groups supported the protection of whooping cranes. There was concern about public (and staff) safety when collectively considering the open access of the refuge, proximity of uses, narrowness of the refuge and interior roads, surrounding hunting activity, and limitations of refuge hunting (area, season, and method of take regulations). Therefore, limits of hunting and fishing activities seem necessary to achieve conservation of species and associated habitat, balancing use opportunities, and public safety. Under current conditions, noise and visual effects related to hunting are temporary.</p>

<p style="text-align: center;">Affected Resources</p>	<p style="text-align: center;"><u>Alternative A (Proposed Action)</u></p> <p><i>Quivira NWR would be open to more hunting opportunities and the hunting of new species, like a muzzleloader and a disabled season for deer and allowed hunting of deer, turkey, coyote, state-defined furbearers, and crow.</i></p>	<p style="text-align: center;"><u>Alternative B (No Action)</u></p> <p><i>This alternative would be a continuation of the existing hunting and fishing program.</i></p>
<p>The refuge’s primary responsibility is natural resource conservation, but also supports compatible wildlife-based recreational opportunities. Therefore, a careful balance of these management priorities is desired. It is estimated that 65,000 visitors use the refuge in a year. The refuge is open to public access, except beyond area closed signs. However, outside a planned refuge public use or educational event, a large percentage of visitors spend most time in vehicles, viewing and photographing wildlife from roads. The most recent visitor use surveys conducted at the refuge showed general satisfaction, as discussed in more detail in the CCP (USFWS 2013). Hunting of waterfowl, pheasant, and bobwhite seem of greatest interest to the public now. However, public input during CCP development showed mixed interest in deer and turkey hunting opportunities on the refuge.</p> <p>Statewide, and likely non-residents, favor deer and turkey hunting on the refuge, while at least some landowners around the refuge do not.</p>	<p>Public concerns of deer hunting impacts on other public uses were identified in development of the CCP. There were public concerns of these simultaneous uses occurring, but also indirect effects of hunting on the experience of viewing mature bucks due to impacts on the approachability and distribution of deer and other wildlife away from non-consumptive use sites. Research indicates hunting impacts deer behavior, such as movements (Marantz et al. 2016). Birdwatching and photography are also extremely common activities on the refuge. Neotropical migratory birds and a diversity of birds occur in and around certain woodland groves in the hunt area especially during October–November. Therefore, state-issued refuge access permits as part of special hunts, or use of other state-supported hunting programs promote wildlife conservation and the occurrence of both hunting and non-consumptive uses. These state-supported hunting programs also allow recreational opportunities for different hunter groups (e.g., archery-only, muzzleloader, and shotgun).</p>	<p>Visual effects are more restricted than noise effects of shooting. While shooting occurs on surrounding private lands, cumulative effects of noise on and off the refuge may be considered minor to moderate, at least in the most active morning hours.</p>

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

**Percent of Total Participants
by Activity**
(Total: 1.2 million participants)

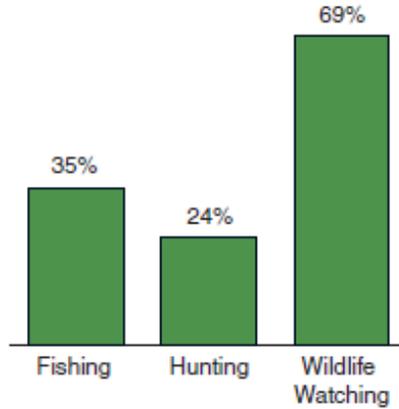


Figure 8. Total Number of Participants for Wildlife-Dependent Recreational Activities, Fishing, Hunting, and Wildlife Watching.

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 9. Most Popular Wildlife-Watching Activities in Kansas and Number of Days Individuals Took Part in Each Activity.

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><i>Quivira NWR would be open to more hunting opportunities and the hunting of new species, like a muzzleloader and a disabled season for deer and allowed hunting of deer, turkey, coyote, state-defined furbearers, and crow.</i></p>	<p style="text-align: center;"><u>Alternative B (No Action)</u></p> <p><i>This alternative would be a continuation of the existing hunting and fishing program.</i></p>
<p>Cultural resources were described in the CCP (USFWS 2013). In recent years, compliance checks of areas have been conducted as part of refuge management. There have been no known effects to cultural resources as a result of hunting and fishing activities.</p> <p>The refuge is planning a more thorough cultural survey compared to earlier efforts. The Service has put in a request and it would occur as soon as schedules and funding allow.</p>	<p>Because of the temporary and superficial use of refuge habitats during hunting and fishing activities, there should be no direct or indirect effects to cultural resources under this alternative from visitors engaged in hunting and fishing activities, as delineated in the hunting and fishing plan. The Service has decided that, in accordance with the carrying out 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 effects to cultural resources are anticipated under this alternative. In recent years, compliance checks of areas have been conducted as part of refuge management. There have been no known effects to cultural resources as a result of hunting and fishing activities.</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>Affected Resources</p>	<p><u>Alternative A (Proposed Action)</u></p> <p><i>Quivira NWR would be open to more hunting opportunities and the hunting or new species, like a muzzleloader and a disabled season for deer and allowed hunting of deer, turkey, coyote, state-defined furbearers, and crow.</i></p>	<p><u>Alternative B (No Action)</u></p> <p><i>This alternative would be a continuation of the existing hunting and fishing program.</i></p>
<p>Land Use</p>		
<p>Management of multiple consumptive and non-consumptive recreational uses in conjunction with the protection of species and associated habitat have the greatest effect on refuge operations. 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 effects. 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 and brochures, or other forms of communication, such as the internet, would continue to be necessary rules 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, such as to educate the public of the status and identification of protected species, the needs 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>Habitat management activities would be similar under both alternatives (CCP 2013), but there may be increased conflicts under the proposed action with greater hunting opportunities.</p> <p>The types of effects under this alternative would be like current conditions, but the frequency and number of effects would likely be increased. For example, it is presumed that management would have to dedicate more resources to enforce federal and state regulations and to control incidental spread of invasive species. With higher public use, there may be increased maintenance needs associated with parking lots and communications, 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 effects of the hunt and fish program on refuge lands and property are generally minor. Occasional violations occur, such as illegal take of wildlife, camping, littering like that of shotgun shells, and destruction of property, including destruction of fences or shooting of signs. Of greater concern, there have been instances where water control structures and water monitoring equipment have shown evidence of tampering from the public, but there is no certainty of the association with hunting or other use activity. Also, hunting and fishing 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 species. Invasive species management is of great cost to the Service in staff time and budget allocation. But, more important, invasive species adversely affect native community conditions, typically for extended periods of time.</p>

Affected Resources	<u>Alternative A (Proposed Action)</u> <i>Quivira NWR would be open to more hunting opportunities and the hunting of new species, like a muzzleloader and a disabled season for deer and allowed hunting of deer, turkey, coyote, state-defined furbearers, and crow.</i>	<u>Alternative B (No Action)</u> <i>This alternative would be a continuation of the existing hunting and fishing program.</i>
Weather conditions influence road maintenance needs, however many roads on and surrounding the refuge are the responsibility of the county or township (not Service-owned roads).		Current conditions generally do not experience significant issues with traffic associated with hunting and other public use activities. Rarely, such as on opening day of waterfowl hunting season, there may be a crowded parking lot and area of hunting. This often relates to hunting conditions elsewhere in the region or state.
Administration		
The administrative organization, number of staff, and budget of the refuge has changed since described in the CCP (USFWS 2013). The refuge is part of the Kansas NWR complex (Figure 1). There is a project leader of the complex and managers for each of the three refuges in the complex. Consistency among hunting and fishing opportunities was considered where appropriate.	Similar activities are involved for both alternatives. But, under the Proposed Action Alternative, it is estimated that law enforcement may involve about 30 to 35 hours per week starting in September through February. There would be more time and cost spent with public communications, as well as coordination and administration with the state about 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 deer surveys.	Hunting and fishing activities require much time and cost. It is estimated that law enforcement may involve about 15 hours per week starting in September through February. Transportation costs associated with law enforcement is estimated at nearly \$200 per week, but would fluctuate with fuel and maintenance costs. Operation of open and closed signs, as well as 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 is not all hunting-related; it is also of interest to non-consumptive uses and required for biological purposes, such as Recovery Act Action. However, more time is spent checking whooping cranes with hunting, an estimated 2 additional hours per week during migration. Many hours are required to provide information to the public through phones, website, the visitor's center, brochures, and news releases throughout the hunting season.

<p style="text-align: center;">Affected Resources</p>	<p style="text-align: center;"><u>Alternative A (Proposed Action)</u></p> <p><i>Quivira NWR would be open to more hunting opportunities and the hunting of new species, like a muzzleloader and a disabled season for deer and allowed hunting of deer, turkey, coyote, state-defined furbearers, and crow.</i></p>	<p style="text-align: center;"><u>Alternative B (No Action)</u></p> <p><i>This alternative would be a continuation of the existing hunting and fishing program.</i></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 and other officers associated with the Kansas NWR complex that would promote safety through education and enforcement of regulations. The complex has two biologists with responsibility of assessing wildlife and habitat conditions and making biological recommendations for use in management decision-making. The refuge has a visitor use specialist that 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, including through phone and visitor center administration, and hunting/fishing program implementation (open and closed area signage).</p>		<p>Costs are associated with printing hunting and fishing information for kiosks and visitor center, and with maintenance of refuge infrastructure, such as roads, parking lots, and 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>Quivira NWR would be open to more hunting opportunities and the hunting of new species, like a muzzleloader and a disabled season for deer and allowed hunting of deer, turkey, coyote, state-defined furbearers, and crow.</i></p>	<p><u>Alternative B (No Action)</u> <i>This alternative would be a continuation of the existing hunting and fishing program.</i></p>
<p>Local and Regional Economics</p>		
<p>As part of CCP (USFWS 2013) 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 was reported before (Figure 10) (USFWS 2011).</p>	<p>Based on the available information, an increase in wildlife-based recreational opportunities is expected to provide improvements to the local, regional, and state economy compared to current conditions. However, in a landscape dominated by agricultural land use, the relative improvements to the overall state economy are likely minor. Compared to current conditions, with more hunt-related experiences offered on the refuge, there would potentially be 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 Action Alternative, there would potentially be fewer improvements to the local, regional, and state economy because of fewer visitation expenditures in the area and a lower number in state hunting permit sales.</p>

<p style="text-align: center;">Affected Resources</p>	<p style="text-align: center;"><u>Alternative A (Proposed Action)</u></p> <p><i>Quivira NWR would be open to more hunting opportunities and the hunting or new species, like a muzzleloader and a disabled season for deer and allowed hunting of deer, turkey, coyote, state-defined furbearers, and crow.</i></p>	<p style="text-align: center;"><u>Alternative B (No Action)</u></p> <p><i>This alternative would be a continuation of the existing hunting and fishing program.</i></p>
<p>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>According to the Kansas Health Institute (Hunt and Panas 2018), population growth in Kansas from 2000 to 2016 among minority populations has seen an increase of 52.5 percent. Projected growth of minority populations, barring any unexpected effects on current population patterns, is expected to increase even more.</p> <p>Among the information provided in the Kansas Health Institute report, see some of the minority and income/poverty data for an improved understanding of Kansas demographics (Figure 11).</p> <p>Based on 2015 data, southeast Kansas has the highest poverty rates, but Stafford county has a comparable poverty rate (Figure 12). Minority groups had the highest rate of poverty (Figure 13).</p>	<p>Within the spirit and intent of Executive Order 12898, 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 has not identified any potential high and adverse environmental or human health effects from this proposed action or any of the alternatives. Minority populations are expected to continue to increase similarly under both alternatives. Kansas has a median household income of \$52,205 (Hunt and Panas 2018). Neither alternative is expected to disproportionately affect income trends. Minority or low-income communities would not be disproportionately affected by any effects from this proposed action or any of the alternatives. Agricultural activities largely drive local and regional economies.</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>Same as discussed 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.

a.

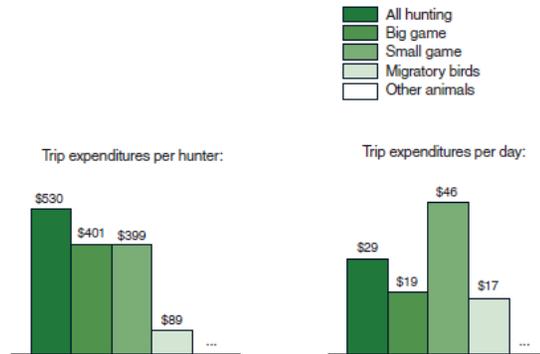
Hunting Expenditures in Kansas
(State residents and nonresidents 16 years old and older)

Total	\$401 million
Trip-related	\$150 million
Equipment	\$72 million
Hunting	\$62 million
Auxiliary and special	\$10 million
Other	\$180 million

Source: Table 20.

b.

Comparative Hunting Expenditures by Type of Hunting



c.

... Sample size too small (less than 10) to report data reliably.

Figure 10a–c. A Survey of Participation in Wildlife-based Recreational Activities in Kansas.

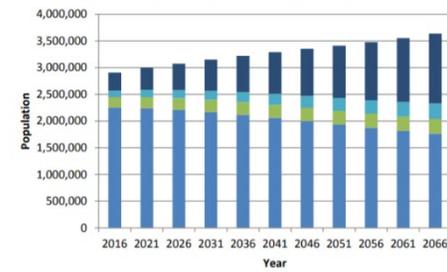
Figure 3.1a. Population Projections by Total Population, Age Group and Race/Ethnicity in Kansas, 2016–2066

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.

a.

Figure 3.1c. Population Projections by Race/Ethnicity in Kansas, 2016–2066

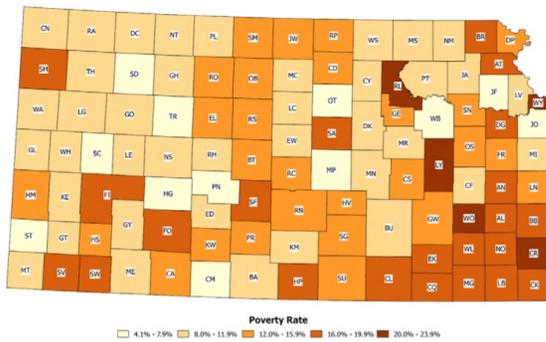


Source: 2016 Kansas Population Projections by Race and Ethnicity, Center for Economic Development and Business Research at Wichita State University.

b.

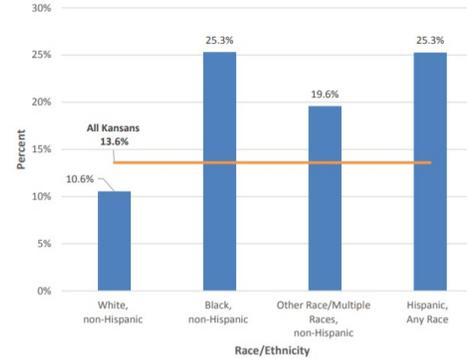
■ White, Non-Hispanic
 ■ Other/Multiple Races, Non-Hispanic
 ■ Black, Non-Hispanic
 ■ Hispanic, Any Race

Figure 11a–b. The Kansas Health Institute Report Provided Insight into Local Demographics, including the Minority Population and Changes in Income/Poverty.



Source: KHI analysis of data from the U.S. Census Bureau's American Community Survey 2015 (2011–2015) 5-Year Estimates.

Figure 12. Southeast Kansas has the Highest Poverty Rates, but Stafford County has a Comparable Poverty Rate.



Source: KHI analysis of data from the U.S. Census Bureau's American Community Survey 2015 (2011–2015) 5-Year Estimates.

Figure 13. Minority Groups in 2015 had the Highest Rate of Poverty in Kansas.

4.3 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).

For more information on the national cumulative effects of the Service’s hunting and fishing program on the Refuge System, see the 2020–2021 Cumulative Impacts Report.

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

Other Past, Present, and Reasonably Foreseeable Activity Affecting Environment	Descriptions of Anticipated Cumulative Impacts
Hunting/Fishing	
<p>Trends of harvest in Kansas for many species (Figure 14) (Report of deer harvest, KDWPT 2018; Small game hunter activity survey—2018b, KDWPT 2019c).</p> <p>KDWPT reported an increase in archery as a method of take used in deer harvest from 2010 to 2017 but identified crossbow as a legal weapon during the archery season, which was a contentious issue (Figure 15).</p> <p>Inline muzzleloaders have higher use than traditional (Figure 16).</p> <p>From the 2017–2018 Furbearer harvest survey (Table 7) (KDWPT 2018c):</p> <p>For details, such as changes in deer and turkey populations since refuge establishment, refer to the refuge CCP (2013).</p>	<p>Like other national wildlife refuges, Quivira NWR 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 decide 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 would regularly coordinate with the state and maintain 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 small part of the total annual state and regional (South-Central Prairies Unit) harvest. (Examples below.)</p> <p>Regional and state estimates (Est.) are provided below (KDWPT 2018b, 2019c).</p> <p>Deer</p> <p>For 2017–2018 season,</p> <p>Total permits issued = 182,632</p> <p>Success rate = 49.6%</p> <p>Total state harvest = 79,567</p> <p>Total harvest in Unit 5 = 3,141</p> <p>Refuge harvest est. = Initially, the estimated take would likely be less than 30 deer annually. Over the long-term (decades), likely no more than 100 annually considering potential population increases and uncertain needs of herd health management. Relative to state and regional harvest numbers, refuge effects on harvest numbers are negligible.</p>

Other Past, Present, and Reasonably Foreseeable Activity Affecting Environment	Descriptions of Anticipated Cumulative Impacts
(Hunting/Fishing continued)	<p><i>Coyote</i></p> <p>For 2018 to 2019 South-Central Prairies Unit, KS, Est. total hunters = 2,877 Est. total days = 14,508 Est. total harvest = 7,713 ± 4,108 Est. season days/hunter = 5.04 Est. season bag/hunter = 2.68 Est. average bag/day = 0.47</p> <p>Refuge harvest est. = Based on an estimated average 0.47 bag per day over a 181-day refuge season, potential harvest is about 85 coyotes if hunting could occur every day of the season. However, impacts would be much less considering refuge-specific regulations and state-issued refuge access permits, such as no trapping, vehicle and light restrictions, prohibition of dogs, and limited hours.</p> <p><i>Squirrel</i></p> <p>For 2018 to 2019 South-Central Prairies Unit, KS, Est. total hunters = 1,167 (10,756 in KS) Est. total days = 4,711 (71,082 in KS) Est. total harvest = 3,627 ± 1,953 (67,664 in KS) Est. season days/hunter = 4.04 (6.61 in KS) Est. season bag/hunter = 3.11 (6.29 in KS) Est. average bag/day = 0.89 (1.23 in KS)</p> <p>Refuge harvest est. = Based on an estimated average of 0.89 bag per day over a 181-day refuge season, potential harvest is about 161 squirrels. However, hunting would 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 common on the refuge. Also, considering the refuge hunt limitations, such as areas and hours, it is expected that the actual take would be much less. This level of take has negligible effects on regional and statewide harvest numbers.</p>

Other Past, Present, and Reasonably Foreseeable Activity Affecting Environment	Descriptions of Anticipated Cumulative Impacts
(Hunting/Fishing continued)	<p><i>Small Game (Cottontail)</i></p> <p>For 2018 to 2019 South-Central Prairies Unit, KS, Est. total hunters = 1,459 (13,841 hunters in KS) Est. total days = 6,504 (79,337 days in KS) Est. total harvest = 3,961 ± 1,597 (63,203 harvest in KS) Est. season days/hunter = 4.46 (5.73 in KS) Est. season bag/hunter = 2.71 (4.57 in KS) Est. average bag/day = 0.99 (0.96 in KS)</p> <p>Refuge harvest est. = Based on an estimated average 0.99 bag per day over a 181-day refuge season, potential harvest is about 179 cottontails. However, it is not expected that cottontail hunting would occur every day of the season. Also, considering the refuge hunt limitations of no trapping and limited hours, it is expected that the actual take would be much less. This level of take has negligible effects on regional and statewide harvest numbers.</p> <p><i>Small Game (Jackrabbit)</i></p> <p>For 2018 to 2019 South-Central Prairies Unit, KS, Est. total hunters = 125 Est. total days = 292 Est. total harvest = 42 Est. season days/hunter = 2.33 Est. season bag/hunter = 0.33 Est. average bag/day = 0.33</p> <p>Refuge harvest est. = Based on an estimated average 0.33 bag per day over a 181-day refuge season, potential harvest is about 60 hare or jackrabbits. However, it is not expected that hunting would occur every day of the season. Also, considering the refuge hunt limitations or no trapping and limited hours, as well as the rarity of jackrabbit occurrence on the refuge, it is expected that the actual take would be much less. This level of take has negligible effects on regional and statewide harvest numbers.</p> <p><i>Furbearers</i></p> <p>(See other column for state survey report data)</p> <p>Refuge harvest est. = Considering seldom observance of many furbearer species and refuge hunt limitations, such as areas and hours, the potential take is likely negligible in proportion to regional or state numbers. Furbearer hunting would require a state-issued refuge access permit as part of a state-used program and/or special hunt. Therefore, the Service would maintain the ability to determine hunt limitations (e.g., species, number of hunters/take, seasons, methods, etc.).</p>

Other Past, Present, and Reasonably Foreseeable Activity Affecting Environment	Descriptions of Anticipated Cumulative Impacts
(Hunting/Fishing continued)	<p><i>Upland Game Bird, Pheasant</i></p> <p>For 2018 to 2019 South-Central Prairies Unit, KS, Est. total hunters = 13,800 (80,421 in KS) Est. total days = 53,572 (337,069 in KS) Est. total harvest = 56,908 ± 7,269 (343,947 in KS) Est. season days/hunter = 3.88 (4.19 in KS) Est. season bag/hunter = 4.12 (4.28 in KS) Est. average bag/day = 1.18 (1.11 in KS)</p> <p>Refuge harvest est. = Based on an estimated average 1.18 bag per day over an 85-day refuge season (including youth), potential harvest is about 100 pheasant. Also, considering refuge hunt limitations on area, it is expected that the actual take would be much less. This level of take has negligible effects on regional and statewide harvest numbers.</p> <p><i>Upland Game Bird, Quail</i></p> <p>For 2018 to 2019 South-Central Prairies Unit, KS, Est. total hunters = 10,714 (66,038 in KS) Est. total days = 45,651 (30,131 in KS) Est. total harvest = 63,745 ± 10,487 (488,489 in KS) Est. season days/hunter = 4.26 (4.56 in KS) Est. season bag/hunter = 5.95 (7.40 in KS) Est. average bag/day = 1.44 (1.50 in KS)</p> <p>Refuge harvest est. = Based on an estimated average 1.44 bag per day over an 85-day refuge season (including youth), potential harvest is about 122 bobwhite. Also, considering Refuge hunt limitations on the area, it is expected that the actual take would be much less. This level of take has negligible effects on regional and statewide harvest numbers.</p>

Other Past, Present, and Reasonably Foreseeable Activity Affecting Environment	Descriptions of Anticipated Cumulative Impacts
(Hunting/Fishing continued)	<p><i>Migratory Birds</i></p> <p>Crow is the only new migratory bird species proposed to be hunted under alternative B. 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). Harvest of uncommon crows on the refuge would be negligible in context of cumulative effects to the population at regional and larger landscape scales.</p> <p>For 2018 to 2019 in South-Central Prairies Unit, KS,</p> <p>Est. total hunters = 83</p> <p>Est. total days = 334</p> <p>Est. total harvest = 542 ± 5,827</p> <p>Est. season days/hunter = 4.00</p> <p>Est. season bag/hunter = 6.50</p> <p>Est. average bag/day = 2.10</p>
Other Wildlife-Dependent Recreation	
<p>There are roads and trails on and around the refuge that contribute to cumulative effects. The Kansas Wetlands & Wildlife National Scenic Byway include the refuge. The Byway was developed as an important socio-economic driver in the region.</p> <p>The Wildlife Drive is near the area open to hunting. Consumptive and non-consumptive users most value that northwest part of the refuge, which likely has the highest visitation. It is also one of the primary areas used by species of conservation concern, such as whooping cranes.</p> <p>As mentioned elsewhere in the EA, interior roads fragment the refuge and any increase in use may contribute to wildlife disturbance because of more frequent traffic and human activity.</p>	<p>Roads and trails on the refuge contribute to cumulative effects on the environment. Roads and trails fragment habitat and increase the potential for the spread of invasive species and human-wildlife interaction, thereby increasing 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 Action Alternative.</p>

Other Past, Present, and Reasonably Foreseeable Activity Affecting Environment	Descriptions of Anticipated Cumulative Impacts
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 (Figure 17, Figure 18).</p>	<p>It is uncertain how projected population and development trends in Kansas would influence species and hunting and fishing effects. 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. Agricultural activities dominate the rural landscape where the refuge is located. 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 likely would be experienced with increasing populations. For example, resident hunters from Wichita now visit the refuge for use opportunities. Changing societal interests and other developments, such as transportation and equipment, would influence these effects. The use of an adaptive management approach allows the refuge to periodically review and adjust the hunt and fish program to make sure that it does not contribute to the cumulative effects of population growth and development on species.</p>
Agricultural Land Uses	
<p>Agricultural activities dominate land use in the region. Agricultural activities have helped wildlife 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 effects of contamination.</p>	<p>Increased hunting under the Proposed Action Alternative may not affect local agricultural uses, in part because of common off-refuge hunting and the current refuge hunt area remains unchanged.</p>

Other Past, Present, and Reasonably Foreseeable Activity Affecting Environment	Descriptions of Anticipated Cumulative Impacts
Use of Lead Ammunition or Tackle	
<p>The Service permits nontoxic ammunition only. Nationally, instances of mortality in birds (scavengers) have been linked to contamination resulting from toxic shot and ammunition in prey (Golden et al. 2016). Bald eagles use refuge lands regularly. For example, point in time eagle counts in winter have exceeded a hundred on the refuge, mostly attracted to the high numbers of waterfowl and concentration of this food source as ice forms. It is not unusual to observe more than 20 to 30 bald eagles foraging on the refuge in winter. Also, nesting eagles have been documented on the refuge in recent years.</p> <p>While fishing has been allowed on the refuge for years, interest has remained low (less than 1 percent of refuge acres). The Service supports use of nontoxic fishing tackle on the refuge and will provide opportunities to educate the public on the effects of lead on natural resources. For reference, the Association of Fish and Wildlife Service agencies conducted a literature review of population-level effects of lead fishing tackle on wildlife (Association of Fish and Wildlife Agencies 2018). Also, a link to multiple references associated with lead is provided in the Public Outreach section of this document below.</p>	<p>No effect resulting from use of lead ammunition because the Service permits nontoxic ammunition only. Interest in fishing as a public activity on Quivira NWR has been extremely limited (less than 1 percent of refuge acres), therefore anticipated impacts are negligible.</p>

Other Past, Present, and Reasonably Foreseeable Activity Affecting Environment	Descriptions of Anticipated Cumulative Impacts
Climate Change	
<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 effects that climate change may have on terrestrial and aquatic habitats and the associated wildlife species.</p> <p>Based on NOAA’s summary of potential climate change effects on Kansas (https://statesummaries.ncics.org/chapter/ks/; Frankson et al. 2017), the prediction is future warmer winter and spring temperatures and relative to summer and fall. The number of cold (minimum temperature below 0 degrees F) nights would decrease. Annual precipitation predictions are uncertain, but possibly less in summer and more in winter. The intensity of droughts is expected to increase.</p> <p>It is reported that temporal shifts are occurring in species migration patterns in response to climate change. Of relevance to this EA and hunting and fishing plan is reports of temporal shifts in migration of the whooping cranes (Jorgensen and Bomberger Brown 2017).</p>	<p>Using available and emerging science, the Service continues to assess predictions of these complex effects. The Service would continue to use an adaptive management approach to carry out this action and make sure that it does not add to the effects of climate change on the environment. Hunt programs and mitigation measures would adapt with changing conditions to continue to conserve natural resources and balance compatible recreational uses.</p>

Key: CCP = Comprehensive Conservation Plan; EA = Environmental Assessment; KS = Kansas; NOAA = National Oceanic and Atmospheric Administration; NWR = National Wildlife Refuge; U.S. = United States

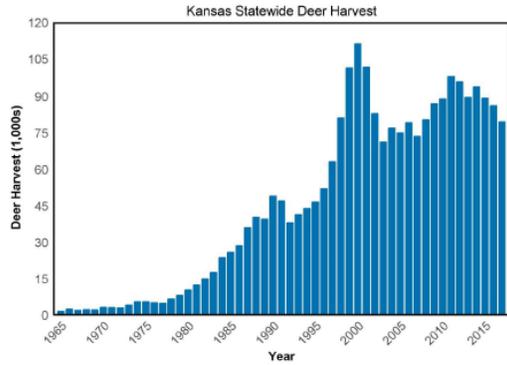
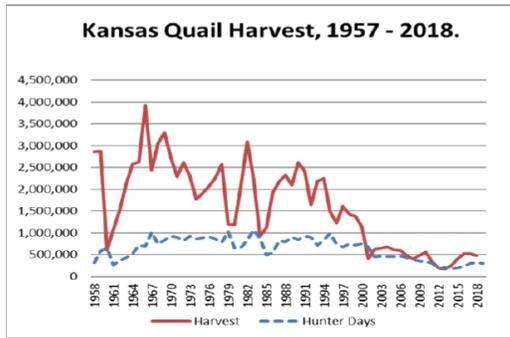
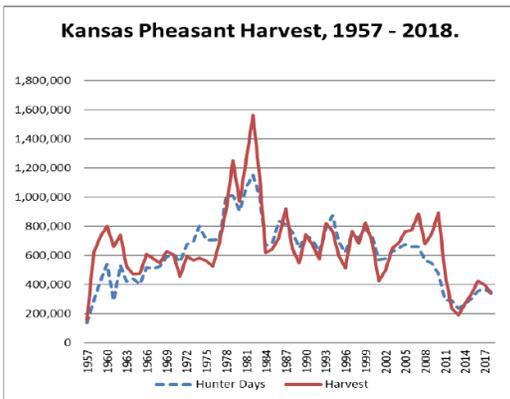


Figure 2. Kansas statewide deer harvest 1965 to present. Greatest harvest occurred in 2000 (111,159) lowest harvest occurred in 1965 (1,504). The first modern deer hunting season in Kansas was held in 1965.

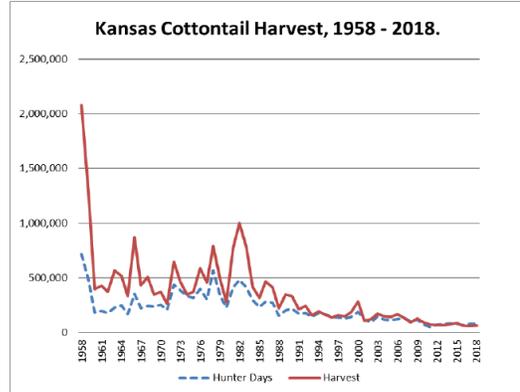
a.



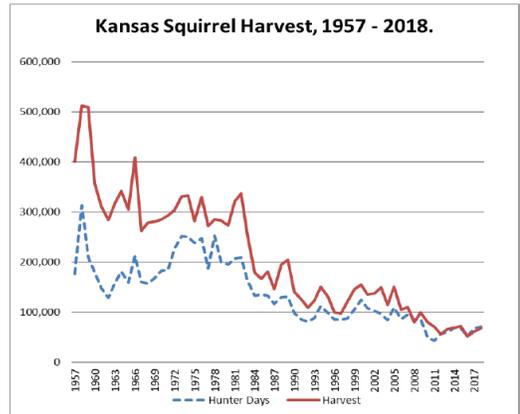
b.



c.



d.



e.

Figure 14a–e. (a) Trends of Deer Harvest in Kansas from 1945 to 2015 (Report of deer harvest, KDWP 2018); (b) Quail Harvest from 1957 to 2018; (c) Pheasant Harvest from 1957 to 2018; (d) Cottontail Harvest from 1957 to 2018; and (e) Squirrel Harvest from 1957 to 2018 (Small game hunter activity survey—2018b, KDWP 2019c).

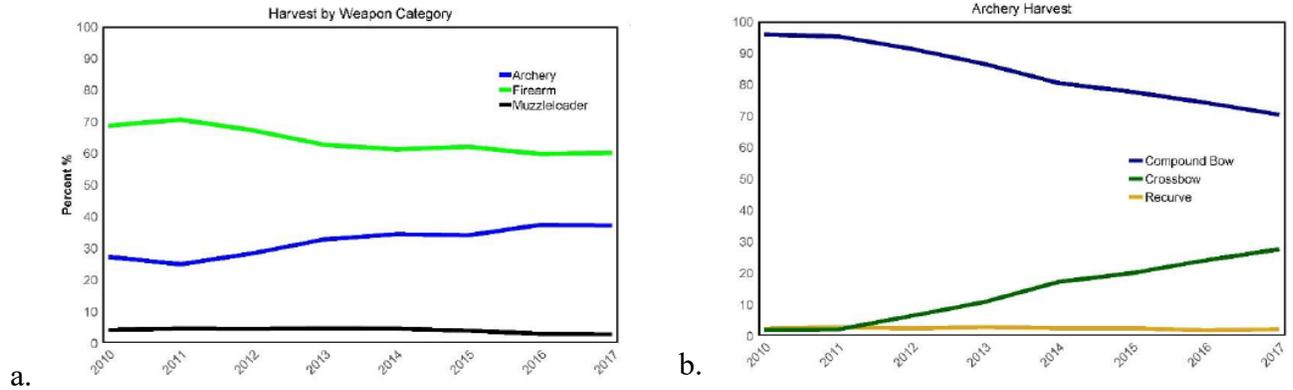


Figure 15a–b. KDWPT Reported an Increase in Archery as a Method of Take Used in Deer Harvest from 2010 to 2017 but Identified Crossbow as a Legal Weapon.

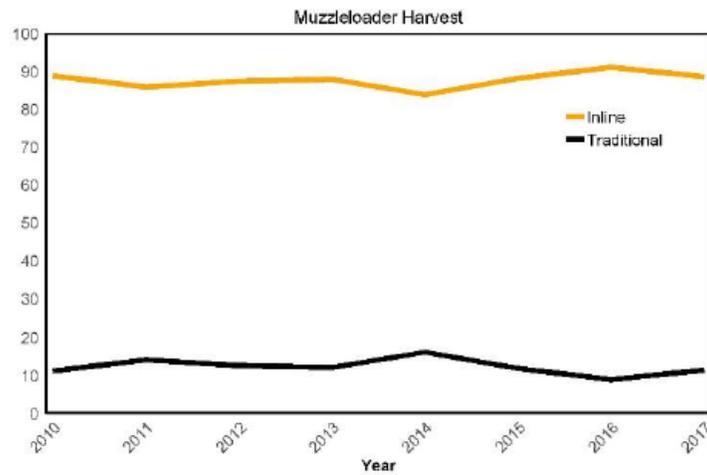
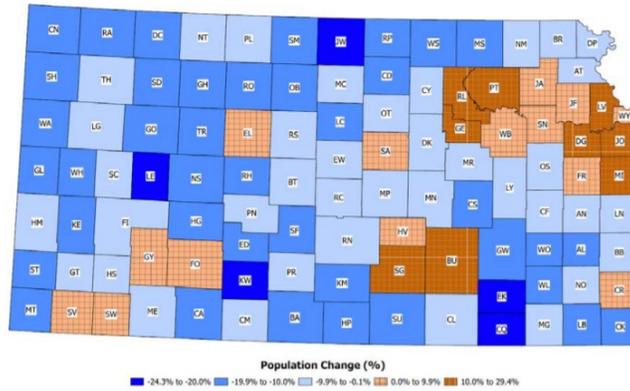


Figure 16. Inline Muzzleloaders Have Higher Use Than Traditional.

Table 7. Harvest, Participation, and Activity Levels for Hunters in Kansas During the 2017–2018 Harvest Season (KDWPT 2018c).

Species	Survey Respondents Who Pursued (n)	Estimated Harvest	% of Hunters Who Pursued	Harvest/100 Days	Maximum Harvest	Ave Harvest/Hunter
Badger	35	91	5	13.8	2	0.66
Bobcat	310	728	42	10.1	7	0.6
Coyote	637	17,537	86	48.7	100	6.99
Red Fox	44	122	6	10.3	20	0.7
Gray Fox	19	4	3	0.2	1	0.05
Swift Fox	11	4	1	1.5	1	0.09
Opossum	55	980	7	32.4	40	4.49
Raccoon	218	10,378	29	109.8	100	12.09
Skunk	22	153	3	60.6	6	1.77

Figure 2.2.5c. Total Population Change (Percent) by County in Kansas, Between 2000 and 2016



Source: KHI analysis of data from the National Center for Health Statistics' (NCHS) April 1, 2000 bridged-race population estimates and the NCHS's June 2017 Vintage July 1, 2016 bridged-race population estimates.

Figure 17. Total Population Change (Percent) by County in Kansas, Between 2000 and 2016.

Figure 3.6b. Population Projections by Age Group in the Wichita Metropolitan Statistical Area, 2016-2066



Figure 3.6c. Population Projections by Race/Ethnicity in the Wichita Metropolitan Statistical Area, 2016-2066

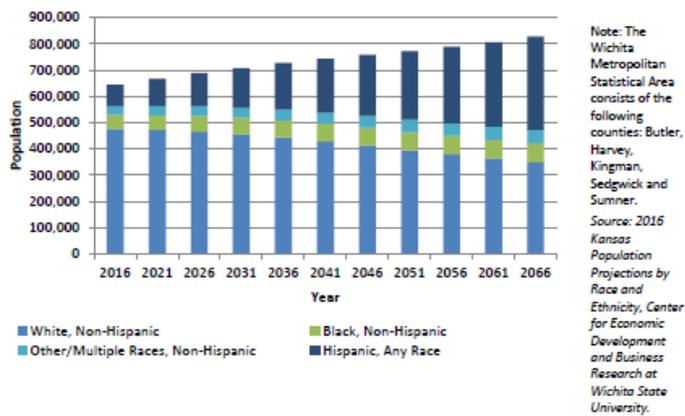


Figure 18. Population Projections from 2016 to 2066 by Demographic Groups.

4.4 Additional Mitigation Measures and Conditions

Mitigation measures include:

- closure of areas to hunting and public use because of recurrence of prohibited activities, such as public contact of water control structures or water use monitoring equipment;
- limiting hunting opportunities or access to areas to allow recovery and improvement of refuge and 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 effects by repairing, rehabilitating, or restoring the affected environment.

4.5 Monitoring

The State of Kansas conducts and uses surveys that are used to facilitate decision-making related to hunting and fishing activities, as can be seen at <https://ksoutdoors.com/Services/Research-Publications/Wildlife-Research-Surveys>. The refuge would heavily rely 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. For example, Sterling College has conducted distance-sampling of deer on the refuge for many years, similar to methods used throughout Kansas. This data may be used to assess trends, such as deer density and distribution, and conditions more specific to the area of the refuge.

4.6 Summary of Analysis

The purpose of this EA is to briefly provide enough 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 primary effect of this alternative is that comparatively more use opportunities would be available for hunting. There would be an increase in the number of species allowed to be hunted, as well as associated seasons and methods of take to satisfy different hunting user groups. Under the proposed action, the refuge would allow opportunities to hunt deer, turkey, coyote, state-defined furbearers, and crow. New hunting experiences would include the use of a muzzleloader rifle and musket, where regulations allow, opportunities for muzzleloader and archery-only seasons, and a youth and disabled season for deer. The challenge of balancing multiple consumptive and non-consumptive uses, all while supporting the conservation of natural resources would persist. However, refuge hunting and fishing mitigation measures and periodic assessments would allow adjustments in hunt and fish activities under both alternatives. In the years since CCP approval (2013), current conditions have offered hunting and fishing opportunities as whooping cranes continue to safely increase use of the refuge. This trend would be expected to continue.

Threatened and Endangered Species—Among the species listed as threatened, endangered, proposed to be listed, or that have status under review in the area of the refuge, the potential effects of hunting on the whooping crane are of greatest concern. However, current and proposed

hunting is limited through area, time, and methods of take restrictions. The Service also has the ability to close areas to hunting for the protection of species and the public. This strategy has been successfully conducted for many years.

Vegetation—Effects on vegetation are expected to be limited and manageable. The greatest potential effect on vegetation is likely related to the introduction and spread of invasive species, which is an existing and ongoing threat.

Visitor Use and Experience—Effects would largely be temporary and mixed, depending on differing perspectives and interests. All actions and alternatives intend to balance the interests of consumptive and non-consumptive uses, while maintaining natural resource conservation as the highest priority.

Cultural Resources—There have been no known effects to cultural resources because of hunting and fishing activities on the refuge, and adjustments would be made as necessary for the protection of resources identified in the future.

Refuge Management and Operations—More resources will likely be dedicated to maintain facilities, infrastructure, and operations with increased public use.

Administration—Increases in administrative time and costs are expected under the Proposed Action Alternative, largely related to law enforcement, public communications, coordination with the state, planning, and monitoring.

Socioeconomics—An increase in wildlife-based recreational opportunities under the Proposed Action Alternative is expected to provide improvements to the local, regional, and state economy.

Environmental Justice—The Service has not identified any potential high and adverse environmental or human health effects from any alternative. Minority populations are expected to continue to increase under both alternatives.

This alternative meets the purpose and needs of the Service as described above, but with expanded wildlife-dependent recreation opportunities. However, it would take more time and resources and staff, and has the potential to create more conflicts between user groups on the refuge, specifically wildlife observation, photography, and hunting groups. With limitations to hunting area and seasons, use of state-issued refuge access permits for deer, turkey, coyote, and furbearers, and use of temporary closures, opportunities on the refuge for these compatible uses would continue.

The Service has found that the proposed action is compatible with the purposes of the Quivira NWR and the mission of the Refuge System (see the Compatibility Determination for Hunting and Fishing on Quivira NWR, which is included as Appendix B).

Alternative B – No Action Alternative

As described above, the effects of this alternative are that comparatively fewer use opportunities would be available for hunting. Current conditions do not allow opportunities to hunt deer, turkey, coyote, state-defined furbearers, or crow. Under this alternative, hunting experiences are limited with prohibited use of a muzzleloader rifle and musket, no muzzleloader or archery-only seasons, and a youth and disabled season for deer. The challenge of balancing multiple consumptive and non-consumptive uses, all while supporting the conservation of natural

resources would persist. However, refuge hunting and fishing mitigation measures and periodic assessments would allow adjustments in hunt and fish activities under both alternatives. In the years since CCP approval (2013), current conditions have offered hunting and fishing opportunities as whooping cranes 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, except it limits potential additional wildlife-dependent recreation opportunities. However, it would require less time, resources, and staff, and would create fewer conflicts between user groups on the refuge.

4.7 List of Sources, Agencies and Persons Consulted

The following agencies and organizations were consulted during the development of this EA.

- 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, USFWS, U.S. Department of the Interior Regions 5 and 7
- Bernardo Garza, Hunt and Fish Coordinator, USFWS, U.S. Department of the Interior Regions 5 and 7
- Craig Mowry, Project Leader, USFWS, Kansas National Wildlife Refuge Complex

The Service Ecological Services program Kansas field supervisor was contacted (via phone and follow-up email) about the Kansas NWR Complex hunting and fishing plans on October 31, 2019. The national wildlife refuges made a request to review the list of species threatened, endangered, proposed, and under review as part of the EA Section 7 consultation rule associated with the hunting and fishing plans. The Section 7 consultation is provided in Appendix C.

4.8 List of Preparers

Quivira NWR staff and regional office planners and editors.

4.9 State Coordination

Representatives of the Kansas NWR Complex (Flint Hills, Marais des Cygnes, and Quivira National Wildlife Refuges) met with the Secretary of the Kansas Department of Wildlife, Parks, and Tourism (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. These discussions helped adjust our plan to align, where possible, with state management goals. Overall, the state was supportive of the Service's proposals of expanded hunting opportunities and both agencies confirmed the continuance of a strong partnership. The refuge received a letter of concurrence from the State Director on November 18, 2019.

4.10 Tribal Consultation

Tribal representatives did participate in development of the most recent refuge CCP (USFWS 2013), which involved an EA that generally approved most of the hunting and fishing activities

included in this more recent EA and associated step-down plan. In addition, the Service mailed an invitation for comments to all tribes potentially affected by initiating an EA to expand hunting opportunities at Quivira NWR. The Service extended an invitation to engage in government-to-government consultation in accordance with Executive Order 13175. No comments were received.

4.11 Public Outreach

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

General Summary

On April 1, 2020, the Service made the hunting and fishing plan and EA available for a 30-day public review and comment period at www.fws.gov/mountain-prairie/huntfish.php#. Hard copies were available upon request. The Service received comments from twelve individuals and two organizations. Two commenters expressed full support for expanding hunting opportunities to include deer, turkey, coyote, furbearers and crow, and new methods of take (muzzleloader/musket for deer, coyote and furbearers) on Quivira NWR. Six commenters expressed opposition to expanding hunting opportunities on Quivira NWR, while two individuals and two organizations were partially opposed to proposed hunting/fishing opportunities. Most opposition involved hunting of coyote, bobcat, and locally rare or uncommon species largely considering conflicts with the refuge's frequent non-consumptive users as well as any increased potential of whooping crane disturbance. The most accepted proposed action was deer hunting, especially as special opportunities for youth and those with disabilities. We discuss the comments we received below by topic.

Comments and Agency Response

Comment (1): A couple commenters expressed general opposition to any hunting on the refuge. These and other commenters indicated that hunting was antithetical to the purposes of a "refuge."

Response: The NWRSA, as amended, stipulates that hunting (along with fishing, wildlife observation and photography, and environmental education and interpretation), if found to be compatible, is a legitimate and priority general public use of a refuge that should be facilitated. The Service has adopted policies and regulations implementing the requirements of the NWRSA that refuge managers comply with when considering hunting and fishing programs. The need for the proposed action also meets the Service's implementation of S.O. 3347, "Conservation Stewardship and Outdoor Recreation," and S.O. 3356, "Hunting, Fishing, Recreational Shooting, and Wildlife Conservation Opportunities and Coordination with States, Tribes, and Territories," by expanding hunting opportunities and aligning Service regulation with State regulations.

We allow hunting of resident wildlife on refuges only if such activity has been determined compatible with the established purpose(s) of the refuge and the mission of the Refuge System as required by the NWRSA. Hunting of resident wildlife on refuges generally occurs consistent with state regulations, including seasons and bag limits. Refuge-specific hunting regulations can

be more restrictive (but not more liberal) than state regulations and often are more restrictive in order to help meet specific refuge objectives.

Each refuge manager makes a decision regarding hunting after examination of the available information. Developing or referencing a CCP, which is a 15-year plan for the refuge, is generally the first step a refuge manager takes. Our policy for managing units of the Refuge System is that we will manage all refuges in accordance with an approved CCP, which, when implemented, will achieve refuge purposes; help fulfill the Refuge System mission; maintain and, where appropriate, restore the ecological integrity of each refuge and the Refuge System; help achieve the goals of the National Wilderness Preservation System; and meet other mandates. The CCP will guide management decisions and set forth goals, objectives, and strategies to accomplish these ends. The next step for refuge managers is developing or referencing step-down plans, of which a hunting plan would be one. Part of the process for opening a refuge to hunting after completing the step-down plan would be appropriate compliance with NEPA (42 U.S. Code 4321 et seq.), such as conducting an EA or preparing an EIS accompanied by the appropriate decision documentation (record of decision, finding of no significant impact, or environmental action memorandum or statement). The rest of the elements in the opening package are an evaluation of Section 7 of the Endangered Species Act of 1973, as amended (16 U.S. Code 1531 et seq.), copies of letters requesting state and/or tribal involvement, and draft refuge-specific regulatory language. We make available the CCP, hunting plan, and NEPA documents, and request public comments on them, as well as on any proposed rule, before we allow hunting on a refuge or other Refuge System lands.

In summary, this illustrates that the decision to allow hunting on a refuge is not a quick or simple process. It is full of deliberation and discussion, including review of all available data to determine the relative health of a population before we allow it to be hunted.

The word “refuge” includes the idea of providing a haven of safety for wildlife, and as such, hunting might seem an inconsistent use of the Refuge System. However, again, the NWRSA stipulates that hunting, if found compatible, is a legitimate and priority general public use of a refuge. Furthermore, we manage refuges to support healthy wildlife populations that in many cases produce harvestable surpluses that are a renewable resource. As practiced on refuges, hunting and fishing do not pose a threat to wildlife populations. It is important to note that taking certain individuals through hunting does not necessarily reduce a population overall, as hunting can simply replace other types of mortality. In some cases, however, we use hunting as a management tool with the explicit goal of reducing a population; this is often the case with exotic and/or invasive species that threaten ecosystem stability. Therefore, facilitating hunting opportunities is an important aspect of the Service’s roles and responsibilities as outlined in the legislation establishing the Refuge System, and the Service will continue to facilitate these opportunities where compatible with the purpose of the specific refuge and the mission of the Refuge System.

We did not make any changes to the hunting and fishing plan or EA as a result of these comments.

Comment (2): Several commenters pointed out there are hunting opportunities on other public lands, such as Forest Service, Bureau of Land Management, and State Areas; therefore, the proposed additional hunting opportunities on national wildlife refuges in Kansas is not necessary.

Response: Congress, through the NWRSA, as amended, envisioned that hunting, fishing, wildlife observation and photography, and environmental education and interpretation would all be treated as priority public uses of the Refuge System. Therefore, the Service facilitates all of these uses on refuges, as long as they are found compatible with the purposes of the specific refuge and the mission of the Refuge System.

We did not make any changes to the hunting and fishing plan or EA as a result of these comments.

Comment (3): We received several comments that other forms of recreation are important in addition to hunting, and to expand hunting opportunities above other public uses is unfair to or creates less enjoyable experiences for other refuge users.

Response: Congress, through the NWRSA, as amended, envisioned that hunting, fishing, wildlife observation and photography, and environmental education and interpretation would all be treated as priority public uses of the Refuge System. Therefore, the Service facilitates all of these uses on refuges, as long as they are found compatible with the purposes of the specific refuge and the mission of the Refuge System. There are several other compatible public uses enjoyed by the public on Quivira NWR and providing an expanded hunting opportunity is not expected to substantially affect other public users or create conflicts. The proposed plan balances multiple public use activities on the refuge. Over 60 percent of the refuge area is closed to all hunting activities throughout the year. Additional areas are sometimes closed for the protection of species of conservation concern and/or public safety. Within the area closed to hunting are some of the most frequently visited sites for wildlife observation and photography (e.g., Wildlife Drive, Big Salt Marsh, and Little Salt Marsh). Also, certain seasons are closed to hunting largely in the interest of balancing multiple public use activities.

To promote alignment with the refuge CCP and coordination of opportunities with KDWP, state-issued refuge hunting access permits will be required for coyotes, state-defined furbearers, deer, and turkey on Quivira NWR. This uses state programs and special hunts that require cooperation with the Service and allows increased management flexibility of hunting factors (for example, species, amount of take, number of access permits, method of take, area, and time) as a strategy that promotes accomplishing an appropriate balance of visitor use activities on Quivira NWR.

We did not make any changes to the hunting and fishing plan or EA as a result of these comments.

Comment (4): Several commenters felt that predators (coyotes, bobcats) should not be hunted on refuges due to their biological importance in refuge ecosystems, and that the cumulative impacts of hunting these species was not thoroughly analyzed by the Service. Commenters stated bobcat density estimates vary and are poorly understood, and that bobcats are limited by available prey, competition, predation, and disease susceptibility. For these reasons, the commenters felt that “trophy hunting” of these species is inappropriate. They also felt that hunting of these species is unethical and the common methods of take for these species, including baiting, hounding, and trapping, are unsportsmanlike.

Response: Refuge managers consider predator management decisions on a case-by-case basis. As with all species, a refuge manager makes a decision about managing predator populations, including allowing predatory species to be hunted, only after careful examination to ensure the

action would comply with relevant laws, policies, and directives. The NWRSA, as amended, directs the Service to manage refuges for “biological integrity, diversity, and environmental health” and mandates that “[r]egulations permitting hunting or fishing of fish and resident wildlife within the System shall be, to the extent practicable, consistent with state fish and wildlife laws, regulations, and management plans” (16 U.S. Code 668dd[m]). Therefore, all the opportunities for hunting predators in the regulations are to bring greater consistency with state fish and wildlife laws, regulations, and management plans, and, for refuges, were only made after careful consideration by the refuge manager to ensure that such actions would not threaten the integrity, diversity, and overall health of the ecosystem and were compatible with both the purpose of the refuge and the mission of the Refuge System. Finally, both the NEPA process and the rulemaking process provide the opportunity for public to provide comments and any additional information on the impacts of our actions. We considered the additional information provided from the public on this issue during these public comment periods and determined that they did not affect our initial determinations that these small and minor opportunities for hunting predators on specific refuge or hatcheries had no more than minor impacts on the population health of these species or other wildlife at the local, regional, or national level.

Most of the predator species listed, if they are allowed to be hunted on a refuge, are only allowed to be hunted with restrictions, such as in number, area, time, and methods of take. Trapping is not an option in the proposed hunt and fish plans. Baiting is prohibited on all refuges outside Alaska under 50 CFR 32.2(h), unless specifically authorized under station-specific regulations, and it is uncommon for baiting to be authorized. The use of dogs for hounding is prohibited on refuges by 50 CFR 26.21(b) unless authorized by station-specific regulations, and many refuges only authorize the use of dogs for retrieval of migratory birds, upland game birds, and small game. Most refuges that allow dogs require the dogs to be under the immediate control of the hunter at all times or leashed unless actively retrieving an animal.

To promote alignment with the refuge CCP and coordination of opportunities with KDWP, state-issued refuge hunting access permits would be required for coyotes, state-defined furbearers, deer, and turkey on Quivira NWR. This uses state programs and special hunts that require cooperation with the Service and allow increased management flexibility of hunting factors (for example, species, amount of take, number of access permits, method of take, area, and time) as a strategy that promotes accomplishing an appropriate balance of visitor use activities on Quivira NWR.

We did not make any changes to the hunting and fishing plan or EA as a result of these comments.

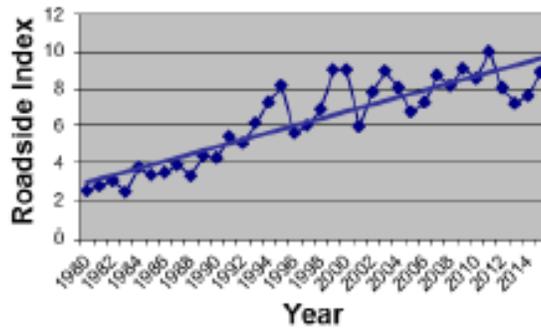
Comment (5): One commenter felt while the EA provides some discussion of population trends for raccoons and coyotes, it provides no estimates of population numbers or trends of other “furbearer” species—or any other analysis of these species’ ability to withstand additional hunting pressure. The Service has a legal duty to ensure that the biological integrity, diversity, and environmental health of the system are maintained for the benefit of present and future generations of Americans (16 U.S. Code Section 668dd[a][1], [4]). The Service cannot act consistent with that duty when authorizing the exploitation of ecologically important predator species like bobcats, especially given the myriad other threats they face and the lack of data on their current populations.

The commenter also felt the analysis in the draft EA of impacts on furbearers is deficient because it provides no analysis of how new hunting “opportunities” on the refuge could impact the other species to be targeted. It also fails to consider an alternative that would not expand hunting to ecologically important predators, such as bobcats, and it provides no cumulative impacts of furbearer hunting on the refuge when combined with hunting elsewhere in the state or country.

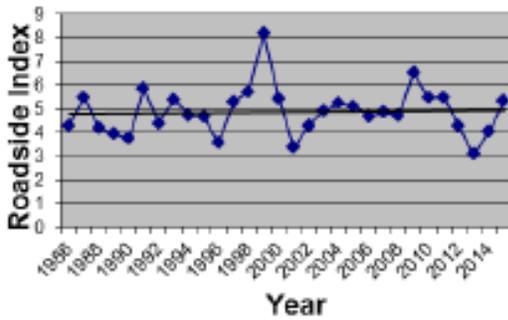
Response: The NWRSAA, as amended, mandates that “[r]egulations permitting hunting or fishing of fish and resident wildlife within the System shall be, to the extent practicable, consistent with state fish and wildlife laws, regulations, and management plans” (16 U.S. Code 668dd[m]). Therefore, all the opportunities for hunting predators in the regulations are to bring greater consistency with state fish and wildlife laws, regulations, and management plans, and, for refuges, were only made after careful consideration by the refuge manager to ensure that such actions would not threaten the integrity, diversity, and overall health of the ecosystem and were compatible with both the purpose of the refuge and the mission of the Refuge System.

Less than 1 percent of Kansas is public lands, therefore limiting the ability to substantially influence impacts of statewide hunting. In the EA for Quivira NWR, population trends were provided on furbearer and other species besides raccoons and coyotes. Some of the trends provided were for the appropriate region of south-central Kansas, which showed stable to increasing trends following severe drought. Statewide trends were provided in the draft EA in Figure 5, which are also stable to increasing. The majority of annual harvest of bobcats in Kansas is a result of trapping, which is not a method of take being proposed on the refuge. In addition, hunting opportunities on the refuge limit the hunted area for all species (less than 40 percent of refuge lands), time (season and hours; no hunting at night), methods of take (no trapping or baiting) and require a state-issued refuge access permit that allows more control in hunting regulations. Collectively, these restrictions limit take and, therefore, impacts associated with other hunted species and/or with population trends at different landscape scales. Furbearer species have access to hunted and non-hunted lands both on and off the refuge (for example, bobcats have average home range size of 2 to 4 square miles for females and about twice that area for males; KDWPT 2020).

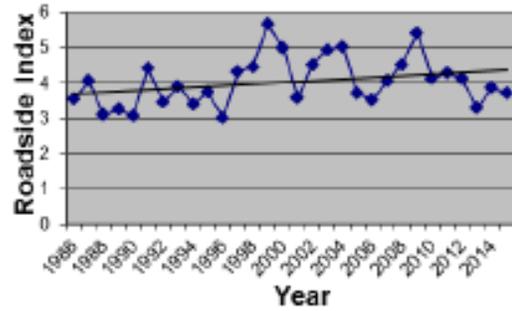
a) Raccoon



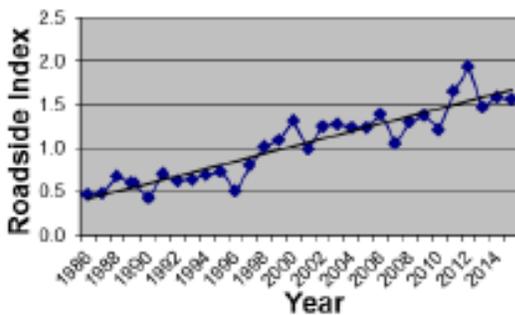
b) Opossum



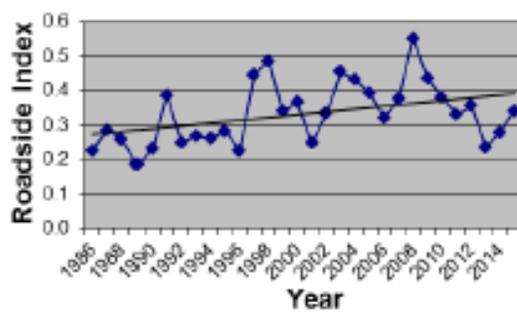
c) Skunk



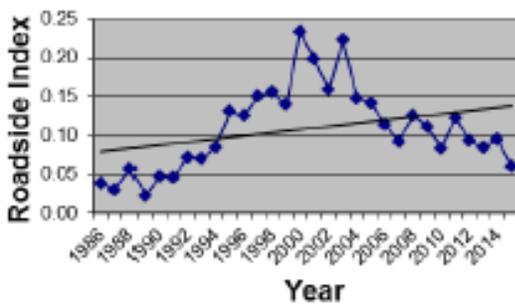
d) Coyote



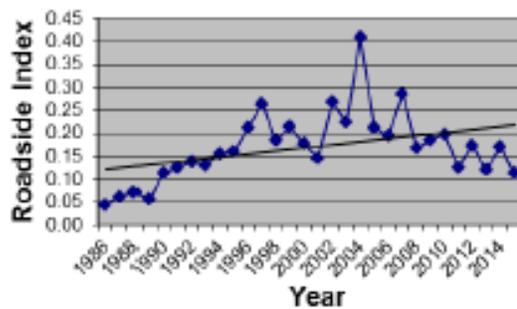
e) Badger



f) Bobcat



g) Red Fox



Figures 1a-g. Population trend of various furbearer species based on annual Roadside Indices.

We did not make any changes to the hunting and fishing plan or EA as a result of these comments.

Comment (6): One commenter was of the opinion that skunks and opossums are not desirable game species and are largely nocturnal, making hunting of these species an unlikely means of control. The commenter also felt muskrat, mink, fox, badger, and bobcats either are not common on the refuge or are nocturnal and not likely to be desirable quarry for hunters, or if hunted for, not found. The commenter stated it appears a change in regulation is not required to control burgeoning populations or to fulfill an urgent popular demand for an open season on these species.

Response: The NWRSA (16 U.S. Code 668dd[a][4]), as amended, stipulates that hunting (along with fishing, wildlife observation and photography, and environmental education and interpretation), if found compatible, is a legitimate and priority general public use of a refuge and should be facilitated. The Service has adopted policies and regulations implementing the requirements of the NWRSA that refuge managers comply with when considering hunting and fishing programs. The need for the proposed action also meets the Service's implementation of S.O. 3347, "Conservation Stewardship and Outdoor Recreation," and S.O. 3356, "Hunting, Fishing, Recreational Shooting, and Wildlife Conservation Opportunities and Coordination with States, Tribes, and Territories," by expanding hunting opportunities and aligning Service regulation with state regulations.

We did not make any changes to the hunting and fishing plan or EA as a result of these comments.

Comment (7): The effect of proposed changes on the endangered whooping crane is of particular concern. The presence of a secure and undisturbed resting and feeding area is a crucial factor in the recovery of this species.

Response: A priority of the Service is the protection of threatened and endangered species and other species of conservation concern. The proposed hunting opportunities intentionally limit hunting area, time, and methods of take largely for the protection of species and the public. In addition to more than 60 percent of refuge lands remaining closed to hunting, the refuge manager has the ability to close areas to all public use for the protection of whooping cranes or other species of concern. Successful implementation of this action for years indicates that it is an effective management option.

We did not make any changes to the hunting and fishing plan or EA as a result of this comment.

Comment (8): One commenter objected on procedural grounds and requested that all comments be posted online.

Response: Comments submitted through the Federal Register regulatory process are available at <http://regulations.gov>. While not required by NEPA, it is our policy to summarize all comments received through the individual refuge NEPA process in the final EA.

We did not make any changes to the hunting and fishing plan or EA as a result of this comment.

Comment (9): One commenter asserted that we should prepare an environmental impact statement (EIS) before proposing to expand hunting and fishing opportunities on the refuge. According to the commenter, the proposed hunting openings and expansions are significant

enough to warrant an EIS, and that the Service did not adequately analyze the cumulative impacts across the country on all huntable populations with the cumulative impacts report.

Response: The Service disagrees with the assertion that we should prepare an EIS before proposing expanded hunting and fishing opportunities on refuges or hatcheries. The Service's NEPA-related analysis of the impacts demonstrated that the proposed actions would not have significant impacts, and the commenter provided no additional information that would change our analysis. As discussed above, we annually conduct management activities on refuges and hatcheries that minimize or offset impacts of hunting and fishing on physical and cultural resources, including establishing designated areas for hunting; restricting levels of use; confining access and travel to designated locations; providing education programs and materials for hunters, anglers, and other users; and conducting law enforcement activities.

We did not make any changes to the hunting and fishing plan or EA as a result of these comments.

Comment (10): We received one comment with concern that the proposed hunting opportunities on the refuge would create an increased need for law enforcement capacity and have a detrimental impact on public safety, wildlife, and other Service resources.

Response: In order to open or expand hunting or sport fishing on a refuge, we must find the activity compatible. To find an activity compatible, the activity must not "materially interfere or detract from" public safety, wildlife resources, or the purposes of the refuge. We have determined that the proposed actions would not have detrimental impacts and found the actions to be compatible.

Service policy (603 FW 2.12[7]) requires station managers to determine that adequate resources (including personnel, which would include law enforcement) exist or can be provided by the Service or a partner to properly develop, operate, and maintain the use in a way that will not materially interfere with or detract from fulfillment of the refuge purpose(s) and the Service mission. If resources are lacking for establishment or continuation of wildlife-dependent recreational uses, the refuge manager will make reasonable efforts to obtain additional resources or outside assistance from states, other public agencies, local communities, and/or private and nonprofit groups before determining that the use is not compatible. When Service law enforcement resources are lacking, we are often able to rely upon state fish and game law-enforcement capacity to assist in enforcement of hunting and fishing regulations. We have considered the factors involved in this opening and find we have adequate law enforcement coverage for this use.

We did not make any change to the hunting and fishing plan or EA based on this comment.

Comment (11): One commenter expressed concern about the use of lead in ammunition or fishing tackle. Quivira NWR was praised for supporting the use of nontoxic ammunition. The commenter stated that science demonstrates harm that lead poisoning causes eagles and other wildlife, and provided a link (<https://diversity.box.com/s/63lkfzz46uprpu67sfk31on118ixnj4f>) to supporting documentation, requesting that these studies be included in the official record for this project. The commenter also felt the draft EA acknowledged potential impacts from lead poisoning but failed to take the "hard look" required under NEPA.

Response: The proposed hunting opportunities on Quivira NWR only allows use of nontoxic ammunition. Adverse environmental impacts of lead were/are acknowledged in the EA. The

Service continues to educate hunters and anglers on the impacts of lead on the environment, and particularly on human health and safety concerns of ingesting animals harvested with lead ammunition. At a national scale, the Service continues to phase-out the use of lead ammunition and tackle on lands in cooperation with our state partners. Fishing on Quivira NWR has been allowed for years, yet there has been very limited interest (irregular use on less than 1 percent of refuge lands). There is no proposed expansion of fishing opportunities on the refuge. We encourage fishers to voluntarily use nontoxic tackle for all harvest activities. Lead alternatives to both ammunition and tackle are becoming more widely available and used by hunters and anglers; however, they remain more expensive.

We added statements about the level of fishing interest on the refuge; the Service supporting the use nontoxic tackle on the refuge; and providing opportunities to educate the public on the effects of lead on natural resources to the hunting and fishing plan and EA as a result of these comments.

Comment (12): One commenter had concerns about deer hunting and public safety, as well as potential conflicts with other hunting (such as doves, ducks, and geese).

Response: The Service considers public safety to be a top priority. Hunting of resident wildlife on refuges generally occurs consistent with state regulations, which are designed to protect public safety. Refuges may also develop refuge-specific hunting regulations that are more restrictive than state regulations in order to help meet specific refuge objectives, including protecting public safety. Refuges use many techniques to ensure the safety of hunters and visitors, such as requiring hunters to wear blaze orange, controlling the density of hunters, limiting where firearms can be discharged (such as not crossing roads, away from buildings), and using time and space zoning to limit conflicts between hunters and other visitors. It is worth noting that injuries and deaths related to hunting are extremely rare, both for hunters themselves and for the non-hunting public.

The proposed deer hunting on Quivira NWR is allowed on less than 40 percent of refuge acres and only for certain seasons and does not allow the use of centerfire rifles. Aspects of deer hunting on the refuge would be further controlled through implementation of state-issued refuge access permits (through special hunts and state-used programs), and public safety would remain a priority consideration in this process.

We did not make any changes to the hunting and fishing plan or EA as a result of these comments.

Comment (13): There were comments expressing general support for the proposed changes in the rule.

Response: In passing the Improvement Act, Congress reaffirmed that the Refuge System was created to conserve fish, wildlife, plants, and their habitats, and would facilitate opportunities for Americans to participate in compatible wildlife-dependent recreation, including hunting and fishing on Refuge System lands. We prioritize wildlife-dependent recreation, including hunting and fishing, when doing so is compatible with the purpose of the refuge and the mission of the Refuge System.

4.12 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**” in Appendix D.
- 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: Craig Mowry, Project Leader, Kansas National Wildlife Refuge Complex

Reviewer Signature: _____ Date: _____

Name/Title: Noreen Walsh, Regional Director, Interior Regions 5 and 7, Lakewood, CO

4.13 References

- Association of Fish and Wildlife Agencies. 2018. Population-level impacts from lead fishing tackle ingestion by fish and wildlife species in North America: a literature review. <www.fishwildlife.org/application/files/9515/3719/5026/AFWA_Lead_Fishing_Tackle_Review_2018_FINAL.pdf>
- Caudill, J.; Carver, E. 2019. Banking on Nature 2017: The Economic Contributions of National Wildlife Refuge Recreational Visitation to Local Communities. U.S. Fish and Wildlife Service, Falls Church, VA.
- Blecha, K.A.; Conard, J.M.; Wisely, S.A. 2011. Deer Density, Movement Patterns, and Group Dynamics on Quivira National Wildlife Refuge: Assessing Potential for Chronic Wasting Disease Transmission. U.S. Fish and Wildlife Service Report.
- Frankson, R.; Kunkel, K.; Stevens, L.; Easterling, D.; Lin, X.; Shulski, M. 2017. Kansas State Climate Summary. NOAA Technical Report NESDIS 149-KS, 4 p.
- Golden, N.H.; Warner, S.E.; Coffey, M.J. 2016. A review and assessment of spent lead ammunition and its exposure and effects to scavenging birds in the United States. In: de Voogt W. (editors), Reviews of Environmental Contamination and Toxicology Volume 237. Reviews of Environmental Contamination and Toxicology (Continuation of Residue Reviews) 237. Springer International Publishing, Cham, Switzerland.
- Hunt, D.C.; Panas, L.J. 2018. A Changing Kansas: Implications for Health and Communities. Kansas Health Institute, KHI/18-13. Kansas Health Foundation, Wichita, KS. 112 p.
- Jorgensen, J.G.; Bomberger Brown, M. 2017. Temporal migration shifts in the Aransas-Wood Buffalo population of whooping cranes (*Grus americana*) across North America. *Waterbirds* 40(3):195–308.
- [KDWPT] Kansas Department of Wildlife, Parks, and Tourism. 2013. Rural mail carrier survey report 2012. Wildlife & Research Surveys. <www.ksoutdoors.com/Services/Research-Publications/Wildlife-Research-Surveys>
- . 2015. 2015 Roadside Summer Survey. Wildlife & Research Surveys. <www.ksoutdoors.com/Services/Research-Publications/Wildlife-Research-Surveys>
- . 2018a. 2018 Bobwhite Whistle Count. Wildlife & Research Surveys. <www.ksoutdoors.com/Services/Research-Publications/Wildlife-Research-Surveys>
- . 2018b. Report of Deer Harvest 2017–2018. Wildlife & Research Surveys. <www.ksoutdoors.com/Services/Research-Publications/Wildlife-Research-Surveys>
- . 2018c. 2017–2018 Furbearer Harvest Survey. Wildlife & Research Surveys. <www.ksoutdoors.com/Services/Research-Publications/Wildlife-Research-Surveys>

——— 2018d. Small game hunter activity survey – 2018. Wildlife & Research Surveys. <www.ksoutdoors.com/Services/Research-Publications/Wildlife-Research-Surveys>

——— 2019a. Pheasant Crowing Survey – 2019. Wildlife & Research Surveys. <www.ksoutdoors.com/Services/Research-Publications/Wildlife-Research-Surveys/Upland-Bird/2019-Pheasant-Crow-Survey>

——— 2019b. Quail, Pheasant, and Turkey Brood Count Survey – 2019. Wildlife & Research Surveys. <www.ksoutdoors.com/Services/Research-Publications/Wildlife-Research-Surveys>

——— 2020. Bobcat. <<https://ksoutdoors.com/Hunting/Furharvesting/Furbearers/Bobcat>> accessed May 21, 2020.

Marantz, S.A.; Long, J.A.; Webb, S.I.; Gee, K.L.; Little, A.R.; Demarais, S. 2016. Impacts of human hunting on spatial behavior of white-tailed deer (*Odocoileus virginianus*). Canadian Journal of Zoology 94:853–861.

[NOAA] National Oceanic and Atmospheric Administration. 2019. NOAA National Centers for Environmental Information state climate summaries; Kansas. <www.statesummaries.ncics.org/chapter/ks/> accessed November 3, 2019.

Pearse, A.T.; Brandt, D.A.; Harrell, W.C.; Metzger, K.L.; Baasch, D.M.; Hefley, T.J. 2015. Whooping Crane Stopover Site Use Intensity within the Great Plains. U.S. Geological Survey Open-File Report 2015–2016, 12 p. <www.dx.doi.org/10.3133/ofr20151166>

[USDOI] U.S. Department of the Interior, U.S. Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau. 2018. 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation. (Revised 2018).

[USFWS] U.S. Fish and Wildlife Service. 2013. Comprehensive Conservation Plan – Quivira National Wildlife Refuge, Kansas. Lakewood, CO: U.S. Department of Interior, Fish and Wildlife Service. 221 p.

Verbeek, N. A.; Caffrey, C. 2002. American crow (*Corvus brachyrhynchos*), version 2.0. In: Poole, A.F.; Gill, F.B., editors. The Birds of North America; Cornell Lab of Ornithology. Ithaca, NY. <www.doi.org/10.2173/bna.647>

**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 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, 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, 115, 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; U.S. = United States

APPENDIX B COMPATIBILITY DETERMINATION

Final Compatibility Determination for Hunting and Fishing on Quivira National Wildlife Refuge

Use: Hunting and fishing

Refuge Name: Quivira National Wildlife Refuge

Establishing and Acquisition Authorities:

- Migratory Bird Conservation Act (16 United States [U.S.] Code Section 715d), Fish and Wildlife Act of 1956 (16 U.S. Code Section 742f[a][4]), and Fish and Wildlife Act of 1956 (16 U.S. Code Section 742f[b][1])

Refuge Purpose(s):

For use as an inviolate sanctuary, or for any other management purpose, for migratory birds; for the development, advancement, management, conservation, and protection of fish and wildlife resources; and for the benefit of the U.S. Fish and Wildlife Service (Service), in performing its activities and services.

National Wildlife Refuge System Mission:

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

The National Wildlife Refuge System Administration Act of 1966 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, and 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; and
- monitor the status and trends of fish, wildlife, and plants in each refuge.

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

Description of Use:

What is the use?

The use covers hunting opportunities besides the existing approved hunting and fishing uses. Other species to be hunted include deer, turkey, coyote, crow, and state-defined hunted furbearers (raccoon, opossum, striped skunk, bobcat, fox, mink, badger, muskrat, and weasel). Deer and turkey hunting were approved uses as part of the Quivira National Wildlife Refuge (NWR) Comprehensive Conservation Plan (CCP) (USFWS 2013), but a step-down hunting and fishing plan has not since been proposed or approved. New methods of take allowed will include muzzleloader rifle and musket.

Where is the use conducted?

The added hunting uses will occur within the existing hunt unit boundaries (greater than 8,000 acres) on the refuge, as shown by the refuge hunt area map provided in the hunting plan, brochures, and other forms of communication.

When is the use conducted?

All new hunting opportunities will occur within the existing hunt season on the refuge, from September through February (all hunting closed March through August). Hunting will not be allowed at night. Refuge and shooting hours will remain the same as the current regulations. While specifics are described in the proposed hunting and fishing plan, closures will occur for the protection of species and the public. For example, closures could be started for the protection of whooping crane during migration. Deer hunting will occur in September and January, but not from October through December to accommodate a balance of consumptive and non-consumptive uses and wildlife-habitat conservation on the refuge. For example, public concerns exist about deer hunting effects on existing deer observation and photography opportunities, as well as bird and birding activities.

How is the use conducted?

The use is conducted according to state, federal, and refuge-specific regulations. Kansas Department of Wildlife, Parks, and Tourism publishes hunting regulations annually at <https://ksoutdoors.com/Hunting>. Regulations pertaining to hunting on all national wildlife refuges are available in 50 Code of Federal Regulations (CFR) 32.2, and can be found at <https://ecfr.io/>. Refuge-specific regulations are available on the refuge's website at www.fws.gov/refuge/quivira/, as well as in brochures provided at refuge headquarters and kiosks.

The Service limits hunt area, season, hours, and other aspects of operations and procedures to make sure of compatibility of multiple wildlife-dependent uses and with conservation priorities as described in the refuge CCP (USFWS 2013).

Why is the use being proposed?

The use is conducted according to state, federal, and refuge-specific regulations. The Kansas Department of Wildlife, Parks, and Tourism publishes hunting regulations annually at www.ksoutdoors.com/Hunting. Regulations pertaining to hunting on all national wildlife refuges are available in the 50 CFR 32.2, which can be found at www.ecfr.io/. Refuge-specific regulations are available on the refuge's website, at www.fws.gov/refuge/quivira/, as well as in brochures provided at refuge headquarters and kiosks.

The Service limits hunt area, season, hours, and other aspects of operations and procedures to make sure of compatibility of multiple wildlife-dependent uses and with conservation priorities as described in the refuge CCP (USFWS 2013).

Availability of Resources:

While added hunting opportunities will require more time and monetary resources, carrying out the hunting and fishing plan can occur under current administrative conditions. Existing programs, such as signs, brochures, and other communications, can be updated with available resources. Maintenance of infrastructure is closely tied to the Service Asset Maintenance Management System. The refuge's base budget will cover the cost of updates. Current law enforcement is enough for safety and management related to expanded hunting uses. Monitoring will heavily rely on state surveys and research information, such as that found at www.ksoutdoors.com/Services/Research-Publications/Wildlife-Research-Surveys. However, some refuge-specific activities will occur, such as whooping crane sight reporting.

Anticipated Impacts of the Use:

For a more in-depth evaluation of effects, refer to the Environmental Assessment associated with the refuge hunting and fishing plan.

The action meets the purpose and needs of the Service as described above, but with expanded wildlife-dependent recreation opportunities. There will be increased number of species allowed to be hunted, as well as associated seasons and methods of take to satisfy different hunting user groups. The refuge will allow opportunities to hunt deer, turkey, coyote, state-defined hunted furbearers, and crow with no appreciably adverse effects in context of regional or statewide populations. New hunting experiences will include use of a muzzleloader rifle and musket, where regulations allow; opportunities for muzzleloader and archery only seasons; and a youth and disabled season for deer. The challenge of balancing multiple consumptive and non-consumptive uses, all while supporting the conservation of natural resources, will persist. Hunting, fishing, and other public use activities have short-term disturbance effects. Refuge public use mitigation measures, such as area and temporal closures and the use of state-issued refuge access permits, and periodic assessments will allow adjustments in activities. In the years since CCP approval (2013), current conditions have offered hunting and fishing opportunities as whooping cranes continue to safely increase use of the refuge. This trend is expected to continue.

There are no foreseen long-term effects on sensitive non-target species, but periodic assessments may lead to necessary changes in public use activities.

Hunt and fish seasons and limits are established within frameworks set by Service for migratory birds and states for Kansas game species. Restrictions are adjusted with consideration of species population trends, supporting long-term conservation of natural resources.

Activities as part of the refuge hunting and fishing plan may negligibly affect other hunting and recreational uses and refuge administration. Adherence and enforcement of state, federal, and refuge-specific regulations are intended to facilitate public safety, multiple-use interests, and wildlife-habitat conservation. With respect to indirect or cumulative effects, there are no anticipated adverse effects to area land use, Indian Trust Resources, cultural resources, environmental justice, listed threatened and endangered species, or other biological community resources.

Public Review and Comment:

The draft compatibility determination was available for public review and comment along with the associated draft hunting and fishing plan and environmental assessment. Detailed summaries of comments received and responses to comments are included in the environmental assessment.

Determination:

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

Stipulations Necessary to Ensure Compatibility:

To ensure compatibility with the Refuge System and refuge goals and objectives, hunting and fishing can only occur under the following conditions:

- Carrying out uses as described in the Quivira NWR Hunting and Fishing Plan, in accordance with applicable state, federal, and refuge-specific regulations.

Justification:

In view of the above and with the stipulations described before, hunting will not materially interfere with or detract from the Refuge System mission or purposes of the refuge. Hunting is a priority public use of the Refuge System and providing a hunting program contributes to achieving one of the refuge goals. Disturbance of wildlife will occur, but the effects are expected to be temporary and minimal. Hunting is not expected to adversely affect the biological integrity, diversity, and environmental health of the refuge or the Refuge System.

The Service and the State of Kansas consider hunting an acceptable and desirable form of public use and wildlife-dependent recreation. Hunting is considered an educational and recreational opportunity that increases the public’s awareness of wise stewardship and management of wildlife resources in the public’s trust. Recreational public hunting is a historic wildlife-dependent use of the Refuge System and is one of the six priority public uses established by Executive Order 12996 (March 25, 1996) and legislatively authorized by the Improvement Act (Public Law 105-57).

Current staff and monetary levels are adequate to administer the hunting program. Kansas state law further controls hunter activities. Hunting is a legitimate wildlife management tool that can be used to control wildlife populations. Hunting harvests a small percentage of the renewable resources, which is in accordance with wildlife-management objectives and principles. Hunting is identified as a priority public use in the Improvement Act and will help meet Refuge System goals with only minimal conflicts. Wildlife-based recreation can instill a greater appreciation of natural resources. The refuge will continue to provide sanctuary habitat for birds and other wildlife throughout the year.

Signatures:

Craig Mowry, Project Leader

Date

Review:

Barbara Boyle, Refuge Supervisor

Date

Approval:

Maureen Gallagher, ARD, NWRS

Date

Mandatory 10- or 15-Year Re-Evaluation Date: 2035

Section 7 Biological Evaluation Form

Originating Person: Mike Oldham Date Submitted: 6-1-2020
 Telephone Number: 620-410-4011

I. **Service Program and Geographic Area or Station Name:** Quivira National Wildlife Refuge

II. **Flexible Funding Program** (e.g. Joint Venture, etc) if applicable: NA

III. **Location:** Location of the project including County, State and TSR (township, section & range):
 Stafford, Reno, and Rice Counties, Kansas. Area includes at least parts of 36 s

IV **Species/Critical Habitat:** List federally endangered, threatened, proposed, and candidate species or designated or proposed critical habitat that may occur within the action area. To obtain species lists:
<http://ecos.fws.gov/ipac/>

Endangered: Least Tern, Whooping Crane,
 Threatened: Northern Long-eared Bat, Piping Plover, Red Knot
 Critical Habitat: Whooping Crane
 Candidate Species: Black Rail

Project Description: Describe proposed project or action or, if referencing other documents, prepare an executive summary (attach additional pages as needed):

The project is development of an approved step-down Hunting and Fishing Plan for Quivira NWR, Kansas. Most of the general actions were approved as part of development of a Comprehensive Conservation Plan (2013). A Section 7 consultation is needed because this step-down plan contains more detail on hunting activities, has required minor adjustments partly due to recent Secretarial Orders (3347 and 3356), and there have since been a few changes in the status of species (e.g., Northern long-eared bat, red knot, and black rail). The general action is outlined below, as far as new and expanded hunting opportunities. The (Draft) Environmental Assessment may be referred to for more detail.

VI. **Determination of Effects:**

(A) **Description of Effects:** Describe the action(s) that may affect the species and critical habitats listed in item IV. Your rationale for the Section 7 determinations made below (B) should be fully described here.

The Service reduces biological conflicts with regulations and management. There are no changes in the areas closed and open to hunting; more than 60% of the refuge is closed to hunting to provide sanctuary. Hunting only occurs during open hours (not at night). Temporary closures and limitations in seasons and methods of take decrease hunting pressure and increase protections during specific wildlife events, including closures during the main bird breeding season or for the protection of whooping cranes during migration. Closures for whooping crane protection have been used for many years with success. Note additional details, especially pages 16-19 and 30, in the EA (provided as a separate attachment).

(B) Determination: Determine the anticipated effects of the proposed project on species and critical habitats listed in item IV. Check all applicable boxes and list the species (or attach a list) associated with each determination.

Determination

No Effect: This determination is appropriate when the proposed project will not directly or indirectly affect (neither negatively nor beneficially) individuals of listed/proposed/candidate species or designated/proposed critical habitat of such species. **No concurrence from ESFO required.**

May Affect but Not Likely to Adversely Affect: This determination is appropriate when the proposed project is likely to cause insignificant, discountable, or wholly beneficial effects to individuals of listed species and/or designated critical habitat. **Concurrence from ESFO required.**

X

May Affect and Likely to Adversely Affect: This determination is appropriate when the proposed project is likely to adversely impact individuals of listed species and/or designated critical habitat. **Formal consultation with ESFO required.**

May Affect and Likely to Adversely Affect but the proposed action is for the purpose of endangered or threatened species recovery and falls under Region 6's Programmatic Consultation on Service-initiated Recovery Actions: This determination is appropriate when adverse effects are likely but the project is designed to assist with recovery of listed species and/or designated critical habitat. **Concurrence from the ESFO that the project is covered by the programmatic consultation is required.**

May affect but Not Likely to Jeopardize candidate or proposed species/critical habitat: This determination is appropriate when the proposed project may affect, but is not expected to jeopardize the continued existence of a species proposed for listing or a candidate species, or adversely modify an area proposed for designation as critical habitat. **Concurrence from ESFO optional.**

Likely to Jeopardize candidate or proposed species/critical habitat: This determination is appropriate when the proposed project is reasonably expected to jeopardize the continued existence of a species proposed for listing or a candidate species, or adversely modify an area proposed for designation as critical habitat. **Conferencing with ESFO required.**

Signature WALTER OLDHAM
[Supervisor at originating station]

Digitally signed by WALTER OLDHAM
Date: 2020.06.01 16:02:45 -05'00'

Date 6-1-2020

Reviewing Ecological Services Office Evaluation (check all that apply):

A. **Concurrence** X **Nonconcurrence** _____
Explanation for nonconcurrence:

B. **Formal consultation required** _____
List species or critical habitat unit

C. **Effects are addressed in the Programmatic Consultation on R6's Recovery Program – no further consultation needed** _____

D. **Conference required** _____
List species or critical habitat unit

Name of Reviewing ES Office **Kansas ES Field Office**

Signature

 JASON LUGINBILL
Digitally signed by JASON LUGINBILL
Date: 2020.06.03 12:04:25 -05'00'

Date
 June 3, 2020

APPENDIX D FINDING OF NO SIGNIFICANT IMPACT

FINDING OF NO SIGNIFICANT IMPACT AND DECISION TO IMPLEMENT THE HUNTING AND FISHING PLAN

QUIVIRA NATIONAL WILDLIFE REFUGE

Stafford, Kansas

The United States (U.S.) Fish and Wildlife Service (Service) is implementing the Quivira National Wildlife Refuge (NWR) Hunting and Fishing Plan in Kansas. The refuge will open or expand hunting opportunities for deer, turkey, furbearer, coyote, and crow on the Quivira NWR in accordance with the refuge's 2020 hunting and fishing plan.

Selected Action

Alternative A – Proposed Action Alternative: The hunting and fishing plan proposes hunting opportunities for new species and methods of use and seasons on the refuge.

Open Hunting Opportunities for New Species

White-tailed deer, mule deer, turkey, coyote, furbearers (state-defined hunted species: badger, bobcat, fox, mink, muskrat, opossum, raccoon, striped skunk, and weasel), and crow.

- No new hunting acres are being proposed.
- Regulations for proposed opportunities would vary by unit (open and closed areas).
- Revisions to season dates, such as new seasons associated with new species, or more dates from September through February.
- Revisions to methods of take, such as muzzleloader rifle and musket for deer, coyote, and furbearers.
- Revisions to bag limit, such as the Service deciding the number of permits for deer and turkey.
- Changes to the administration, such as the Service controlling hunts but coordinating with state programs.
- Proposed opportunities for targeted demographics, such as a youth and disabled season for deer.

Expanded Hunting Opportunities

Muzzleloader season (for deer); archery-only season (for deer); new youth/disabled season for deer; muzzleloader rifle/musket method of take (for deer, coyote, and furbearers).

- No new hunting acres are being proposed.
- Regulations for proposed opportunities would vary by unit (open and closed areas).
- No revision to season dates; that is, the refuge would still be open to hunting September through February and closed March through August.
- Revision to methods of take, such as muzzleloader rifle and musket.
- No revision to bag limit (except associated with new hunts/new species).
- No changes to the administration of the hunt (besides new hunts mentioned above).
- No changes to opportunities for targeted demographics outside of deer, mentioned above (already allow youth/disabled seasons for other species).

For clarification, the use of the term “special hunt” in context of hunting on the refuge is in accordance with how the state recognizes special hunts. The Service traditionally considers a hunt to be a special hunt if it occurs outside of a regular season, while the state recognizes special hunts that occur within regular state seasons that may differ in the time, such as days or months regularly allowed. A special hunt or draw and other state-used programs with use of a state-issued refuge access permit allows the Service to limit or control the number of hunters, amount of take by species, hunt area, time, and method of take, but it is typically administered through the state.

No Changes Are Being Proposed to the Following:

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 through February, as described in the hunting and fishing plan and newly published Code of Federal Regulations associated with the hunting and fishing plan.

Hunting Hours

- The refuge is open to the public 1½ hours before sunrise to 1½ hours after sunset. Hunting hours follow state regulations, but only within the refuge open hours. No night hunting or waiting is permitted, nor set-up during refuge closed hours, which would otherwise be considered camping.

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 prohibited.
- Fires of any type are prohibited within the refuge.
- The use of boats, canoes, and any other watercraft is 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 decided 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 and fishing regulations based on population trends.

Species to Be Taken – Migratory Game Birds (State-Defined)

The Service would propose no difference between the alternatives for migratory game bird species, besides crow, that may be hunted on the refuge as described in the hunting and fishing plan: duck, coot, goose, and mourning dove in refuge hunt unit during state seasons from September through February (all hunting is prohibited on the refuge in March through August). The Service would not propose the Light Goose Spring Conservation Order season on the refuge under either alternative. Hunting of rail, common snipe, woodcock, and sandhill cranes would not be permitted under either alternative. Methods of take are bow and arrow or shotgun no larger than 10-gauge. Shotguns must be incapable of holding more than three shells.

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

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

Species to Be Taken – Small Game (Squirrel, Rabbit [Cottontail, Jackrabbit])

- The refuge would permit hunting of squirrel and rabbit [cottontail, jackrabbit], which is not a change from current conditions.
- Methods of take permitted are shotgun and muzzleloading shotgun no larger than 10-gauge with nontoxic ammunition (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 the Kansas NWR Complex.
- Continue current seasons for the refuge (state seasons that fall within September through February and exclude March through August).

Changes Are Being Proposed to the Following:

Methods of Take

A new method of take is proposed for hunting activities, the use of muzzleloader rifle and musket, such as for deer, coyote, and furbearer. No changes are proposed for the following

prohibited methods of take: centerfire rifle, rimfire rifle, pistol and handgun, trapping, running coyote or furbearers, and hunting from vehicles. The refuge permits nontoxic ammunition (shot and bullets) 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.

Species to Be Taken – Deer (State-Defined: White-Tailed Deer and Mule Deer)

- Deer would be permitted to be hunted, which is a change from current conditions.
- As authorized in a state-issued refuge access permit, a Deer Youth/Disabled Hunt Season would occur during the second weekend or week in September (now, September 7 through 15). Allowable methods of take would include archery, muzzleloader rifle and musket, and shotgun, according to state regulations with use of nontoxic ammunition (shot and bullets).
- Special hunts, as defined by the state, or use of state-used programs that require a state-issued refuge access permit, would be used for Deer Muzzleloader Hunt and Archery-Only Season. These are opportunities to occur in September, following the youth and disabled season. The Service would decide the number of hunters or access permits, days open to hunting, and weapon choice. The Service administers with consideration of state programs and seasons.
- As authorized in a state-issued refuge access permit, a Deer Extended Firearm Whitetail Antlerless-only season would occur in January with muzzleloader rifle and musket (as described above) and shotgun method of take.
- As authorized in a state-issued refuge access permit, a Deer Extended Archery Whitetail Antlerless-only season would occur in January in concurrence with state regulations.
- For all deer hunting opportunities, the Service is authorized to have control and flexibility in hunting regulations, such as limiting the number of hunters and access permits, the days of hunting, and the methods of take with the use of a state-issued refuge access permit. Administration would be coordinated with the state.

Species to Be Taken – Turkey

- Turkey would be allowed to be hunted, a change from current conditions.
- For all turkey hunting opportunities, the Service is authorized to have control and flexibility in hunting regulations, such as limiting the number of hunters and access permits, the days of hunting, and the methods of take with a state-issued refuge access permit. Administration would be coordinated with the state.
- A state-issued refuge access permit required as part of a special hunt or other state-used program would provide opportunities during the fall season. Now, the second split is December 16 through January 31. The refuge is closed to all hunting during the spring season (April).
- As authorized in a state-issued refuge access permit, methods of take include archery and shotgun (nontoxic shot only), in concurrence with state regulations.
- Use of dogs for turkey hunting is prohibited.

Species to Be Taken – Coyote

- Coyote would be permitted to be hunted, a change from current conditions.
- The Service would limit hunting opportunities to state-used programs and special hunts that require a state-issued refuge access permit to maintain authority (flexibility) of hunting regulations, such as coyote take, number of access permits, the days of hunting, and methods of take.
- Under a state-issued refuge access permit, hunting would be permitted at a determined time in the September through February period when refuge hunt areas are open.
- As authorized in a state-issued refuge access permit, allowable methods of take would be shotgun, muzzleloader rifle and musket with the use of nontoxic ammunition; or archery.
- No use of vehicles, radios, dogs, or bait.

Species to Be Taken – Furbearers (State-Defined Hunted Species: Badger, Bobcat, Red Fox, Gray Fox, Swift Fox, Mink, Muskrat, Opossum, Raccoon, Striped Skunk, and Weasel)

- New state-defined furbearer species permitted to be hunted on the refuge include badger, bobcat, fox, mink, muskrat, opossum, raccoon, striped skunk, and weasel.
- The Service would limit hunting opportunities to state-used programs and special hunts that require a state-issued refuge access permit to maintain authority (flexibility) of hunting regulations, such as furbearer take, number of access permits, the days of hunting, and methods of take.
- As authorized in a state-issued refuge access permit, allowable seasons occur within the state-defined season, which is now November 13 through February 15 and excluding March through August.
- As authorized in a state-issued refuge access permit, the use of calls may be permitted.
- No hunting at night. The refuge is open 1½ hours before sunrise to 1½ hours after sunset.
- As authorized in a state-issued refuge access permit, methods of take include archery, muzzleloader rifle and musket, and shotgun with the use of nontoxic ammunition.
- No use of dogs.

Species to Be Taken – Migratory Game Birds (State-Defined)

- Crow is a new species of migratory game bird that may be hunted.
- Limited season would align with state season, starting in mid-November but extending only through February. The refuge is closed to all hunting March through August.
- Method of take allowed on the refuge covers bow and arrow and shotgun no larger than 10-gauge and incapable of holding more than three shells (nontoxic ammunition only).

Of note, as a result of public comment, state input, and guidance through the comprehensive conservation plan (CCP) development, the factors in the bulleted list below were considered in development of the Proposed Action Alternative.

- Management of the refuge would support conservation of focal species, which were described in the CCP (pages 72–79) as native communities.
- Hunting of certain bird species that are rarely observed, species of conservation concern, or species closely associated with those of conservation concern would not be hunted species on the refuge, such as rail, woodcock, snipe, sandhill crane, and prairie chicken species.
- Hunting activities would be closed to protect federally endangered whooping crane as decided by the Service. However, the Service would consider some exceptions related to special, controlled, permitted hunts, such as the limited use of archery for deer in specially designated upland areas.
- Furbearer hunting would only be allowed under a special use permit within the same area permitted for deer hunting.
- The Service would consider archery-only deer hunting for youth and wounded warriors within a proposed deer and turkey hunt area.
- Consideration would be given to balancing deer hunting opportunities and traditional quality observation and photography experiences.

Under the proposed alternative, the Service would largely support the actions above, but with minor changes to support a national effort to expand hunting and fishing opportunities on public lands (Secretarial Orders 3347 and 3356, which satisfies new efforts to improve alignment with state hunting regulations while preserving non-consumptive uses. For example, deer, turkey, coyote, and furbearer hunting opportunities are expanded, but limited in number, area, season, and method of take. The Service maintains the option to control aspects of hunting deer, turkey, coyote, and furbearers through state-issued refuge access permits. While a special use permit would not be required for furbearer hunting, a state-issued refuge access permit would have the same resulting effect in terms of the Service’s ability to determine hunting regulations. Trapping is not considered in the proposed hunt plan, which would have required a special use permit mentioned in the CCP. Further, refuge closures are permitted for the protection of species, habitat and the public as decided by the Service. The area proposed for deer, turkey, coyote, and furbearer hunting is the same as the current hunt area, which is nearly within the area approved in the CCP. A slight boundary adjustment made largely to facilitate administration of multiple public uses and to promote public safety.

This alternative was selected over the other alternatives because this alternative offers the best opportunities for public hunting while meeting the Service’s mandates under the National Wildlife Refuge System Improvement Act of 1997 and Secretarial Order 3356. The proposed alternative would result in an estimated increase of 425 hunter use days and minor increased economic inputs to local communities as well as minimize potential direct and indirect impacts on biological resources. This alternative balances the needs of the multiple user groups on the refuge and uses existing roads and infrastructure to the extent possible, thereby minimizing impacts on physical resources.

The Service has determined that the hunting and fishing plan is compatible with the purposes of the Quivira NWR and the mission of the National Wildlife Refuge System (Refuge System).

Other Alternatives Considered and Analyzed

Alternative B – No Action Alternative: Hunting and fishing opportunities already exist on Quivira NWR (USFWS 2013). Hunting is permitted on more than 8,000 acres of refuge lands, and all waters are open to sport fishing in accordance with state fishing regulations and with some exceptions.

Hunting of waterfowl (ducks, coot, and geese), pheasant, quail, mourning dove, squirrel, and rabbit is (and would continue to be) permitted during regular state seasons that occur within the period of September 1 through February, in accordance with applicable federal and state regulations. Light Goose Spring Conservation Order season is excluded under both alternatives. Use of rifles, pistols, and falconry is prohibited under both alternatives. Current conditions do not allow opportunities to hunt coyote and crow. Deer and turkey hunting and limited furbearer hunting (with a special use permit) are approved uses of the refuge as described in the CCP, but a step-down management plan with additional detail, such as the proposed action, is needed to carry out those actions. Therefore, current conditions do not allow opportunities to hunt deer, turkey, coyote, state-defined furbearers, or crow. Under this alternative, hunting experiences would be limited with prohibited use of a muzzleloader rifle and musket, and there would be no muzzleloader, archery-only, or youth and disabled opportunities for deer.

Besides hunting and fishing, 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 through February.

Refuge management activities, such as using prescribed fire, 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 (2013).

This alternative was not selected, because even though it would have the least direct impacts on physical and biological resources, it does not meet the main purpose of the proposed action, which is to expand hunting opportunities on the refuge.

Summary of Effects of the Selected Action

An environmental assessment (EA) was prepared in compliance with the National Environmental Policy Act (NEPA) to provide a decision-making framework that (1) explored a reasonable range of alternatives to meet project objectives; (2) evaluated potential issues and impacts to the refuge, resources and values; and (3) identified mitigation measures to lessen the degree or extent of these impacts. The EA evaluated the effects associated with two alternatives, and it is incorporated as part of this finding.

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

- The selected alternative would result in minor, short-term, direct and indirect impacts on resident species and habitat. The Service believes that take of hunted species on Quivira NWR would not have a significant impact on regional or statewide wildlife and fish populations as the number harvested would be a small fraction of regional and statewide populations. In addition, overall populations would continue to be monitored by the

Kansas Department of Wildlife, Parks, and Tourism (KDWPT), and future harvests would be adjusted as needed under existing state regulatory processes.

- Non-hunted wildlife species occurring on the refuge may be affected by disturbances due to hunting activities. Short-term disturbances may take place at the time of the action when hunting occurs on the refuge. In a single season, non-hunted wildlife may be disturbed multiple times; however, there are enough available habitat resources for them to relocate, both on refuge and on adjacent lands, so there would be minimal negative impacts. Long-term impacts of short-term disturbance are not likely to occur, and cumulative impacts would be negligible on non-hunted wildlife.
- The refuge will continue to support substantial populations of non-hunted wildlife under all alternatives. Therefore, at the local level, hunting on the refuge adds minimally to cumulative impacts on non-hunted wildlife, and negligibly relative to statewide and regional populations.
- Administration costs would require additional resources for public communications, coordination with the state, law enforcement, and monitoring. Monitoring would involve assessment of more species, but much of the information would be used from state surveys and volunteer efforts, such as deer surveys.
- Local economies will receive minor benefits from hunters and anglers purchasing items related to hunting and fishing.
- 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; therefore, minority and low income populations will not be adversely affected.
- The KDWPT is responsible for monitoring populations of resident game and fish and implementing any adjustments to future harvests as needed under the existing state regulations to ensure sustainable populations (<https://ksoutdoors.com/>). Their action will prevent potential cumulative impacts from occurring due to hunting take, development and population increase.
- The use of lead ammunition on the refuge is prohibited. The use of lead fishing tackle will be negligible and should not result in any cumulative impacts relative to lead poisoning of wildlife.
- Climate change may result in both positive and negative cumulative effects on resident game species. The Service will work with KDWPT to adjust the hunting program on the refuge to ensure that it does not contribute further to the cumulative impacts of climate change on resident game species and fish.
- The proposed action may lead to some adverse impacts on non-consumptive user groups on the refuge during hunting season. The increased hunting opportunities will create additional noise and visual impacts to those users visiting the refuge when hunters are present. However, these impacts on non-consumptive users will be balanced out by setting aside other areas for non-consumptive public use and through management of hunting activities that require a state-issued refuge access permit (for example: timing and conditions of deer, turkey, and furbearer hunting activities).

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

- 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 decrease hunting pressure and increase protections during specific wildlife events, including closures during the main bird breeding season or for the protection of whooping cranes during migration. Many of the proposed hunting opportunities occur in late fall and winter in upland habitat when upland-associated wildlife abundance and diversity is low relative to breeding and peak migration seasons and is limited to the refuge hunt unit during open hours (not at night).
- Hunting may be permanently or periodically closed to species or to areas of the refuge if the Service decides 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.
- The refuge law enforcement officers and KDWPT wardens will monitor the hunts and conduct license, bag limit, and compliance checks.
- Notification of hunting activities on the refuge will be available in key areas and at the refuge headquarters to inform visitors that may want to participate in other activities such as fishing, wildlife observation, or wildlife photography that hunting is occurring within designated areas on the refuge.

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

- The proposed action continues to consider game on the refuge as part of larger state-managed units and populations, except with additional federal regulations (more restrictive). Based on recent years state harvest reports and the current level of interest, it is estimated that harvest of deer, turkey, coyote, small game, furbearers, and crow on the refuge would likely be less than 10 percent of the state-defined regional hunt unit harvest and less than 1 percent of the statewide harvest. Thus, the potential take would be negligible. The Service works closely with the state to ensure that additional species harvested on a refuge are within the limits set by the state to ensure healthy populations of the species for present and future generations of Americans.
- The adverse direct and indirect effects of the proposed action on air, water, soil, habitat, wildlife, and aesthetic/visual resources, are expected to be minor and short term.
- Managed and limited harvest of deer, turkey, furbearers, coyote, and crow has been shown to be consistent with long-term population maintenance and enhancement, and the action is not irreversible.

- The Refuge System uses an adaptive management approach to all wildlife management on refuges, monitoring and re-evaluating the hunting opportunities on the refuge on an annual basis to ensure that the hunting program continues to contribute to the biodiversity and ecosystem health of the refuge and these opportunities do not contribute to any cumulative impacts on habitat for wildlife from climate change; population growth and development; or local, state, or regional wildlife management.
- The monitoring and mitigation measures related to this action will ensure that the Service can act swiftly under any worst-case scenario to ensure this action does not contribute to any significant adverse impacts on furbearers, coyote, crow, or other habitat and wildlife on the refuge.
- The action would result in beneficial effects on the human environment, including increased wildlife-dependent recreational opportunities and socioeconomics of the local economy, with only minimal adverse impacts on the human environment, as discussed in the EA.
- The action, along with mitigation measures, will ensure that there is low risk to the health and safety of refuge staff, visitors, and the hunters/fishers themselves.
- The effects of the proposed activities on the quality of the human environment are not highly controversial. The Service acknowledges some opposition to aspects of the proposed activities but concludes that this opposition does not rise to the level of significant scientific controversy regarding the impacts of the proposed action.
- The Service notes that those voicing opposition to the Service's proposed alternative do not provide data or evidence to refute the numeric estimates of loss and the related potential for distributional impacts, which the Service has concluded are not of a magnitude to threaten the wildlife or habitat of the refuge.
- The possible effects of the activities on the quality of the human environment are relatively certain and do not involve unique or unknown risks. Hunting is already occurring on the refuge and wildlife and habitat on the refuge continue to thrive despite the loss of habitat outside the refuge boundaries.
- The activities do not establish a precedent for actions or represent a decision in principle about a future consideration, because regulations regarding sport hunting seasons are determined annually and are reviewed, based on new biological information, prior to finalizing the annual decision on hunting on the refuge.
- There are no significant cumulative effects identified by the EA. Additional hunting would only slightly add to the cumulative impacts on deer, turkey, furbearers, coyote, and crow populations stemming from hunting at the local and regional levels, and would result in minor impacts on furbearers, coyote, and crow on the refuge.
- There are no irreversible or irretrievable resource commitments identified by the EA, except for a minor consumption of fossil fuels for routine operations.
- The activities would not threaten a violation of federal, state, or local law or requirements imposed for the protection of the environment.

- The activities would not have an adverse effect on historical or cultural resources due to the temporary and superficial use of refuge habitats during hunting activities.
- The action would not have significant adverse impacts on any threatened or endangered species or any federally designated critical habitat.
- The action would not affect any wilderness areas.
- The action is not expected to have any significant adverse effects on wetlands and floodplains, pursuant to Executive Orders 11990 and 11988.

Public Review

The proposal has been coordinated with all interested and/or affected parties. Parties contacted include:

- KDWPT; Pratt, Kansas
- Kansas State Historic Preservation Office; Topeka, Kansas
- Potentially affected tribes

Refuge staff met with KDWPT on October 30, 2019, to discuss the current hunting program and recommendations for the future. During that meeting, the state shared organization and public interests and responded to proposed hunting opportunities at the meeting and in follow-up verbal and written communications. These discussions helped adjust our plan to align, where possible, with state management goals. Overall, the state was supportive of the Service's proposals of expanded hunting opportunities, and both agencies confirmed the continuance of a strong partnership. The refuge received a letter of concurrence from the state director on November 18, 2019. Follow-up communications occurred regarding final revisions to documents, and these were mutually respectful.

The Service consulted with the Kansas State Historic Preservation Office, requesting review and comment concerning the Service's determination of no adverse effect to historic properties with regard to the opening of additional species to hunting on Quivira NWR.

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

On April 1, 2020, the Service released the EA for a 30-day public comment period. The Service received comments from 12 individuals and two organizations. Two commenters expressed full support for expanding hunting opportunities to include deer, turkey, coyote, furbearers, and crow, and new methods of take (muzzleloader/musket for deer, coyote and furbearers) on Quivira NWR. Six commenters expressed opposition to expanding hunting opportunities on Quivira NWR, while two individuals and two organizations were partially opposed to proposed hunting/fishing opportunities. Most opposition involved hunting of coyote, bobcat, and locally rare or uncommon species largely considering conflicts with the refuge's frequent non-consumptive users and any increased potential of whooping crane disturbance. The most accepted proposed action was deer hunting, especially as special opportunities for youth and those with disabilities. We discuss the comments we received in detail in the EA by topic. The

Service made revisions to the EA to address and clarify some of the concerns raised about impacts of the action.

In addition, on April 9, 2020, the Service published the Draft 2020–2021 Station-Specific Hunting and Sport Fishing Regulation Regulations in the Federal Register. The Service has removed all refuge-specific regulations from 50 Code of Federal Regulations Part 32 that were duplicative of other Service or state regulations, and thus unnecessary. The regulations removed from the refuge-specific regulations are all still enforceable on the refuge under federal and state law. The regulations applicable to the hunting on the refuge have been clarified concerning the use of temporary hunting blinds as a result of the rulemaking this year. Also, in maintaining consistency with the refuge CCP, hunting of furbearers will require a state-issued refuge access permit. The refuge will ensure that refuge’s hunting brochure includes all applicable regulations for hunting on the refuge.

Finding of No Significant Impact

Based upon a review and evaluation of the information contained in the EA as well as other documents and actions of record affiliated with this proposal, the Service has determined that the proposal to implement expanded hunting on Quivira NWR does not constitute a major federal action significantly affecting the quality of the human environment under the meaning of section 102(2)(c) of NEPA, as amended. As such, an environmental impact statement is not required.

Decision

The Service has decided to open or expand hunting opportunities for deer, turkey, furbearer, coyote, and crow on Quivira NWR in accordance with the 2020 Quivira NWR Hunting and Fishing Plan. These actions will be effective at the end of the final national process period for hunting and fishing on Refuge System lands.

This action is compatible with the purpose of the refuge and the mission of the Refuge System (see the final compatibility determination, which is Appendix B of the EA).

The action is consistent with applicable laws and policies regarding the establishment of hunting on refuges. Refuge-specific regulations promulgated in conjunction with this action are in the process of being finalized. This action will not be implemented until the regulations are finalized.

Regional Director, Interior Regions 5 and 7
U.S. Fish and Wildlife Service
Lakewood, Colorado

Date