

# **Draft Environmental Assessment**

## **for Recreational Hunting on Lacreek National Wildlife Refuge**

March 2020

Prepared by

Todd Schmidt and Shilo Comeau  
Lacreek National Wildlife Refuge  
Martin, South Dakota

## Table of Contents

<b>1.0</b>	<b>Introduction.....</b>	<b>3</b>
1.1	Proposed Action.....	3
1.2	Background.....	3
1.3	Purpose and Need for the Proposed Action.....	4
1.4	Alternatives Considered.....	5
	Alternative A – Expand Hunting Opportunities on Lacreek National Wildlife Refuge – Proposed Action Alternative.....	5
	Alternative B – Continue Current Management – No Action Alternative.....	10
<b>2.0</b>	<b>Affected Environment and Environmental Consequences.....</b>	<b>11</b>
2.1	Affected Environment.....	11
2.2	Environmental Consequences of the Action.....	12
2.3	Cumulative Impact Analysis.....	33
2.4	Summary of Analysis.....	37
	Alternative A – Proposed Action Alternative.....	37
	Alternative B – No Action Alternative.....	38
2.5	Monitoring.....	39
2.6	Outreach to the Community.....	40
	Opening Pool 10 to Waterfowl Hunting with a Bald Eagle Nest Within the Unit Near The Pool 10 Structure.....	40
	Opening Sandhill Units to Hunting.....	40
	Opening a Predator Hunt.....	40
	Opening Cottontail Rabbit Hunting to Weapon Choice.....	40
	Opening Turkey Hunting.....	40
2.7	List of Preparers.....	41
2.8	State Coordination.....	41
2.9	Tribal Consultation.....	41
2.10	Public Outreach.....	41
2.11	Determination.....	42
2.12	References.....	42

## **List of Tables**

Table 1. Affected Natural Resources and Anticipated Direct and Indirect Impacts of the Proposed Action and Any Alternatives. ....	13
Table 2. Affected Visitor Use and Experience and Cultural Resources and Anticipated Direct and Indirect Impacts of the Proposed Action and Any Alternatives. ....	28
Table 3. Affected Refuge Management and Operations and Anticipated Direct and Indirect Impacts of the Proposed Action and Any Alternatives.....	31
Table 4. Affected Socioeconomics and Anticipated Direct and Indirect Impacts of the Proposed Action and Any Alternatives. ....	32
Table 5. Anticipated Cumulative Impacts of the No Action and Proposed Action Alternatives .	33

## **Appendices**

Appendix A	Other Applicable Statutes, Executive Orders, and Regulations .....	46
Appendix B	Scientific Name Species List and Species Categorization.....	47

# **Draft Environmental Assessment for Recreational Hunting on Lacreek National Wildlife Refuge**

**Date:** March 2020

This Environmental Assessment (EA) is being prepared to evaluate the effects associated with this preferred action and complies with the National Environmental Policy Act (NEPA) in accordance with Council on Environmental Quality regulations (40 Code of Federal Regulations [CFR] 1500-1509) and Department of the Interior (43 CFR 46; 516 DM 8) and 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. Other applicable statutes, executive orders, and regulation compliance are addressed in Appendix A.

## **1.0 Introduction**

### **1.1 Proposed Action**

The Service is proposing to open hunting opportunities for cottontail rabbit, prairie chicken, mountain lion, coyote, red fox, and bobcat on approximately 12,800 acres. In addition, it is proposed to expand hunting opportunities of migratory game birds, upland game birds, and big game on approximately 2,800 acres on Lacreek National Wildlife Refuge (NWR) in accordance with the refuge's migratory game bird, upland game, predator, and big game hunting plan.

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 proposal action may be different from the original. The final decision on the preferred action will be made at the conclusion of the public comment period for the EA and the 2020-2021 Refuge Specific Hunting and Sport Fishing Regulations. 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 or fishing, or both. Refuge-specific regulations also would apply to all alternatives. These regulations are identified in Title 50 of the CFR and in the refuge hunting plan associated with this document. Refuge-specific topics include but are not limited to: (1) type of weapons and ammunition allowed, (2) possession of alcohol, (3) hours of use, and (4) parking restrictions.

### **1.2 Background**

The refuge is in Bennett County in south central South Dakota. The refuge was established in 1935 by President Franklin D. Roosevelt through Executive Order No. 7160 "... as a refuge and breeding ground for migratory birds and other wildlife." The refuge lies in the Lake Creek Valley on the northern edge of the Nebraska Sandhills and covers 16,576 acres of native Sandhills, sub-irrigated meadows, impounded fresh water marshes, and tall and mixed grass prairie uplands.

The refuge has been open to mule deer and whitetail deer, sharp-tailed grouse and ring-necked pheasants for nearly 40 years. Waterfowl hunting, upland bird hunting, and big game hunting has been allowed on the Little White River Recreation Area (LWRRA) (222 acres) for more than 75 years. Hunting is now authorized and ongoing on approximately 8,700 acres, while nearly 9,000 acres are closed.

The mission of the National Wildlife Refuge System (Refuge System), as outlined by the National Wildlife Refuge System Administration Act of 1966 (NWRSA), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Improvement Act) (16 U.S. Code 668dd et seq.), is:

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

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

- provide for the conservation of fish, wildlife, 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;
- 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.

### **1.3 Purpose and Need for the Proposed Action**

The purpose of this proposed action is to provide compatible wildlife-dependent recreational opportunities on the refuge. The need of the proposed action is to meet the Service’s priorities and mandates as outlined by the NWRSA to “recognize compatible wildlife-dependent recreational uses as the priority general uses of the Refuge System” and “ensure that opportunities are provided within the Refuge System for compatible wildlife-dependent recreational uses” (16 U.S. Code 668dd[a][4]). In addition, the approved refuge comprehensive conservation plan (CCP) outlines hunting objectives including expanding waterfowl hunting, opening of added species such as cottontail rabbit and coyote, and expanding species such as mourning dove and turkey where compatible. During the public comment process, while

developing the CCP, many requests were made to expand hunting opportunities for waterfowl and add new huntable acres within the Sandhills habitats of the refuge.

## 1.4 Alternatives Considered

### **Alternative A – Expand Hunting Opportunities on Lacreek National Wildlife Refuge – Proposed Action Alternative**

Hunting is now authorized and ongoing on approximately 8,700 acres, while nearly 9,000 acres are closed. The proposed action would increase the total acreage open to hunting on the refuge to approximately 11,500 acres. Approximately 220 acres are now open to waterfowl hunting and the proposed action would increase the total for waterfowl hunting to nearly 5,100 acres. Now, 12 species can be hunted on the refuge and the proposed action would increase the total to 18 species. If the species are italicized, they are a newly proposed species for hunting in 2020.

- Migratory Game Bird Hunting: Open to duck, light geese, dark geese, mourning dove, Wilson’s snipe, Sandhill crane, American crow, and coot.
- Upland Game Hunting: Open to pheasant, sharp-tailed grouse, *prairie chicken*, and *cottontail rabbit*.
- Predator Hunting: Open to *coyote*, *red fox*, *bobcat*, and *mountain lion*.
- Big Game Hunting: Open to white-tailed deer and mule deer.

A description of management units provides more information about what habitats exist on the refuge that may inform what species may be present for hunting. These areas support waterfowl, deer, rabbits, and other game species.

As described in the 2020 hunting plan, besides current authorized hunting opportunities, the proposed alternative would allow expanded hunting of duck, light geese, dark geese, sandhill crane, mourning dove, American crow, Wilson’s snipe, coot, pheasant, sharp-tailed grouse, mule and white tailed deer to new acres. It would also allow cottontail rabbit, prairie chicken, coyote, red fox, bobcat, and mountain lion to be hunted.

The refuge has prepared a hunting plan, which is presented in this document as the Proposed Action Alternative.

Approximately 220 acres are now open to migratory bird hunting and this proposed action would open approximately 5,100 new acres to migratory bird hunting. Now, 8,900 acres are open to pheasant, sharp-tailed grouse, and deer, this proposal would open 2,800 more acres for hunting these species. In addition, this proposal would open hunting to six new species: cottontail rabbit, prairie chicken, coyote, red fox, bobcat, and mountain lion. The following is a list of proposed changes to the refuge hunting program. Species italicized are newly proposed species.

#### ***Areas to Be Opened***

- Open the hunting unit in the South Sandhills including the Elm Creek portion, which would be about 1,600 acres south of Cedar Creek Road and East of the Trout Ponds.
- Open the hunting unit in the West Sandhills including the new Marty Quarter acquisition, which would be about 1,200 acres.

### ***Species to be Taken – Predators***

- *Coyote* to be hunted throughout the LWRRA, South Sandhills, West Sandhills, and the Brown Ranch hunting units from January 1 through February 15, dawn to dusk daily (5,600 acres)
- *Bobcat* to be hunted throughout the LWRRA, South Sandhills, West Sandhills, and the Brown Ranch hunting units from January 1 through February 15, dawn to dusk daily (5,600 acres)
- *Red Fox* to be hunted throughout the LWRRA, South Sandhills, West Sandhills, and the Brown Ranch hunting units from January 1 through February 15, dawn to dusk daily (5,600 acres)
- *Mountain Lion* to be hunted throughout the LWRRA, South Sandhills, West Sandhills, and the Brown Ranch hunting units from January 1 through February 15, dawn to dusk daily (5,600 acres)

### ***Species to Be Taken – Migratory Game Birds***

- Mourning Dove to be hunted throughout the Pool 10 hunting unit, Brown Ranch units, Marty Quarter, and LWRRA unit in concurrence with state seasons and regulations. Added 5,000 acres.
- American Crow to be hunted throughout the Pool 10 hunting unit, Brown Ranch units, Marty Quarter, and LWRRA unit in concurrence with state fall season only and regulations. The state identified spring season would be closed. Added 5,000 acres.
- Duck to be hunted throughout the Pool 10 hunting unit, Brown Ranch units, Marty Quarter, and LWRRA unit in concurrence with state seasons and regulations. Added 5,000 acres.
- Wilson's Snipe to be hunted throughout the Pool 10 hunting unit, Brown Ranch units, Marty Quarter, and LWRRA unit in concurrence with state seasons and regulations. Added 5,000 acres.
- Sandhill Crane to be hunted throughout the Pool 10 hunting unit, Brown Ranch units, Marty Quarter, and LWRRA unit in concurrence with state seasons and regulations. Added 5,000 acres.
- Dark Geese to be hunted throughout the Pool 10 hunting unit, Brown Ranch units, Marty Quarter, and LWRRA unit in concurrence with state seasons and regulations. Added 5,000 acres.
- Light Geese to be hunted throughout the Pool 10 hunting unit, Brown Ranch units, Marty Quarter, and LWRRA unit in concurrence with state seasons and regulations. Added 5,000 acres.
- Coot to be hunted throughout the Pool 10 hunting unit, Brown Ranch units, Marty Quarter, and LWRRA unit in concurrence with state seasons and regulations. Added 5,000 acres.

### ***Species to Be Taken – Upland Game***

- Pheasant to be hunted throughout all open hunting units on the refuge in concurrence with state seasons and regulations and refuge regulations. Added 2,800 acres.
- Sharp-tailed Grouse to be hunted throughout all open hunting units on the refuge in concurrence with state seasons and regulations and refuge regulations. Added 2,800 acres.
- *Prairie Chicken* to be hunted throughout all open hunting units on the refuge in concurrence with state seasons and regulations and refuge regulations. Added 11,700 acres.
- *Cottontail Rabbit* to be hunted throughout all open hunting units on the refuge in concurrence with state seasons and regulations and refuge regulations. Added 11,700 acres.

### ***Species to Be Taken – Big Game***

- White-tailed deer and mule deer to be hunted throughout all open hunting units on the refuge in concurrence with state seasons and regulations and refuge regulations (archery and muzzleloader). Added 2,800 acres.
- White-tailed deer and mule deer to be hunted throughout all open hunting units on the refuge in concurrence with state seasons and regulations and refuge regulations (Youth/Apprentice Hunter season with centerfire rifles). Added 2,800 acres.

These refuge-specific regulations would be published in the Federal Register as part of the 2020-2021 Refuge Hunting Regulations.

50 CFR 32.61

*Lacreek National Wildlife Refuge—*

- (1) Migratory game bird hunting. We, the Service, allow the hunting of goose, duck, coot, Wilson's snipe, sandhill crane, American crow, and mourning dove on designated areas of the refuge subject to the following conditions:*
  - (i) We allow the use of motorized boats for hunting and game retrieval on the LWRRRA. We allow the use of manual powered boats for hunting and game retrieval on all waters within open hunt areas.*
  - (ii) We do not allow the use of rifles for the taking of American crow.*
  - (iii) Hunters must remove from the refuge all boats, decoys, blinds, blind material, stands, platforms, and any other personal property before the end of each day's hunt.*
- (2) Upland game hunting. We allow the hunting of ring-necked pheasant, sharp-tailed grouse, prairie chicken, and cottontail rabbit on designated areas of the refuge.*
- (3) Big game hunting. We allow hunting of white-tailed and mule deer on designated areas of the refuge subject to the following conditions.*
  - (i) We close the refuge to archery deer hunting during refuge muzzleloader deer seasons.*

- (ii) *Hunters may leave portable tree stands and free-standing elevated platforms on the refuge from August 25 to February 15. Hunters must remove all other personal property by the end of the day's hunt (see [§ 27.93](#) of this chapter).*
- (4) *Predator hunting. We allow the hunting of coyote, red fox, bobcat, and mountain lion on designated areas of the refuge subject to the following conditions.*
  - (i) *The predator hunting season would be from January 1 through February 15 on designated areas of the refuge.*
  - (ii) *Predators may be taken with shotgun, muzzle loading firearms, archery equipment, and centerfire and rimfire rifles.*
  - (iii) *We allow predators to be taken from ½ hour before legal sunrise to ½ after legal sunset.*
- (5) *Other specific hunting regulations that applies to all hunting at Lacreek NWR:*
  - (i) *We require the use of non-toxic shot.*
  - (ii) *Hunters may enter the refuge two hours before legal sunrise and remain no longer than two hours after legal sunset.*
  - (iii) *We allow the use of motorized boats for hunting and game retrieval on the LWRRA. We allow the use of manual powered boats for hunting and game retrieval on all waters within open hunt areas.*
  - (iv) *We allow the use of hunting dogs for migratory game bird and upland game hunting and retrieval, provided they are always under immediate control of the owner.*
  - (v) *We do not allow the use of dogs for predator hunting and locating.*
  - (vi) *We prohibit loaded firearms on any refuge roadway or discharging a firearm over or across any refuge roadway and within 33 feet from the centerline of any refuge roadway.*

### ***Mitigation Measures to Avoid Conflicts***

The refuge manager may establish specific regulations for individual species or parts of the refuge depending on conflicts with other wildlife dependent recreation priorities. Permanent or periodic hunting closures for specific species or closures of parts of the refuge may be necessary if the refuge manager decides that there is specific habitat, wildlife protection, or public safety rule. The need to carry out mitigation measures would be evaluated annually. There is now no perceived conflict or need for mitigation measures. All hunting would be conducted in accordance with all applicable state, refuge and federal regulations. Coordination with the public and refuge stakeholders including the South Dakota Fish, Wildlife, and Parks would promote continuity and understanding of refuge and Service resource goals and objectives, and would help assure that the decision-making process considers all interests.

### **Biological Conflicts**

The refuge reduces conflict related to biological resources by adopting a "wildlife first" principle explicitly stated in the Improvement Act. Staff monitor species population trends to make sure that target species can be hunted on the refuge without adversely affecting the species. These

monitoring activities include direct observation of populations, consultation with state and Service species specialists, and review of current species survey information and research.

The refuge limits or excludes hunting activities where the potential for biological concerns exist. Pools 3, 4, 5, 6, 7, 8 are closed to hunting, specifically providing a sanctuary for migratory birds in an area otherwise hunted heavily for migratory birds. Likewise, the Trout Ponds area and the Pool 10 water control structure area are also closed to all hunting. These closures afford protection for migratory birds and wintering or nesting bald eagles. Both areas currently have active bald eagle nests that should not be disturbed by hunting pressure. Although not proposed in this current plan, the refuge, in the future, could limit or exclude hunting activities on additional portions of the refuge to avoid conflicts related to biological resources, such as threatened or endangered species. Special hunts could also be used to manage hunting pressure, provide increased opportunities, and manage overall take at appropriate levels.

The refuge follows recovery plan guidelines for the management of the following federally threatened and endangered species. Five threatened or endangered species may be found within refuge boundaries and no critical habitats.

- Northern long-eared bat (*Myotis septentrionalis*): The range of the threatened northern long-eared bat is found across much of the eastern and north central U.S. and all Canadian provinces from the Atlantic coast to the southern Northwest Territories and eastern British Columbia (USFWS 2017c). Three species of bats have been documented on the refuge through acoustic surveys, but no northern long-eared bats were identified (Lacreek NWR survey files 2011).
- Red knot (*Calidris canutus rufa*): The range of the threatened red knot is found primarily in the eastern and central U.S. Red knot can be found primarily in eastern South Dakota but is an accidental migrant on the refuge (Tallman 2002).
- Whooping crane (*Grus americana*): The endangered whooping crane occur only in North America. They now exist in the wild at 3 locations and in captivity at 12 sites. The range of the whooping crane is primary in the central U.S., but also the Great Lakes and Florida (USFWS 2010). Whooping cranes are occasionally observed on the refuge during migration and were last observed in the spring of 2009 (Lacreek NWR observational report 2009).
- American burying beetle (*Nicrophorus americanus*): This species is now listed as endangered and is being proposed for down listing as threatened. The states in which this population is known to or is believed to occur are Arkansas, Kansas, Massachusetts, Nebraska, Ohio, Oklahoma, Rhode Island, South Dakota, and Texas (USFWS 2019). There have been periodic carrion beetle surveys on the refuge, with the most recent survey occurring in 2018. No American burying beetles have been documented (Lacreek NWR survey files 2018). However, the beetle has been documented in Bennett County and several counties next to the refuge in South Dakota and Nebraska including Todd County and Cherry County, respectively (C. Bessken-USFWS, personal communication, November 2019).
- Western prairie fringed orchid (*Platanthera praeclara*): This species is now listed as threatened and its range is limited to the central U.S. This species has not been

documented on the refuge, but it has been documented in Bennett, Oglala Lakota, and Todd Counties in South Dakota and Cherry County, Nebraska (USFWS 2009).

An Endangered Species Act Section 7 consultation was conducted, and it was found that the proposed alternative is not likely to conflict with recovery or protection of these species. A determination of "No Effect" was made for the red knot and the western prairie fringed orchid as the proposed project would not directly or indirectly affect (neither negatively nor beneficially) individuals of listed, proposed, or candidate species, as well as designated or proposed critical habitat of such species. For the northern long-eared bat, whooping crane, and American burying beetle, it was found that the proposed alternative "may affect but is not likely to adversely affect" these species because it is likely to cause insignificant, discountable, or wholly beneficial effects to individuals. Section 7 of the Endangered Species Act requires federal agencies to evaluate potential effects to threatened and endangered species and their habitats and an Environmental Assessment under NEPA specifically for the hunting program and addresses each of these species. A list of scientific names and categorization of species referenced in this document can be found in Appendix B.

#### Public Use Conflicts

To reduce conflicts with priority non-hunting recreational uses outlined in the Improvement Act, and for public safety, the refuge designates areas open to hunting and enforces refuge-specific regulations. The boundaries of all lands owned or managed by the Service are posted with refuge boundary signs. Areas administratively closed to hunting are clearly marked with either "No Hunting Zone" or "Area Beyond This Sign Closed" signs. Aside from hunting, wildlife observation and photography is the major public use, such as for migratory bird observation. This use primarily occurs during the spring months (March through June) where no conflict with hunters would result. Overall, hunting effects to visitor services and recreation opportunities are considered short-term, minor and local. Past conflicts have been minimal, and we anticipate future conflicts to be about the same.

#### Administrative Use Conflicts

The most potential for conflict with management activities occurs in areas where habitat treatments are conducted. Occasionally, an area open to hunting is proposed to receive a prescribed fire treatment. Typically, a notice of the impending treatment is posted at the unit public access points to alert all users, including hunters. Before starting the fire treatment, the refuge fire staff scout the treatment unit to make sure that no one is endangered by the treatment. Other habitat treatments such as prairie dog control or invasive species treatments may generate a temporary closure of an area. Notice or information about any of these closures may be posted and available at the refuge headquarters and information kiosks to mitigate conflicts.

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

#### **Alternative B – Continue Current Management – No Action Alternative**

Continue current hunting opportunities for upland game, big game, and migratory game birds on refuge lands as described in the 2017 Lacreek NWR Hunting and Fishing Brochure. New hunting opportunities for species identified in the 2020 hunting plan would remain closed to hunting. All other existing public uses would remain unchanged.

Under this alternative, current refuge hunting opportunities for specific migratory birds, big game, and waterfowl species would continue and remain the same across those parts of the refuge. The refuge would continue to serve as habitat for fish and wildlife as well as provide outdoor recreational opportunities for all six priority wildlife dependent public uses: hunting, fishing, wildlife observation, photography, environmental education, and interpretation.

The species that would continue to be open at the LWRRA would be duck, goose, sandhill crane, Wilson's snipe, American crow, mourning dove, pheasant, grouse, and deer. The rest of the refuge hunting units would allow the take of pheasant, sharp-tailed grouse, and deer.

## **2.0 Affected Environment and Environmental Consequences**

### **2.1 Affected Environment**

Lacreek NWR consists of approximately 16,576 acres in Bennett County, South Dakota. The refuge is primarily native Sandhills, wetlands (sub-irrigated, riparian, and managed wetlands), and tall and mixed grass prairie uplands. Different community types are delineated within the refuge based on dominant plant species, soils, and water availability. The Sandhills contains a diverse mix of grass and forb species generally not found anywhere else on the refuge. The Sandhills prairie is distinctive because of the combination of plant communities found there. Typical short, mixed, and tall grass species are all located in the Sandhills because differences in topography and available moisture create conditions that allow each to persist (Kaul 1990).

Wetlands on the refuge occur primarily within the floodplain of Lake Creek and are influenced by a combination of surface water and ground water inputs. Substantial emergent and submergent vegetation occurs in managed wetland pools. Wet meadow habitat on the refuge occurs at the perimeter of managed wetland areas, along riparian corridors, and springs emerging from the Sandhills. Wet, sub-irrigated meadows occur primarily on the western part of the refuge. These meadows are nearly flat, have saturated soils near the surface for most of the growing season, as well as pond water for short periods after rainfall events. These wet meadows contain a full complement of native grasses and forbs, such as prairie cordgrass, Canada bluejoint, switchgrass, foxtail barley, sedge and rush species, golden doc, mint, golden rod, Nuttall's sunflower, wild licorice, blue verbena, stinging nettle, sandbar willow, red-osier dogwood, and false indigo bush.

The refuge lies at an intersection of different grassland types. Sandhills prairie, tall-grass prairie, and mixed-grass prairie can all be found here. There are just more than 5,000 acres of uplands on the refuge that consist of native and non-native grasses and forbs. Native grasses that have been recorded during habitat surveys are big bluestem, little bluestem, sand bluestem, prairie sandreed, switchgrass, Indian grass, Canada wildrye, prairie June grass, sand dropseed, needle-and-thread grass, western wheatgrass, and salt grass, while non-native grasses are smooth brome, crested wheatgrass, and Kentucky bluegrass. The refuge has restored some of these non-native dominated upland areas to native grasses and forbs. More than 120 species of native grass, forb, sedge, and rush species have been harvested to be used for restoration.

The refuge serves as an important staging area for migrating Canada geese, other waterfowl, sandhill cranes, shorebirds, and neotropical migrants. Providing an important migration and wintering habitat for the high plains trumpeter swan flock is a primary goal. Unique habitats are provided in black-tailed prairie dog towns that support high numbers of burrowing owls and host ferruginous hawks, both of which are species of concern. Additional birds of concern that occur

on the refuge are: Henslow's sparrow (*Ammodramus henslowii*), lark bunting (*Calamospiza melanocorys*), long-billed curlew (*Numenius americanus*), marbled godwit (*Limosa fedoa*), red-headed woodpecker (*Melanerpes erythrocephalus*), semipalmated sandpiper (*Calidris pusilla*), and willet (*Tringa semipalmata*).

The proposed action alternative is in the south and west parts of the refuge for upland game, big game, and predator hunting and the west and northeast part of the refuge for migratory bird hunting. The habitats included in these areas are Sandhills, uplands, and one managed wetland (Pool 10).

For more information about the affected environment, please see chapter 4 of the refuge's CCP, which can be found at [www.fws.gov/mountain-prairie/refuges/completedPlanPDFs\\_F-L/lck\\_2006\\_ccpfinal\\_all.pdf](http://www.fws.gov/mountain-prairie/refuges/completedPlanPDFs_F-L/lck_2006_ccpfinal_all.pdf)

## 2.2 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” or “are otherwise considered important” as related to the proposed action. Any resources that would not be more than negligibly affected by the action have been dismissed from further analyses.

Tables 1 through 4 provide:

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

Table 5 provides a brief description of the anticipated cumulative effects of the proposed action and any alternatives.

Impact Types:

- *Direct effects* are those that are caused by the action and occur at the same time and place.
- *Indirect effects* are those that are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable.
- *Cumulative impacts* result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

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

<p><b>Affected Resources</b></p>	<p><b><u>Alternative A (Proposed Action)</u></b> <i>Expand and provide hunting opportunities for deer species, upland game, predators and huntable migratory birds - expand take of now allowable species to new acres and allow the take of new species to include: cottontail rabbit, prairie chicken, coyote, red fox, bobcat, and mountain lion.</i></p>	<p><b><u>Alternative B (No Action)</u></b> <i>Continue to provide hunting opportunities as described in the 2017 Lacreek NWR Hunting and Fishing Brochure.</i></p>
<p><b>Upland Game</b></p>		
<p><b><i>Ring-Necked Pheasant (Pheasant)</i></b> Pheasant hunting in South Dakota started in 1919 and is still popular today. South Dakota Game, Fish, and Parks (SD GFP) estimates that from 2009 to 2018, hunters harvested an average of approximately 744,880 pheasants per year statewide while 565 hunters harvested only 2,885 pheasants in Bennett County in 2018 (SD GFP 2019c). In 2015, Lacreek NWR conducted a breeding bird point count survey and there was an average of 0.56 birds per point surveyed more than 51 points in the Sandhills. The lower number of pheasants located in Sandhill units is likely because of less than favorable habitat relative to other habitat types found on the refuge where the average number of pheasants per point was higher.</p>	<p><b><i>Ring-Necked Pheasant (Pheasant)</i></b> Under this alternative, 70 percent of the refuge would be open to pheasant hunting. Pheasant hunting is now allowed where the highest quality pheasant habitat is located, and the habitat located within the proposed 2,800 additional acres is less than favorable for pheasants. The estimated increase in number of hunters is expected to be low, as is the number of pheasants taken from the refuge. This slight increase in take and use is expected to have negligible effects to the local pheasant population.  Estimated increase in hunter numbers: 5 Estimated annual take: 5</p>	<p><b><i>Ring-Necked Pheasant (Pheasant)</i></b> Under this alternative, 53 percent of the refuge would remain open to pheasant hunting and disturbance to pheasants caused by hunting pressure in these areas would continue. Closed areas would remain the same to provide escape and non-disturbance locations. We expect that the estimated yearly number of pheasants hunted at the refuge would hover around 3 to 4, with an estimate of 10 hunters. Thus, for the overall pheasant population this would constitute a negligible effect.</p>

<p style="text-align: center;"><b>Affected Resources</b></p>	<p style="text-align: center;"><b><u>Alternative A (Proposed Action)</u></b></p> <p><i>Expand and provide hunting opportunities for deer species, upland game, predators and huntable migratory birds - expand take of now allowable species to new acres and allow the take of new species to include: cottontail rabbit, prairie chicken, coyote, red fox, bobcat, and mountain lion.</i></p>	<p style="text-align: center;"><b><u>Alternative B (No Action)</u></b></p> <p><i>Continue to provide hunting opportunities as described in the 2017 Lacreek NWR Hunting and Fishing Brochure.</i></p>
<p><b><i>Sharp-Tailed Grouse and Greater Prairie-Chicken (Prairie Grouse)</i></b></p> <p>Sharp-tailed grouse and greater prairie-chickens (prairie grouse), are native birds that are primarily distributed across central and western South Dakota. Prairie grouse typically occur on large continuous blocks of native grassland but can occur in cropland or field edges in grassland-dominated landscapes. Prairie grouse are commonly found in mixed flocks where these species’ range overlaps. Sharp-tailed grouse and greater prairie-chicken are combined when considering the daily and possession limits by the SD GFP. SD GFP estimates that from 2009 to 2018, hunters harvested an average of approximately 12,760 prairie grouse per year statewide while hunters harvested a projected 310 grouse in Bennett County in 2018 (SD GFP 201d). In 2015, the refuge conducted a breeding bird point count survey and there was an average of 0.06 birds per point surveyed more than 51 points in the Sandhills. Prairie grouse use the Sandhills and other native grass units for nesting, and there are at least two confirmed leks directly next to the refuge. In the late fall and winter, prairie grouse would often be observed more frequently in the Brown Ranch East and the east boundary of Pools 9 and 10 than in the Sandhills.</p>	<p><b><i>Sharp-Tailed Grouse and Greater Prairie-Chicken (Prairie Grouse)</i></b></p> <p>Under this alternative, 70 percent of the refuge would be open to all prairie grouse species (sharp-tailed grouse and prairie-chicken). Prairie grouse harvest is now allowed where grouse are frequently present during the hunting season. Adding the proposed 2,800 acres of additional native grass habitat would increase hunter opportunities during the early part of upland game season but harvest may not increase significantly because hunters could find the Sandhills to be more challenging to hunt than areas now open because of the rough terrain and limited access. This slight increase in take and use is expected to have negligible effects to the local grouse population.</p> <p>Estimated increase in hunter numbers: 10 Estimated annual take: 15</p>	<p><b><i>Sharp-Tailed Grouse and Greater Prairie-Chicken (Prairie Grouse)</i></b></p> <p>Under this alternative, 53 percent of the refuge would remain open to sharp-tailed grouse hunting, and disturbance to grouse caused by hunting pressure in these areas would continue. Closed areas would remain the same to provide escape and non-disturbance locations. We expect that the estimated yearly number of pheasants hunted at the refuge would hover around 8 to10, with an estimate of 9 hunters. Thus, for the overall grouse population this would constitute a negligible effect.</p>

<b>Affected Resources</b>	<b><u>Alternative A (Proposed Action)</u></b> <i>Expand and provide hunting opportunities for deer species, upland game, predators and huntable migratory birds - expand take of now allowable species to new acres and allow the take of new species to include: cottontail rabbit, prairie chicken, coyote, red fox, bobcat, and mountain lion.</i>	<b><u>Alternative B (No Action)</u></b> <i>Continue to provide hunting opportunities as described in the 2017 Lacreek NWR Hunting and Fishing Brochure.</i>
<p><b><i>Cottontail Rabbit</i></b></p> <p>South Dakota allows cottontail rabbit hunting from September to February. Based on the 2017 to 2018 survey responses, there were a projected 4,628 resident and 607 nonresident cottontail hunters harvesting an estimated 24,272 cottontails during the 2017 small game season (SD GFP 2018f). There are no estimates of population size on the refuge, but it is expected to be high enough to support a hunter harvest while sustaining a viable population. Cottontail rabbit was listed in the refuge CCP and accompanying EA (2006) as a species that would be considered for additional hunting opportunities.</p>	<p><b><i>Cottontail Rabbit</i></b></p> <p>Under this alternative, 70 percent of the refuge would be open to rabbit hunting. A hunter harvested take would likely be confined to wooded areas and tree piles, where hunters may want to harvest cottontail rabbits while hunting other species. In addition, young, inexperienced hunters could harvest rabbit as an introduction to the hunting sports. Hunting could also reduce the amount of prey available to predators, including resident furbearers and migratory birds of prey but take is expected to be limited and a viable population would still be sustained that could also provide a sustainable food source for predators.</p> <p>Estimated hunter numbers: 7</p> <p>Estimated annual take: 14</p>	<p><b><i>Cottontail Rabbit</i></b></p> <p>Under this alternative, none of the refuge would be open to cottontail rabbit hunting and no increased disturbance to rabbit populations would occur. Rabbits would continue to provide food resources to prey species. Effects would be negligible.</p>
<b>Big Game</b>		
<p><b><i>White-Tailed Deer and Mule Deer</i></b></p> <p>White-tailed deer and mule deer are a highly sought-after big game species in South Dakota, and hunting is the number one tool for managing deer populations across the state (SD GFP 2019e). The refuge supports resident populations of white-tailed deer and mule deer, but little is known about the current size and condition of the resident deer herds on the refuge. Past surveys (2005 to 2011) show a range of 8 to 23 deer per square mile during that time frame (Lacreek NWR survey data). Epizootic hemorrhagic disease outbreaks have occurred on the refuge in the past and this disease lowered the local white-tailed deer population, but populations rebounded within a few years.</p>	<p><b><i>White-Tailed Deer and Mule Deer</i></b></p> <p>Under this alternative, an additional 2,800 acres are proposed to be open to archery and muzzleloader take making 70 percent of the refuge available for big game hunting. This would provide for increased opportunities to harvest deer, especially mule deer. The additional acres to be opened would be the Marty Quarter, which is primarily wet meadow habitat, as well as the south and west Sandhills. This increase in take and use is expected to have negligible effect to the local deer populations because the state does not anticipate increasing the number of muzzleloader tags issued. There could be an increase in the number of archery hunters, but the Sandhills are often more challenging to hunt than areas now open because of rough terrain and somewhat limited cover and access.</p>	<p><b><i>White-Tailed Deer and Mule Deer</i></b></p> <p>Under this alternative, deer hunting programs on the refuge and at the LWRRA would continue as presently managed with 53 percent of the refuge open to big game hunting. The refuge would continue to provide muzzleloader and archery seasons for deer in accordance with state and federal laws and regulations. Only the LWRRA would be open to rifle hunting. We expect that the estimated yearly number of deer taken at the refuge would remain around two, with an estimate of 29 hunters.</p>

<b>Affected Resources</b>	<b><u>Alternative A (Proposed Action)</u></b>	<b><u>Alternative B (No Action)</u></b>
<p>There are now three methods of take allowed on the refuge: rifle, archery and muzzleloader. Hunters are required to carry a valid state permit to hunt on the refuge. Rifle hunting is only allowed on the LWRRA, and nowhere else on the refuge. The state decides, in cooperation with the refuge, the number of tags available. Muzzleloader permits are issued through a limited draw process conducted by SD GFP. There were 215 licenses issued for the 2018 Wildlife Refuge Deer seasons, which included 29 at the refuge (26 residents and 3 nonresidents) (SD GFP 2018a). An average of 17 muzzleloader harvested deer were taken from 2009 to 2018 (SD GFP 2018a).</p> <p><b><i>Predator: Coyote</i></b></p> <p>Coyotes are located throughout South Dakota in almost every habitat. Coyotes can be harvested year-round by hunting or trapping in the state, with most coyote hunting occurring in the western two-thirds of South Dakota. There are many large tracts of public land open to coyote hunting in the western half of South Dakota. A popular method of hunting is to attract coyotes using a call that sounds like a prey animal in distress. In Bennett County, 209 coyotes were projected to be harvested in 2018 to 2019 which is about 2 percent of the state’s total harvest. The refuge supports resident populations of coyotes, but little is known about the current size and condition of the resident population on the refuge. Coyote was listed in the refuge CCP and accompanying EA (2006) as a species that would be considered for additional hunting opportunities.</p>	<p><i>Expand and provide hunting opportunities for deer species, upland game, predators and huntable migratory birds - expand take of now allowable species to new acres and allow the take of new species to include: cottontail rabbit, prairie chicken, coyote, red fox, bobcat, and mountain lion.</i></p> <p>This slight increase in take and use is expected to have negligible effects to the local deer population.</p> <p>Estimated increase in hunter numbers: 8</p> <p>Estimated annual take: 2</p> <p><b><i>Predator: Coyote</i></b></p> <p>Under this alternative, 34 percent of the refuge would be open to coyote hunting and disturbance to coyotes from hunting pressure would occur in open areas. Hunters would be allowed to call coyotes and use a center-fire rifle to take coyotes. Because of safety concerns for staff and other visitors that may be participating in wildlife-dependent recreational activities, the season would not be open year-round . Small mammal and red fox populations may increase with increased harvest of coyote. Coyote calling is a popular method of take in Bennett County and there would be some interest in coyote hunting on the refuge. Although take may affect local populations these effects would not be detrimental because the season would not be open year-round.</p> <p>Estimated hunter numbers: 10</p> <p>Estimated annual take: 10</p>	<p><i>Continue to provide hunting opportunities as described in the 2017 Lacreek NWR Hunting and Fishing Brochure.</i></p> <p>Thus, for the overall deer population this would constitute a negligible effect.</p> <p><b><i>Predator: Coyote</i></b></p> <p>Under this alternative, none of the refuge would be open to coyote hunting and no increased disturbance to coyote populations would occur. Hunters would still have an opportunity to harvest coyotes from state grounds or private land next to the refuge. We expect that the estimated yearly number of coyotes taken at the refuge would hover around five to seven, with an estimate of eight hunters. Thus, for the overall coyote population this would constitute a negligible effect.</p>

<p style="text-align: center;"><b>Affected Resources</b></p>	<p style="text-align: center;"><b><u>Alternative A (Proposed Action)</u></b></p> <p><i>Expand and provide hunting opportunities for deer species, upland game, predators and huntable migratory birds - expand take of now allowable species to new acres and allow the take of new species to include: cottontail rabbit, prairie chicken, coyote, red fox, bobcat, and mountain lion.</i></p>	<p style="text-align: center;"><b><u>Alternative B (No Action)</u></b></p> <p><i>Continue to provide hunting opportunities as described in the 2017 Lacreek NWR Hunting and Fishing Brochure.</i></p>
<p><b><i>Predators: Red Fox, Bobcat, and Mountain Lion</i></b></p> <p>Red fox are located across the state in almost every habitat. They tend to be secretive and are most active from dusk to dawn. They often rest during the day and only move when disturbed, remaining active throughout the winter. There is a year-round season in South Dakota, and SD GFP projected 12 red fox were harvested in Bennett County in 2018 to 19 (SD GFP 2019b). It is very rare to observe a fox on the refuge, likely because of the presence of coyotes across the refuge.</p> <p>Bobcats occur in most counties in western South Dakota, including Bennett County. They can be found in riparian areas, often along rivers and creeks. Bobcats harvested in South Dakota are required to be checked and tagged by SD GFP staff, allowing a census of all bobcats harvested annually (TYCZ 2016). SD GFP collects age structure, sex ratio, and harvest data annually to monitor and assess population status of bobcats. Bobcats are active throughout the year, but not often seen on the refuge. The refuge does not perform any management specifically for bobcat, and bobcat populations on the refuge can vary greatly from year to year. According to SD GFP no bobcats were harvested in Bennett County in 2019 (SD GFP 2019b).</p>	<p><b><i>Predators: Red Fox, Bobcat, and Mountain Lion</i></b></p> <p>Under this alternative, 34 percent of the refuge would be open to hunting these predator species. Trapping these predators would not be allowed on the refuge, no dogs could be used while hunting, and seasons would not be year-round. Effects would be negligible to red fox in Bennett County because they are thought to be present mostly outside the refuge because of the coyote population living on the refuge. Harvest would likely be opportunistic and would occur while hunting other predator species.</p> <p>Effects would also be negligible to the local bobcat population and harvest would probably not occur annually. Although bobcat would likely be present every year on the refuge, the population size could fluctuate greatly from year to year. Some bobcat may not use areas open to hunting and could move to closed areas or be trapped off refuge.</p> <p>Effects would be negligible to the Bennett County mountain lion population and harvest would probably not occur annually because they are thought to be present mostly outside the refuge, with most observations occurring to the north and west of the refuge. Harvest would likely be opportunistic and occur while hunting other predator species.</p> <p>Estimated hunter numbers: 3 Estimated annual take: &lt;1</p>	<p><b><i>Predators: Red Fox, Bobcat, and Mountain Lion</i></b></p> <p>Under this alternative, none of the refuge would be open to red fox, bobcat, or mountain lion hunting and no increased disturbance to these predator populations would occur. Hunters would still have an opportunity to harvest these predators from state grounds next to the refuge.</p>

<b>Affected Resources</b>	<b><u>Alternative A (Proposed Action)</u></b> <i>Expand and provide hunting opportunities for deer species, upland game, predators and huntable migratory birds - expand take of now allowable species to new acres and allow the take of new species to include: cottontail rabbit, prairie chicken, coyote, red fox, bobcat, and mountain lion.</i>	<b><u>Alternative B (No Action)</u></b> <i>Continue to provide hunting opportunities as described in the 2017 Lacreek NWR Hunting and Fishing Brochure.</i>
<p>Historically, mountain lions occurred throughout South Dakota and were considered abundant in the Black Hills. However, the population declined in the early 1900's. In 1978, mountain lions were listed as a state threatened species. After a breeding population was established in the Black Hills and with a better understanding of population dynamics, the mountain lion was removed from the state threatened species list and classified as a big game animal in 2003 (SD GFP 2019f). The first hunting season was established in 2005 and seasons continue today (SD GFP 2019f). Outside the Black Hills, there is a year-round resident only season. Eleven lions were harvested on the prairie outside of the Black Hills during 2017 to 2018 (SD GF&amp;P 2018g). A mountain lion has never been observed on the refuge, but a young male was shot on a ranch north of the LWRRA in 2016, an adult male was shot in eastern Bennett County in 2017, and two lions were shot in northern Bennett County in 2018.</p>		
<b>Migratory Birds</b>		
<p><b><i>Waterfowl (Ducks and Geese)</i></b> The refuge contains extensive areas of semi-permanent emergent marshes, seasonal wetlands, and open water that annually support thousands of ducks and geese, many trumpeter swans, as well as other water bird species such as American white pelicans and shorebirds.</p>	<p><b><i>Waterfowl (Ducks and Geese)</i></b> Under alternative B, 31 percent of the refuge would be open to waterfowl hunting. Feeding and resting habitat for waterfowl would be compromised in all open hunt areas during shooting hours. This would change use patterns of waterfowl during the waterfowl season. Concentrating hunting on a large block and keeping 69 percent of the refuge acreage closed to hunting could reduce overall disturbance.</p>	<p><b><i>Waterfowl (Ducks and Geese)</i></b> Under this alternative, 1 percent of the refuge would remain open to waterfowl hunting. Disturbance to waterfowl from hunting pressure would occur only at the LWRRA. Closed areas would remain the same to provide escape and non-disturbance locations.</p>

<p align="center"><b>Affected Resources</b></p>	<p align="center"><b><u>Alternative A (Proposed Action)</u></b></p> <p><i>Expand and provide hunting opportunities for deer species, upland game, predators and huntable migratory birds - expand take of now allowable species to new acres and allow the take of new species to include: cottontail rabbit, prairie chicken, coyote, red fox, bobcat, and mountain lion.</i></p>	<p align="center"><b><u>Alternative B (No Action)</u></b></p> <p><i>Continue to provide hunting opportunities as described in the 2017 Lacreek NWR Hunting and Fishing Brochure.</i></p>
<p>The refuge is in the Central Flyway with peak fall migration occurring from late-October through November. Primarily mallard and Canada Geese are present in channels that remain open water after most of the managed pools freeze-up. Survey data during peak migration, collected from 2001 to 2013, provides an estimated average of 21,000 ducks. Survey data collected during peak migration, from 1979 to 2013, provides an estimated average of 13,500 Canada geese (Unpublished Lacreek NWR survey data). Twenty-eight duck hunters were reported for Bennett County with a harvest of 5.6 ducks per hunter (SD GFP 2018d). SD GFP projected total of 169 Canada goose hunters, harvested 998 geese in 2017 with an average take of 6 geese per hunter (2018e). Youth waterfowl hunting was considered as an additional hunting opportunity in the refuge CCP and accompanying EA (2006), but only a youth waterfowl hunt was listed.</p> <p><b><i>American Coot</i></b></p> <p>American coot are common and widespread, and populations appear to be stable, according to the North American Breeding Bird Survey (Sauer et al. 2014). Coot are not hunted nearly as much as ducks because many hunters consider them inedible. Some hunters shoot them for sport, particularly in Louisiana, California, Florida, Wisconsin, and Minnesota. In the Migratory Bird Hunting Activity and Harvest During the 2017 to 18 and 2018 to 19 Hunting Seasons Report (Raftovich 2019), the Service estimates that coot hunters harvested 117,100 (± 62 percent) coots in 2017 and 83,600 (± 69 percent) in 2018 in the U.S.</p>	<p>Hatch year and late hatching birds may be vulnerable to early season hunting mortality (Nelson 1966). Closed areas would be an inviolate sanctuary to protect hatch year ducks, geese and all trumpeter swans. This increase in take and use is expected to have minimal effects to the local waterfowl population because ducks and geese are abundant at the refuge and a substantial part of the refuge would remain closed during the season. The most probable effect would be a change in the use patterns of ducks, geese, and swans during open season.</p> <p>Estimated increase in hunter numbers: 210</p> <p>Estimated annual take: 1,250</p> <p><b><i>American Coot</i></b></p> <p>Under this alternative, 31 percent of the refuge would be open to coot hunting. Some hunters may take coot while hunting waterfowl species and young, inexperienced hunters may harvest coot as an introduction to hunting. This increase in take and use is expected to have neutral effects to the local coot population because coots are abundant on the refuge.</p> <p>Estimated increase in hunter numbers: 3</p> <p>Estimated annual take: 9</p>	<p>Hunters would still have an opportunity to harvest birds from state grounds next to the refuge. We expect that the estimated yearly number of ducks and geese harvested at the refuge would be around 78 and 240, respectively, with an estimated 14 duck hunters and 80 goose hunters. Thus, for the overall pheasant population this would constitute a negligible effect.</p> <p><b><i>American Coot</i></b></p> <p>Under this alternative, 1 percent of the refuge would remain open to coot hunting and disturbance to coots because of hunting pressure would occur only at the LWRRRA. Closed areas would remain the same to provide escape and non-disturbance locations. Hunters would still have an opportunity to harvest birds from state grounds next to the refuge.</p>

<p style="text-align: center;"><b>Affected Resources</b></p>	<p style="text-align: center;"><b><u>Alternative A (Proposed Action)</u></b></p> <p><i>Expand and provide hunting opportunities for deer species, upland game, predators and huntable migratory birds - expand take of now allowable species to new acres and allow the take of new species to include: cottontail rabbit, prairie chicken, coyote, red fox, bobcat, and mountain lion.</i></p>	<p style="text-align: center;"><b><u>Alternative B (No Action)</u></b></p> <p><i>Continue to provide hunting opportunities as described in the 2017 Lacreek NWR Hunting and Fishing Brochure.</i></p>
<p>This report also gave an estimate of less than 50 hunters harvesting an estimated 100 ± 189 percent coots in South Dakota. There have been no formal surveys of the coot on the refuge and populations can fluctuate widely, often depending on moisture levels because breeding success increases during wet periods that provide more ponds and stable water levels throughout brood-rearing.</p> <p><b><i>Wilson’s Snipe</i></b></p> <p>These birds are among the most widespread shorebirds in North America. According to the Breeding Bird Survey, Wilson’s Snipe populations are increasing at a rate of 8.5 percent per year (1967 to 2012) in South Dakota (Sauer et al. 2014). Snipe is common in areas with adequate numbers of shallow wetlands, especially the prairie pothole region in eastern South Dakota and the northern and southern edges of the state west of the Missouri River. In the U.S., hunters harvested 42,400 (± 57 percent) and 83,600 (± 121 percent) snipe in 2017 and 2018, respectively (Raftovich et al. 2019). In South Dakota, there were only 100 ± 178 percent snipe harvested in 2017 and none reported harvested in 2018 (Raftovich et al. 2019). There are no estimates of the snipe population on the refuge. However, they are present and appear to be abundant during certain times of the year.</p>	<p><b><i>Wilson’s Snipe</i></b></p> <p>Under this alternative, 31 percent of the refuge would be open to snipe hunting. Some hunters could take snipe while hunting waterfowl species and young, inexperienced hunters may harvest snipe as an introduction to hunting. The global breeding population, which is shared between the U.S. and Canada, is estimated at 2 million individuals (Sauer et al. 2014). This increase in take and use is expected to have neutral effect to the local snipe population because this species is abundant on the refuge.</p> <p>Estimated increase in hunter numbers: 3</p> <p>Estimated annual take: 6</p>	<p>The number of coot hunters and harvest numbers are estimated to remain similar to the ten-year average for Bennett County. Effects would be negligible.</p> <p><b><i>Wilson’s Snipe</i></b></p> <p>Under this alternative, 1 percent of the refuge would remain open to snipe hunting. Disturbance to snipe from hunting pressure would occur only at the LWRRA. Closed areas would remain the same to provide escape and non-disturbance locations. Hunters would still have an opportunity to harvest birds from state grounds next to the refuge. We expect that the estimated yearly number of snipe hunted at the refuge would hover around three to four, with an estimated number of hunters around two. Thus, for the overall snipe population this would constitute a negligible effect.</p>

<p style="text-align: center;"><b>Affected Resources</b></p>	<p style="text-align: center;"><b><u>Alternative A (Proposed Action)</u></b></p> <p><i>Expand and provide hunting opportunities for deer species, upland game, predators and huntable migratory birds - expand take of now allowable species to new acres and allow the take of new species to include: cottontail rabbit, prairie chicken, coyote, red fox, bobcat, and mountain lion.</i></p>	<p style="text-align: center;"><b><u>Alternative B (No Action)</u></b></p> <p><i>Continue to provide hunting opportunities as described in the 2017 Lacreek NWR Hunting and Fishing Brochure.</i></p>
<p><b><i>Mourning Dove</i></b></p> <p>The mourning dove is one of the most widely distributed and abundant species in urban and rural areas of North America. Partners in Flight (PIF) estimates the global breeding population at 120 million with 81 percent spending some part of the year in the U.S., 19 percent in Mexico, and 5 percent in Canada (PIF 2017). The primary management goal of the Service is to maintain dove populations at a healthy and productive state (Seamans 2019). The Service estimates approximately 694,300 dove hunters harvested 10,374,500 ± 4 percent mourning doves in 2018 at a national level. In South Dakota, there were only 69,400 ± 15 percent doves harvested by hunters. South Dakota represents only 1 percent of the total doves harvested at a national level and only 1 percent of the total dove hunters nationally (Raftovich et al. 2018). The average number of mourning doves harvested in South Dakota from 2008 to 2017 was 5,247, and in Bennett County, the state projected 8 hunters harvested an estimated 32 birds in 2017 (SD GFP 2018b). Mourning dove was listed in the refuge CCP and accompanying EA (2006) as a species that would be considered for more hunting opportunities.</p>	<p><b><i>Mourning Dove</i></b></p> <p>Under this alternative, 31 percent of the refuge would be open to mourning dove hunting. This early-season hunt is allowed next to the refuge and is generally of short duration and low pressure because mourning doves tend to migrate shortly after the dove season opens. Many hunters also shift to hunting other species such as waterfowl and upland game birds. In addition, young, inexperienced hunters may harvest doves as an introduction to the hunting sports. This increase in take and use is expected to have neutral effect to the local dove population because the South Dakota dove population is stable, according to Breeding Bird Survey data (Sauer et al. 2014).</p> <p>Estimated increase in hunter numbers: 8</p> <p>Estimated annual take: 32</p>	<p><b><i>Mourning Dove</i></b></p> <p>Under this alternative, 1 percent of the refuge would remain open to mourning dove hunting. Disturbance to mourning doves from hunting pressure would occur only at the LWRRA. Closed areas would remain the same to provide escape and non-disturbance locations. Hunters would still have an opportunity to harvest birds from state grounds and walk-in areas next to the refuge. The estimated yearly number of doves hunted at the refuge is expected to remain around 20, with an estimate of six hunters. Thus, for the overall dove populations, this would constitute a negligible effect.</p>

<p style="text-align: center;"><b>Affected Resources</b></p>	<p style="text-align: center;"><b><u>Alternative A (Proposed Action)</u></b></p> <p><i>Expand and provide hunting opportunities for deer species, upland game, predators and huntable migratory birds - expand take of now allowable species to new acres and allow the take of new species to include: cottontail rabbit, prairie chicken, coyote, red fox, bobcat, and mountain lion.</i></p>	<p style="text-align: center;"><b><u>Alternative B (No Action)</u></b></p> <p><i>Continue to provide hunting opportunities as described in the 2017 Lacreek NWR Hunting and Fishing Brochure.</i></p>
<p><b><i>American Crow</i></b></p> <p>American crows are abundant, and their populations were stable in South Dakota for the last 40 years according to the North American Breeding Bird Survey (Sauer et al. 2014).</p> <p>PIF (2017) estimates a global breeding population at 27 million, with 88 percent spending part of the year in the U.S. American crows live in open habitats with scattered trees, woodlots, shelterbelts, and forest edges (Tallman 2002). There are no estimates of the crow population on the refuge; however, they are present and appear to be abundant during certain times of the year.</p>	<p><b><i>American Crow</i></b></p> <p>Under this alternative, 31 percent of the refuge would be open to crow hunting. This increase in take and use is expected to have neutral effects to the local crow population. This early-season hunt is allowed on areas next to the refuge and is generally a low-pressure hunt because many hunters shift to hunting other species, such as waterfowl and upland game birds. In addition, young, inexperienced hunters may harvest crows as an introduction to the hunting sports. This increase in take and use is expected to have neutral effects to the local crow population because crows are abundant on the refuge.</p> <p>Estimated increase in hunter numbers: 3</p> <p>Estimated annual take: 3</p>	<p><b><i>American Crow</i></b></p> <p>Under this alternative, 1 percent of the refuge would remain open to crow hunting. Disturbance to crows from hunting pressure would occur only at the LWRRA.. Closed areas would remain the same to provide escape and non-disturbance locations. Hunters would still have an opportunity to harvest birds from state grounds and walk-in areas next to the refuge We expect that the estimated yearly number of crows taken at the refuge would remain around two to three, with an estimate of two hunters. Thus, for the overall crow population this would constitute a negligible effect.</p>

<b>Affected Resources</b>	<b><u>Alternative A (Proposed Action)</u></b> <i>Expand and provide hunting opportunities for deer species, upland game, predators and huntable migratory birds - expand take of now allowable species to new acres and allow the take of new species to include: cottontail rabbit, prairie chicken, coyote, red fox, bobcat, and mountain lion.</i>	<b><u>Alternative B (No Action)</u></b> <i>Continue to provide hunting opportunities as described in the 2017 Lacreek NWR Hunting and Fishing Brochure.</i>
<p><b><i>Sandhill Crane</i></b></p> <p>Sandhill cranes are abundant and their populations increased by about 4.5 percent per year between 1966 and 2014, according to the North American Breeding Bird Survey (Sauer 2014). The North American Waterbird Conservation Plan lists them as a species of low conservation concern (Kushlan et al. 2002). All crane-hunting seasons are regulated by federal and state wildlife agencies and require a special state permit. Hunting seasons are limited to specific areas, time periods, and bag limits. For South Dakota, there was an estimated average of 50 active hunters from 2010 to 2015 (Dubovsky 2016). There are no estimates of the sandhill crane population on the refuge. However, they are present mostly during spring and fall migration.</p>	<p><b><i>Sandhill Crane</i></b></p> <p>Under alternative B, 31 percent of the refuge would be open to sandhill crane hunting. This increase in take and use is expected to have neutral effects to the local Sandhill crane population because fall migration generally occurs over a relatively short time period (late October through mid-November) and stop-overs on the refuge for small flocks (200 to 300) are limited to 1 or 2 days. Also, if disturbed, sandhill cranes could likely move to a closed area on the refuge.</p> <p>Estimated increase in hunter numbers: 5</p> <p>Estimated annual take: 10</p>	<p><b><i>Sandhill Crane</i></b></p> <p>Under this alternative, 1 percent of the refuge would remain open to sandhill crane hunting and disturbance to cranes because of hunting pressure would occur only at the LWRRRA. Closed areas would remain the same to provide escape and non-disturbance locations. Hunters would still have an opportunity to harvest birds from state grounds and walk-in areas next to the refuge. The estimated yearly number of cranes harvested at the refuge would be expected to remain around five to six, with an estimate of seven hunters. Thus, for the overall crane population this would constitute a negligible effect.</p>
<b>Wildlife and Habitat</b>		
<p><b><i>Habitats</i></b></p> <p>The refuge lies in Lake Creek Valley on the Northern edge of the Nebraska Sandhills and has sub-irrigated meadows, impounded freshwater marshes, and tall- and mixed-grass prairies. The refuge and its associated habitats are well known for their diversity and wildlife values. The wet meadows, grasslands, and prairie dog towns support several migratory birds of concern, and the Sandhills is a large habitat of native grass that provides a mix of warm and cool season grasses, low growing shrubs, yucca, and bare ground.</p>	<p>Under this alternative, 70 percent of the refuge is open to public hunting. Effects to habitats are expected to be similar to the No Action Alternative, but increased hunting may result in more short-term disturbance over a larger area because more units would be open to hunting, as well as added opportunities for hunting of new species. This disturbance may include temporary displacement of migratory and resident wildlife from foot and vehicle traffic moving through and next to the area, and the slight potential for an increase in noxious weeds close to parking lots.</p>	<p>Under this alternative, 53 percent of the refuge is open to public hunting. The effects to habitats would be limited to human and dog foot traffic within the open areas during hunting season. However, in closed areas, a diversity of habitats would be protected from disturbance, and species diversity would not be affected long-term because the protected area covers a range of diverse habitats.</p>

<p style="text-align: center;"><b>Affected Resources</b></p>	<p style="text-align: center;"><b><u>Alternative A (Proposed Action)</u></b></p> <p><i>Expand and provide hunting opportunities for deer species, upland game, predators and huntable migratory birds - expand take of now allowable species to new acres and allow the take of new species to include: cottontail rabbit, prairie chicken, coyote, red fox, bobcat, and mountain lion.</i></p>	<p style="text-align: center;"><b><u>Alternative B (No Action)</u></b></p> <p><i>Continue to provide hunting opportunities as described in the 2017 Lacreek NWR Hunting and Fishing Brochure.</i></p>
<p>The refuge occurs in a region characterized by the transition between eastern and western plant and animal species. Wildlife on the refuge are aquatic and marsh dwelling species, as well as species typical of the prairie. Waterfowl, shorebirds, wading birds, raptors, songbirds, reptiles, amphibians, fish, mammals, and insects use the area.</p> <p><b><i>Birds</i></b></p> <p>The refuge is especially important for migratory birds, both during the migrating and nesting seasons. There have been 281 bird species recorded on the refuge since 1969. A wide array of avian species uses the refuge because of the diversity of wetlands and grasslands habitats that are well suited for providing resources for migrating and nesting passerines. There are ten birds of national conservation concern that occur on the refuge (Birds of Conservation Concern, USFWS 2008) as well as three other bird species that are important to consider when conducting refuge management: (1) trumpeter swan; (2) bald eagle; and (3) American white pelican. The refuge is an important staging and migration area for the high plains trumpeter swan flock. There are three confirmed bald eagle nests within the refuge boundary, as two were established within the last two years. And the largest pelican nesting colony in western South Dakota occurs at the refuge. Nesting sites relatively free from disturbance and abundant food resources on the refuge, as well as on lakes and ponds within flying distance, are believed to make this site attractive to nesting pelicans.</p>	<p>Disturbance from hunting on non-hunted migratory birds would be like the No Action Alternative, but over a wider area and during a longer period. Hunting around Pool 10 and adjacent units could affect burrowing owls and ferruginous hawks if waterfowl hunters traverse prairie dog towns during early season hunts. This disturbance is thought to have minimal effects on the populations of these species on the refuge as the owls are nocturnal and the hawks spend many hours of the day hovering in search for prey. Waterfowl hunting on Pool 10 and the Marty Quarter would affect trumpeter swans because they may not feed and roost as they would have traditionally. Trumpeter swans would still have access to many wetlands that provide high quality food resources and protection from disturbance within closed areas found on the refuge and on private wetlands next to the refuge. Swans would likely change their use patterns to avoid areas open to hunting when hunters are present, but the overall average number of swans using the refuge is not likely to change significantly. Waterfowl hunting on Pool 10 may affect bald eagles. If they are present on the ice during hunting seasons, they may also benefit from increased food resources from injured waterfowl. Areas around eagle nests are closed to hunting, so there would be neutral effects. Late migrating shorebirds and wading birds would be minimally affected by waterfowl hunting since they are usually in small groups and can escape to closed areas. Prairie dogs and snakes in Pool 10 units may be affected if waterfowl hunters traverse prairie dog towns during early season hunts. The effects to these species are like the No Action Alternative, but in a larger area. Hunters would encounter reptiles during the early fall hunting season as they are active in the Sandhills and upland habitats on warm days, but disturbance is thought to be like the No Action Alternative.</p>	<p>The number of closed areas offsets the effects to wildlife and aquatic species on the refuge, because it protects large areas of the refuge from disturbance. The likelihood of disturbance from hunting non-target migratory birds is likely to be minimal because most species typically migrate before hunting begins. Most American white pelicans, double-crested cormorants, and black-crown night heron leave the refuge by late- August, so no effects are expected for colonial nesting birds. Direct effects to non-hunted birds that are present year-round such as woodpeckers, horned lark and dark-eyed junco are negligible. Indirect effects to this group of species are also minimal and do not appreciably reduce their numbers at the population level. Hunts could minimally affect burrowing owls, but they may escape into burrows. Ferruginous and rough-legged hawks may be disturbed by hunters walking through prairie dog towns, but disturbance would be minimal and of short duration. Areas around eagle nests are closed to hunting, and they could benefit from feeding on carrion and injured pheasant, ducks, and geese.</p>

<p style="text-align: center;"><b>Affected Resources</b></p>	<p style="text-align: center;"><b><u>Alternative A (Proposed Action)</u></b></p> <p><i>Expand and provide hunting opportunities for deer species, upland game, predators and huntable migratory birds - expand take of now allowable species to new acres and allow the take of new species to include: cottontail rabbit, prairie chicken, coyote, red fox, bobcat, and mountain lion.</i></p>	<p style="text-align: center;"><b><u>Alternative B (No Action)</u></b></p> <p><i>Continue to provide hunting opportunities as described in the 2017 Lacreek NWR Hunting and Fishing Brochure.</i></p>
<p><b><i>Mammals</i></b></p> <p>The refuge contains 60 known species of mammals. Resident species include little brown bat, black-tailed prairie dog, Ord’s kangaroo rat, and American badger.</p> <p><b><i>Reptiles, Amphibians, and Fish</i></b></p> <p>The refuge and the surrounding wetlands contain 47 known species of reptiles, amphibians, and fish. A variety of turtles, frogs, and toads require lakes, streams, and seasonal wetlands. The most common species are snapping and painted turtles, bull and chorus frogs, Woodhouse’s toad, rainbow trout, common carp, and black bullhead. Snakes are present in all habitats and the most common are eastern yellow-bellied racer, plains garter snake, bull snake, and prairie rattlesnake. The Sandhills supports lesser earless lizard, prairie lizard, and many-lined skink, species generally only found in the Sandhills region of South Dakota.</p> <p><b><i>Insects</i></b></p> <p>There have been some pollinator and carrion beetle surveys conducted on the refuge, but no data has been gathered about other insect species present on the refuge. Native bee species have been observed, but no formal surveys have been completed. Common butterfly and carrion beetle species are eastern tiger swallowtail, lupine blue, painted lady, monarch, <i>Nicrophorus marginatus</i>, and <i>Nicrophorus tomentosus</i>.</p>	<p>Effects to insects are expected to be similar to the No Action Alternative, but over a larger area and for a longer time period. Effects to insect species from habitat disturbance related to hunting are negligible at the local level. Overall, hunting effects to wildlife and their habitats and effects to the biological diversity of the refuge are expected to temporarily disturb and change use patterns for some wildlife species, but the effects are thought to be insignificant on local, flyway, and migratory populations.</p>	<p>Some resident mammal and bird species may be displaced from hunt areas but could find safety in closed areas. Small mammals such as voles and mice are generally nocturnal or secretive. Both qualities make hunter interactions with small mammals rare. Prairie dogs would experience minimal effects on days they are more active, as they tend to spend more time in burrows during inclement weather. Amphibians, and fish would not be affected because amphibians would not be as active during hunting season and hunters would not likely interact with fish while hunting. Hunters would encounter reptiles during the early hunting season, including rattlesnakes, as they are active in upland habitats on warm days, but disturbance is expected to be minimal. Rattlesnakes are normally present on the top of prairie dog mounds, and generally escape into burrows so effects would be minimal and short-term. Hunting is not likely to greatly affect insects and disturbance would be related to human presence during the season. Some species of butterflies and moths are migratory and would not be present for most of the refuge hunting season.</p>

<b>Affected Resources</b>	<b><u>Alternative A (Proposed Action)</u></b> <i>Expand and provide hunting opportunities for deer species, upland game, predators and huntable migratory birds - expand take of now allowable species to new acres and allow the take of new species to include: cottontail rabbit, prairie chicken, coyote, red fox, bobcat, and mountain lion.</i>	<b><u>Alternative B (No Action)</u></b> <i>Continue to provide hunting opportunities as described in the 2017 Lacreek NWR Hunting and Fishing Brochure.</i>
		Overall, the effect on wildlife and their associated habitat would be limited to foot (human and dog) traffic and noise associated with hunting in open areas during open seasons. In addition, vehicle traffic on roads next to open areas increases and this could influence wildlife movements.
<b>Threatened and Endangered Species and Other Special Status Species</b>		
<p>Five federally listed species may be found on the refuge: northern long-eared bat, red knot, whooping crane, American burying beetle, and western prairie fringed orchid.</p> <p><b><i>Northern Long-Eared Bat</i></b></p> <p>There are several species of bats on the refuge, and three species have been documented on the refuge through acoustic surveys, but no northern long-eared bats were identified (Lacreek NWR survey files 2011).</p> <p><b><i>Red Knot</i></b></p> <p>The red knot can be found primarily in eastern South Dakota, but it is an accidental migrant on the refuge (Tallman 2002).</p>	<p>A consultation pursuant to Section 7 of the Endangered Species Act was formerly conducted as part of this EA and the updated hunting plan. A determination of “No Effect” was made for the northern long-eared bat, red knot, whooping crane, American burying beetles, and the western prairie fringed orchid as the proposed project would not directly or indirectly affect (neither negatively nor beneficially) individuals of listed, proposed, or candidate species, as well as designated or proposed critical habitat of such species. In addition, the refuge may close any location on the refuge that are thought to house these species as habitat protection.</p>	<p>No effect is expected under this alternative for any federally listed threatened or endangered species or their critical habitat. Per intra-service Section 7 consultations, it has been decided that these species would not be affected by hunting activities carried out in accordance with federal and state regulations. In addition, the refuge may close any location on the refuge that are thought to house these species as habitat protection.</p>

<p style="text-align: center;"><b>Affected Resources</b></p>	<p style="text-align: center;"><b><u>Alternative A (Proposed Action)</u></b></p> <p><i>Expand and provide hunting opportunities for deer species, upland game, predators and huntable migratory birds - expand take of now allowable species to new acres and allow the take of new species to include: cottontail rabbit, prairie chicken, coyote, red fox, bobcat, and mountain lion.</i></p>	<p style="text-align: center;"><b><u>Alternative B (No Action)</u></b></p> <p><i>Continue to provide hunting opportunities as described in the 2017 Lacreek NWR Hunting and Fishing Brochure.</i></p>
<p><b><i>Whooping Crane</i></b></p> <p>The whooping crane now exists in the wild at three locations and in captivity at 12 sites. The range of the whooping crane is primarily in the central U.S., but also the Great Lakes and Florida (USFWS 2010). Whooping cranes are occasionally observed on the refuge during migration and were last observed in the spring of 2009 (Lacreek NWR files 2009).</p> <p><b><i>American Burying Beetle</i></b></p> <p>This species is now listed as endangered and is being proposed for down listing as threatened. There have been periodic carrion beetle surveys on the refuge, with the most recent survey occurring in 2018, and no American burying beetles have been documented (Lacreek NWR survey files 2018). However, a single beetle has been documented in Bennett County in 2017 and in several counties next to the refuge in South Dakota and Nebraska, including Todd County and Cherry County, respectively (C. Bessken- USFWS personal communication November 2019).</p> <p><b><i>Western Prairie Fringed Orchid</i></b></p> <p>This species is now listed as threatened and its range is limited to the central U.S. This species has not been documented on the refuge, but it has been documented in Bennett, Oglala Lakota, and Todd Counties in South Dakota and in Cherry County, Nebraska (USFWS 2009).</p>		

Key: CCP = Comprehensive Conservation Plan; EA = Environmental Assessment; LWRRA = Little White River Recreation Area; PIF = Partners in Flight; SD GFP = South Dakota Game, Fish, and Parks

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

<p><b>Affected Resources</b></p>	<p><b><u>Alternative A (Proposed Action)</u></b> <i>Expand and provide hunting opportunities for deer species, upland game, predators and huntable migratory birds - expand take of now allowable species to new acres and allow the take of new species to include: cottontail rabbit, prairie chicken, coyote, red fox, bobcat, and mountain lion.</i></p>	<p><b><u>Alternative B (No Action)</u></b> <i>Continue to provide hunting opportunities as described in the 2017 Lacreek NWR Hunting and Fishing Brochure.</i></p>
<p><b>Visitor Use and Experience</b></p>		
<p>The refuge offers a variety of recreational opportunities to local residents and other visitors centered around wildlife resources. Opportunities on the refuge include wildlife-dependent and wildlife-compatible uses legislated by Congress and outlined in the Improvement Act. These uses are hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation. The refuge is open to hunting for white-tailed and mule deer, ring-necked pheasant, and sharp-tailed grouse. Several select pools are open for fishing throughout the year. The refuge is a popular destination for viewing migrations of waterfowl, shorebirds, and neotropical birds. The refuge provides outstanding opportunities for viewing wildlife. The abundance and variety of wildlife species combined with relatively low visitation provides many opportunities to view wildlife closely. Popular wildlife watching opportunities on the refuge include trumpeter swans, American white pelicans, burrowing owls, and black-tailed prairie dogs. Interpretive displays and brochures are available at refuge headquarters and two informational kiosks. An auto tour route and nature trails provide opportunities for viewing and photographing wildlife. The LWRRA has facilities for boating, fishing, swimming, and camping.</p>	<p>Under this alternative, the effects are expected to be like the No Action Alternative, but over a greater area. Although some hunting seasons would extend into late winter, there are few (if any) non-hunting visitors using the refuge at this time. Given that hunters would be allowed to access the refuge earlier and later in the day than non-hunters, more parking areas would be established. Non-hunters are not required to park in a parking area, so no conflict is assumed. Proper signage would delineate the newly opened and closed areas before the first hunting season to reduce confusion and unexpected confrontations. Even with the proposed changes in the areas closed to hunting, the auto tour and three wildlife trails would be available for use by all visitors throughout the hunting season. This area is now popular for wildlife viewing and photography. The closed areas help make sure participants are safe.</p>	<p>Under this alternative, the refuge would continue to serve as habitat for fish and wildlife, as well as provide outdoor recreational opportunities for all six priority wildlife dependent public uses, which are hunting, fishing, wildlife observation, photography, environmental education, and interpretation. Conflicts are most likely to occur between hunting and other uses such as bird watching, photography and wildlife viewing. The non-hunting public would not be restricted from entering the hunting area. However, while hunters are present, we would expect non-hunters to avoid the hunting area. Given that hunters would be allowed to access the refuge earlier (2 hours before sunrise) than non-hunters (1/2 hour before sunrise.), some non-hunters may not find parking spaces. However, non-hunters are not required to park in parking areas. During high visitation periods, we would expect disturbance by gunfire to negatively affect the serenity and natural experience to which the non-hunting public is accustomed. However, the auto tour and three wildlife viewing and hiking trails closed to all hunting and would be available for use by all visitors throughout the hunting season. This area is now popular for wildlife viewing and photography. The closed areas help make sure participants are safe.</p>

<p style="text-align: center;"><b>Affected Resources</b></p>	<p style="text-align: center;"><b><u>Alternative A (Proposed Action)</u></b></p> <p style="text-align: center;"><i>Expand and provide hunting opportunities for deer species, upland game, predators and huntable migratory birds - expand take of now allowable species to new acres and allow the take of new species to include: cottontail rabbit, prairie chicken, coyote, red fox, bobcat, and mountain lion.</i></p>	<p style="text-align: center;"><b><u>Alternative B (No Action)</u></b></p> <p style="text-align: center;"><i>Continue to provide hunting opportunities as described in the 2017 Lacreek NWR Hunting and Fishing Brochure.</i></p>
<p><b>Cultural Resources</b></p>		
<p>Although there have been few cultural resource investigations in and around the refuge, a major discovery was made in 2000 of a large bison bone and stone artifact site located in Pool 8. The site was called the Sierra-Kai site and was mapped and recorded by Service archaeologists in August 2000 during a drawdown of the reservoir. Over 1,500 bison bones and many stone artifacts were documented. It appears that the site may have been used to process bison carcasses. A Late Plains period (1500 A.D. to 1800 A.D.) projectile point was recovered with other stone tools. The site covered nearly 20 acres and extended to the northeast. Other indications of prehistoric Native American activity within the boundaries of the refuge include stone artifact finds near Pool 9 by a Service archaeologist. These sites show the potential for other prehistoric sites, usually covered by the waters and vegetation of the reservoirs, to exist along the old creek bed and floodplain dammed in the 1930s to create the reservoirs. The Sand Hills and the Badlands areas of Nebraska and South Dakota are now known to have evidence of Native American occupation, possibly throughout the last several thousand years. It is also known from historic records that various tribes frequently visited the refuge area during the 18th and 19th centuries, including the Lakota, Cheyenne, Arapahoe and Pawnee, to name a few.</p>	<p>Under this alternative, the effects are expected to be the same as the No Action Alternative, but there would be some changes to access through the addition of parking lots. However, the addition of grass parking lots would not disturb the ground and there should be no direct effects to cultural resources. All proposed installation or development of infrastructure undertaken in the future in association with or as a result of carrying out this alternative would be subject to further review and consideration on an individual basis under section 106 of the National Historic Preservation Act.</p>	<p>Under this alternative, there would be no change to the current hunting program on the refuge. Hunting resident upland game birds, migratory birds, and big game requires no ground disturbing activities or other activities that might disturb undocumented sites. Maintaining the current program would not alter, directly or indirectly, any characteristic of a historic property. Because of the temporary and superficial use of refuge habitats; there should be no direct effects to cultural resources under this alternative from visitors engaged in available hunting activities.</p>

<p style="text-align: center;"><b>Affected Resources</b></p>	<p style="text-align: center;"><b><u>Alternative A (Proposed Action)</u></b></p> <p><i>Expand and provide hunting opportunities for deer species, upland game, predators and huntable migratory birds - expand take of now allowable species to new acres and allow the take of new species to include: cottontail rabbit, prairie chicken, coyote, red fox, bobcat, and mountain lion.</i></p>	<p style="text-align: center;"><b><u>Alternative B (No Action)</u></b></p> <p><i>Continue to provide hunting opportunities as described in the 2017 Lacreek NWR Hunting and Fishing Brochure.</i></p>
<p>Although no prehistoric sites have been found eligible for nomination to the National Register of Historic Places, future discoveries may change that situation.</p>		

Key: LWRRA = Little White River Recreation Area; NWR = National Wildlife Refuge

**Table 3. Affected Refuge Management and Operations and Anticipated Direct and Indirect Impacts of the Proposed Action and Any Alternatives.**

<p><b>Affected Resources</b></p>	<p><b><u>Alternative A (Proposed Action)</u></b> <i>Expand and provide hunting opportunities for deer species, upland game, predators and huntable migratory birds - expand take of now allowable species to new acres and allow the take of new species to include: cottontail rabbit, prairie chicken, coyote, red fox, bobcat, and mountain lion.</i></p>	<p><b><u>Alternative B (No Action)</u></b> <i>Continue to provide hunting opportunities as described in the 2017 Lacreek NWR Hunting and Fishing Brochure.</i></p>
<p><b>Administration</b></p>		
<p>Administering hunting on the refuge covers the following costs: law enforcement, education, maintenance of boundaries, roads, and access points, and search and rescue efforts. There is no regular law enforcement presence on the refuge, but a federal wildlife officer is available through a Nebraska Service office. An agreement exists for assistance between state enforcement. Refuge staff would be available to answer questions or concerns by refuge visitors.</p>	<p>Under this alternative, the refuge would be open to approximately 11,500 acres for hunting and the cost associated with expanding the hunt program would be higher during the start of the new hunt program. We believe that costs associated with installing signs and maintaining parking areas would increase approximately 10 percent during the first year. There would also be some minor costs associated with creating new parking lots and hunting brochures.</p>	<p>Under this alternative, the refuge is open to approximately 8,700 acres for hunting primarily upland game birds and big game species. The annual cost associated with administering this alternative is \$3,500. Included in this estimate are costs associated with salary, equipment, and law enforcement (one visit during fall to check hunters). In addition, some infrastructure maintenance is needed to support hunting, such as installing and maintaining proper signs, as well as maintaining two informational kiosks and four vault toilets and mowing parking lots.</p>

Key: NWR = National Wildlife Refuge

**Table 4. Affected Socioeconomics and Anticipated Direct and Indirect Impacts of the Proposed Action and Any Alternatives.**

<p><b>Affected Resources</b></p>	<p><b><u>Alternative A (Proposed Action)</u></b> <i>Expand and provide hunting opportunities for deer species, upland game, predators and huntable migratory birds - expand take of now allowable species to new acres and allow the take of new species to include: cottontail rabbit, prairie chicken, coyote, red fox, bobcat, and mountain lion.</i></p>	<p><b><u>Alternative B (No Action)</u></b> <i>Continue to provide hunting opportunities as described in the 2017 Lacreek NWR Hunting and Fishing Brochure.</i></p>
<p><b>Local and Regional Economics</b></p>		
<p>In 2018, Bennett County had 63 private non-farm employment establishments with paid employees, compared to 26,743 establishments in the State of South Dakota overall. Agriculture is the major employer in the county. A variety of businesses exist in Martin, including health services, education, retail sales, and support services. The median per capita income is \$15,287 (2013 to 2017) compared with the State which was \$28,761. Thirty five percent of the population was living below the poverty line, compared with the state at thirteen percent (U.S. Census Bureau QuickFacts 2017).</p>	<p>Under this alternative, greater visitation and expenditure are expected. However, effects to the local economy and regional economy are likely to be negligible because most hunters tend to stay overnight and buy food or other hunting-related items outside of Bennett County. It is expected that annual hunting use on the refuge would increase from current levels if the refuge expands the number of species that may be harvested. This would result in increased hunting-related visits to the refuge and surrounding communities, as well as increased expenditures into the local economy.</p>	<p>Under this alternative, no effects on the local and regional economy are expected to occur as visitation and expenditure is estimated to stay the same or slightly increase under this alternative.</p>
<p><b>Environmental Justice</b></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>Same as the No Action Alternative.</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 or low-income communities would not be disproportionately affected by any effects from this proposed action or any of the alternatives.</p>

Key: NWR = National Wildlife Refuge

### 2.3 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). Carrying out this alternative would have no significant cumulative effects on local wildlife populations, the natural environment, cultural resources, social and economic resources, or recreational opportunities. This finding is based on an analysis of potential environmental effects of hunting on the refuge with other projects and actions.

**Table 5. Anticipated Cumulative Impacts of the No Action and Proposed Action Alternatives**

Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment	Descriptions of Anticipated Cumulative Impacts
<b>Hunting</b>	
<p>Under the mission of the Service there are nine guiding principles, including one that focuses on the “Big Six” public uses: hunting, fishing, wildlife observation, photography, interpretation, and education. The Service and the refuge evaluate each of these uses to make sure of compatibility and appropriateness. Hunting was found to be a compatible use and this wildlife-dependent recreational activity has occurred on the refuge for nearly fifty years. Hunting and fishing occur throughout the entire state of South Dakota and across the U.S. as every citizen has the opportunity, under law, to hunt and fish. Nationally the number of hunters decreased 16 percent from 2011 to 2016 (DOI et al. 2016). Eleven and a half million people aged 16 years and older enjoyed hunting a variety of animals within the U.S. in 2016.</p> <p><i>Upland Game (ring-necked pheasant, prairie grouse, cottontail rabbit)</i></p>	<p>The cumulative effects of hunting on the refuge are most likely to help the public and possibly wildlife habitat because increased hunting opportunities would result in more hunters participating in the sport over the long-term. This would have positive effects on habitat conservation. Each alternative would have minor effects on local, regional, or national hunting opportunities. The Service does not believe that increasing hunting opportunities on refuge land would decrease hunting opportunities on other public and tribal lands near the refuge. Because trends show that the number of hunters participating in the sport is declining, we believe providing more opportunities would potentially increase the number of hunters that use public land for hunting recreation.</p> <p>The proposed hunts would have a negligible cumulative effect on regional and statewide wildlife populations. Both alternatives would have minor effects on the environment, hunted species, and non-hunted migratory birds, and resident wildlife species. However, under the No Action Alternative, the affected area, species, and time period of hunting allowed on the refuge would increase. Under both alternatives, there are areas on the refuge that are closed to all hunting and that would provide places where wildlife can escape from hunting related disturbances. Cumulative effects on species hunted are discussed separately.</p> <p>Hunting upland game on the refuge would not add significantly to the cumulative effects on the local populations of these species. The anticipated increase in take is likely to be a small fraction of the estimated populations, even with the addition of 2,800 acres of land. The estimated annual take of upland game birds is 20 and the estimated take of rabbits is 10. Such small increases in harvest are not likely to have cumulative effects. Hunters are most likely to encounter prairie grouse in the proposed new opening, so increases in the harvest of these species is expected but not likely to be significant.</p>



<b>Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment</b>	<b>Descriptions of Anticipated Cumulative Impacts</b>
<p><i>Migratory Birds (ducks and geese, Wilson’s snipe, coot, crow, mourning dove, and sandhill crane)</i></p>	<p>Annual waterfowl assessments are based on the distribution, abundance, and flight corridors (flyways) of migratory birds. An annual Waterfowl Population Status Report is produced each year and covers the most current breeding population and production information available for waterfowl in North America. The report is a cooperative effort by the Service, the Canadian Wildlife Service, various state and provincial conservation agencies, and private conservation organizations (USFWS 2018). In the U.S., the process involves several scheduled meetings (Flyway Study Committees, Flyway Councils, and Service Regulations Committee where information on the status of migratory bird populations and their habitats is shared with individuals of agencies responsible for setting hunting regulations. In addition, public hearings are held, and the proposed regulations are published in the Federal Register to allow public comment. An Annual Adaptive Harvest Management Report provides the most current data, analyses, and decision-making protocols (USFWS 2017a). These reports are intended to aid the development of waterfowl harvest regulations in the U.S. for each hunting season. Coot, moorhen and rail species are also counted and analyzed.</p> <p>Each state selects season dates, bag limits, shooting hours, and other choices using guidance in these reports. The refuge is in the Central Flyway and follows the regulations set by the State of South Dakota which are published in the yearly proclamation. The Service believes that hunting on the refuge would not add significantly to the cumulative effects of migratory bird management on local, regional, or Central Flyway populations because the percentage likely to be taken on the refuge, though possibly additive to existing hunting takes, would be a small fraction of the estimated populations. In addition, overall populations would continue to be monitored and future harvests would be adjusted as needed under the existing flyway and State regulatory processes. Several points support this conclusion:</p> <ol style="list-style-type: none"> <li>1) The proportion of the national waterfowl harvest that occurs on national wildlife refuges is only 6 percent (USFWS 2013).</li> <li>2) There are no populations that exist wholly and exclusively on national wildlife refuges.</li> <li>3) Annual hunting regulations within the U.S. are established at levels consistent with the current population status.</li> <li>4) Refuges cannot allow more liberal seasons than provided for in federal frameworks.</li> <li>5) Refuges bought with money derived from the Federal Duck Stamp must limit hunting to 40 percent of the available area.</li> </ol>

<b>Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment</b>	<b>Descriptions of Anticipated Cumulative Impacts</b>
	As a result, changes or additions to hunting on the refuge would have minor effects on wildlife species in South Dakota. Although the proposed action alternative would increase hunting opportunities compared to the no action alternative, the slight increase in hunter activity would not rise to a significant cumulative effect locally, regionally, or nationally.
<b>Non-Hunted Resident Wildlife</b>	
	The only direct and indirect effect to resident wildlife is short-term disturbance at the time of the action when hunting occurs on the refuge. In a single season resident wildlife may be disturbed multiple times, however there are enough resources for them to relocate on the refuge and respond so there are no negative effects. Areas closed to all hunting provide enough space for resident wildlife to continue to relocate on the refuge in response to temporary disturbance. Long-term effects of short-term disturbance are not likely to occur, and cumulative effects are negligible on resident wildlife. The refuge would continue to support substantial resident wildlife populations that would be at, or above, the habitat's carrying capacity under both alternatives. Even at the local level, the refuge only adds slightly to cumulative effects on the resident wildlife, and a negligible amount to regional and statewide populations.
<b>Use of Lead Ammunition</b>	
Lead ammunition is allowed for big game, predators, and cottontail rabbit. Non-toxic shot is required for migratory birds and upland birds. Research has shown that lead can be present in gut piles left by deer hunters after field dressing. Bald eagles and other raptors feed on gut piles and may ingest the lead, leading to poisoning.	The Service has been educating hunters about the risk to wildlife from lead ammunition. Refuge staff provide information on websites, signage and through other means to make sure hunters have relevant information to voluntarily switch to non-toxic ammunition. Under these alternatives, the refuge represents a small portion of hunting that would allow the use of lead ammunition (deer, predators, rabbits). Since hunters normally remove the animals hunted with lead shot from the refuge, the continued allowance of toxic shot for hunting of some species is estimated to have a negligible effect on the cumulative effects of lead in the environment. The Service's hunt program can be adjusted to make sure that it does not contribute further to the cumulative effects of lead on refuge habitats or wildlife.

Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment	Descriptions of Anticipated Cumulative Impacts
<b>Climate Change</b>	
<p>Ecological stressors are expected to affect a variety of natural processes and associated resources into the future. Precipitation availability may have a large effect on the number of potholes available to breeding waterfowl. These habitat changes may dramatically reduce the amount and quality of both grassland and wetland for migratory birds that are hunted. As a result, wildlife would be displaced into other areas of available habitat.</p>	<p>While the effects from climate change on the refuge wildlife and habitats are not certain, expanding hunting on the refuge would not add to the cumulative effects of climate change because the refuge uses an adaptive management approach for its hunt program, consistently monitoring and reviewing the hunt program periodically and when necessary. The Service would adjust the hunt program as necessary to make sure that it does not contribute further to the cumulative effects of climate change on resident wildlife and migratory birds.</p>

Key: U.S. = United States

## 2.4 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**

The proposed action alternative would open hunting opportunities for cottontail rabbit, prairie chicken, mountain lion, coyote, red fox, and bobcat on approximately 12,800 acres. In addition, it would expand hunting opportunities of migratory game birds, upland game birds, and big game on approximately 2,800 acres on the refuge. The Service expects some minimal increases in disturbance to habitat and wildlife from hunting related activities. The largest increase in disturbance would likely occur on and around Pool 10. Disturbed wildlife would either seek refuge within closed areas or leave the refuge entirely to use or rest on other habitats in the area. Distributed migratory birds may also move to the closed areas or adjacent lands, or they might continue their migration south. During times of no or low hunting pressure, wetlands within the hunting area would provide resting and feeding areas, as they would during non-hunting hours, such as in the late evening or overnight. The Service expects the direct effects to waterfowl caused by disturbance to not significantly affect individual fitness or have any population level effects. The refuge would continue to support substantial resident wildlife populations that would be at, or above, the habitat’s carrying capacity. Even at the local level, the refuge only adds slightly to cumulative effects on the resident wildlife, and a negligible amount to regional and statewide populations.

Under this alternative, we expect an increase in disturbance to non-hunting visitors, especially during high visitation periods. Disturbance from gunfire would negatively affect the serenity and natural experience to which the non-hunting public is accustomed. However, the auto tour and three wildlife viewing and hiking trails are in the area that is closed to all hunting and would be available for use by all visitors throughout the hunting season.

The costs associated with installing signs and maintaining parking areas would increase during the first year. There would also be some minor costs associated with creating new parking lots and hunting brochures, maintaining roads, trails, and other infrastructure in the following years.

Because of the temporary and superficial use of refuge habitats, there would be no direct effects to cultural resources under this alternative from visitors engaged in current or proposed hunting activities. Collecting or removing artifacts, historic items, shed antlers, and other natural objects is prohibited.

It is anticipated under this proposed action that more hunters would use the refuge thereby bolstering the area economy. Martin is the nearest community offering hotels, restaurants, groceries, and fuel. This community depends on hunters to support the economy during the hunting season. The proposed action would help to further support this economic level. Area landowners and adjacent neighbors to the refuge could see a decrease in hunting pressure because hunters would have more opportunities on the refuge. 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 or low-income communities would not be disproportionately affected by any effects from this proposed action or any of the alternatives.

This alternative would allow new hunting of predators, migratory birds, and upland game bird species described in the 2019 hunting plan within the refuge. It would also expand hunting opportunities to 2,800 new acres in accordance with federal regulations, refuge-specific regulations, and the seasons and regulations set by the State of South Dakota.

New hunting opportunities would attract hunters not using the refuge, thus affording an opportunity for the refuge to engage new segments of the public to promote natural resources conservation, environmental education, and natural resources stewardship. Opportunities to create more outdoor recreation experiences would be consistent with the goals and priority uses identified by the Improvement Act and Secretarial Orders 347 and 3356. The Service has decided that the hunting plan is compatible with the purposes of the refuge and the mission of the Refuge System.

This alternative meets the purpose and needs of the Service as described above, because it provides hunting opportunities on the refuge and meets the refuge establishing purposes. It maintains 60 percent of the refuge as inviolate sanctuary for migratory birds. The Service has the resources necessary to carry out this alternative, and has decided that the proposed action described in this alternative is compatible with the purposes of the refuge and the mission of the Refuge System. This alternative also helps align Service regulations with state regulations as much as possible to make hunting more accessible and regulations less complex to the public.

### **Alternative B – No Action Alternative**

This alternative would continue to offer public hunting opportunities of pheasant, sharp-tailed grouse, and deer on Lacreek NWR. The species that would continue to be hunted at the LWRRA are: upland game birds, some migratory birds, and small game as named in 50 CFR part 32. No additional acres would be opened to hunting on the refuge or the LWRRA. Effects on wildlife and habitat would be negligible because there would likely be the same amount of disturbance from hunting related activities. Overall, the effect on wildlife and their associated habitat would be limited to foot (human and dog) traffic and noise associated with hunting in open areas during open seasons. In addition, vehicle traffic on roads next to open areas increases and this could

influence wildlife movements. Although this alternative has lesser direct effects to physical and biological resources than the proposed action, it would reduce our mandates under the Administration Act and Secretarial Order 3356 - Hunting, Fishing, Recreational Shooting, and Wildlife Conservation Opportunities and Coordination with States, Tribes, and Territories.

Under this alternative, the refuge would continue to serve as habitat for fish and wildlife as well as provide outdoor recreational opportunities for all six priority wildlife dependent public uses, which are hunting, fishing, wildlife observation, photography, environmental education, and interpretation. Conflicts are most likely to occur between hunting and other uses such as bird watching, photography and wildlife viewing. This alternative meets one of the guiding principles of the Service because it provides wildlife-dependent recreational opportunities for the public. However, the alternative does not allow for the variety of hunting opportunities that could be offered, including those mentioned in the refuge CCP, nor does it allow for alignment with state regulations.

Under this alternative, some infrastructure maintenance is needed to support hunting, including installing and maintaining proper signs, maintaining two informational kiosks and four vault toilets, and mowing parking lots. There would be no additional costs to the refuge under this alternative.

Hunting resident upland game birds, migratory birds, and big game requires no ground disturbing activities or other activities that might disturb undocumented sites. Continuing the current program would not alter, directly or indirectly, any characteristic of a historic property. Because of the temporary and superficial use of refuge habitats, there would be no direct effects to cultural resources under this alternative from visitors engaged in available hunting activities.

Opportunities to create more outdoor recreation experiences by adding species would be lost. In addition, the refuge's ability to connect with certain segments of the public would potentially be diminished because hunting for popular game species would not be allowed. Hunters would pursue these species off-refuge and thus the refuge's ability to reach those members of the public and promote natural resource conservation, environmental education, and natural resources stewardship may be limited

There would be no change to current public use and wildlife management programs on the refuge under this alternative. The refuge would not increase its effect on the economy and would not provide new hunting or access opportunities. 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 or low-income communities would not be disproportionately affected by any effects from this proposed action or any of the alternatives.

## **2.5 Monitoring**

Continued annual biological monitoring of both resident and migratory wildlife and their habitats is done on the refuge in conjunction with our state partners. In addition, the station would stay apprised on the status of threatened and endangered species on the refuge through consultation and local monitoring. Continued communication with the local SD GFP conservation officer, Bennett County Sheriff, and detailed federal wildlife officers to decide if user conflicts are occurring and any changes that could enhance the hunt program.

## **2.6 Outreach to the Community**

The following issues were raised among various parties involved and were factors considered in developing the alternatives.

### **Opening Pool 10 to Waterfowl Hunting with a Bald Eagle Nest Within the Unit Near The Pool 10 Structure**

- A bald eagle pair constructed a nest near Pool 10 in winter of 2018. Their first nest attempt was in the spring of 2019. Incubation was started but abandoned in late May for unknown reasons. This area is now open to deer, pheasant, and sharp-tailed grouse hunting. However, a consideration is the consistent shooting and human disturbance near the nest caused by waterfowl hunters. This consideration resulted in creating a Closed to Hunting Area of 235 acres. The Service recommends no hunting or hiking within 330' of an active nest during the breeding season (November through June). The proposed Closed to Hunting Area is ample. The shortest distance from a hunter to the nest would be 1200'.

### **Opening Sandhill Units to Hunting**

- During initial scoping, some hunters commented that if the Sandhills are open to hunting then deer would not have a true refuge area and would change their patterns or leave the refuge. This could cause more deer to travel to private land, allowing increased numbers to be shot and preventing bucks from becoming trophy size.
- Trophy size of deer would not be a consideration, however, the primary consideration in opening the Sandhill units is hunter opportunity. The Sandhills are a unique land feature and offer a special hunt to hunters, not found anywhere else in South Dakota.

### **Opening a Predator Hunt**

- In winter months, coyotes congregate on the ice near resting waterfowl, mainly Pools 9 and 10. It is possible to see up to 20 coyotes standing on the ice, watching, waiting, and looking for a sick or wounded bird. By allowing hunters to shoot at these coyotes, it would disturb the migrating waterfowl, further causing stress during a tough and cold time of year. The area proposed to be open for coyote hunting and other predators allows hunters to call their quarry and reduce disturbance to waterfowl. The season dates for the predator hunt is proposed January 1 through February 15. This would also reduce user conflict as upland game and deer seasons are over. We would allow the use of centerfire rifles to take predators.

### **Opening Cottontail Rabbit Hunting to Weapon Choice**

- We would allow the take of cottontail rabbits with a rim-fire rifle. A user conflict or safety issue is not foreseeable because of the suspected low rabbit hunters.

### **Opening Turkey Hunting**

- We considered opening turkey hunting as suggested in the approved CCP of 2006. A consideration was given to a spring hunt but declined because of potential conflicts with management operations and safety of management staff. A fall hunt was considered.

However, because of population management of turkeys the SD GFP has held a fall turkey hunt in Bennett County only 5 of the last 10 years. The fall season has not been held in Bennett County since 2013. It was decided not to open hunting to a species that was closed by the state.

**2.7 List of Preparers**

Name	Position	Work Unit
Shilo Comeau	Conservation Easement Specialist	Huron Wetland Management District
Todd Schmidt	Acting Station Manager	Lacreek National Wildlife Refuge

**2.8 State Coordination**

The refuge reviewed the operations and regulations for neighboring state wildlife management areas and refuges to find consistency where possible. Refuge manager Todd Schmidt coordinated with Tom Beck, John Kanta, Trent Haffly, and Jim McCormick, of the SD GFP Department. The state has generally expressed interest in having the Service evaluate opening refuges to new or expanded hunting opportunities. This interest is congruent with the Department of Interior Secretarial Order 3356, “Hunting, Fishing, Recreational Shooting, and Wildlife Conservation Opportunities and Coordination with States, Tribes, and Territories.”

Soon, we will send a letter and the draft Environmental Assessment to the state asking to coordinate with them to adjust the hunting plan to align, where possible, with state management goals. We will continue to consult and coordinate on specific aspects of the hunting plan to make sure safe and enjoyable recreational hunting opportunities.

**2.9 Tribal Consultation**

The Service mailed an invitation for comments to all Tribes potentially affected by initiating an Environmental Assessment to open Lacreek NWR to big game and upland game hunting. The Service extended an invitation to engage in government-to-government consultation in accordance with Executive Order 13175.

**2.10 Public Outreach**

The refuge will make the public aware of the availability of the draft EA and hunting plan via public notices on the refuge’s website, through local newspapers, and in the refuge headquarters office. During a 30-day public comment period, the Service will accept comments in writing, in person, electronically, or in any other form the public wishes to present comments or information. After close of the comment period, all comments and information will be reviewed and considered. The final EA will address the comments submitted.

## 2.11 Determination

This section will be filled out on completion of any public comment period and at the time of finalization of the Environmental Assessment.

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

Preparer Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name/Title/Organization: \_\_\_\_\_

---

Reviewer Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name/Title: \_\_\_\_\_

## 2.12 References

Bessken, C. USFWS Ecological Services. Personal Communications. November 12, 2019. South Dakota Counties with American burying beetles.

Comeau, S. 2015. Breeding Birds of Lacreek NWR: 2015. Unpublished report.

Dubovsky, J.A. 2016. Status and harvests of sandhill cranes: Mid-Continent, Rocky Mountain, Lower Colorado River Valley and Eastern Populations. Administrative Report, U.S. Fish and Wildlife Service, Lakewood, Colorado. 15pp.

Kaul, R. 1990. Plants. Pp 127–142. In: Bleed, A. and C. Flowerday, editors. An atlas of the Sand Hills. Conservation and Survey Division, University of Nebraska. Lincoln, Nebraska.

Kushlan, J. A.; Steinkamp, M.J.; Parsons, K.C.; Capp, J.; Cruz, M.A.; Coulter, M.; Davidson, I.; Dickson, L.; Edelson, N.; Elliott, R.; Erwin, R.M.; Hatch, S.; Kress, S.; Milko, R.; Miller, S.; Mills, K.; Paul, R.; Phillips, R.; Saliva, J.E.; Sydeman, W.; Trapp, J.; Wheeler, J.; Wohl, K. 2002. Waterbird conservation for the Americas: The North American waterbird conservation plan, version 1. Washington, DC, USA.

Lacreek National Wildlife Refuge. 2009. Observation Report. Whooping Crane Sighting Report to the South Dakota Ecological Services Field Office, Pierre, South Dakota. Martin, South Dakota.

- . 2013. Survey Data. 1979 to 2013. Canada goose survey results. Martin, South Dakota.
- . 2001 to 2013. Duck survey results. Martin, South Dakota.
- . 2005 to 2011. Deer survey results. Martin, South Dakota.
- . 2011. Acoustic bat survey results. Martin, South Dakota.
- . 2018. American burying beetle survey results. Martin, South Dakota.

Nelson, J. B. 1966. The breeding biology of the Gannet *Sula Bassana* on the Bass Rock, Scotland. *Ibis*, 108: 584-626.

[PIF] Partners in Flight. 2017. Avian Conservation Assessment Database. 2017.

Raftovich, R.V., Chandler, S.C.; Fleming, K.K. 2018. Migratory bird hunting activity and harvest during the 2016-17 and 2017-18 hunting seasons. U.S. Fish and Wildlife Service, Laurel, Maryland, USA. <[www.fws.gov/migratorybirds/pdf/surveys-and-data/HarvestSurveys/MBHActivityHarvest2016-17and2017-18.pdf](http://www.fws.gov/migratorybirds/pdf/surveys-and-data/HarvestSurveys/MBHActivityHarvest2016-17and2017-18.pdf)>

Raftovich, R.V., Fleming, K.K.; Chandler, S.C.; Cain, C.M. 2019. Migratory bird hunting activity and harvest during the 2017-18 and 2018-19 hunting seasons. U.S. Fish and Wildlife Service, Laurel, Maryland, USA. <[www.fws.gov/migratorybirds/pdf/surveys-and-data/HarvestSurveys/MBHActivityHarvest2017-18and2018-19.pdf](http://www.fws.gov/migratorybirds/pdf/surveys-and-data/HarvestSurveys/MBHActivityHarvest2017-18and2018-19.pdf)>

Sauer, J. R., Hines, J. E.; Fallon, J. E.; Pardieck, K. L.; Ziolkowski, D. J.; Link, W.A. 2014. The North American Breeding Bird Survey, results and analysis 1966-2013 (Version 1.30.15)

Seamans, M. E. 2019. Mourning dove population status, 2019. U.S. Department of the Interior, Fish and Wildlife Service, Division of Migratory Birds Management, Laurel, Maryland.

Stukel E. D.; Drilling, N. 2016. Birds of South Dakota II: South Dakota Breeding Bird Atlas II. Pierre, South Dakota. South Dakota Game Fish and Parks and United States Fish and Wildlife Service. <<https://gfp.sd.gov/breeding-bird-atlas/>>

[SD GFP] South Dakota Game Fish and Parks. 2018a. National Wildlife Refuge Deer Harvest Report. <[https://gfp.sd.gov/UserDocs/nav/NATIONAL\\_WILDLIFE\\_REFUGE\\_FIREARM\\_DEER.pdf](https://gfp.sd.gov/UserDocs/nav/NATIONAL_WILDLIFE_REFUGE_FIREARM_DEER.pdf)>

———. 2018b. Mourning Dove Harvest Report: 2017. <<https://gfp.sd.gov/UserDocs/nav/report-dove.pdf>>

———. 2018c. Waterfowl Harvest Report: 2017. <<https://gfp.sd.gov/UserDocs/nav/report-waterfowl-summary.pdf>>

———. 2018d. Ducks (all species) Harvest Report: 2017-18. <<https://gfp.sd.gov/UserDocs/nav/report-duck.pdf>>

- . 2018e. Canada Geese (all seasons) Harvest Report: 2017-18.  
<<https://gfp.sd.gov/UserDocs/nav/report-canadagoose-all.pdf>>
- . 2018f. Cottontail and Squirrel Harvest Report: 2017-18.  
<<https://gfp.sd.gov/UserDocs/nav/report-cottontail-squirrel.pdf>>
- . 2018g. Mountain Lion Harvest Report: 2017-18.  
<<https://gfp.sd.gov/UserDocs/nav/MountainLion.pdf>>
- . 2019a. Archery Deer Harvest Report: 2018.  
<[https://gfp.sd.gov/UserDocs/nav/ARCHERY\\_DEER.pdf](https://gfp.sd.gov/UserDocs/nav/ARCHERY_DEER.pdf)>
- . 2019b. Furbearer Harvest Report: 2018. South Dakota Game Report No. 2019 - 04.  
<[https://gfp.sd.gov/UserDocs/nav/-\\_2018\\_Furbearer\\_Annual\\_Report.pdf](https://gfp.sd.gov/UserDocs/nav/-_2018_Furbearer_Annual_Report.pdf)>
- . 2019c. Ring-Neck Pheasant Harvest Report: 2018.  
<<https://gfp.sd.gov/UserDocs/nav/PHEASANT.pdf>>
- . 2019d. Prairie Chicken and Sharp-tailed Grouse Harvest report: 2018.  
<[https://gfp.sd.gov/UserDocs/nav/PRAIRIE\\_GROUSE.pdf](https://gfp.sd.gov/UserDocs/nav/PRAIRIE_GROUSE.pdf)>
- . 2019e. Deer hunting in South Dakota. <<https://gfp.sd.gov/deer/>>
- . 2019f. Mountain lion hunting in South Dakota. <<https://gfp.sd.gov/mountain-lion/>>

Tallman, D. A.; Swanson, D. L.; Palmer J.S. 2002. Birds of South Dakota: South Dakota Breeding Bird Atlas I (SDBBA). Aberdeen, South Dakota. South Dakota Ornithologists Union-Northern State University through Midstates/Quality Quick Print.

Tycz, B. M. 2016. Evaluation of Bobcat (*Lynx rufus*) Survival, Harvest, and Population Size in the West-Central Region of South Dakota. SDSU Thesis, Brookings, South Dakota. 988 pp.

U.S. Census Bureau. 2017. Quick Facts  
<[www.census.gov/quickfacts/fact/table/SD,bennettcountysouthdakota/PST045218](https://www.census.gov/quickfacts/fact/table/SD,bennettcountysouthdakota/PST045218)>

U.S. Department of the Interior, U.S. Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau. 2016 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation. Available from  
<[https://wsfrprograms.fws.gov/subpages/nationalsurvey/nat\\_survey2016.pdf](https://wsfrprograms.fws.gov/subpages/nationalsurvey/nat_survey2016.pdf)>

[USFWS] U.S. Fish and Wildlife Service. 2006. Lacreek NWR Comprehensive Conservation Plan. Division of Refuges, Region 6, Lakewood, Colorado. 145 pp.

———. 2008. Birds of Conservation Concern: 2008. Division of Migratory Bird Management. Arlington, Virginia. 93 pp.

- . 2009. Western Prairie Fringed Orchid (*Platanthera praeclara*) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service Twin Cities Field Office, Bloomington, Minnesota.
- . 2010. ECOS Whooping Crane species profile.  
<<https://ecos.fws.gov/ecp0/profile/speciesProfile?sId=758>>
- . 2013. Issuance of Annual Regulations Permitting the Hunting of Migratory Birds, Final Supplemental Environmental Impact Statement. USFWS, Division of Migratory Birds and Management, Laurel, MD. 418pp.
- . 2017a. Adaptive Harvest Management Report, 2018 Hunting Season. USFWS, Division of Migratory Birds and Management, Laurel, MD. 69pp.
- . 2017b. Waterfowl: Population Status, 2017. USFWS, Division of Migratory Birds and Management, Laurel, MD. 74pp.
- . 2017c. Range map of the Northern long-eared bat.  
<<https://ecos.fws.gov/ecp0/profile/speciesProfile?sId=9045>>
- . 2018. Waterfowl population status, 2018. U.S. Department of the Interior, Washington, D.C. USA.
- . 2019. Species Status Assessment Report for the American Burying Beetle (*Nicrophorus americanus*). V1.0. dated February 2019. Oklahoma Ecological Service Regional Office, Tulsa, Oklahoma.
- USGS Patuxent Wildlife Research Center (2014). Available from: <[www.mbr-pwrc.usgs.gov/bbs/](http://www.mbr-pwrc.usgs.gov/bbs/)>

**APPENDIX A      OTHER APPLICABLE STATUTES, EXECUTIVE ORDERS, AND REGULATIONS**

<b>Statutes, Executive Orders, and Regulations</b>
<b>Cultural Resources</b>
<p>American Indian Religious Freedom Act, as amended, 42 U.S.C. 1996 – 1996a; 43 CFR Part 7</p> <p>Antiquities Act of 1906, 16 U.S.C. 431-433; 43 CFR Part 3</p> <p>Archaeological Resources Protection Act of 1979, 16 U.S.C. 470aa – 470mm; 18 CFR Part 1312; 32 CFR Part 229; 36 CFR Part 296; 43 CFR Part 7</p> <p>National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470–470x-6; 36 CFR Parts 60, 63, 78, 79, 800, 801, and 810</p> <p>Paleontological Resources Protection Act, 16 U.S.C. 470aaa – 470aaa-11</p> <p>Native American Graves Protection and Repatriation Act, 25 U.S.C. 3001–3013; 43 CFR Part 10</p> <p>Executive Order 11593 – Protection and Enhancement of the Cultural Environment, 36 Fed. Reg. 8921 (1971)</p> <p>Executive Order 13007 – Indian Sacred Sites, 61 Fed. Reg. 26771 (1996)</p>
<b>Fish and Wildlife</b>
<p>Bald and Golden Eagle Protection Act, as amended, 16 U.S.C. 668-668c, 50 CFR 22</p> <p>Endangered Species Act of 1973, as amended, 16 U.S.C. 1531-1544; 36 CFR Part 13; 50 CFR Parts 10, 17, 23, 81, 217, 222, 225, 402, and 450</p> <p>Fish and Wildlife Act of 1956, 16 U.S.C. 742 a–m</p> <p>Lacey Act, as amended, 16 U.S.C. 3371 et seq.; 15 CFR Parts 10, 11, 12, 14, 300, and 904</p> <p>Migratory Bird Treaty Act, as amended, 16 U.S.C. 703–712; 50 CFR Parts 10, 12, 20, and 21</p> <p>Executive Order 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds, 66 Fed. Reg. 3853 (2001)</p>
<b>Natural Resources</b>
<p>Clean Air Act, as amended, 42 U.S.C. 7401–7671q; 40 CFR Parts 23, 50, 51, 52, 58, 60, 61, 82, and 93; 48 CFR Part 23</p> <p>Wilderness Act, 16 U.S.C. 1131 et seq.</p> <p>Wild and Scenic Rivers Act, 16 U.S.C. 1271 et seq.</p> <p>Executive Order 13112 – Invasive Species, 64 Fed. Reg. 6183 (1999)</p>
<b>Water Resources</b>
<p>Coastal Zone Management Act of 1972, 16 U.S.C. 1451 et seq.; 15 CFR Parts 923, 930, 933</p> <p>Federal Water Pollution Control Act of 1972 (commonly referred to as Clean Water Act), 33 U.S.C. 1251 et seq.; 33 CFR Parts 320–330; 40 CFR Parts 110, 112, 116, 117, 230-232, 323, and 328</p> <p>Rivers and Harbors Act of 1899, as amended, 33 U.S.C. 401 et seq.; 33 CFR Parts 114, 115, 116, 321, 322, and 333</p> <p>Safe Drinking Water Act of 1974, 42 U.S.C. 300f et seq.; 40 CFR Parts 141–148</p> <p>Executive Order 11988 – Floodplain Management, 42 Fed. Reg. 26951 (1977)</p> <p>Executive Order 11990 – Protection of Wetlands, 42 Fed. Reg. 26961 (1977)</p>

Key: CFR = Code of Federal Regulations; U.S.C. = U.S. Code

## APPENDIX B SCIENTIFIC NAME SPECIES LIST AND SPECIES CATEGORIZATION

### Plants

<i>Agropyron cristatum</i> Crested wheatgrass	<i>Koeleria macrantha</i> Prairie junegrass
<i>Agropyron smithii</i> Western wheatgrass	<i>Mentha arvensis</i> Mint
<i>Amorpha fruticosa</i> False indigo	<i>Panicum virgatum</i> switchgrass
<i>Andropogon gerardii</i> Big bluestem	<i>Platanthera praeclara</i> Western Prairie Fringed Orchid
<i>Andropogon hallii</i> Sand bluestem	<i>Poa pratensis</i> Kentucky bluegrass
<i>Andropogon scoparius</i> Little bluestem	<i>Rumex maritimus</i> Golden dock
<i>Bromis inermis</i> Smooth bromegrass	<i>Salix exigua</i> Sandbar willow
<i>Calamagrostis canadensis</i> Canada bluejoint	<i>Solidago canadensis</i> Canada goldenrod
<i>Calamovilfa longifolia</i> Prairie sandreed	<i>Solidago gigantean</i> Giant goldenrod
<i>Cornus stolonifera</i> Red osier dogwood	<i>Solidago missouriensis</i> Missouri goldenrod
<i>Distichlis spicata</i> Inland saltgrass	<i>Solidago mollis</i> Soft goldenrod
<i>Elymus canadensis</i> Canada wildrye	<i>Solidago rigida</i> Stiff goldenrod
<i>Eragrostis trichoides</i> Sand lovegrass	<i>Sorghastrum nutans</i> Indiangrass
<i>Glycyrrhiza lepidota</i> Wild licorice	<i>Spartina pectinata</i> prairie cordgrass
<i>Helianthus nuttallii</i> Nuttall's sunflower	<i>Sporobolus cryptandrus</i> sand dropseed
<i>Hesperostipa comata</i> needle and thread	<i>Urtica dioica</i> Stinging nettle
<i>Hordeum jubatum</i> Foxtail barley	<i>Verbena hastata</i> Blue vervain
	<i>Yucca glauca</i> Yucca

## **Mammals**

*Canis latrans* Coyote

*Cynomys ludovicianus* Black-tailed prairie dog

*Dipodomys ordii* Ord's kangaroo rat

*Myotis lucifugus* Little brown bat

*Vulpes fulva* Red fox

*Felis rufus* Bobcat

*Odocoileus virginianus* White-tailed deer

*Sylvilagus floridanus* Eastern cottontail

*Taxidea taxus* American badger

*Myotis septentrionalis* Northern long-eared bat

*Odocoileus hemionus* Mule deer

*Puma concolor* Mountain lion

## **Birds**

*Aix sponsa* Wood duck

*Anas acuta* Northern pintail

*Anas americana* American widgeon

*Anas clypeata* Northern shoveler

*Anas creca* Green-winged teal

*Anas cyanoptera* Cinnamon teal

*Anas discors* Blue-winged teal

*Anas platyrhynchos* Mallard

*Anas rubripes* American black duck

*Anas strepera* Gadwall

*Anser albifrons* Greater white-fronted goose

*Athene cunicularia* Burrowing owl

*Aythya affinis* Lesser scaup

*Aythya americana* Redhead

*Aythya collaris* Ring-necked duck

*Aythya marila* Greater scaup

*Aythya valisineria* Canvasback

*Branta canadensis* Canada goose

*Bucephala albeola* Bufflehead

*Bucephala clangula* Common goldeneye

*Buteo regalis* Ferruginous Hawk

*Calamospiza melanocorys* Lark bunting

*Calidris canutus rufa* Red knot

*Calidris pusilla* Semipalmated sandpiper

*Catoptrophorus semipalmatus* Willet

*Centronyx henslowii* Henslow's sparrow

*Charadrius melodus* Piping plover

*Chen caerulescens* Snow goose

*Chen rossii* Ross's goose

*Corvus brachyrhynchos* American crow

*Cygnus buccinator* Trumpeter swan

*Cygnus columbianus* Tundra swan

*Fulica americana* American coot  
*Gallinago delicata* Wilson's snipe  
*Grus americana* Whooping crane  
*Grus canadensis* Sandhill crane  
*Haliaeetus leucocephalus* Bald eagle  
*Limosa fedoa* Marbled godwit  
*Lophodytes cucullatus* Hooded merganser  
*Melanerpes erythrocephalus* Red-headed woodpecker  
*Melanitta fusca* White-winged scoter  
*Meleagris gallopavo* Wild turkey  
*Mergus merganser* Common merganser  
*Mergus serrator* Red-breasted merganser

### **Frogs**

*Bufo woodhousei* Woodhouse's toad  
*Pseudacris triseriata* Western chorus frog  
*Rana catesbeiana* Bullfrog

### **Turtles**

*Chelydra serpentina* Common snapping turtle  
*Chrysemys picta* Western painted turtle

### **Lizards**

*Eumeces multivirgatus* Many-lined skink  
*Holbrookia maculata* Northern earless lizard  
*Sceloporus undulates* Northern prairie lizard

*Numenius americanus* Long-billed curlew  
*Nycticorax* Black-crowned night heron  
*Oxyura jamaicensis* Ruddy duck  
*Pelecanus erythrorhynchos* American white pelican  
*Perdix perdix* Gray partridge  
*Phalacrocorax auritus* Double-crested cormorant  
*Phasianus colchicus* Ring-necked pheasant  
*Tympanuchus cupido* Greater prairie-chicken  
*Tympanuchus phasianellus* Sharp-tailed grouse  
*Zenaida macroura* Mourning dove

### **Snakes**

*Coluber constrictor* Eastern yellow-bellied racer  
*Crotalus viridis* Prairie rattlesnake  
*Pituophis melanoleucus* Bull snake  
*Thamnophis radix* Plains garter snake

### **Arthropods**

*Vanessa cardui* Painted lady  
*Danaus plexippus* Monarch butterfly  
*Papilio glaucus* Eastern tiger swallowtail  
*Nicrophorus americanus* American Burying Beetle  
*Nicrophorus marginatus* Margined burying beetle  
*Nicrophorus tomentosus* Gold-necked burying beetle