

Draft Environmental Assessment

for Moose and Pronghorn Hunting on Browns Park National Wildlife Refuge

March 2020

Prepared by

Robert M. Bundy, Project Leader

Lower Green National Wildlife Refuge Complex
19001 E. Wildlife Refuge Road, Randlett, UT 84063

Table of Contents

1.0	Introduction.....	3
1.1	Proposed Action.....	3
1.2	Background.....	3
1.3	Purpose and Need for the Proposed Action:	5
2.0	Alternatives.....	6
2.1	Alternatives Considered.....	6
	Alternative A – Allow Hunting for Moose and Pronghorn on Areas Open to Big Game Hunting per State Regulation – Proposed Action Alternative	6
	Alternative B – No New Hunting Opportunities – No Action Alternative.....	6
2.2	Alternative(s) Considered, But Dismissed from Further Consideration.....	6
3.0	Affected Environment and Environmental Consequences	7
3.1	Affected Environment.....	7
3.2	Environmental Consequences of the Action.....	7
3.3	Cumulative Impact Analysis.....	20
3.4	Mitigation Measures and Conditions	23
3.5	Monitoring	23
3.6	Summary of Analysis.....	23
	Alternative A – Proposed Action Alternative.....	23
	Alternative B – No Action Alternative	24
3.7	List of Sources, Agencies and Persons Consulted	24
3.8	List of Preparers.....	24
3.9	State Coordination	24
3.10	Tribal Consultation	24
3.11	Public Outreach.....	25
3.12	Determination	25
3.13	References.....	25

List of Figures

Figure 1. Current and Proposed Hunting Opportunities on Browns Park National Wildlife Refuge.....	4
--	---

List of Tables

Table 1. Affected Natural Resources and Anticipated Direct and Indirect Impacts of the Proposed Action and Any Alternatives.	8
Table 2. Affected Visitor Use and Experience and Anticipated Direct and Indirect Impacts of the Proposed Action and Any Alternatives.....	15
Table 3. Affected Cultural Resources and Anticipated Direct and Indirect Impacts of the Proposed Action and Any Alternatives.....	16
Table 4. Affected Refuge Management and Operations and Anticipated Impacts of the Proposed Action and Any Alternatives	17
Table 5. Affected Socioeconomics and Anticipated Direct and Indirect Impacts of the Proposed Action and Any Alternatives.	19
Table 6. Anticipated Cumulative Impacts of the Proposed Action and Any Alternatives	20

Appendices

Appendix A Other Applicable Statutes, Executive Orders, and Regulations.....	26
---	----

Draft Environmental Assessment for Moose and Pronghorn Hunting on Browns Park National Wildlife Refuge

Date: March 2020

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

1.0 Introduction

1.1 Proposed Action

The Service is proposing to open Browns Park National Wildlife Refuge (NWR) to moose and pronghorn hunting in accordance with the refuge's comprehensive conservation plan (CCP) (1999) and hunting plan (1990). Moose and pronghorn would be open on Colorado Parks & Wildlife (CPW) Hunt Units 1 and 201, in areas of the refuge that are open to big game hunting (Figure 1). These areas include the Grimes, Nelson, Spitzie, and Warren Units as well as other areas identified as open on the refuges hunting map. Moose and pronghorn would be open during any state designated season using all legal methods of take.

This proposed action is often iterative and evolves over time during the process as the agency refines its proposal and learns more from the public, tribes, and other agencies. Therefore, the final proposed action may be different from the original. The final decision on the proposed action will be made at the conclusion of the public comment period for the EA and the Draft 2020-2021 Refuge-Specific Hunting and Sport Fishing Regulations. The Service cannot open a refuge to hunting 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.

1.2 Background

National wildlife refuges are guided by the mission and goals of the National Wildlife Refuge System (Refuge System), the purposes of an individual refuge, Service policy, and laws and international treaties. Relevant guidance covers the National Wildlife Refuge System Administration Act of 1966 (NWRSA), as amended by the Refuge System Improvement Act of 1997 (Improvement Act), Refuge Recreation Act of 1962, and selected parts of the Code of Federal Regulations and U.S. Fish and Wildlife Service Manual.

The refuge was authorized in 1963 by the Migratory Bird Conservation Commission with the first tract bought in 1965. Refuge lands were significantly increased on December 11, 1970, pursuant to Public Land Order 4973, which formally withdrew Bureau of Land Management lands within the refuge boundary. The primary purpose of the refuge is to provide sanctuary for migratory birds, to provide for suitable fish and wildlife-dependent recreation, protection of natural resources, and conservation of threatened and endangered species.



U.S. Fish & Wildlife Service
Browns Park National Wildlife Refuge

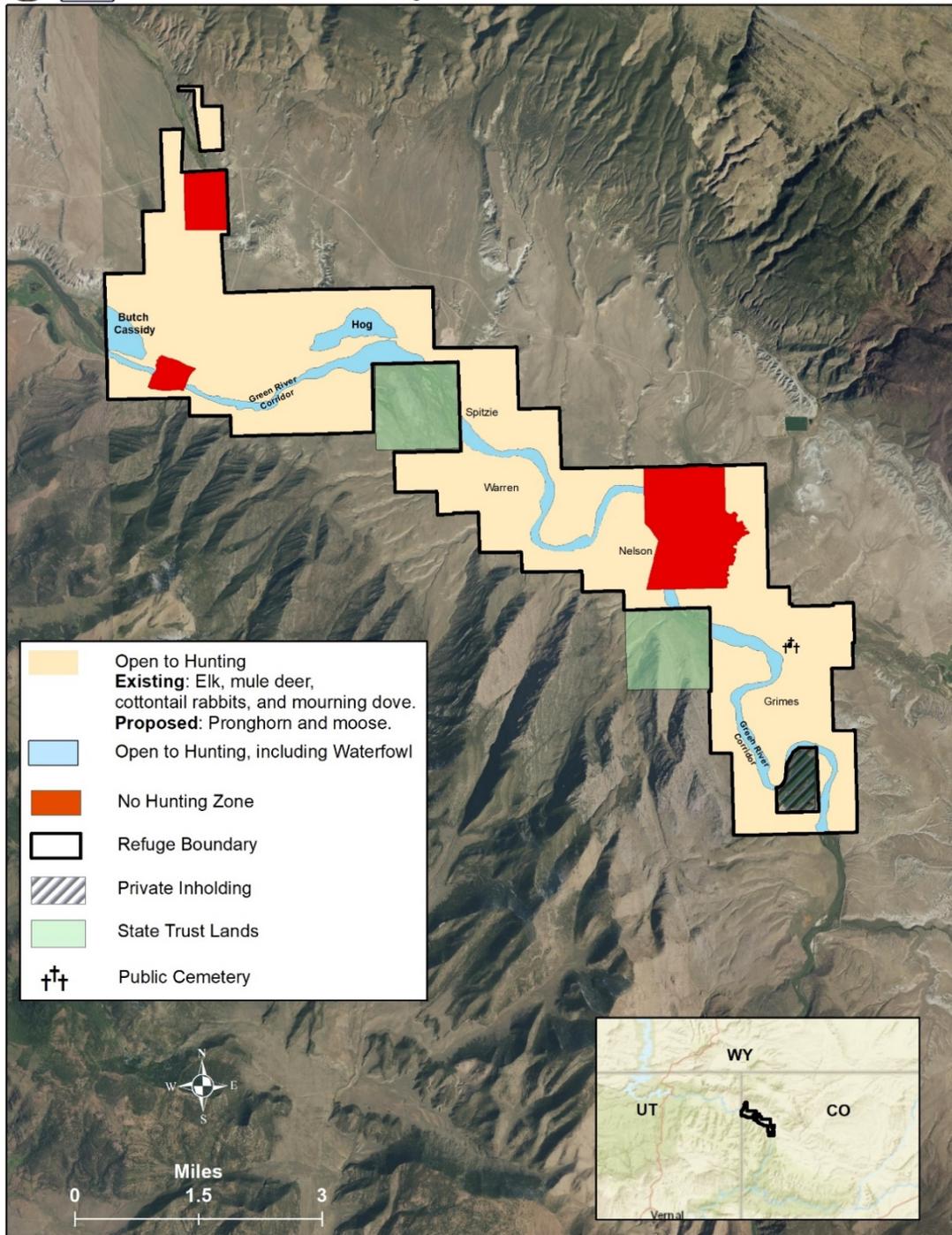


Figure 1. Current and Proposed Hunting Opportunities on Browns Park National Wildlife Refuge.

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

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

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

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

Although moose and pronghorn have not been previously hunted on the refuge, the areas where hunting would be allowed are the same areas already open to other big game species including mule deer and elk. Moose and pronghorn are inconsistently observed in low numbers on the refuge; however, they do provide an opportunity for recreational hunting which is a stated objective in the refuge’s CCP.

1.3 Purpose and Need for the Proposed Action:

The purpose of this proposed action is to provide compatible wildlife-dependent recreational opportunities on Browns Park NWR. The need of the proposed action is to meet the Service’s priorities and mandates as outlined by the NWRSA to “recognize compatible wildlife-dependent recreational uses as the priority general uses of the 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)). One objective in the refuge’s CCP states that “the

refuge staff will provide quality hunting and fishing opportunities that will not adversely affect local or regional populations of game.” Strategies to achieve this objective include “allow[ing] limited hunting of mule deer, elk, cottontail rabbit, and mourning dove, and allowing waterfowl and coot hunting on no more than two marshes and the Green River corridor during any one season.”

2.0 Alternatives

2.1 Alternatives Considered

Alternative A – Allow Hunting for Moose and Pronghorn on Areas Open to Big Game Hunting per State Regulation – Proposed Action Alternative

The refuge has prepared a revised hunting plan (USFWS 2020a), which is presented in this document as the Proposed Action Alternative.

Under the Proposed Action Alternative, moose and pronghorn hunting would be allowed on all areas now open to big game hunting per state regulation. The refuge is divided between CPW Units 1 and 201 and all hunts would be administered as per state regulation including weapon and annual season dates set by CPW.

Mitigation Measures to Avoid Conflicts:

- Administrative sites and picnic areas have been closed to hunting to reduce potential conflicts with refuge staff and visitors.

Implementation of the proposed alternative would help meet the CCP-defined objective to provide quality hunting and fishing opportunities that will not adversely affect local or regional populations of game species. While the refuge is open to big game hunting, adding moose and pronghorn would provide more opportunities for the hunting public. Moose and pronghorn are found in limited numbers on the refuge and CPW biologists monitor the to determine proper harvest levels. Because they occur in limited numbers, it is assumed that the station’s refuge officer and CPW game wardens would be able to easily monitor hunting pressure and enforce both refuge-specific and state regulations concurrent with their responsibilities to monitor mule deer, elk, cottontail, mourning dove, and waterfowl hunters. Costs to administer the hunt are anticipated to be minimal.

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

Alternative B – No New Hunting Opportunities – No Action Alternative

Under the No Action Alternative, hunting for mule deer, elk, waterfowl, mourning dove, and cottontail rabbit would continue as visitor opportunities on the refuge. No new hunting opportunities would be offered.

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

At least initially, there was some discussion about opening the refuge to spring turkey hunting. While there is adequate riparian habitat along the Green River to support this activity, there is no population of turkeys either on the refuge or in the immediate vicinity. The Service does not

desire to propose an activity where there is no reasonable chance at success and additionally, the activity would conflict with both the state and Service's desire to provide wintering habitat for big game species such as elk and mule deer. No further analysis will be conducted on this alternative.

3.0 Affected Environment and Environmental Consequences

3.1 Affected Environment

Browns Park NWR consists of approximately 18.9 square miles in Moffat County, Colorado. The refuge is primarily semi-desert shrublands (uplands), wetlands, grasslands, and riparian habitat. The proposed action is in and around Nelson wetland, Spitzie wetland, Warren wetland, and the upland areas surrounding them, as well as Grimes Bottom, and the riparian habitat along the Green River(Figure 1).

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

For more information about the affected environment, please see the section on Refuge and Resource Description, Geographical/Ecosystem/Flyway Setting starting on page 13 of the refuge's CCP (1999) which can be found on the refuge's home page:

https://www.fws.gov/refuge/browns_park/.

3.2 Environmental Consequences of the Action

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

Tables 1 through 5 provide:

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

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

Impact Types:

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

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

Affected Resources	<u>Alternative A (Proposed Action)</u> <i>Moose and pronghorn hunting would be allowed on all areas now open to big game hunting per state regulation. The refuge is divided between CPW Units 1 and 201 and all hunts would be administered as per state regulation including weapon and annual season dates set by CPW.</i>	<u>Alternative B (No Action)</u> <i>Hunting for mule deer, elk, waterfowl, mourning dove, and cottontail rabbit would continue as visitor opportunities on the refuge. No new hunting opportunities would be offered.</i>
Resident Big Game		
<p>Moose Browns Park NWR has historically supported a small population of shiras moose (<i>Alces alces shirasi</i>) which migrate locally along the Green River corridor and into the Diamond Breaks and Cold Springs Wilderness Study Areas. The most recent CPW estimate for the moose population (2018 post-hunt report) shows 20 animals in the Game Management Hunt Units 1 and 201 combined. In 2016–2018 hunters annually harvested a single bull from Unit 201.</p> <p>Pronghorn The most recent CPW estimate of the pronghorn (<i>Antilocapra Americana</i>) population (2018 post-hunt report) shows 1,010 animals in the Game Management Hunt Units 1, 2, and 201 combined. The refuge only falls within Hunt Units 1 and 201 but CPW uses all three units in its population and harvest estimates for this area of northwest Colorado. Pronghorn have been infrequently observed in the Hunt Unit 201 part of the refuge, although each instance was less than ten animals total, and none have been observed in the Hunt Unit 1 part of the refuge for over five years.</p>	<p>There would be a possibility of harvesting only one moose through implementation of the proposed action (only one tag for Hunt Unit 1 and 201 combined). Only one bull has been harvested in all of Hunt Unit 1 and 201 during the past three years. Thus, we, the Service, would anticipate negligible effect to the overall population. Because moose hunting is not now allowed on the refuge, it is possible that hunting pressure would cause moose to move more frequently along the Green river; however, at most, one hunter would be pursuing moose and effects to moose would be considered minor. Other visitors hunting waterfowl and cottontail rabbits or walking to observe and photograph wildlife would likely have more disturbance effects on moose. Overall, harvest would not be anticipated to result in measurable effects to the moose population, and disturbance associated with hunting moose would be negligible compared to other activities occurring on the refuge.</p> <p>Similar to moose, tags are annually allocated in both CPW Hunt Units (1 and 201) for archery, muzzleloader, and rifle; however, pronghorn have not been observed in Hunt Unit 1 for the last five years. The small number of hunters anticipated to hunt pronghorn on the refuge would be anticipated to have negligible harvest effects on the overall population which CPW is to determine the number of permits allocated each year. Additionally, pronghorn hunting would have a minor influence on pronghorn distribution on the refuge and disturbance through hunting may provide a cumulative effects above what is already occurring through use by other hunters and wildlife observers. Based on the small population size and anticipated small number of hunters, this effect would be considered negligible compared to the other uses already occurring on the refuge.</p>	<p>Moose and pronghorn would not be hunted on the refuge and added disturbance and harvest effects to moose and pronghorn would not occur.</p>

<p style="text-align: center;">Affected Resources</p>	<p style="text-align: center;"><u>Alternative A (Proposed Action)</u></p> <p><i>Moose and pronghorn hunting would be allowed on all areas now open to big game hunting per state regulation. The refuge is divided between CPW Units 1 and 201 and all hunts would be administered as per state regulation including weapon and annual season dates set by CPW.</i></p>	<p style="text-align: center;"><u>Alternative B (No Action)</u></p> <p><i>Hunting for mule deer, elk, waterfowl, mourning dove, and cottontail rabbit would continue as visitor opportunities on the refuge. No new hunting opportunities would be offered.</i></p>
Other Wildlife		
<p>The refuge contains several habitat types which support a wide variety of game and non-game birds, mammals, reptiles, amphibians, and invertebrates. The refuge primarily provides migrating birds with a place to rest and feed; it is not a popular breeding location. Migratory bird concentrations are highest during the spring and fall migrations. Despite that, a small amount of waterfowl, such as Canada geese, ducks, and mergansers, stay and raise broods each spring and summer. Bald eagles, ospreys, great-horned owls, and a variety of songbirds such as meadowlarks and loggerhead shrikes, annually nest on the refuge. River otters and beavers can be observed in the Green River. Beavers also build many dams along the Beaver Creek as it flows from the Cold Springs down to the Green River. The refuge valley experiences notably mild winters compared to the surrounding landscapes. The valley receives much less snowfall than the surrounding mountains and the weather is often relatively warmer. For these reasons, elk and mule deer annually migrate to the valley floor to graze in the meadows and sage-steppe when winter weather becomes too harsh in the mountains.</p>	<p>Increased hunting may result in some added lead shot exposure to vultures, eagles, coyotes, and other scavengers that may feed on the leftover carcasses of moose. In most instances, birds and scavenging wildlife are unlikely to mistake an intact, spent bullet as anything edible. However, rounds that shatter on a moose or pronghorn bone may result in fragments small enough for scavengers to inadvertently ingest while feeding on the carcass. Moose hunters may minimally affect birds along the Green River and in wetlands if the hunter misses or the bullet exits the animal. In these cases, the shot may end up on the ground or in the water where birds, such as waterfowl, feed or ingest gizzard stones. Because of the low populations of moose and pronghorn on the refuge, and the relative abundance of hunters harvesting elk and mule deer, the added lead shot is unlikely to cause a noticeable effect on the ecosystem.</p> <p>The prohibition of waterfowl hunting from the Spitzie, Nelson, and Warren wetlands provides birds with sanctuaries from hunters and unnecessary human disturbances. The inclusion of moose hunting may result in more disturbances to birds and wildlife residing in and around these wetlands. However, the increased frequency of disturbances should be minor when compared to the current non-waterfowl hunts (cottontail, elk, mourning dove, and mule deer) that may occur in the same areas. The moose and pronghorn hunting seasons occur well after the breeding season of most birds so there should be no disturbance to nesting birds. Tundra swans typically arrive in the refuge in November and spend most of their time foraging on the Green River and in wetlands that are now flooded. The moose hunts would occur before tundra swans' arrival so there is little chance of moose hunters disturbing the swans. Even if the two occasionally overlap, the increased chance of disturbance is nominal when compared to waterfowl hunters already present in the wetlands and Green River corridor. The same reasoning can be applied to bald eagles along the Green River.</p>	<p>There would be less disturbance to birds, wildlife, and vegetation occurring in the upland areas where pronghorn typically live, and in the Green River corridor, creeks, and wetlands that moose generally occupy. Populations of other species remain healthy under current hunt programs.</p>

Affected Resources	<u>Alternative A (Proposed Action)</u> <i>Moose and pronghorn hunting would be allowed on all areas now open to big game hunting per state regulation. The refuge is divided between CPW Units 1 and 201 and all hunts would be administered as per state regulation including weapon and annual season dates set by CPW.</i>	<u>Alternative B (No Action)</u> <i>Hunting for mule deer, elk, waterfowl, mourning dove, and cottontail rabbit would continue as visitor opportunities on the refuge. No new hunting opportunities would be offered.</i>
<p>Tundra swans, bald eagles, and golden eagles are commonly observed during winter in the refuge. The tundra swans are remarkably skittish and quick to take off when they notice people watching them. The swans typically arrive in Browns Park in fall and stay through the winter.</p> <p>Sage grouse live in the sage-steppe uplands in and around the refuge. The refuge contains a few historic leks that are now abandoned, but staff rarely observe live birds and signs left from them. CPW staff annually survey active leks outside the refuge border to monitor the local populations.</p>	<p>Golden eagles and sage grouse may experience some disturbances by pronghorn hunters but the increased occurrences are negligible when compared to elk and mule deer hunters in the same areas.</p>	
Threatened and Endangered Species and Other Special Status Species		
<p>Ute ladies'-tresses orchid (<i>Spiranthes diluvialis</i>) is a threatened species of flower that has historically grown along the Green River corridor. It typically occurs in gravelly sediment in riparian areas. Unfortunately, the Flaming Gorge Dam channelized the Green River and changed its flood regime, causing many of the historical orchid sites in the refuge to become uninhabitable because of faster water flow over the sandbars, drier banks, and the loss of adjacent wet meadows and oxbows. A 1998 survey located the orchids on southern end of the refuge and estimated a total of 100 plants. The most recent report shows plants being observed on the refuge in 2004.</p>	<p>The addition of moose hunting at the refuge has the remote potential to minimally affect the Ute-ladies'-tresses orchid; however, this is improbable since it typically grows in gravelly sediment along riparian areas. Moose hunters may unknowingly walk through potential orchid habitat while scouting for moose, but the anticipated low hunter activity is unlikely to leave an effect upon orchid populations occurring within the refuge boundaries. Additionally, staff have not observed the orchid on the refuge in the past several years. Pronghorn hunters are also unlikely to affect the Ute ladies'-tresses orchid since it occurs in a much different habitat from pronghorn. Neither hunt would affect Colorado pikeminnows in the Green River and Vermillion Creek.</p>	<p>Maintaining current hunting regulations without the addition of moose and pronghorn opportunities would result in continued low hunter density and minimal effect for the current Ute-ladies'-tresses orchid and Colorado pikeminnow populations in the refuge.</p>

<p style="text-align: center;">Affected Resources</p>	<p style="text-align: center;"><u>Alternative A (Proposed Action)</u></p> <p><i>Moose and pronghorn hunting would be allowed on all areas now open to big game hunting per state regulation. The refuge is divided between CPW Units 1 and 201 and all hunts would be administered as per state regulation including weapon and annual season dates set by CPW.</i></p>	<p style="text-align: center;"><u>Alternative B (No Action)</u></p> <p><i>Hunting for mule deer, elk, waterfowl, mourning dove, and cottontail rabbit would continue as visitor opportunities on the refuge. No new hunting opportunities would be offered.</i></p>
<p>In 2018, the Flaming Gorge Dam released sustained high-water levels which scoured sandbars and severely eroded riverbanks on the Green River. This may have greatly reduced if not eliminated any remaining orchid populations growing along the Green River in Browns Park.</p> <p>The Colorado pikeminnow (<i>Ptychocheilus lucius</i>) is an endangered fish species which occurs within the Green River and the Colorado River. Threats to this species include dams and other obstacles to migration, changes to water temperature and clarity, loss of spawning sites because of river channelization and decreased flooding, and competition by non-native fish species. The Colorado State University Larval Fish Lab has conducted fish sampling surveys annually since 2005. The research surveyors use trammel nets, sein nets, electrofishing, and PIT tag detectors to gather population and migration data about these fish. Successive annual studies show that pikeminnow concentrate at the mouth of the Vermillion Creek, approximately Green River mile 247.75 (Reference Attachment 1), each spring. Pikeminnow have also been observed as far upstream as Beaver Creek, although in smaller concentrations than in Vermillion Creek.</p>		

<p style="text-align: center;">Affected Resources</p>	<p style="text-align: center;"><u>Alternative A (Proposed Action)</u></p> <p><i>Moose and pronghorn hunting would be allowed on all areas now open to big game hunting per state regulation. The refuge is divided between CPW Units 1 and 201 and all hunts would be administered as per state regulation including weapon and annual season dates set by CPW.</i></p>	<p style="text-align: center;"><u>Alternative B (No Action)</u></p> <p><i>Hunting for mule deer, elk, waterfowl, mourning dove, and cottontail rabbit would continue as visitor opportunities on the refuge. No new hunting opportunities would be offered.</i></p>
Vegetation		
<p>Wetland</p> <p>Approximately 1,245 acres of wetland habitat exist on the refuge. This covers both deep-water and shallow marshes and wet meadows. Hardstem bulrush (<i>Scirpus acutus</i>) and cattail (<i>Typha latifolia</i>) are the dominant plant species. This habitat exists in seven active marsh units throughout the length of the refuge next to the Green River (see map 3). From upstream to downstream, the names of the active marsh units are: Butch Cassidy, Hog Lake, Flynn, Spitzie, Warren, Nelson, and Hoy.</p> <p>Riparian</p> <p>Approximately 1,112 acres of riparian habitat exist on the refuge. The dominant plant species are Fremont’s cottonwood (<i>Populus fremontii</i>), narrow-leaved cottonwood (<i>Populus angustifolia</i>), river birch (<i>Betula fontinalis</i>), buffaloberry (<i>Shepherdia argentea</i>), three-leaved sumac (<i>Rhus aromatica</i>), boxelder (<i>Acer negundo</i>), and sandbar willow (<i>Salix exigua</i>). On the refuge, this habitat exists along Beaver Creek, Vermillion Creek, and the Green River.</p> <p>Uplands</p> <p>Approximately 7,930 acres of semidesert shrubland exist on the refuge.</p>	<p>Increased foot traffic and vehicle use on the refuge may result in more movement of invasive plant species along roads and wildlife trails. While minimal, effects would be most pronounced on wetland and riparian habitat for moose and grassland and semi-desert shrubland for pronghorn. These effects would be seasonal during the fall hunting season and considering the small number of added hunters associated with the proposed new hunts, effects would be negligible.</p>	<p>Because the new hunts would not occur, there would be no effects to vegetation beyond what is occurring now. Low hunter density results in minimal trampling damage under the current program.</p>

Affected Resources	<u>Alternative A (Proposed Action)</u>	<u>Alternative B (No Action)</u>
<p>The dominant plant species are big sagebrush (<i>Artemisia tridentata</i>), black sagebrush (<i>Artemisia nova</i>), greasewood (<i>Sarcobatus vermiculatus</i>), rabbitbrush (<i>Chrysothamnus spp.</i>), spiny hopsage (<i>Grayia spinosa</i>), shadscale (<i>Atriplex confertifolia</i>), winterfat (<i>Krascheninnikovia lanata</i>), Indian ricegrass (<i>Oryzopsis hymenoides</i>), needle-and-thread (<i>Stipa comata</i>), sand dropseed (<i>Sporobolus cryptandrus</i>), and cheatgrass (<i>Bromus tectorum</i>). This habitat covers much of the uplands throughout the refuge. Other upland habitat types include approximately 1,083 acres of pinyon-juniper habitat and a small acreage of rock outcrops and cliffs.</p>	<p><i>Moose and pronghorn hunting would be allowed on all areas now open to big game hunting per state regulation. The refuge is divided between CPW Units 1 and 201 and all hunts would be administered as per state regulation including weapon and annual season dates set by CPW.</i></p>	<p><i>Hunting for mule deer, elk, waterfowl, mourning dove, and cottontail rabbit would continue as visitor opportunities on the refuge. No new hunting opportunities would be offered.</i></p>
Geology and Soils		
<p>The refuge is home to a unique soil type known as cryptobiotic soils. Cryptobiotic (also known as cryptogamic) soils are living soil crusts composed of algae, cyanobacteria, and fungi. These microscopic organisms trap moisture, atmospheric carbon and nitrogen, and organic matter in the soil. Filaments formed by cyanobacteria in the crust also reduce soil erosion. The added water and nutrients enhance the soil for plants, lichens, and mosses which further improves soil stabilization. Cryptobiotic soils are extremely fragile and take decades to form. Any foot or vehicle traffic compresses the crusts and takes decades or more to recover.</p>	<p>While some areas may become trampled from foot traffic and hunters driving vehicles off-road illegally, these effects would be more pronounced if they occurred in areas where cryptogamic soils are found. Tire tracks across these areas can be evident for long periods of time and in some cases, might encourage other vehicles to follow the tracks. These soils only occur in upland areas so only pronghorn hunters could potentially have any effect; however, the small number of pronghorn hunters anticipated with the proposed action would provide negligible additive effects to what is occurring already. While moose have been observed in the sage uplands, most hunters are likely to target their efforts in riparian areas and wetlands. Therefore, moose hunting would have no known long-term effects to geology or soils.</p>	<p>There would be no effect beyond what is already occurring relative to other visitor uses. Now, there is a minimal level of off-road vehicle occurrence.</p>

Affected Resources	<u>Alternative A (Proposed Action)</u>	<u>Alternative B (No Action)</u>
Cryptobiotic soils occur in scattered patches throughout the refuge uplands and sage-steppe. The Hog Lake Overlook is home to a particularly large and concentrated patch of soil crusts since the location receives little foot traffic.	<i>Moose and pronghorn hunting would be allowed on all areas now open to big game hunting per state regulation. The refuge is divided between CPW Units 1 and 201 and all hunts would be administered as per state regulation including weapon and annual season dates set by CPW.</i>	<i>Hunting for mule deer, elk, waterfowl, mourning dove, and cottontail rabbit would continue as visitor opportunities on the refuge. No new hunting opportunities would be offered.</i>

Key: CPW = Colorado Parks and Wildlife

Note: Moose and pronghorn hunting would be allowed on all areas now open to big game hunting per state regulation. The refuge is divided between CPW Hunt Units 1 and 201 and all hunts would be administered as per state regulation including weapon and annual season dates set by CPW.

Hunting for mule deer, elk, waterfowl, mourning dove, and cottontail rabbit would continue as visitor opportunities on the refuge. No new hunting opportunities would be offered.

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

<p>Affected Resources</p>	<p><u>Alternative A (Proposed Action)</u></p> <p><i>Moose and pronghorn hunting would be allowed on all areas now open to big game hunting per state regulation. The refuge is divided between CPW Units 1 and 201 and all hunts would be administered as per state regulation including weapon and annual season dates set by CPW.</i></p>	<p><u>Alternative B (No Action)</u></p> <p><i>Hunting for mule deer, elk, waterfowl, mourning dove, and cottontail rabbit would continue as visitor opportunities on the refuge. No new hunting opportunities would be offered.</i></p>
<p>Access and location of the refuge limits visitation to about 5,400 visits each year (Carver and Caudill 2007). These visits are divided among hunting, fishing, wildlife observation, photography, environmental education, and interpretation. Hunting is allowed on the refuge for mule deer, elk, cottontail rabbits, ducks, geese, coots, and mourning doves. The refuge lies within the State of Colorado limited quota quality hunting units for deer and elk, making this a world class hunting area for those species.</p>	<p>Based on the low numbers of moose and pronghorn using the refuge and the limited number of permits allowed for each species and hunt, we would anticipate no more than 30–40 added hunter use days through implementation of the proposed action. Pronghorn hunters would be primarily using upland habitats while moose hunters would be evenly split between upland, riparian, and wetland habitats resulting in a minimal gain in refuge visitors during the open season. Allowing moose and pronghorn hunting could disperse animals and make them less likely to stay when wildlife observers and photographers are trying to get close. However, based on the low number of hunters, this effect would be minimal. Besides areas closed to hunting for safety (picnic areas and administrative facilities) these added hunts would occur refuge-wide; there are no mitigation measures to reduce effects to non-consumptive users and fishermen.</p>	<p>There would not be an added 30–40 refuge visits for moose and pronghorn hunting. Although other hunting and visitor pressure might disperse moose and pronghorn, it is possible that they may remain in areas observable to the public and increase opportunity for other non-consumptive users such as wildlife observers and photographers.</p>

Key: CPW = Colorado Parks and Wildlife

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

<p align="center">Affected Resources</p>	<p align="center"><u>Alternative A (Proposed Action)</u></p> <p><i>Moose and pronghorn hunting would be allowed on all areas now open to big game hunting per state regulation. The refuge is divided between CPW Units 1 and 201 and all hunts would be administered as per state regulation including weapon and annual season dates set by CPW.</i></p>	<p align="center"><u>Alternative B (No Action)</u></p> <p><i>Hunting for mule deer, elk, waterfowl, mourning dove, and cottontail rabbit would continue as visitor opportunities on the refuge. No new hunting opportunities would be offered.</i></p>
<p>The refuge area is rich in cultural resources. The earliest visible cultural sites belong to the Fremont Indian culture that occupied the refuge from approximately A.D. 300. Granaries, or storage buildings that held corn, remain today. This same culture left petroglyphs, or rock carvings of strange peoples and animals, on rock slabs in and near the refuge. Sometime after the Fremonts disappeared, a part of the Shoshone or Snake Tribe arrived and began spending winters in the relatively mild climate of the refuge. Tepee rings and other less dramatic evidence remain on the refuge. During the Shoshone occupation, Euro-American trappers and traders entered the Valley. Three of these traders built a fort they christened Fort Davy Crockett. Sometime after the fur trade dissolved, cattle ranchers entered the Valley and began grazing the surrounding area. Not long after, outlaws, including such notables as Butch Cassidy and the Wild Bunch, set up in the valley because it offered shelter from the law and for their rustled livestock.</p> <p>Three National Historic Sites exist on the refuge. The Lodore School is a schoolhouse that was erected in 1911. The refuge permits the Browns Hole Homemakers Club to maintain and use the School for community events. The Two Bar Ranch is a late 19th century ranch that was winter headquarters for Ora Haley, a powerful rancher during that time. Fort Davy Crockett is the third Site on the refuge. A possible fort site was excavated on the refuge in 1984. While there is little doubt that the Fort existed on the refuge, the results of the excavation did not conclusively prove the location.</p>	<p>There would be no known effects to cultural resources from implementation of the proposed action.</p>	<p>Same as the Proposed Action Alternative.</p>

Key: CPW = Colorado Parks and Wildlife

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

<p style="text-align: center;">Affected Resources</p>	<p style="text-align: center;"><u>Alternative A (Proposed Action)</u></p> <p><i>Moose and pronghorn hunting would be allowed on all areas now open to big game hunting per state regulation. The refuge is divided between CPW Units 1 and 201 and all hunts would be administered as per state regulation including weapon and annual season dates set by CPW.</i></p>	<p style="text-align: center;"><u>Alternative B (No Action)</u></p> <p><i>Hunting for mule deer, elk, waterfowl, mourning dove, and cottontail rabbit would continue as visitor opportunities on the refuge. No new hunting opportunities would be offered.</i></p>
<p>Land Use</p>		
<p>Refuge habitats are actively managed to aid certain wildlife species. Managers have a variety of tools available to improve or alter habitats as needed. The tools most commonly used on the refuge include water level manipulation with dikes, levees, water control structures and pumps, and prescribed fire.</p> <p>In wetlands, water levels are closely controlled to provide optimum growing conditions for important forage plants used by migratory waterbirds. The Butch Cassidy, Log Lake, and Flynn wetland units are usually managed to maintain deep permanent water required by migrating diving ducks and other breeding waterfowl. The Spitzie, Warren, Hoy, and Nelson units are either flooded or allowed to remain dry during the growing season on a rotating basis to encourage the growth of highly nutritious moist soil plants. During spring or fall migration, these wetland units are shallowly flooded to make these plants and their associated insects available to migrating waterfowl and shorebirds. When the units become dominated by emergent vegetation (cattail and bulrush) they can dry up completely for prescribed fire. Once burned, an agricultural disc is dragged through the unit to break up, expose, and kill the rhizomes of emergent plants to retard their spread.</p> <p>Fire is a tool used for a variety of reasons. Most commonly it is used to set vegetation back to an earlier successional stage and diversify the structure of habitats. In grasslands, it is used to remove residual vegetation and dead litter, increase the vigor of grass plants, and to control the encroachment of brushy species. On the refuge, it is frequently used to prepare a site for a subsequent treatment.</p>	<p>Pronghorn hunting would primarily occur in upland habitat and would not be anticipated to have any conflict with prescribed fire or water management in wetland habitats. Moose hunting would occur next to wetland habitats, but the timing would be after most wetland management activities for the year conclude. There would be a minimal increase in vehicle traffic associated with hunters during the open season; however, these visits would be at a time when other hunting seasons and other visitor uses are occurring and would likely not be noticed beyond what already occurs. There could be more competition for camp sites during the moose and pronghorn season which is an unavoidable conflict which cannot be mitigated. Because there is abundant public land next to the refuge and multiple campsites available off refuge, we consider these effects to be negligible.</p>	<p>Under the current hunting program, there are no known effects to land use on the refuge.</p>

<p style="text-align: center;">Affected Resources</p>	<p style="text-align: center;"><u>Alternative A (Proposed Action)</u></p> <p><i>Moose and pronghorn hunting would be allowed on all areas now open to big game hunting per state regulation. The refuge is divided between CPW Units 1 and 201 and all hunts would be administered as per state regulation including weapon and annual season dates set by CPW.</i></p>	<p style="text-align: center;"><u>Alternative B (No Action)</u></p> <p><i>Hunting for mule deer, elk, waterfowl, mourning dove, and cottontail rabbit would continue as visitor opportunities on the refuge. No new hunting opportunities would be offered.</i></p>
<p>In areas infested with nonnative plants, it is used to remove residual vegetation that would interfere with herbicide application. Where tamarisk grows to a large size in continuous stands, herbicides are largely ineffective. Fire is used to kill the above-ground part of the plants. When the plants resprout, they are sprayed; the herbicide is then transported more effectively to the rootball, where it can kill the entire plant.</p> <p>Two campgrounds are available for refuge visitors to use. Minimal development of one of the campgrounds is needed to define campsites and parking, replacement of a pit toilet, and to provide safe fire rings.</p> <p>A 10-mile wildlife drive passes through the refuge on the north side of the River. An overlook has been built off the wildlife drive above the Spitzie wetland unit. A birdwatching foot trail has been developed along Beaver Creek near the refuge headquarters.</p>		
<p>Administration</p>		
<p>The refuge is staffed by a GS-12 station manager, a GS-9 Wildlife Refuge Specialist, a WG-10 Maintenance Mechanic, a GS-7 Biological Technician (TRM), and support staff at the Lower Green River NWR Complex office located at Ouray NWR near Vernal, Utah (Budget Technician, Refuge Officer, and Project Leader). Besides the refuge officer's time to conduct compliance checks and staff time to develop and distribute outreach materials, little money is dedicated to the hunt program. A state game warden with CWP shares enforcement responsibilities.</p>	<p>Because of the low number of animals, low number of permits available, and the estimated 30–40 hunter use days over the season, it is estimated that the hunt would cost greater than \$1,000 to carry out. Moose and pronghorn seasons run concurrent with seasons already in progress so little more law enforcement time would be spent to start the proposed action. Support from the CPW Game Warden would further reduce this time so providing moose and pronghorn hunting on the refuge would have a minimal effect on refuge administration.</p>	<p>There would be no change to the current law enforcement and administrative support necessary to administer the hunt program under this alternative. Approximately 10–15 percent of our officer's time would be spent signing, monitoring, and conducting compliance checks while administrative and management staff would spend less than 5 percent of their time preparing for and starting the hunting program.</p>

Key: CPW = Colorado Parks and Wildlife

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

<p>Affected Resources</p>	<p><u>Alternative A (Proposed Action)</u> <i>Moose and pronghorn hunting would be allowed on all areas now open to big game hunting per state regulation. The refuge is divided between CPW Units 1 and 201 and all hunts would be administered as per state regulation including weapon and annual season dates set by CPW.</i></p>	<p><u>Alternative B (No Action)</u> <i>Hunting for mule deer, elk, waterfowl, mourning dove, and cottontail rabbit would continue as visitor opportunities on the refuge. No new hunting opportunities would be offered.</i></p>
<p>Local and Regional Economics</p>		
<p>The refuge is located in a remote part of Colorado with the nearest town, Maybell, Colorado (population 72), located 55 miles from the refuge. Vernal, Utah (population 10,370) and Craig, Colorado (population 9,693) are located 85 and 86 miles from the refuge, respectively, and both serve as gateways to the refuge from Utah and Colorado. The dominant land ownership in the tri-state area around the refuge is public and after mining, quarrying, oil and gas production, the recreation industry is a key socioeconomic driver. The refuge averages about 5,400 visitors per year with 75 percent of visits related to wildlife observation and other non-consumptive uses (Carver and Caudill 2007). Total expenditures from visitors were \$483,000 with non-residents accounting for \$478,800 or 99 percent of total expenditures. Expenditures on big game hunting activities accounted for 4 percent of all expenditures, followed by non-consumptive activities and fishing at 5 and 2 percent, respectively.</p>	<p>It is anticipated that there would be an added 30–40 visits associated with moose and pronghorn hunting. While big game hunters spend the most per visit (\$182 per visit), the estimated addition of \$5,473–\$7,280 to the local economy would be minimal.</p>	<p>Refuge visitors would continue to contribute \$483,000 to the local economy and there would not be an added \$5,473–\$7,280 contribution to the local economy.</p>
<p>Environmental Justice</p>		
<p>Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities.</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. The Service has identified no minority or low-income communities within the impact area. Minority or low-income communities would not be disproportionately affected by any effects from this proposed action or any of the alternatives.</p>	

Key: CPW = Colorado Parks and Wildlife

3.3 Cumulative Impact Analysis

Cumulative impacts are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR 1508.7). While cumulative effects associated with moose and pronghorn hunting are expected to be minimal, Table 6 provides a summary of possible impacts.

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

Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment	Descriptions of Anticipated Cumulative Impacts
Wildlife – Resident Game Species and Fish	
<p>Hunting/Fishing</p> <p>Pronghorn - Throughout the 1960’s, there were only about 15,000 pronghorns left in the State of Colorado. This number rose to 30,000 in the 1970’s and in 2008, the Colorado pronghorn population was estimated at more than 70,000. The pronghorn population peaked in 2010 at 79,000 and then declined to a post-hunt population of around 66,000. CPW biologists attribute the reduction to increased doe harvest, primarily in the southeast region, but also acknowledge that recent drought conditions have reduced fawn production and recruitment.</p> <p>The 1990 Browns Park NWR Hunting Plan suggests that pronghorn winter populations are highly dependent on winter severity with 30–70 seen during a mild winter and 300–500 showing up during a severe winter. The refuge serves as winter range for multiple species of big game including pronghorn, deer, and elk. During recent fall counts on the refuge, only about ten pronghorns were observed (Rachel Portwood, pers. comm.)</p> <p>Moose - During the 1970’s it was difficult to see a moose in Colorado and hunting was not allowed. Most animals were transient from Wyoming and only a limited few could be observed, primarily in North Park Colorado near Walden. However, because of a successful reintroduction program beginning in 1978 the current moose population is estimated to be around 3,000 and is continuing to increase. Transplants from Wyoming and Utah continue, and moose are transplanted into suitable habitat throughout the state.</p>	<p>Alternative A (proposed action).</p> <p>A permit is required to hunt pronghorn in CPW Hunt Units 1 and 201, and annual permit numbers are based on CPW annual aerial surveys and population trends. Most land in Hunt Units 1 and 201 is public and most is not on the refuge. Opening pronghorn on the refuge would allow hunters more land to hunt and would decrease the density of hunters in each respective unit. The number of permits should remain the same as the population, not the amount of land open to hunting regulates the number of permits issued in any given year. Based on the number of pronghorns observed on the refuge during the earlier hunting seasons, we estimate that no more than one or two pronghorns would be harvested annually. It is possible that opening the refuge would improve harvest during the initial few years as pronghorn have never been hunted on the refuge, but it is reasonable to assume that once pronghorn hunting is opened on the refuge, resident animals would become more wary of hunters and hunting activity.</p> <p>There is only one tag (Hunt Units 1 and 201 combined) issued for moose annually and there are typically between one and five moose on the refuge at any given time. Based on past harvest statistics for this species, it is reasonable to assume that no more than one moose would be harvested on the refuge in any given year. Compared with a growing statewide population of more than 3,000 animals, this should have negligible to no effect on this species.</p> <p>In summary, there should be no long-term effects associated with starting the proposed action for either species.</p> <p>Alternative B (no action).</p> <p>Permits for both moose and pronghorn in CPW Hunt Units 1 and 201 would continue to be issued based on the annual population estimates, and the refuge would serve as a no hunting area for moose and pronghorn. Hunter density would remain consistent in areas open to moose and pronghorn hunting and it is possible that the resident population would increase during hunting season based on hunting pressure on other lands in CPW hunt units 1 and 201.</p>

Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment	Descriptions of Anticipated Cumulative Impacts
<p>Moose have not been transplanted near the refuge but it is close enough to the Wyoming and Utah borders that transients have moved in and can be seen on or near the refuge throughout the year. Numbers are low and moose were not even considered in the 1990 Hunting Plan, but there are moose present on the refuge in extremely low numbers.</p>	
Other Wildlife-Dependent Recreation (road and trail development and use)	
<p>The refuge has a Wildlife Drive, which is open year-round, and a network of dirt roads, many of which are available annually or seasonally for public use. The refuge contains two designated trails for public use.</p> <p>While there is little infrastructure for the public to travel along, hiking and horseback riding are permitted throughout the refuge.</p> <p>The refuge also keeps two primitive campgrounds which are available year-round. They contain a few basic amenities and hunters often use them while hunting elk and mule deer in Colorado Game Management Hunt Units 1 and 201.</p>	<p>Alternative A (proposed action).</p> <p>Opening hunting opportunities for moose and pronghorn may result in more wear on the roads and walking trails available for public use. The Wildlife Drive is well supported year-round by mowing vegetation along the shoulder and grading the gravel road as necessary, and when weather conditions allow it. The dirt roads around wetlands and leading to secluded overlooks are supported irregularly by simply mowing encroaching vegetation; they are rarely graded to remove potholes and ruts. These dirt roads are often damaged during the fall and winter months when hunters searching for elk and mule deer use them more frequently than other visitors do during the rest of the year (many such roads are closed to public use of motorized vehicles from March 31 to July 31). Moisture, such as rain and snow, often make them muddy and prone to forming potholes and ruts when used repeatedly during wet conditions. This is a prevalent issue during the fall and winter months.</p> <p>The Swinging Bridge and Crook campgrounds would experience increased visitation if moose and pronghorn hunting is opened on the refuge. The increase in campers and hunters using the facilities may minimally increase the amount of maintenance necessary to manage the campgrounds and associated pit toilets.</p> <p>The Swinging Bridge reopened in 2018 and, as a result, there have been more visitors and campers at the refuge. There have also been more cases of vandalism in the recent year than observed in the past several years. The vandalism ranges from destruction of property (campground kiosks), driving vehicles off-road, camping outside the designated campgrounds, and bodily fluids on the floor and walls of campground pit toilets. These infractions require staff members to spend extra time caring for campgrounds, and their associated facilities, to make sure they are usable for other visitors.</p>

Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment	Descriptions of Anticipated Cumulative Impacts
	<p>Alternative B (no action).</p> <p>There would be no added wear and tear on refuge infrastructure from the estimated 30–40 annual visits by pronghorn and moose hunters. It is however possible that if moose and pronghorn are not hunted on Browns Park that increased visitation by wildlife observers could result in the same or an increased level of infrastructure damage.</p>
Development and Population Increase	
<p>The refuge is located in a remote area of northwest Colorado with few public amenities for visitors. Access to the refuge is mainly along the few roads and highways that are maintained year-round, which range approximately 40–60 miles to the nearest towns (Dutch John, Utah, and Maybell, Colordao) and 80–90 miles to the nearest cities (Craig, Colorado, Vernal, Utah, and Rock Springs, Wyoming). There is a seasonal route through Crouse Canyon to Vernal, Utah, that requires driving 50 miles on rough roads for 1.5 hours. This route is also less well-known and, because of the rough road and lack of awareness, it is not used as often as the other routes. Most land ownership in this area is by the Bureau of Land Management, National Park Service, the Service, Colorado State Land Board, CPW, and a few local ranches. It is unlikely that there would be an influx of new residents to this area because of the remote location and lack of privately-owned lands.</p>	<p>Because of the remote nature of the refuge, there would be no anticipated effects to refuge resources relative to development and population increase under either alternative.</p>
Agricultural Land Use	
<p>The refuge does not lease or administer any agricultural lands. The only agricultural land within the refuge boundary is a private inholding used by a local rancher to produce hay.</p>	<p>Alternative A (proposed action).</p> <p>Opening pronghorn and moose hunts on the refuge would not affect the agricultural lands in the private inholding. The moose are not known to regularly graze in that area and the new hunting regulations would doubtfully change their grazing habits as a result. Pronghorn have not been observed in the part of the refuge located within Colorado Game Management Hunt Unit 1 and therefore are unlikely to graze on the private inholding. The refuge would maintain its current regulations for hunting big game, such as elk and mule deer, and would apply them to moose and pronghorn hunting activities as well. The refuge would allow moose and pronghorn hunting during any CPW designated season using all legal methods of take.</p> <p>Alternative B (no action).</p> <p>There would continue to be no effect to the one private inholding on the refuge.</p>

Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment	Descriptions of Anticipated Cumulative Impacts
Use of Lead Ammunition and Tackle	
<p>Currently, there is no prohibition on the use of lead ammunition for hunting big game on the refuge. The refuge does require the use of non-toxic shot for waterfowl, mourning dove, and cottontail rabbits. Lead sinkers can still be used for fishing.</p>	<p>Alternative A (proposed action). We estimate that at most, one to five pronghorn and one moose would be harvested each year and it is likely that any lead ammunition would remain in the animal following harvest. Missed shots can happen but compared to the entirety of CPW Hunt Units 1 and 201, the refuge would contribute a small percentage of lead ammunition lost to missed shots. The refuge officer and CPW game warden would be regularly patrolling the refuge; thus, few errant shots would be anticipated to result from individual taking long, rushed, or illegal shots at moose or pronghorn.</p> <p>Alternative B (no action). Continued hunting for deer and elk would result in minimal accumulation of lead ammunition on refuge habitats. Non-toxic shot would continue to be required for waterfowl, mourning dove, and cottontail rabbits.</p>

Key: CPW = Colorado Parks and Wildlife; NWR = National Wildlife Refuge

3.4 Mitigation Measures and Conditions

Because of the minimal to negligible nature of effects to the human environment, there are no proposed mitigation measures associated with the proposed action.

3.5 Monitoring

Law enforcement staff would monitor moose and pronghorn hunting on the refuge and, if harvest exceeds the estimates provided in the earlier narrative or if infractions increase beyond that attributable to existing big game hunting, the Service would consult with CPW to decide if more constraints or mitigation measures are required to continue with the proposed action.

3.6 Summary of Analysis

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

Alternative A – Proposed Action Alternative

The proposed action, allowing moose and pronghorn hunting as per state regulation and season in CPW Units 1 and 201 on Browns Park National Wildlife Refuge, could result in more harvest of moose and pronghorn. This effect would be higher in the short term as animals have not been hunted before, but they would become more wary of hunting activity in succeeding years and harvest would likely be minimal. Other uses will be occurring concurrently, thus, there would be added road and facility effects from the estimated added 30–40 visitor days and increased competition for limited camping sites. Hunting may temporarily disturb or displace moose and pronghorn which could affect wildlife observation and photography opportunities for these species. Seasons are short and confined to fall so these effects would be short-term and minimal.

Big game hunters contribute approximately \$182 per visit to the local economy so an added \$5,473–\$7,280 would be added to the local economy. Considering that current refuge visitors contribute \$483,000 annually, this improvement would be minimal.

The proposed action would fulfill the purpose and need by providing more compatible wildlife dependent recreation in the form of pronghorn and moose hunting which is an objective in the refuge’s CCP. While several opportunities for wildlife dependent recreation already exist on the refuge, both consumptive and non-consumptive, the proposed action provides the opportunity to increase hunter access while only minimally affecting other uses on the refuge. The proposed action most closely meets the purpose and need of this environmental assessment by providing more recreational opportunities for refuge visitors.

Alternative B – No Action Alternative

Under the no action alternative, hunting for mule deer, elk, waterfowl, mourning dove and cottontail rabbits would continue per state season and regulation. The refuge hosts 5,400 visits annually with 75 percent related to wildlife observation and other non-consumptive uses. Hunting (big game, small game, and migratory birds) comprise about 23 percent of the visits and 99 percent of all revenue generated to the local economy comes from non-residents.

The no action alternative already fulfills the purpose and need by providing opportunities for wildlife dependent recreation on the refuge; however, unlike the proposed action, there would be no new opportunities provided.

3.7 List of Sources, Agencies and Persons Consulted

On June 25–26, 2019, refuge staff attended a hunt meeting with other Colorado refuges to make sure consistency in consideration of new hunting and fishing opportunities. This meeting was attended by staff from Arapaho, San Luis Valley, Rocky Mountain Arsenal, and regional office representatives.

3.8 List of Preparers

Name	Position	Work Unit
Robert M. Bundy	Project Leader	Lower Green River NWR Complex
Rachel Portwood	Wildlife Refuge Specialist	Browns Park NWR

Key: NWR = National Wildlife Refuge

3.9 State Coordination

State coordination has been conducted by regional office staff at the Unified Region 7 office in Lakewood, Colorado.

3.10 Tribal Consultation

The Service mailed an invitation for comments to all Tribes potentially affected by initiating an Environmental Assessment to open the refuge to moose and pronghorn hunting. The Service extended an invitation to engage in government-to-government consultation in accordance with Executive Order 13175.

3.11 Public Outreach

This draft Environmental Assessment will be displayed on the refuge website and a hard copy will be available at the refuge office in Maybell, Colorado for a period of 30 days.

3.12 Determination

This section will be filled out upon 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: _____

3.13 References

Carver, E.; and Caudill, J. 2007. Banking on Nature 2006. The local economic benefits to local communities of National Wildlife Refuge visitation. Division of Economics, U.S. Fish and Wildlife Service. Washington, D.C. 354 pp. plus appendices.

[USFWS] U.S. Fish and Wildlife Service. 1991. Hunting Plan for Browns Park National Wildlife Refuge. Internal Publication. 15 pp. plus attachments.

_____. 1999. Comprehensive Conservation Plan for Browns Park National Wildlife Refuge. Prepared by U.S. Fish and Wildlife Service, Browns Park, National Wildlife Refuge. 38 pp. plus appendices.

APPENDIX A OTHER APPLICABLE STATUTES, EXECUTIVE ORDERS, AND REGULATIONS

Statutes, Executive Order, and Regulations
Cultural Resources
<p>American Indian Religious Freedom Act, as amended, 42 U.S.C. 1996 – 1996a; 43 CFR 7</p> <p>Antiquities Act of 1906, 16 U.S.C. 431-433; 43 CFR 3</p> <p>Archaeological Resources Protection Act of 1979, 16 U.S.C. 470aa – 470mm; 18 CFR 1312; 32 CFR Part 229; 36 CFR Part 296; 43 CFR 7</p> <p>National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470-470x-6; 36 CFR 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 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>
Fish and Wildlife
<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 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 10, 11, 12, 14, 300, and 904</p> <p>Migratory Bird Treaty Act, as amended, 16 U.S.C. 703-712; 50 CFR 10, 12, 20, and 21</p> <p>Executive Order 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds, 66 Fed. Reg. 3853 (2001)</p>
Natural Resources
<p>Clean Air Act, as amended, 42 U.S.C. 7401-7671q; 40 CFR 23, 50, 51, 52, 58, 60, 61, 82, and 93; 48 CFR 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>
Water Resources
<p>Coastal Zone Management Act of 1972, 16 U.S.C. 1451 et seq.; 15 CFR 923, 930, 933</p> <p>Federal Water Pollution Control Act of 1972 (commonly referred to as Clean Water Act), 33 U.S.C. 1251 et seq.; 33 CFR 320-330; 40 CFR 110, 112, 116, 117, 230-232, 323, and 328</p> <p>Rivers and Harbors Act of 1899, as amended, 33 U.S.C. 401 et seq.; 33 CFR Pars 114, 115, 116, 321, 322, and 333</p> <p>Safe Drinking Water Act of 1974, 42 U.S.C. 300f et seq.; 40 CFR 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