

Final Environmental Assessment

for Moose and Pronghorn Hunting on Browns Park National Wildlife Refuge

July 2020

Prepared by

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This environmental assessment (EA) reflects the proposed action as presented in the draft EA, responses to public comments, and any subsequent changes based on comments. No changes to the draft proposed actions were made; however, additional language was added in Table 6, based on a comment received regarding our cumulative impacts analysis of lead in the environment. The EA was 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] 1500-1508) and Department of the Interior (43 CFR 46; 516 DM 8), and United States (U.S.) Fish and Wildlife Service (Service) (550 FW 3) regulations and policies. NEPA requires examination of the effects of proposed actions on the natural and human environment.

1.0 Introduction

1.1 Proposed Action

The Service is proposing to open 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. 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.

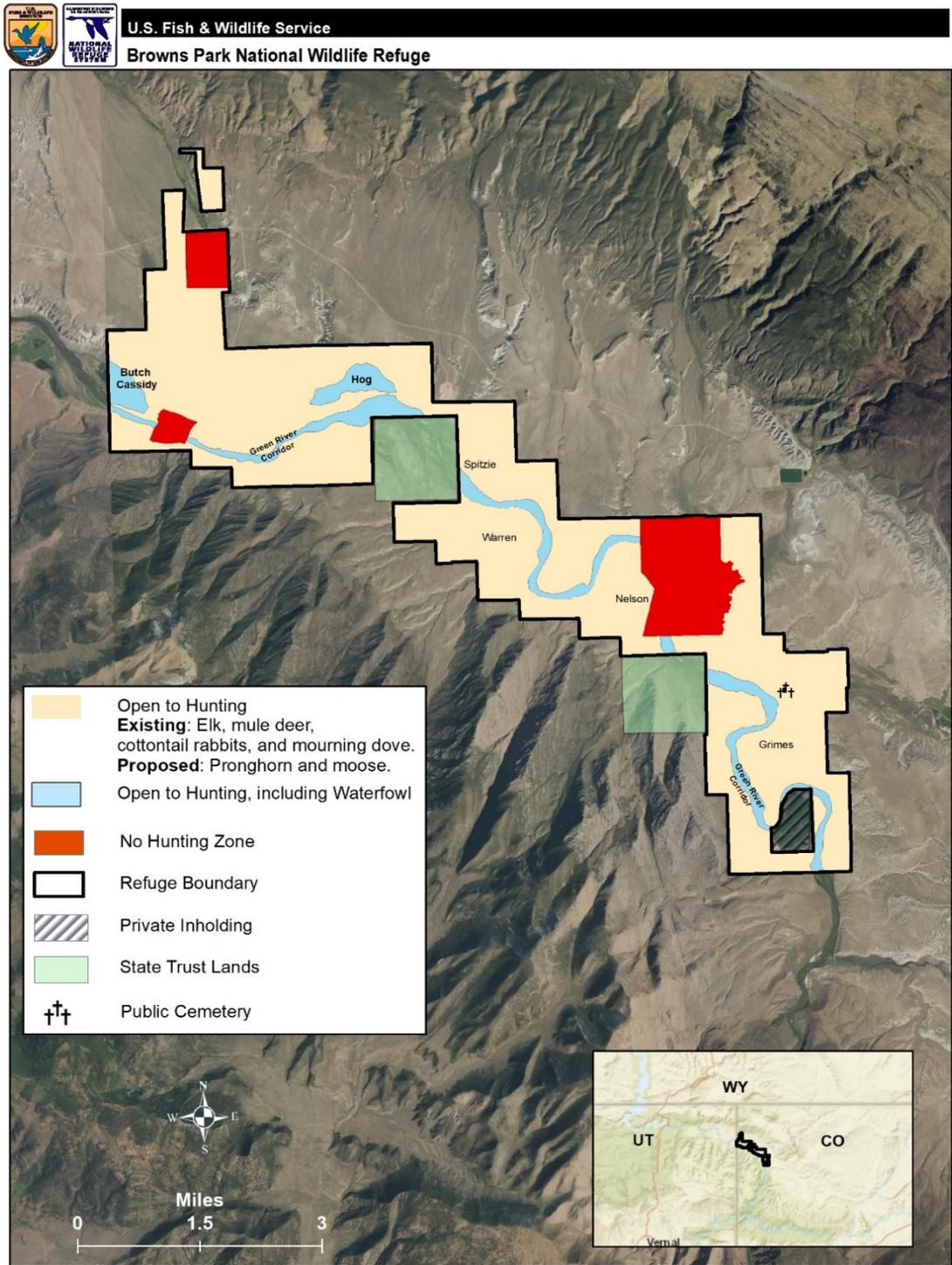


Figure 1. Current and Proposed Hunting Opportunities on Browns Park National Wildlife Refuge.

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.

The mission of the Refuge System, as outlined by the NWRSAA, 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 NWRSAA mandates the Secretary of the Interior in administering the System to (16 U.S. Code 668dd[a][4]):

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

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

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 Hunt 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 campgrounds 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 (USFWS 2020b).

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; and
- 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.

| <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 Hunt 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>Resident Big Game</p> | | |
| <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> |

| 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 Hunt 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> |
|--|--|---|
| 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 Hunt 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> |
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| <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 Hunt 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> |
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| <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, each spring. Pikeminnow have also been observed as far upstream as Beaver Creek, although in smaller concentrations than in Vermillion Creek.</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 Hunt 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> |
|---|---|---|
| Vegetation | | |
| <p>Wetland 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. 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 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 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> <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 Hunt 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> |
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| <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</i> spp.), 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> | | |
| Geology and Soils | | |
| <p>The refuge is home to a unique soil type known as cryptobiotic soils. Cryptobiotic (also known as cryptogammic) 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> <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 Hunt 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> |
|---|--|---|
| 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. | | |

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

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> <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 Hunt 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>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, the Service, 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 (campgrounds and administrative facilities) these added hunts would occur refuge-wide; there are no mitigation measures to reduce effects to nonconsumptive 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 nonconsumptive 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 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 Hunt 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>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 permitted 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 Hunt 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 and Hog Lake 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> |

| 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 Hunt 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>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. A 10-mile wildlife drive passes through the refuge on the north side of the River. Overlooks have been built off the wildlife drive above the Spitzie wetland unit and Horse Bottom. A birdwatching foot trail has been developed along Beaver Creek near the refuge headquarters.</p> | | |
| Administration | | |
| <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; NWR = National Wildlife Refuge

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

| <p style="text-align: center;">Affected Resources</p> | <p style="text-align: center;"><u>Alternative A (Proposed Action)</u></p> <p><i>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.</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> |
|--|--|--|
| Local and Regional Economics | | |
| <p>The refuge is 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 nonconsumptive 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 nonconsumptive 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> |
| Environmental Justice | | |
| <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>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> |

| Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment | Descriptions of Anticipated Cumulative Impacts |
|---|--|
| <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>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> | <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> |
| <p>Other Wildlife-Dependent Recreation (road and trail development and use)</p> | |
| <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 maintains 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 maintained 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 maintained 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> |

| Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment | Descriptions of Anticipated Cumulative Impacts |
|---|---|
| | <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> <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, Colorado) 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> |

| Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment | Descriptions of Anticipated Cumulative Impacts |
|---|---|
| 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 continue 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> |
| 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)</p> <p>We estimate that, at most, one to five pronghorn and one moose would be harvested each year and it is likely that some lead ammunition would remain in the animal following harvest. The refuge sits in two hunting units, with Hunt Unit 1 located west of the river and Hunt Unit 201 located east of the river. CPW sets harvest quotas annually for big game for all units in the state. For moose, CPW has determined that one tag for Hunt Units 1 and 201 combined is appropriate and can be filled using any legal method, including archery, muzzleloader, or rifle. For pronghorn, CPW has allowed 60 tags (for muzzleloader and rifle season) for Hunt Units 1 and 201 combined. Only Hunt Unit 201 allows rifle tags. For deer and elk, species that are already hunted on the refuge, CPW allows approximately 345 elk tags (for muzzleloader and rifle) and 70 mule deer tags (for muzzleloader and rifle) across Hunt Units 1 and 201 combined. In 2019, there were approximately 474 tags issued where hunters had the option to legally harvest one of these big game species using lead ammunition in Hunt Units 1 and 201. Opening the refuge to moose and pronghorn hunting would not change the total number of tags allowed by CPW and, thus, the total amount of lead ammunition potentially added to the environment would not change.</p> |

| Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment | Descriptions of Anticipated Cumulative Impacts |
|--|--|
| | <p>Missed shots can happen but compared to the entirety of CPW Hunt Units 1 and 201, the refuge would contribute a small fraction of the lead ammunition lost to missed shots. Refuge law enforcement officers and CPW wardens regularly patrol the refuge. Few errant shots would be anticipated to result from hunters taking long, rushed, or illegal shots at moose or pronghorn.</p> <p>Alternative B (No Action)</p> <p>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 Hunt 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 nonconsumptive, 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 nonconsumptive 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

To more closely align with State of Colorado hunting regulations, a letter was sent to the Director of CPW, requesting their assessment of the refuge hunting program and feedback on hunting opportunities that the state would like the Service to consider. Refuge staff met on December 3, 2019 to discuss the state’s response and to make recommendations on where the refuge could come closer to aligning with the state. During this period, Refuge Manager Daryl Magnuson had periodic discussion with local CPW law enforcement and management staff to keep them informed on the refuge’s progress. The state is supportive of the proposed new moose and pronghorn hunts. Additional state coordination has been conducted by regional office staff at the Unified Region 7 office in Lakewood, CO.

3.10 Tribal Consultation

The Service mailed an invitation for comments to all tribes potentially affected by initiating an EA 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. The Service received no comments from tribes on the proposed action.

3.11 Public Outreach

The public was encouraged to comment on the proposed expansion of hunting opportunities at Browns Park NWR from April 1–30, 2020. In addition, public comments on the entire national hunting and fishing rule were accepted through June 8, 2020. Comments received specific to Browns Park NWR generally fell into several broad categories including general opposition to hunting on national wildlife refuges, concern about the safety of other public uses and their continued availability, opposition to lead ammunition, concern regarding adequate staffing levels, and concern regarding the level and completeness of our NEPA analysis and documentation. We addressed these comments below.

Comment (1): Several commenters expressed general opposition to hunting on refuges. They note that there are plenty of places in Colorado where hunting is allowed and that expanded hunting opportunity at the refuge was not needed.

Response: While we agree with the commenters that Colorado does have significant public lands open to hunting, the NWRSA, as amended, stipulates that hunting (along with fishing, wildlife observation and photography, and environmental education and interpretation), if found to be compatible, is a legitimate and priority general public use of a refuge and should be facilitated. The Service has adopted policies and regulations implementing the requirements of the NWRSA that refuge managers comply with when considering hunting and fishing programs.

We allow hunting of resident wildlife on national wildlife refuges only if such activity has been determined compatible with the established purpose(s) of the refuge and the mission of the Refuge System as required by the NWRSA. Hunting of resident wildlife on national wildlife refuges generally occurs consistent with state regulations, including seasons and bag limits. Refuge-specific hunting regulations can be more restrictive (but not more liberal) than state regulations and often are more restrictive to help meet specific refuge objectives. These objectives include resident wildlife population and habitat objectives, minimizing disturbance impacts to wildlife, maintaining high-quality opportunities for hunting and other wildlife-dependent recreation, eliminating or minimizing conflicts with other public uses or refuge management activities, and protecting public safety.

The word “refuge” includes the idea of providing a haven of safety for wildlife, and as such, hunting might seem as an inconsistent use of the Refuge System. But again, the NWRSA stipulates that hunting, if found compatible, is a legitimate and priority general public use of a refuge. Furthermore, we manage refuges to support healthy wildlife populations that in many cases produce harvestable surpluses that are a renewable resource. As practiced on refuges, hunting and fishing do not pose a threat to wildlife populations.

We made no changes as a result of these comments.

Comment (2): One commenter expressed concern that other public uses, such as wildlife observation and photography, would be diminished and could be negatively affected by

expanded hunting opportunities. Likewise, there was concern expressed regarding the safety of all users.

Response: Congress, through the NWRSA, as amended, envisioned and clearly stated that hunting, fishing, wildlife observation and photography, and environmental education and interpretation would all be treated as priority public uses of the Refuge System. Therefore, the Service facilitates all of these uses on refuges if they are found compatible with the purpose of the refuge and the mission of the NWRSA. At Browns Park NWR, all these activities have been found compatible and are facilitated to the extent practical for the benefit of the public. All priority public uses occur at varying levels throughout the year and will continue in the future.

The Service considers public safety to be a top priority. Hunting of resident wildlife on refuges generally occurs consistent with state regulations, which are designed to protect public safety (e.g., blaze orange requirements to increase visibility of hunters, prohibitions on discharging firearms across roads or near occupied buildings). The refuge uses a variety of techniques to minimize user conflicts including: (1) providing information on refuge websites and in printed brochures regarding regulations and expectations for hunting and fishing activities, (2) providing clear signage of areas open and closed to hunting, and (3) providing law enforcement and outreach in the field to address conflicts that may arise. In the past, conflicts between user groups have been minimal, and we expect future conflicts to remain that way. It should be noted that injuries and deaths related to hunting are extremely rare, both for hunters and for the non-hunting public.

We made no changes as a result of these comments.

Comment (3): Several commenters expressed concern about the use of lead ammunition and recommended that the Service prohibit its use for big game hunting on the refuge.

Response: The amount of lead potentially introduced into the environment as a result of the Service's action is negligible for the following reasons. First, only one moose tag is allowed for all of Hunt Units 1 and 201 for any season (archery, muzzleloader, or rifle). According to CPW, in only one of the last three years, the successful hunter used archery equipment to harvest a moose (CPW 2019). Second, only ten tags for pronghorn are allowed for the muzzleloader season for all of Hunt Units 1 and 201. And finally, only 50 tags for pronghorns are allowed for rifle for all of Hunt Units 1 and 201. The portion of the refuge in Hunt Unit 1, west of the Green River, is not open for rifle pronghorn hunting. The Service is concerned about the impacts of spent lead ammunition on scavengers, especially golden eagles, bald eagles, and ravens. Lead shot for waterfowl hunting has been illegal nationwide since 1991. In addition to waterfowl, existing hunting opportunities with shotguns for mourning doves and cottontail rabbits also require the use of non-toxic shotshells at Browns Park NWR. Non-toxic ammunition for big game is becoming more available as the demand for this ammunition increases (Kelly et al. 2011). Copper ammunition is a good alternative since it is less toxic and frangible than lead ammunition (Hunt et al. 2006). The Service's intent is to reduce the potential of lead poisoning to migratory birds and birds of prey, as well as lower the risk of lead exposure for humans ingesting wild game hunted on refuges. It is also the Service's intent, to the extent practical, to align with state regulations with respect to hunting activities. The Service will continue to work with CPW on ways to promote non-toxic alternatives, as well as promote these alternatives on refuge informational resources such as brochures and refuge websites.

We made no changes as a result of these comments.

Comment (4): One commenter stated that refuge budgets and staff have declined for some time and that adequate staff are not available to expand hunting opportunities at Browns Park NWR.

Response: The Service has analyzed the resources needed to safely implement a moose and pronghorn hunt on the refuge and found it to be compatible with the refuge purpose and mission of the Refuge System. The expansion of hunting opportunities can be successfully implemented with resources available at the refuge. The refuge will continue to coordinate with CPW game wardens and other local and federal law enforcement personnel, as appropriate, to ensure a safe hunting experience for all users of the refuge.

We made no changes as a result of these comments.

Comment (5): One commenter specifically suggested that the Service needed to complete an environmental impact statement to comply with requirements of NEPA. In addition, another commenter stated that our environmental assessment was inadequate with respect to our analysis of the cumulative effects of lead. This same commenter suggested that the Service should have evaluated a non-toxic only alternative to comply with NEPA.

Response: The Service disagrees with the assertion that we should prepare an environmental impact statement for proposing expanded hunting opportunities on Browns Park NWR. The Service's environmental assessment analysis of the impacts of the proposed action demonstrated that the action would not have significant impacts at the local, regional, or national level, and the commenter has provided no additional information that would change this analysis. The refuge annually conducts management activities that minimize or offset impacts of hunting on physical and cultural resources, including establishing designated areas for hunting; restricting levels of use; confining access and travel to designated locations; providing education programs and materials for hunters, anglers, and other users; and conducting law enforcement activities.

With respect to our analysis of the cumulative effects of lead on the environment, we have added additional language to the final environmental assessment to include an analysis of the use of lead ammunition outside of the refuge and in past, present, and foreseeable future use (Table 6). This additional information did not change our overall assessment that the use of lead ammunition would result in no more than a negligible increase of lead in the environment when compared to the lead ammunition being used in the surrounding areas. As for developing and analyzing an alternative specific to requiring only the use of non-toxic ammunition on the refuge for moose and pronghorn, the Service disagrees with this statement. The NWRSA, as amended, directs the Service to make refuge regulations as consistent with state regulations as practicable. The Service currently allows mule deer and elk hunting on the refuge following state regulations. As stated above, the intent of the Service is to follow state-approved methods of take including the use of approved ammunition. The state currently promotes the use of non-toxic ammunition as an alternative to lead ammunition, a position shared by the Service. However, CPW continues to allow lead ammunition for the harvest of many species including big game. The Service did not feel it necessary to evaluate a non-toxic only alternative for moose and pronghorn.

Comment (6): We received a comment as part of the national rule concerning the use of muzzleloader rifles regarding disturbance to wildlife and toxic smoke caused by the burning of black powder in muzzleloader rifles. The commenter also states these firearms are dangerous to the hunter.

Response: Muzzleloader rifles are a legal method of take for big game species in the State of Colorado, and special season dates are set for this method. We believe the effects to both hunted and non-hunted species on the refuge as a result of use of muzzleloader firearms would be negligible, for the following reasons:

- The number of hunters pursuing moose or pronghorn on the refuge is expected to be low, especially during the muzzleloader season. The State of Colorado allows one moose tag, which can be filled either by archery, muzzleloader, or rifle, and ten muzzleloader pronghorn tags for the entirety of Hunt Units 1 and 201 where the refuge sits.
- Noise produced by muzzleloading and modern rifles of the same caliber and barrel length are similar in decibel range. However, the noise produced by these weapons has quite different characteristics. Black powder used in muzzleloaders makes a much lower frequency noise of longer duration. Smokeless cartridges used in modern firearms have a faster burn, which gives a much higher pitched noise with a much shorter duration. The high pitched crack of modern firearms is much more damaging to hearing ability, and likely more disturbing to wildlife than the lower-pitched sound of black-powder weapons.
- Muzzleloading weapons have a shorter effective range and require a closer approach to game than needed if using modern firearms. In addition, the long reloading time of muzzleloaders (approximately 30 seconds) means that hunters typically wait for better opportunities, and fewer shots are fired.
- Muzzleloaders use a variety of propellants, including black powder, a mixture of potassium nitrate, charcoal, and sulfur. Black powder does produce relatively large quantities of smoke when fired. If combustion of black powder is complete, smoke would contain primarily nitrogen and carbon dioxide. However, since combustion is incomplete, black powder combustion produces hydrogen sulfide, sulfur oxides, carbon monoxide, and nitrogen oxides (Del'Aria and Opperman 2017). These compounds are toxic if breathed in high concentrations, however in field conditions encountered when hunting, black powder smoke disperses rapidly. Total amounts produced as a result of hunting activity, and therefore any effects to wildlife would be negligible.
- The commenter also stated that muzzleloading firearms present risk of injury to the hunters themselves. Muzzleloaders do take significantly more knowledge to operate than modern firearms and involve greater risk. However, a western Colorado study documented less than 1 percent of hunter injuries from 1997-2005 resulted from gunshot wounds (Reishus 2007). In 2017, there were over 17 million hunters with firearms, according to the National Sporting Goods Association, and only 35 injuries occurred per 100,000 participants, of which a vast majority were non-serious injuries (Target Tamers 2020). Thus, although hunting with any type of firearm involves risk, overall it is an extremely safe activity.

No changes to the rule resulted from this comment.

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: ROBERT BUNDY Digitally signed by ROBERT BUNDY
Date: 2020.07.22 12:00:27 -06'00' Date: _____

Name/Title/Organization: Robert Bundy, Project Leader, Lower Green River National Wildlife Refuge Complex

Reviewer Signature: _____ Date: _____

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

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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

APPENDIX B FINDING OF NO SIGNIFICANT IMPACT

FINDING OF NO SIGNIFICANT IMPACT AND DECISION TO OPEN MOOSE AND PRONGHORN HUNTING

BROWNS PARK NATIONAL WILDLIFE REFUGE

Moffat County, Colorado

The United States (U.S.) Fish and Wildlife Service (Service) is opening hunting opportunities for moose and pronghorn on Browns Park National Wildlife Refuge (NWR) in accordance with the Browns Park NWR Hunting Plan.

Selected Action

Alternative A – Proposed Action Alternative: As described in the hunting plan (USFWS 2020), in addition to current authorized hunting opportunities, such as waterfowl, mourning dove, cottontail rabbits, mule deer, and elk, the Service proposed to open moose and pronghorn hunting in areas currently open to other hunting opportunities. 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 other big game hunting opportunities including Grimes, Nelson, Spitzie, and Warren Units. The portion of the refuge lying west of the Green River is in Hunt Unit 1 and that lying to the east is in Hunt Unit 201. Moose and pronghorn would be open during any state-designated season using all legal methods of take.

This alternative was selected over the No Action Alternative because of the following determinations:

- The Proposed Action Alternative would allow the public to harvest a renewable resource, promote a wildlife-oriented recreational opportunity, and increase awareness of the refuge and the National Wildlife Refuge System (Refuge System).
- The Proposed Action Alternative best aligns hunting regulations with surrounding lands and waters to the extent legally practicable and meets additional requirements outlined in Secretarial Order 3356.
- The Proposed Action Alternative best increases access for recreational opportunities related to hunting and, in doing so, meets the requirements of Secretarial Order 3366.
- The Proposed Action Alternative has been determined compatible and aligns with Service policy regarding the establishment of hunting programs on national wildlife refuges.
- The Proposed Action Alternative is compatible with the purpose for which the refuge was established.
- This proposal does not initiate widespread controversy or litigation.
- There are no conflicts with local, state, regional, or federal plans or policies.

This alternative is the Service's proposed action because it offers the best opportunity for public hunting that would result in a minimal impact on physical and biological resources, while meeting the Service's mandates under the National Wildlife Refuge System Administration Act (NWRSA), as amended, and Secretarial Order 3356.

Other Alternatives Considered and Analyzed

Alternative B – No Action Alternative: This alternative would maintain current hunting opportunities for waterfowl, mourning doves, cottontail rabbits, mule deer and elk on refuge lands. No new opportunities for hunting would be allowed. All other existing public uses would remain unchanged.

Under this alternative, current refuge hunting opportunities for waterfowl would continue to occur along the Green River corridor and in Hog and Butch Cassidy bottoms. Hunting of mourning dove and cottontail rabbit would remain open across all open areas on the refuge. Likewise, mule deer and elk opportunities would remain the same. In addition, Browns Park NWR would continue to serve as habitat for fish and wildlife as well as provide outdoor recreational opportunities for all six wildlife-dependent priority public uses—hunting, fishing, wildlife observation, photography, and environmental education and interpretation.

This alternative was not selected because opportunities to create additional compatible wildlife-dependent outdoor recreational experiences by adding moose and pronghorn hunting would not be realized. Although we expect only a few hunters to visit the refuge in any given year to hunt these species, the refuge would miss the opportunity to connect with a segment of the public and promote conservation and environmental stewardship of natural resources. All other public uses on the refuge would not change and would continue to be managed as described in current plans.

Summary of Effects of the Selected Action

An environmental assessment (EA) was prepared in compliance with the National Environmental Policy Act (NEPA) to provide a decision-making framework that: (1) explored a reasonable range of alternatives to meet project objectives; (2) evaluated potential issues and impacts to the refuge, resources, and values; and (3) identified mitigation measures to lessen the degree or extent of these impacts. The EA evaluated the effects associated with opening hunting opportunities for moose and pronghorn on refuge lands already open to big game hunting (mule deer and elk) at Browns Park NWR. It is incorporated as part of this finding.

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

- This alternative would open lands already open to hunting to moose and pronghorn hunting.
- The refuge currently manages 12,112 acres in fee title. Additional opportunities created from this decision may attract a few (less than five) more hunters in any given year. For the past several years, CPW has allowed only one moose tag for Hunt Units 1 and 201 combined, on which the refuge sits. For pronghorn, there is the possibility of a few additional hunters. At this time, we believe these new hunting opportunities would not conflict with other visitor activities. If conflicts develop, they will be addressed and

mitigated. There would be no effect on endangered or threatened species resulting from this action. Effect on other resident wildlife and their habitat would be negligible.

- This alternative helps meet the purpose and needs of the Service, as described above, because it provides additional wildlife-dependent creation opportunities on the refuge. This alternative also helps align Service regulations with state regulations to make hunting more accessible and understandable by the American public.
- We anticipate a very slight increase in visitation under this alternative. The impacts to the local and regional economy are likely to have a negligible impact.
- Measures to mitigate and minimize adverse effects have been incorporated into the selected action. These measures include adopting a “wildlife first” principle explicitly stated in the NWRSA, as amended. Staff biologists monitor species population trends to ensure that target species can be hunted on the refuge without adversely affecting the species. These monitoring activities include direct observation of populations, consultation with state and Service species specialists, and review of current species survey information and research.
- The refuge can limit or exclude hunting activities where there are biological concerns. For the species currently hunted on the refuge and the new expansion for moose and pronghorn, existing biological concerns are not currently present. However, should conditions change in the future, the refuge could limit or exclude hunting activities 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.
- An Endangered Species Act Section 7 review was conducted. It was determined that the Proposed Action Alternative would have “No Effect” with recovery and protection of the following species: Ute ladies’-tresses (threatened) and Colorado pike minnow (endangered). The Ute ladies’-tresses have been known to occur in gravelly sandbars along the Green River. However, no plants have been observed in several years on the refuge. It is very unlikely that a moose or pronghorn hunter would happen upon this plant during the fall hunting seasons. Likewise, there would be no impact on the Colorado pike minnow attributable to hunting activity in riparian corridors or uplands habitats. Section 7 of the Endangered Species Act requires federal agencies to evaluate potential impacts to threatened and endangered species and their habitats, as well as an environmental assessment under NEPA, specifically for the hunting program that addresses each of these species.

Public Use Conflicts

To minimize conflicts with priority non-hunting recreational uses outlined in the Refuge System Improvement Act of 1997, 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 “No Hunting Zone” or “Area Beyond This Sign Closed” signs. Areas closed to hunting currently include campgrounds, areas near residences, and refuge buildings, as shown on the hunting map in the EA, hunting plan, and other refuge public use materials. Overall,

hunting impacts 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. Habitat treatments, such as invasive species treatment, may generate a temporary closure of an area, as would routine maintenance of roads and other facilities. Notice or information about any of these closures may be posted and available at the refuge office to mitigate conflicts.

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

- The Service works closely with the state to ensure that species harvested on a refuge are within the limits set by the state to ensure healthy populations of the species for present and future generations of Americans.
- The action would result in more wildlife-dependent recreational opportunities and minimal effects to the local economy, all with negligible impacts to the human environment as discussed above.
- Any adverse direct and indirect effects of the proposed action on air, water, soil, habitat, wildlife, aesthetic and visual resources, and wilderness values are expected to be negligible and short-term in nature.
- The Refuge System uses an adaptive management approach to all wildlife management on refuges, including monitoring and re-evaluating hunting and fishing opportunities on an annual basis. This ensures these programs continue to contribute to conserving natural resources and support the purpose of the refuge and mission of the Refuge System. By using an adaptive approach, these opportunities would not contribute to any cumulative impacts to habitat or to wildlife from climate change, population growth and development, or local, state, or regional wildlife management.
- The action, along with proposed mitigation measures, would ensure there is low risk to the health and safety of refuge staff, visitors, and the hunting and fishing public.
- The action would not impact any threatened or endangered species, nor any federally-designated critical habitat.
- There is no scientific controversy over the impacts of this action and the impacts of the proposed action are relatively certain.
- The proposal is not expected to have any significant adverse effects on wetlands and floodplains, pursuant to Executive Orders 11990 and 11988.

The analysis summarized above and detailed in the environmental assessment demonstrates that the addition of moose and pronghorn hunting on 12,112 acres would not have significant impact on local or regional wildlife populations. The actual number of animals likely to be harvested on the refuge would be a tiny fraction of the estimated populations. In addition, overall populations would continue to be monitored in collaboration with CPW biologists.

State Coordination

On December 3, 2019, refuge staff met with District CPW staff to discuss the proposed 2020 hunting plan changes and received feedback from the state. Several additional contacts via phone were held between the refuge manager and CPW staff as the proposal was being finalized. In addition, a formal letter was sent to the CPW Director, requesting feedback on the status of the current refuge hunting program and an assessment of alignment with state regulations. CPW staff reviewed the draft environmental assessment, hunting plan, and compatibility determination during the public review period. The refuge will continue to coordinate with CPW to address annual implementation of hunting activities and ensure safe and enjoyable hunting opportunities.

Public Review

The public was encouraged to comment on the proposed expansion of hunting opportunities at Browns Park NWR from April 1–30, 2020. In addition, public comments on the entire national hunting and fishing rule were accepted through June 8, 2020. Comments received specific to Browns Park NWR generally fell into several broad categories including general opposition to hunting on national wildlife refuges, concern about the safety of other public uses and their continued availability, opposition to lead ammunition, concern regarding adequate staffing levels, and concern regarding the level and completeness of our NEPA analysis and documentation. We addressed these comments below.

Comment (1): Several commenters expressed general opposition to hunting on refuges. They note that there are plenty of places in Colorado where hunting is allowed and that expanded hunting opportunity at the refuge was not needed.

Response: While we agree with the commenters that Colorado does have significant public lands open to hunting, the NWRSA, as amended, stipulates that hunting (along with fishing, wildlife observation and photography, and environmental education and interpretation), if found to be compatible, is a legitimate and priority general public use of a refuge and should be facilitated. The Service has adopted policies and regulations implementing the requirements of the NWRSA that refuge managers comply with when considering hunting and fishing programs.

We allow hunting of resident wildlife on national wildlife refuges only if such activity has been determined compatible with the established purpose(s) of the refuge and the mission of the Refuge System as required by the NWRSA. Hunting of resident wildlife on national wildlife refuges generally occurs consistent with state regulations, including seasons and bag limits. Refuge-specific hunting regulations can be more restrictive (but not more liberal) than state regulations and often are more restrictive to help meet specific refuge objectives. These objectives include resident wildlife population and habitat objectives, minimizing disturbance impacts to wildlife, maintaining high-quality opportunities for hunting and other wildlife-dependent recreation, eliminating or minimizing conflicts with other public uses or refuge management activities, and protecting public safety.

The word “refuge” includes the idea of providing a haven of safety for wildlife, and as such, hunting might seem as an inconsistent use of the Refuge System. But again, the NWRSA stipulates that hunting, if found compatible, is a legitimate and priority general public use of a refuge. Furthermore, we manage refuges to support healthy wildlife populations that in many

cases produce harvestable surpluses that are a renewable resource. As practiced on refuges, hunting and fishing do not pose a threat to wildlife populations.

We made no changes as a result of these comments.

Comment (2): One commenter expressed concern that other public uses, such as wildlife observation and photography, would be diminished and could be negatively affected by expanded hunting opportunities. Likewise, there was concern expressed regarding the safety of all users.

Response: Congress, through the NWRSA, as amended, envisioned and clearly stated that hunting, fishing, wildlife observation and photography, and environmental education and interpretation would all be treated as priority public uses of the Refuge System. Therefore, the Service facilitates all of these uses on refuges if they are found compatible with the purpose of the refuge and the mission of the NWRSA. At Browns Park NWR, these activities have been found compatible and are facilitated to the extent practical for the benefit of the public. All priority public uses occur at varying levels throughout the year and will continue in the future.

The Service considers public safety to be a top priority. Hunting of resident wildlife on refuges generally occurs consistent with state regulations, which are designed to protect public safety (e.g., blaze orange requirements to increase visibility of hunters, prohibitions on discharging firearms across roads or near occupied buildings). The refuge uses a variety of techniques to minimize user conflicts including: (1) providing information on refuge websites and in printed brochures regarding regulations and expectations for hunting and fishing activities, (2) providing clear signage of areas open and closed to hunting, and (3) providing law enforcement and outreach in the field to address conflicts that may arise. In the past, conflicts between user groups have been minimal, and we expect future conflicts to remain that way. It should be noted that injuries and deaths related to hunting are extremely rare, both for hunters and for the non-hunting public.

We made no changes as a result of these comments.

Comment (3): Several commenters expressed concern about the use of lead ammunition and recommended that the Service prohibit its use for big game hunting on the refuge.

Response: The amount of lead potentially introduced into the environment as a result of the Service's action is negligible for the following reasons. First, only one moose tag is allowed for all of Hunt Units 1 and 201 for any season (archery, muzzleloader, or rifle). According to CPW, in only one of the last three years, the successful hunter used archery equipment to harvest a moose (CPW 2019). Second, only ten tags for pronghorn are allowed for the muzzleloader season for all of Hunt Units 1 and 201. And finally, only 50 tags for pronghorns are allowed for rifle for all of Hunt Units 1 and 201. The portion of the refuge in Hunt Unit 1, west of the Green River, is not open for rifle pronghorn hunting. The Service is concerned about the impacts of spent lead ammunition on scavengers, especially for golden eagles, bald eagles, and ravens. Lead shot for waterfowl hunting has been illegal nationwide since 1991. In addition to waterfowl, existing hunting opportunities with shotguns for mourning doves and cottontail rabbits also require the use of non-toxic shotshells at Browns Park NWR. Non-toxic ammunition for big game is becoming more available as the demand for this ammunition increases (Kelly et al. 2011). Copper ammunition is a good alternative since it is less toxic and frangible than lead ammunition (Hunt et al. 2006). The Service's intent is to reduce the potential of lead poisoning

to migratory birds and birds of prey, as well as lower the risk of lead exposure for humans ingesting wild game hunted on refuges. It is also the Service's intent, to the extent practical, to align with state regulations with respect to hunting activities. The Service will continue to work with CPW on ways to promote non-toxic alternatives, as well as promote these alternatives on refuge informational resources such as brochures and refuge websites.

We made no changes as a result of these comments.

Comment (4): One commenter stated that refuge budgets and staff have declined for some time and that adequate staff are not available to expand hunting opportunities at Browns Park NWR.

Response: The Service has analyzed the resources needed to safely implement a moose and pronghorn hunt on the refuge and found it to be compatible with the refuge purpose and mission of the Refuge System. The expansion of hunting opportunities can be successfully implemented with resources available at the refuge. The refuge will continue to coordinate with CPW game wardens and other local and federal law enforcement personnel, as appropriate, to ensure a safe hunting experience for all users of the refuge.

We made no changes as a result of these comments.

Comment (5): One commenter specifically suggested that the Service needed to complete an environmental impact statement to comply with requirements of NEPA. In addition, another commenter stated that our environmental assessment was inadequate with respect to our analysis of the cumulative effects of lead. This same commenter suggested that the Service should have evaluated a non-toxic only alternative to comply with NEPA.

Response: The Service disagrees with the assertion that we should prepare an environmental impact statement before proposing expanded hunting opportunities on Browns Park NWR. The Service's environmental assessment analysis of the impacts of the proposed action demonstrated that the action would not have significant impacts at the local, regional, or national level, and the commenter has provided no additional information that would change this analysis. The refuge annually conducts management activities that minimize or offset impacts of hunting on physical and cultural resources, including establishing designated areas for hunting; restricting levels of use; confining access and travel to designated locations; providing education programs and materials for hunters, anglers, and other users; and conducting law enforcement activities.

With respect to our analysis of the cumulative effects of lead on the environment, we have added additional language to the final environmental assessment to include an analysis of the use of lead ammunition outside of the refuge and in past, present, and foreseeable future use (Table 6). This additional information did not change our overall assessment that the use of lead ammunition would result in no more than a negligible increase of lead in the environment when compared to the lead ammunition being used in the surrounding areas. As for developing and analyzing an alternative specific to requiring only the use of non-toxic ammunition on the refuge for moose and pronghorn, the Service disagrees with this statement. The NWRSA, as amended, directs the Service to make refuge regulations as consistent with state regulations as practicable. The Service currently allows mule deer and elk hunting on the refuge following state regulations. As stated above, the intent of the Service is to follow state-approved methods of take including the use of approved ammunition. The state currently promotes the use of non-toxic ammunition as an alternative to lead ammunition, a position shared by the Service. However, CPW continues

to allow lead ammunition for the harvest of many species including big game. The Service did not feel it necessary to evaluate a non-toxic only alternative for moose and pronghorn.

Comment (6): We received a comment as part of the national rule concerning the use of muzzleloader rifles regarding disturbance to wildlife and toxic smoke caused by the burning of black powder in muzzleloader rifles. The commenter also states these firearms are dangerous to the hunter.

Response: Muzzleloader rifles are a legal method of take for big game species in the State of Colorado, and special season dates are set for this method. We believe the effects to both hunted and non-hunted species on the refuge as a result of use of muzzleloader firearms would be negligible, for the following reasons:

- The number of hunters pursuing moose or pronghorn on the refuge is expected to be low, especially during the muzzleloader season. The State of Colorado allows one moose tag, which can be filled either by archery, muzzleloader, or rifle, and ten muzzleloader pronghorn tags for the entirety of Hunt Units 1 and 201 where the refuge sits.
- Noise produced by muzzleloading and modern rifles of the same caliber and barrel length are similar in decibel range. However, the noise produced by these weapons has quite different characteristics. Black powder used in muzzleloaders makes a much lower frequency noise of longer duration. Smokeless cartridges used in modern firearms have a faster burn, which gives a much higher pitched noise with a much shorter duration. The high pitched crack of modern firearms is much more damaging to hearing ability, and likely more disturbing to wildlife than the lower-pitched sound of black-powder weapons.
- Muzzleloading weapons have a shorter effective range and require a closer approach to game than needed if using modern firearms. In addition, the long reloading time of muzzleloaders (approximately 30 seconds) means that hunters typically wait for better opportunities, and fewer shots are fired.
- Muzzleloaders use a variety of propellants, including black powder, a mixture of potassium nitrate, charcoal, and sulfur. Black powder does produce relatively large quantities of smoke when fired. If combustion of black powder is complete, smoke would contain primarily nitrogen and carbon dioxide. However, since combustion is incomplete, black powder combustion produces hydrogen sulfide, sulfur oxides, carbon monoxide, and nitrogen oxides (Del’Aria and Opperman 2017). These compounds are toxic if breathed in high concentrations, however in field conditions encountered when hunting, black powder smoke disperses rapidly. Total amounts produced as a result of hunting activity, and therefore any effects to wildlife would be negligible.
- The commenter also stated that muzzleloading firearms present risk of injury to the hunters themselves. Muzzleloaders do take significantly more knowledge to operate than modern firearms and involve greater risk. However, a western Colorado study documented less than 1 percent of hunter injuries from 1997-2005 resulted from gunshot wounds (Reishus 2007). In 2017, there were over 17 million hunters with firearms, according to the National Sporting Goods Association, and only 35 injuries occurred per 100,000 participants, of which a vast majority were non-serious injuries (Target Tamers 2020). Thus, although hunting with any type of firearm involves risk, overall it is an extremely safe activity.

No changes to the rule resulted from this comment.

Finding of No Significant Impact

Based upon a review and evaluation of the information contained in the environmental assessment, as well as other documents and actions of record affiliated with this proposal, the Service has determined that the proposal to allow moose and pronghorn hunting opportunities, in accordance with the laws of the State of Colorado, on Browns Park NWR does not constitute a major Federal action significantly affecting the quality of the human environment under the meaning of Section 102 (2) (c) of NEPA. As such, an environmental impact statement is not required.

Decision

The Service has decided to open hunting opportunities for moose and pronghorn on 12,112 acres on Browns Park NWR.

This action is compatible with the purpose of the refuge and the mission of the Refuge System (final compatibility determination; USFWS 2020b)

The action is consistent with applicable laws and policies regarding the establishment of hunting on national wildlife refuges. Refuge-specific regulations promulgated in conjunction with this action are in the process of being finalized (see 85 FR 20030). This action will not be implemented until the date of public inspection by the Federal Register and regulations are finalized.

Noreen Walsh
Regional Director, Interior Regions 5 and 7
U.S. Fish and Wildlife Service
Lakewood, CO

Date

**APPENDIX C INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION FORM –
REGION 6**

INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION FORM

Originating Person:
Robert Bundy and Rachel Portwood
Telephone Number:
(406) 788-5041(Robs cell)
Date:
March 30, 2020

I. Region: 6

II. Service Activity (Program): National Wildlife Refuge System

III. Pertinent Species and Habitat:

A. Listed species and/or their critical habitat within the action area:

Ute ladies-tresses orchid (*Spiranthes diluvialis*)

Colorado pikeminnow (*Ptychocheilus lucius*)

B. Proposed species and/or proposed critical habitat within the action area

None

C. Candidate species within the action area:

None

D. Include species/habitat occurrence on a map.

IV. Geographic area or station name and action:

Browns Park NWR (U.S. Fish and Wildlife Service).

V. Location (attach map):

A. Ecoregion Number and Name: Wyoming Basin (No. 18) and Colorado Plateaus
(No. 20)

B. County and State: Moffat County, Colorado

C. Section, township, and range (or latitude and longitude):

Latitude 40°46'27", Longitude -108°44'46" (Browns Park NWR)

D. Distance (miles) and direction to nearest town: Browns Park NWR is 40 miles NE of Vernal, UT.

E. Species/habitat occurrence:

1) Ute ladies-tresses orchid (orchid) 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. This caused many of the historical orchid sites in Browns Park to become uninhabitable due to 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 orchids being observed on the Refuge in 2004. 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.

2) The Colorado Pikeminnow (pikeminnow) 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 due to river channelization and decreased flooding, and competition by non-native fish species. The Colorado State University (CSU) 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, each spring. Pikeminnows have also been observed as far upstream as Beaver Creek, although in smaller concentrations than in Vermillion Creek.

VI. Description of proposed action (attach additional pages as needed):

Browns Park National Wildlife Refuge (Refuge) is proposing to open moose and pronghorn hunting opportunities on the Refuge in accordance with its Comprehensive Conservation Plan

(1999), Hunt Plan (1990), and existing State, local, and refuge-specific regulations (50 CFR 32.34; 50 CFR 32.42). The Refuge will open these lands to hunting consistent with Colorado State hunting regulations on approved game species, unless specific area conditions require more restrictive regulations for reasons of safety; quality of experience; or conflicts with Refuge purposes apply. Opening these lands to hunting will provide additional opportunities for the public to enjoy wildlife-oriented recreation.

VII. Determination of effects:

A. Explanation of effects of the action on species and critical habitats in items III. A, B, and C (attach additional pages as needed):

The addition of moose hunting at Browns Park NWR has the remote potential to minimally impact 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 anticipated low hunter activity is unlikely to leave an impact 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 impact the Ute ladies-tresses orchid since it occurs in a much different habitat from pronghorn. Neither hunt will affect Colorado pikeminnows in the Green River and Vermillion Creek.

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

To eliminate the possibility of any adverse effects, all hunting activities on areas where the orchid had been observed in the past would be suspended if this orchid is once again located in the Refuge and growing during the hunting season.

VIII. Effect determination and response requested: [* = optional]

A. Listed species/designated critical habitat:

| <u>Determination</u> | <u>Response Requested</u> |
|--|---------------------------|
| no effect to species/critical habitat | |
| 1) Ute ladies' tresses orchid | |
| 2) Colorado pikeminnow | ___*Concurrence |
| may affect, but is not likely to adversely affect species/critical habitat | ___ Concurrence |
| may affect, and is likely to adversely affect species/critical habitat (species/unit: _____) | ___ Formal Consultation |

B. Proposed species/proposed critical habitat:

| <u>Determination</u> | <u>Response requested</u> |
|--|---------------------------|
| no effect on proposed species/proposed critical habitat (species/unit: _____) | ___*Concurrence |
| is likely to jeopardize proposed species/ adversely modify proposed critical habitat (species/unit: _____) | ___ Conference |

C. Candidate species:

| <u>Determination</u> | <u>Response requested</u> |
|--|---------------------------|
| no effect (species: _____) | ___*Concurrence |
| is likely to jeopardize candidate species (species: _____) | ___ Conference |

ROBERT
BUNDY

Digitally signed by
ROBERT BUNDY
Date: 2020.04.01 11:29:55
-06'00'

Project Leader
Lower Green River NWR Complex

_____ date

IX. Reviewing ESO Evaluation:

A. Concurrence _____ Nonconcurrence _____

B. Formal consultation required _____

C. Conference required _____

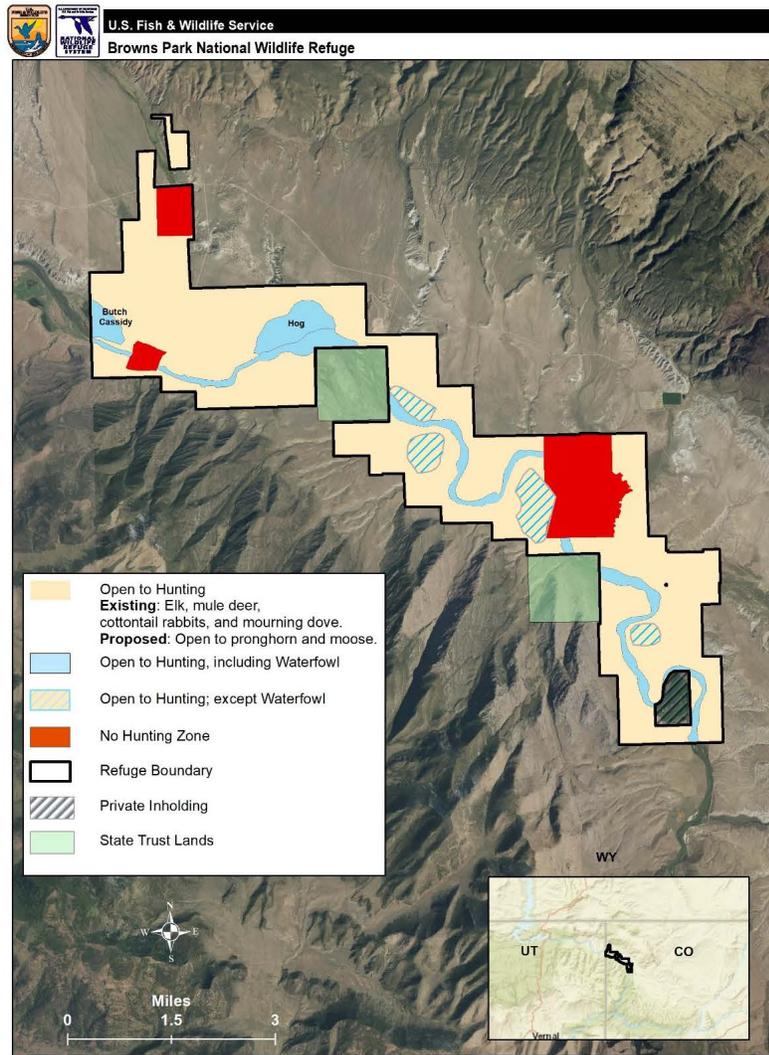
D. Informal conference required _____

E. Remarks (attach additional pages as needed):

signature
[Title/office of reviewing official]

date

Map Showing Location of Proposed Expansion of Moose and pronghorn hunting areas.



- Intra-Service Section 7 and Instructions -