National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

16 September 2019

Gopaul Noojibail
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Date

Approved:

9/27/19

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Date

INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternatives and environmental impacts associated with implementing a proposed mountain goat management plan in Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively, the park).

The purpose in taking action is to 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep whose status is tenuous and 2) protect other park resources and values from the rapidly growing non-native mountain goat population. Non-native mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. Prompt action is needed to remove or substantially reduce the non-native mountain goats from the park to prevent the rapidly growing and expanding goat population from displacing the small and declining population of native bighorn sheep and prevent pathogen transmission.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA. The entire EA is hereby incorporated by reference.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA and public comments received during the EA review period, the NPS selected Alternative C (preferred alternative) to rapidly remove non-native mountain goats from the park by lethal and non-lethal (live capture and translocation) removal methods with modifications to include the use of qualified volunteers to assist in lethal removal activities, and allow for the donation and distribution of mountain goat meat that results from lethal removal activities. These modifications were added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The selected alternative will implement a management plan to reduce non-native mountain goats within the park using lethal and non-lethal removal methods. This alternative best meets the plan's purpose to aid in the conservation of a native population of bighorn sheep located within the park, and protect other park resources and values from the rapidly growing non-native mountain goat population. Most of the removal activities will occur within areas managed as wilderness.

The EA addresses impacts to park resources resulting from aerial and ground-based lethal and non-lethal removals conducted by federal personnel and contractors. The potential authorized use of qualified volunteers to assist federal personnel in the ground-based removal of non-native mountain goats does not create new or increase adverse environmental impacts previously addressed in the EA because ground-based actions undertaken by qualified volunteers are identical to those actions undertaken by federal personnel and contractors.

The removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and

other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; (3) the field conditions present to successfully transport carcasses from the park's wilderness/backcountry to a frontcountry staging area, and (4) the health and safety condition of the meat. Although the donation of the mountain goat carcasses was not analyzed in the EA, it does not change the environmental impacts described in the EA.

Management Framework

Population Reduction (Years 1−5). The goal will be to reduce the number of mountain goats in the population as quickly as possible by lethal and non-lethal methods. The timing and duration of population reduction efforts will ultimately depend on weather, density and distribution of goats, and technique, but intensive reduction via helicopter-based efforts will generally occur mid-December to early March. With favorable weather and goat distribution, approximately 90% of the population could be removed in the first 1−5 years.

Post-reduction (Years 6−7). This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to monitoring and removal, which will occur year round as needed.

Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park from any direction and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

Lethal Removal

Mountain goats will be dispatched using firearms with non-lead ammunition from aerial- or ground-based efforts. If direct (use of firearms) lethal removal efforts fail or goats occur in a location that does not lend itself to direct lethal removal, mountain goats may be captured and euthanized on site. Animals will be dispatched by trained personnel following established and approved guidelines from the American Veterinary Medical Association (AVMA).

Aerial-based lethal removal will be performed by federal contractors or personnel with the appropriate training, certifications, skills, and proficiencies in aviation operations and safe use of firearms for dispatching wildlife. Aerial capture techniques will include darting or net-gunning from a helicopter. Aerially captured mountain goats will be hobbled and blindfolded, placed in a transport bag, and attached to a helicopter by a sling for transport to a processing site where they will be humanely dispatched (i.e., using euthanasia drugs or by gunshot).

Ground-based lethal removal will be done by approved personnel or qualified volunteers (see below). Ground-capture techniques may include ground darting or baiting goats to a drop net, clover trap, or snare. Those captured using ground techniques will be dispatched on site.

Initial lethal removal activities are expected to take 3−5 years, with most activity occurring within the first 1−2 years. Although weather-dependent, the initial management activities will occur in ≤3 removal periods/year between mid-December and early March when park visitation is low compared to the late spring, summer, and fall seasons. If late fall/winter missions are

unsuccessful, removals could occur at any time of year. Each management period will last ≤2 weeks. Aircraft-based operations will occur ≤25 days, which will include ≤12 days of fixed-wing monitoring, ≤3 helicopter survey days, ≤5 helicopter-based capture days, and ≤5 days of lethal removal per management period. If funding allows, up to 10 additional days (2 removal periods) of lethal removal could occur.

Lethal removals will take place where mountain goats occur within the park, but will generally be concentrated in the central portion of the range between Cascade and Snowshoe Canyons (Fig. 1 in EA), where the majority of mountain goats currently occur. Following the initial population reduction, approximately 10% of the mountain goat population may remain. Over time, as the remaining mountain goats become less numerous and more wary, removal efficiency is likely to decrease, thus slowing removal efforts.

Helicopters will be used to ferry equipment or drop off/pick up ground-based crews performing lethal removal activities: ≤10 helicopter landings/year will occur for this purpose. To increase capture efficiency and enhance safety, a fixed-wing aircraft may be used to spot remaining mountain goats and direct crews to their location. These helicopter landings and fixed-wing aircraft use are part of the ≤25 days of aircraft-based operations previously described.

Use of Qualified Volunteers

The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the "Use of Volunteers for Wildlife Management in Parks," and Director's Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

Non-Lethal Removal (Live Capture and Translocation)

Mountain goats could be live captured within the park and translocated to suitable locations where they are native, or be transferred to accredited zoos. The NPS will coordinate live capture and transport activities occurring within the park with appropriate state wildlife agencies, including the Wyoming Game and Fish Department and involved recipients. Recipients are expected to be responsible for obtaining permits and approvals and capturing, disease testing, and transporting mountain goats from the park to suitable native locations or accredited zoos.

Mountain goats could be captured and translocated over the course of 1−5 years primarily between December and March. The number of mountain goats captured and translocated will depend on capture success and interest from outside entities. If suitable recipients for translocation are available, live capture and translocation activities will generally occur prior to when lethal removal activities commence for the season, because helicopter capture efficiency is likely to be greatest at the onset of operations, when mountain goats are naïve and likely to be in terrain where capture can be achieved safely. As removal activities continue, the remaining mountain goats would be more likely to seek areas where operations are more difficult (steep, rocky terrain), and flee from the helicopter in order to elude capture. If capture

efficiency exceeds typical effort for capturing goats (2.5 hours/goat[1]), helicopter-supported translocation operations will cease and shift to lethal removal techniques.

Live capture operations could occur wherever goats are located within the park, but will likely take place between Cascade and Snowshoe canyons. Goats may be captured via net gunning or darting from a helicopter, or from the ground using traps, nets, or snares, and/or chemical immobilization. A fixed-wing aircraft may also be used to spot goats from the air for capture. Captured mountain goats will be ferried beneath a helicopter in a transport bag to a frontcountry staging area.

In accordance with the Animal Welfare Act, NPS Management Policies, standard operating procedures, and guidance from the American Society of Mammologists, all actions involving direct handling or management of goats will be conducted humanely and in accordance with NPS-approved capture and handling protocols to ensure animal welfare and human safety are maintained. No more than four goats will be transported via helicopter during a single trip. If a mountain goat were to sustain a life-threatening injury during capture and relocation activities, it will be dispatched as quickly as possible using established and approved guidelines from the AVMA. After reaching the staging areas, mountain goats will be transported by recipients using road-based vehicles to translocation sites outside of the park.

Artificial Baits

Temporary salt baits could be placed to attract mountain goats to suitable areas for more efficient monitoring, capture, collaring, and/or removal.

Helicopters and Firearms

Helicopter and firearms use will comply with NPS firearms use policies, Interagency Helicopter Operations Guide, and the NPS Aerial Capture Eradication and Tagging of Animals Operations Plan prepared specifically for the implementation of the park's Mountain Goat Management Plan. Per NPS aviation policy, only qualified government or contract personnel will participate in aerially based operations. If available and approved by the helicopter base manager and aviation officer, helicopter operations will be based out of the Teton Interagency Helibase adjacent to the Jackson Hole Airport. Otherwise, operations will base out of the Jackson Hole Airport. Firearms will be used to humanely dispatch seriously injured mountain goats, to remove goats that may become aggressive to humans, and to lethally remove mountain goats in the park.

Carcass Disposal

Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. In situations where carcass relocation is not possible, temporary trail or area closures may be

[1] The 2.5-hour capture efficiency is based on data obtained from 2014–2016 Grand Teton National Park mountain goat capture and collaring field activities.

implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger, in accordance with applicable health guidelines and other requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

Temporary Closures

It is possible that specific areas of the park will need to be temporarily closed during mountain goat management activities if park staff determine this is necessary to ensure public safety. Closures of specific areas could last for several hours, days, or for the duration of the management activities. It is anticipated that the majority of these closures will occur in the late fall and winter months during periods of lower visitor use. Larger areas defined by canyons or drainages may be closed during management activities for ≤7 days to ensure human safety during helicopter-based removal activities. In situations where mountain goat carcasses cannot be moved but may pose a risk to park visitors, temporary area closures will be implemented. These closures (≤5 acres) will remain in place until carcasses are consumed, which could be up to 2 weeks or longer in the winter if carcasses become buried in snow and become accessible at a later date. The public will be appropriately notified in advance of these temporary closures as required under 36 CFR 1.5.

Mountain Goat Monitoring

As needed to monitor or improve the success of control efforts, monitoring activities will include fixed-wing and helicopter-based population monitoring; ground-based population surveys; and/or deployment of remote cameras at natural and artificial mineral licks. It may be necessary to temporarily capture (helicopter-based), radio-collar and/or mark with paint goats prior to releasing them for the purpose of tracking them to a more suitable location and/or time for removal.

Ground-based surveys involve using spotting scopes and binoculars from a distant observation point to scan suitable habitats for goats. These surveys will occur from May–October. Camera deployment entails attaching a camera using nylon straps to a nearby tree or rock and orienting the camera towards a natural or artificial mineral lick. Remote cameras will be checked every few weeks to change out memory cards and batteries. Helicopter-based population trend monitoring flights for mountain goats, conducted by the NPS or WGFD, could occur every 1−5 years in combination with surveys for bighorn sheep in winter. These surveys will be completed over 1−3 days per year, with 6−8 hours of flight time each day. During aerial surveys, a low-level helicopter will systematically search all mountain goat habitat in the park.

If mountain goats are captured and released, park-specific capture protocols approved by the NPS veterinarian will be followed. Upon capture, the helicopter will land close by and the mountain goat(s) will be restrained, blindfolded, and processed on site or placed in a transport bag for ferry to a frontcountry processing site. During processing, mountain goats will be placed in a sternal or left lateral recumbent position to prevent bloat. A physical exam will be conducted to check for signs of respiratory distress or capture-related injuries; baseline heart rate, respiratory rate, and rectal temperature will be established and subsequently monitored every 5−10 minutes. Goats processed at backcountry sites will be radio-collared and released on site.

The number of days needed for captures will depend on the number of goats targeted, with flight time estimated as 2.5 hours/animal captured in any season. The NPS will continue to coordinate closely with WGFD personnel on capture and monitoring of goats. Refueling and processing of mountain goats (if not taking place in the field) will occur at established frontcountry staging/refueling sites. A contract helicopter will base operations out of the Teton Interagency Helibase at the Jackson Hole Airport, if it is available. Alternatively, operations will base out of the fixed-wing base operations at the south end of the Jackson Hole Airport. Other staging/refueling areas have been identified in the park and could be used for processing/sampling captured mountain goats and refueling the helicopter.

Education and Interpretation

The NPS will continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, potential impacts of mountain goats on bighorn sheep and other park resources, and progress towards achieving mountain goat removal. The NPS will continue to solicit observation reports of bighorn sheep and mountain goats from park visitors and employees.

Wilderness Character Monitoring

Park wildlife biologists will report wilderness character monitoring measures to the park's wilderness coordinator in accordance with the park's Recommended and Potential Wilderness Building Blocks for Wilderness Stewardship. Measures reported will include authorized actions that manipulate wildlife, status of non-native animal species, non-recreational physical developments, administrative flight operations, and the number and extent of visitor behavior restrictions (area closures).

Cooperation with Land and Wildlife Managers

The NPS will work cooperatively with WGFD, Idaho Department of Fish and Game, the United States Forest Service and other adjacent stakeholders to identify possible management strategies that could be implemented outside the park to reduce the mountain goat population in the Teton Range. The aim of interagency cooperation is to limit future colonization by mountain goats and the need for additional intensive management events within the park, and to support interagency partners in taking actions outside the park.

MITIGATION MEASURES

The selected alternative incorporates the mitigation measures listed in Appendix A of this document.

PUBLIC INVOLVEMENT/AGENCY CONSULTATION

Public scoping occurred November 12–December 20, 2013. A public meeting was held in Jackson on December 12, 2018. The EA was made available for public review and comment during a 30-day (total) period from December 4–20, 2018, and February 4–15, 2019. Two

hundred and two correspondences were received. Substantive comments primarily focused on mountain goat removals, bighorn sheep management, public hunting, and the use of qualified volunteers. Substantive comments are addressed in the Errata and Response to Public Comments.

National Historic Preservation Act

In accordance with section 106 of the National Historic Preservation Act, the NPS initiated consultation with the Wyoming State Historic Preservation Office (SHPO) on April 6, 2018, via telephone conversation and email correspondence. The park determined that field activities associated with the selected alternative will have “no potential to cause effect” on cultural resources if specific mitigation measures are followed (Appendix A). The SHPO concurred with the park’s determination via email response on April 9, 2018.

Endangered Species Act

In April 2017, the NPS sought input from the U.S. Fish and Wildlife Service (USFWS) regarding helicopter disturbance to raptors. The information provided was used to assess potential impacts and develop conservation measures. On June 29, 2019, the park obtained a current species list from the Information Planning and Conservation (IPaC) website. The USFWS was notified via email of a forthcoming request for informal consultation on July 8, 2019, a Biological Assessment was mailed to USFWS on July 15, 2019, and concurrence from the USFWS was received via email on July 30, 2019. Based on information from the management plan/EA, the USFWS’s understanding of the nature of the project, local conditions, and current information on federally listed species, the USFWS concurs with the park’s “may affect, not likely to adversely affect” determination for Canada lynx and grizzly bear, and “not likely to jeopardize the continued existence” determination for the North American wolverine. The USFWS also notes that the project should be re-analyzed if plans change, if new information on the distribution of listed or proposed species or critical habitat becomes available, or if new information reveals effects to listed or proposed species or critical habitat not previously considered.

Tribal Consultations

A scoping letter describing the preferred alternative was mailed to the park's 24 associated tribes on August 1, 2018, to solicit comments and concerns. Park leaders met with representatives of The Shoshone-Bannock Tribes of Fort Hall, Idaho on September 24, 2018, to discuss the proposed management plan. The Tribes submitted comments on the technical meeting and EA via letter on December 20, 2018. The park also received varied interest and feedback from the Assiniboine and Sioux Tribes, Blackfeet Tribe, Cheyenne and Arapaho Tribes, Coeur D’Alene Tribe, Comanche Tribe, Confederated Tribes of the Colville Reservation, Confederated Salish and Kootenai Tribes, Confederated Tribes of the Umatilla Indian Reservation, Northern Arapaho Tribe of the Wind River, and Rosebud Sioux Tribe. The park will continue to consult with interested tribes during implementation of the Mountain Goat Management Plan.

FINDING OF NO SIGNIFICANT IMPACT

Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 identify ten criteria for determining whether the selected action will have a significant impact on the human

environment. The NPS reviewed each of these criteria, given the environmental impacts described in the EA, and determined there would be no significant impacts for any of the ten criteria. This determination is part of the NEPA decision file.

The following impact topics were dismissed from full analysis in the EA and are not discussed in this FONSI: acoustic environment, air quality, archeological resources, environmental justice, ethnographic resources, federally listed wildlife species, historic structures and cultural landscapes, Indian trust resources, state listed species of greatest conservation need, visitor and employee health and safety, visitor use and experience, and wildlife (excluding bighorn sheep) and migratory birds.

There will be no significant impacts on public health, public safety, or unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects or elements of precedence were identified. Implementation of the NPS selected alternative will not violate any federal, state, or local environmental protection law.

As described in the EA, the selected alternative has the potential for beneficial and adverse impacts on bighorn sheep, vegetation and soils (including whitebark pine), and wilderness character; however, no potential for significant adverse impacts was identified.

Bighorn Sheep

Implementing the selected alternative may cause short-term (several minutes to hours) disruptions of normal bighorn sheep behaviors and increased stress during mountain goat monitoring, capture and translocations, and lethal removal activities. Conservation measures aimed at minimizing disturbance impacts to the bighorn sheep population will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

Reducing the goat population is expected to benefit bighorn sheep by eliminating a major population-level threat and effectively minimizing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. Beneficial impacts are expected to be long-term (10-20 years).

When the adverse and beneficial effects of selected alternative are combined with the effects of past, present, and reasonably foreseeable future actions, the total cumulative impact on bighorn sheep remains adverse. Because there are other stressors facing the Teton Range bighorn sheep herd not addressed by this plan, the benefit expected from implementing the selected alternative will not significantly change the overall cumulative adverse impact on bighorn sheep.

Vegetation and Soils

The removal of mountain goats will reduce adverse impacts on soils and native plant communities in the alpine and subalpine zones. Herbivory, wallowing, and soil compaction will be decreased. Backcountry work may lead to some impact on soils and vegetation where

mountain goats are present as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover). As mountain goats and their impacts are diminished, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

When the effects of the selected alternative are combined with other past, present, and foreseeable future impacts, the total cumulative impact on vegetation and soils will be adverse, then gradually beneficial as goats are removed. The incremental beneficial impacts of the alternative will contribute substantially to the impacts on high elevation vegetation and soils (7,500 to 11,000 feet in elevation) that are already occurring. The incremental impacts of the selected alternative will contribute slightly to, but not substantially to the impacts on lower elevation vegetation and soils (frontcountry staging areas/helispots) that are already occurring.

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then steadily decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. It's anticipated these flight operations will occur ≤ 25 days per year, with ≤ 10 landings annually. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there will be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses. These carcasses will likely be used as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures may affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced, resulting in a long-term benefit on wilderness character.

The increment contributed by the direct and indirect impacts will result in no change in the cumulative impacts for the untrammeled quality of wilderness because the NPS is currently baiting, capturing, and collaring mountain goats for monitoring purposes (NPS 2015a). The increment contributed by the direct and indirect impacts will have a substantial cumulative beneficial effect on the natural quality of wilderness because mountain goats will be removed from wilderness. The increment contributed by the direct and indirect impacts of increasing authorized administrative flight operations up to 50 per year over the 2015 baseline of 47 operations will have a noticeable cumulative adverse effect on the undeveloped quality of wilderness during the first one to five years. The increment contributed by the direct and indirect impacts of the additional administrative flight operations and related field activities that involve

human created noise will have similar short-term and long-term adverse cumulative effects on the solitude or primitive and unconfined recreation as those described for the undeveloped quality of wilderness. Potential temporary area closures will have a noticeable cumulative effect on solitude or primitive and unconfined recreation. However, due to the long-term benefits to wilderness character as a whole (collectively the wilderness qualities described above), the selected alternative will substantially change cumulative effects for the better.

CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2) (c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

APPENDIX A: MITIGATION MEASURES

The following mitigation measures will be implemented to minimize the degree and/or extent of adverse impacts.

ACOUSTIC ENVIRONMENT

- When possible, select/contract aircraft with quieter technology, for example, fixed-wing aircraft having propellers with slower tip speed, e.g., propellers with 3 or more blades, and quiet technology helicopters.
- Use direct routes, avoiding sensitive sites to and from launch and staging areas.
- Minimize low level flight when practicable. When flying to and from the work area, aircraft will maintain a minimum 2,000 foot altitude where possible, per Federal Aviation Administration (FAA) Advisory Circular 91-36D Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas (FAA 2004).
- Brief pilots on the value of natural soundscapes and ask for their compliance and suggestions about noise mitigation. Helicopter pilots will be encouraged to take the FAA Fly Neighborly training at https://go.usa.gov/xQPCW
- Use firearm silencers, when feasible, during lethal removal efforts to mitigate soundscape impacts.
- Avoid prolonged aircraft and road vehicle idling at staging areas.
- Minimize conducting activities during temperature inversion periods when noise propagation can affect ground points at greater distances, and noise can be louder.

CULTURAL RESOURCES

- All staff and other persons involved in mountain goat management will be informed of the procedures to follow in the event of archeological and ethnographic resource discovery, as well as the penalties for illegally collecting artifacts, or intentionally damaging archeological resources and/or historic properties.
- Backcountry/wilderness helicopter landing sites will occur on snow covered areas away from the edges of snow patches or snow fields to avoid any unevaluated, sensitive cultural sites that may exist at the receding snowline.
- Coordinates for any known backcountry cultural sites within areas where goat management activities will occur will be supplied to helicopter pilots to ensure landings do not occur at sensitive sites.
- Coordinates for backcountry helicopter landing sites occurring in snow-free locations will be provided to the cultural resources program manager for record keeping purposes and to pursue archeological surveys of the areas, as warranted, post-project.
- In the unlikely event that human remains are discovered during project activities, park law enforcement rangers, the park superintendent, and the park and regional archeologists will be contacted immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act will be followed.
- If previously unknown archeological (human-modified) resources and/or human remains are discovered during monitoring or management activities, all work in the immediate vicinity (approx. 600 feet) of the discovery shall be halted until the resources are identified and documented and an appropriate mitigation strategy developed. The park cultural resource specialist will be contacted for any questions or discoveries. The same measures will be followed for paleontological (fossils) and other non-cultural related resources.

QUALIFIED VOLUNTEER PROGRAM

- Volunteers will carry and have bear spray (≥7.9 oz) readily available on their person.
- Volunteers will attend a safety training and participate in bear spray deployment simulation.
- Volunteers will work in teams of ≥2 individuals, but not to exceed 6 volunteers/week in backcountry.
- Volunteers will report the location of all mountain goat kills within 12 hours, noting carcass disposition (i.e. removed or left in place).

SOILS

- Field activities will minimize disturbances on steep slopes and bare mineral soil.

VEGETATION

- Equipment and boots will be cleaned and free of soil, plant material, and seeds prior to all operations to prevent the accidental spread of non-native species.
- Location information on backcountry work areas (e.g., bait and capture sites) will be recorded and maintained as part of the record of actions taken; this will ensure that proper revegetation, if necessary, is completed.
- Backcountry work areas will be minimal in size and short-term in nature to reduce vegetation impacts of staging.

VISITOR USE AND EXPERIENCE

- As much as possible, field activities in backcountry and wilderness areas will occur during periods of minimal visitation, and will avoid trails, overlooks, backcountry camping zones, and climbing routes.
- Signs, alerts, bulletins, press releases, and notifications will be issued to inform visitors of temporary area closures and other management activities.

WILDERNESS CHARACTER

- Bait lures, traps, cameras, and other installations will be removed at the end of each field season. Located animal collars that no longer serve as tracking devices will be retrieved when practicable.
- Aerial- and ground-based field activities in wilderness areas will occur during periods of minimal visitation and will avoid trails, overlooks, backcountry camping zones, and climbing routes when visitors are likely present. Park staff will examine the proposed location, timing, and duration of each temporary area closure and consider ways to modify the closure to minimize effects on visitors.
- Field activities will avoid subsurface ground disturbance and known archeological (human-modified) and paleontological (fossils) resources.

WILDLIFE

- To prevent environmental contamination, only lead-free ammunition will be used.
- Helicopter pursuits for the purpose of live capture will occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses will be recorded and passed on to relevant park staff at the end of each day. Based on this information, appropriate trail or area closures will be identified and implemented, as necessary, or carcasses will be moved/removed to minimize the potential for conflicts.
- The decomposition status of mountain goat carcasses will be monitored as needed and appropriate measures (e.g., removal, demolition, area closure, etc.) will be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.
- Helicopter-based management activities will avoid sensitive bighorn sheep lambing areas during the lambing season (late May−June).
- Helicopter-based removal of mountain goats will be permitted within important bighorn sheep winter habitat only under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon, when bighorn sheep are less likely to be bedded and ruminating.
- When active golden eagle territories occur within the area of operation from January 15–July 31, a ½-mile flight buffer will be established around the active nest.
- When active peregrine falcon territories occur within the area of operation from March 1–August 15, a ½-mile flight buffer will be established around the active nest.
- Personnel involved in helicopter-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines and grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine or grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine or grizzly bear denning habitat during the sensitive denning period (grizzly bear: November–April, wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If a potential den location is found, an appropriate disturbance-free buffer will be established around the den.
- A disturbance free buffer of 1 km around known grizzly bear dens will be implemented to minimize disturbance to denning grizzly bears.

- All activities will comply with the Superintendent's Compendium regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Additionally, equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
    - At all times in all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) will ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.
    - All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.
    - All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately. All bear sightings must be reported to the park's Bear Management Office in ≤24 hours.

APPENDIX B: ERRATA AND RESPONSES TO SUBSTANTIVE COMMENTS

Part 1: Errata

The revisions to the park's Mountain Goat Management Plan Environmental Assessment (EA) provided below do not change the impacts analysis that is contained in the EA.

The following text replaces the existing carcass disposal description in the **Elements Common to All Alternatives** section (page 20):

5. **Carcass Disposal:** Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use system trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

   If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The following management framework descriptions in the **Elements Common to the Action Alternatives (B and C)** (page 21) has been revised for clarification:

1. ***Post-reduction (Years 6−7).*** This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to tactical monitoring and removal, which will occur year round when needed.

   Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

The following section is added to the end of the **Elements Common to the Action Alternatives (B and C)** section of the plan/EA to describe the use of qualified volunteers (page 22):

4. **Qualified Volunteers:** The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the "Use of Volunteers for Wildlife Management in Parks," and Director's Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

Several scientific names were incorrectly spelled on pages 39 – 41 of the plan/EA. Correct spellings are provided below:

Alpine vegetation – *Poa alpina*
Sub-alpine mixed conifer forest – *Juniperus communis*, *Hedysarum occidentale*, and *Vi*
Sub-alpine herbaceous – *Leucopoa kingii*, *Mertensia ciliate*, *Lomatium ambiguum*, and *Phacelia hastate*
Montane herbaceous meadows – *Geranium viscosissimum*, *Balsamorhiza sagittata*, and *Carex hoodia*
Montane mixed-conifer forest – *Eucephalus engelmannii*

The following statement in the **Vegetation and Soils, Affected Environment, Sub-alpine herbaceous** section (page 4) is revised by removing a reference to "tall forbs:"

> Common species in these communities include western aster (*Symphyotrichum ascendens*), subalpine fleabane (*Erigeron peregrinus*), sulphur Indian paintbrush (*Castilleja sulphurea*), and fireweed (*Epilobium* sp).

The following statement in the **Vegetation and Soils, Environmental Consequences, Alternative A – No Action, Direct and Indirect Impacts** (page 43) is revised by removing references to photosynthesis and plant growth:

> This condition removes native vascular and non-vascular plant material resulting in an open area available for colonization by other plant species, native or nonnative.

The wilderness character impact analysis for Alternative C has been revised to better clarify direct and indirect impacts on wilderness character from using non-lethal removal methods.

The original text located on page 49 of the EA is replaced with the text provided below:

> **Alternative C – Combination of Lethal and Non-Lethal Removal**
>
> **Direct and Indirect Impacts**

Under this alternative, field activities that involve the lethal and non-lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≤20 years. Alternative C would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This alternative would have a negative effect on the **undeveloped** quality of wilderness due to ≤50 administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. This alternative would have a positive effect on the **natural quality of wilderness** because exotic mountain goats would be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses would be reduced if translocation operations are successful. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation quality of wilderness** because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative C, wilderness character (collectively the wilderness qualities described above) would be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities occur. However, this impact on wilderness character would diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

The following reference was omitted from the EA and is added to **Chapter 5: References**:

Stafl, N. and M. I. O'Connor.
2015 American pikas' (*Ochotona princeps*) foraging response to hikers and sensitivity to heat in an alpine environment. Arctic, Antarctic, and Alpine Research 47: 519-527.

Part 2: Responses to Substantive Comments

PURPOSE AND NEED FOR ACTION

Nativity and evidence for need to cull mountain goats

Comment 1: Several commenters stated that the draft plan/EA does not clearly demonstrate that mountain goats are not native to the Teton Range. One commenter cited a mountain goat observation in *Campfires in the Canadian Rockies* by W. T. Hornaday (1906) as evidence that mountain goats occurred and were native to the Teton Range. Others noted that mountain goats have naturally migrated to the Tetons.

Response 1: It is well documented that mountain goats were translocated to the Snake River Range, an area where they were not native, by the state of Idaho in the late 1960s/early 1970s (Hayden 1984, Hayden 1989). The state of Wyoming also recognizes that mountain goats are not native to this region (McWhirter and Roop 2007). Descendants of this introduced mountain goat population likely colonized the Teton Range giving rise to the present day population (GRTE unpublished data). The fact that mountain goats dispersed from the Snake River Range to the Teton Range on their own does not make them native. Recent genetic work suggests that the most likely source of mountain goats in the Tetons is the Snake River population of mountain goats.

The observation of a mountain goat in the Teton Range in the Hornaday book is attributed to naturalist W. H. Wright in 1892, not Hornaday himself. Park staff was unable to locate the original publication cited by Hornaday and therefore cannot verify this observation. Of the three accounts of mountain goats in the GYE in the late 1800s, all appeared to be mistaken identifications of bighorn sheep (Schullery and Whittlesey 2001). Thus, the large amount of historical material examined provides no convincing evidence of either individual mountain goats or a population of mountain goats existing in the GYE before 1882 (Laundre 1990, Schullery and Whittlesey 2001, Whittlesey et al. 2018).

Comment 2: Multiple commenters stated that the mountain goat management plan/EA does not sufficiently demonstrate that mountain goats are harming bighorn sheep, therefore there is no justifiable reason to eradicate the mountain goats.

Response 2: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and *the non-native species interferes with, disrupts, or damages park resources*. The policy also explicitly calls for superintendents to "evaluate the species' current or potential impact on park resources." As stated in the management plan/EA, mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. This is one of the smallest and most isolated sheep herds in Wyoming, which has also experienced an apparent population decline. Coupled with the increase in mountain goat population and possibility of 250–400 mountain goats (DeVoe et al. 2015) eventually occupying the Teton Range if not controlled, NPS policy is clear on management of this non-native species.

HISTORY AND STATUS OF MOUNTAIN GOATS

Disease status of mountain goats

Comment 3: Several commenters requested additional information about the pathogen/disease status of mountain goats and a better explanation of why mountain goats are a risk to bighorn sheep. Commenters also inquired about the evidence that bighorn sheep and mountain goats can contract pathogens (disease) from one another, with one noting that the NPS assertion that bighorn sheep were potentially at risk of pathogen transmission from mountain goats was not supported by the scientific literature.

Response 3: Pneumonia in members of the subfamily Caprinae (which includes bighorn sheep and mountain goats) involves multiple bacterial species (Besser et al. 2013), with a specific pathogen (*Mycoplasma ovipneumoniae*: *M. ovi*) that may initiate or predispose animals to a suite of respiratory pathogens (Besser et al. 2008). Mountain goats do host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). In particular, both bighorn sheep and mountain goats can become infected with *M. ovi* (Besser et al. 2008, Wolff et al. 2019), which is not part of the naturally occurring bacterial load in either wild ungulate but can cause pneumonia in mountain goats and bighorns, and could be one of the respiratory pathogens transmitted among these species (Wolff et al. 2019). Both bighorn sheep and mountain goats that reside in the Teton Range have been tested for *M. ovi* as well as several other pathogens that can contribute to pneumonia.

The disease status of mountain goats captured in the park (2014–2018) was provided on page 4 of the EA and is detailed in the table below. To date, there are no indications of pneumonia in Teton Range mountain goats, however, testing did find two pathogens (*B. trehalosi* and *Manheimia* spp.) that can contribute to pneumonia in bighorn sheep. Unfortunately, mountain goats residing in the Snake River Range (the putative source of mountain goats in the Teton Range) have tested positive for all the pathogens associated with pneumonia. Of particular concern, *M. ovi* was detected in 6 of 7 animals sampled in 2013 and all of the *Pasteurellacae* bacteria (Lowrey et al. 2018). Given the likely connection between the Snake River and Teton populations of mountain goats, it is conceivable, and possibly even likely, that goats in the Tetons could become carriers of *M. ovi* in the near future, thereby increasing the risk of transmitting this pathogen to bighorn sheep.

Year	Number Tested	Lkt+[1] B. trehalosi[2]	M. haemolytica[3]	Lkt+ M. spp.[4]	P. multocida[5]	M. ovi[6]
2014	5	2/5 (40%)	0/5 (0%)	0/5 (0%)	0/5 (0%)	0/5 (0%)
2015	4	2/4 (50%)	0/4 (0%)	0/4 (0%)	0/4 (0%)	0/4 (0%)
2017	5	0/5 (0%)	0/5 (0%)	1/5 (20%)	0/5 (0%)	0/5 (0%)
2018	1	0/1 (0%)	0/1 (0%)	1/1 (100%)	0/1 (0%)	0/1 (0%)
Total	15	4/15 (27%)	0/15 (0%)	2/15 (13%)	0/15 (0%)	0/15 (0%)

[1]leukotoxigenic; [2]*Biberstenia trehalosi*; [3]*Manheimia haemolytica;* [4]*Manheimia species;* [5]*Pastuerella; multocida;* [6]*Mycoplasma ovipneumoniae*

Comment 4: Several commenters inquired about the risk of disease/pathogen transmission from mountain goat carcasses left on the landscape.

Response 4: Transmission of the pathogens typically involved in respiratory disease or pneumonia in bighorn sheep and mountain goats is generally via direct contact and/or aerosolized droplets (Dixon et al. 2002, Besser et al. 2014). These pathogens do not survive well in the environment outside the host (Carter et al. 1995) because conditions in the outside environment are not favorable (e.g., temperatures much cooler than within the host). It is unlikely that pathogens would survive >24 hours once the host is killed (T. Besser pers. comm. 7/18/2019).

Comment 5: One commenter suggested that mountain goats may have been translocated with pathogens. Another offered that removing mountain goats would not reduce/eliminate the risk of disease transmission because the two species have already interacted.

Response 5: Because there are no records of disease surveillance from the original translocation of mountain goats to the Snake River Range and Big Hole mountains of Idaho there is no way to know their disease status when introduced. While it is possible that respiratory pathogens could have been present in the translocated mountain goats, the fact that the population successfully established and went on to expand in numbers and distribution in a relatively short time frame, suggests that they may not have been transplanted with a lethal pathogen community. However, mountain goats in the Snake River Range *currently* have the suite of pathogens that cause pneumonia in bighorn sheep, and goats in the Teton Range have tested positive for some of these pathogens, while bighorn sheep currently have not tested positive for these pathogens (see response 3). Thus the evidence supports that removal of goats in the Teton Range should reduce the risk of transmission of pathogens to bighorn sheep.

Comment 6: The Wyoming Department of Agriculture suggested that the NPS has made erroneous assumptions about mountain goat range, overlap with domestic sheep, and pathogen transmission.

Response 6: As described in the management plan/EA, mountain goat distribution is based on empirical evidence on goat locations, which includes relocations from GPS-collared animals and observations. The only assumption made for mountain goat distribution is locational accuracy. Mountain goats in the Snake River and Teton Ranges (Lowrey et al. 2018) have tested positive for the bacteria associated with bighorn sheep pneumonia (*Bibersteinia trehalosi*, *Mannheimia* spp., *Mycoplasma ovipneumoniae*, and *Mannheimia haemolytica*) that collectively pose a high risk of disease to bighorn sheep (see response 3). Transmission of pathogens between species is viewed as a legitimate risk where the two species overlap (Wolff et al. 2016). Mountain goats and bighorn sheep overlap spatially and temporally in portions of the Teton Range and have been observed <100 yards from each other on survey flights.

Mountain goat population analysis

Comment 7: One commenter inquired about whether increases in mountain goat numbers were primarily due to immigration or local breeding. This individual went on to note that the mechanism of population increase could impact effectiveness of mountain goat control within the park.

Response 7: Although the mechanism of population growth is unknown, biologists suspect that population growth of mountain goats is due to reproduction in the Teton Range. Immigration, however, was an obviously important factor in colonization of the Teton Range, and will also be a contributing factor in the need to continue management of goats in the Teton Range in perpetuity (as stated in the management plan/EA). Genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations, suggesting that migration between the two populations is likely low. To address the immigration issue, in part, the WGFD has liberalized mountain goat hunting season west of the park (Hunt Area 4); the quota for this unit is 48 goats of any age or sex. This increased harvest should reduce the population of goats that may immigrate into the park.

Mountain goat movements/dispersal

Comment 8: One commenter noted that the plan/EA provided contradictory information about home ranges of mountain goats generally being fixed (page 5) and subsequent references to observations of dispersing mountain goats in the Teton Range.

Response 8: The statements referring to mountain goats as generally having fixed home ranges, but also exhibiting dispersal are correct. Dispersal from natal home ranges (the home range a mountain goat was born into and used with its mother for the first year of life) is common in mountain goats (Festa-Bianchet and Cote 2008, Stevens 1983, Varley 1996). However, once independent subadult mountain goats have established their own home range they typically show high fidelity to the area. In other words, a mountain goat's home range is generally fixed once established. Dispersers tend to be younger animals, generally ranging from 1–3 years old (Stevens 1983, Festa-Bianchet and Cote 2008) with males more likely to disperse than females (Hutchins and Stevens 1981, Johnson 1983). Williams (1999) observed dispersal of mountain goats to new topographic areas when source populations were high. Varley (1996) and Stevens (1983) found that colonization of new habitats by mountain goats was related to connectivity of goat habitat.

ISSUES AND IMPACT TOPICS DISMISSED

Federally listed wildlife species

Comment 9: One commenter was concerned that the potential impacts to wolverine resulting from removal actions were understated.

Response 9: Wolverines are currently proposed for protection under the Endangered Species Act (ESA). A Biological Assessment fully analyzing the impacts to endangered, threatened, and proposed species, such as wolverine, was completed and submitted to the USFWS for consultation. Page 24 of the plan/EA provides specific conservation measures to reduce potential impacts to wolverine. Although there is potential for negative disturbance impacts, implementation of the conservation measures should minimize that possibility. The presence of mountain goat carcasses on the landscape resulting from lethal removal activities could have a beneficial effect on wolverines if they are found and consumed.

Effects of aircraft on visitor experience

Comment 10: One commenter expressed concerns about the effects of low flying aircraft on the visitor experience and requested that this topic be addressed through the planning process.

Response 10: Pages 14 (Visitor Use and Experience) and 46–50 (Wilderness Character) of the plan/EA adequately addressed potential impacts on visitor experience from utilizing aircraft to monitor and remove mountain goats from the park. Specific mitigation measures are provided on page 23 of the plan/EA to reduce or avoid potential impacts on visitor experience.

ALTERNATIVES

Alternative A – No Action

Comment 11: Several commenters suggested that the mountain goats should be allowed to remain in the Teton Range and offered the perspective that their presence here is not any different than other nearby federal lands from which they came.

Response 11: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for the removal of exotic (non-native) species already present, up to and including eradication if control is prudent and feasible, and the exotic species interferes with natural processes and the perpetuation of natural features, native species or natural habitats. The Need for the Proposal section of the EA (pages 1–3) provides a rationale for why mountain goats must be removed from the park.

Alternative C – Combination of Lethal and Non-Lethal Removal (Preferred)

Transfer of mountain goats to zoos

Comment 12: Several commenters were opposed to placing mountain goats in zoos as part of translocation efforts.

Response 12: Transfer of mountain goats to zoos would only be considered under very specific conditions. During translocation efforts, the capture and transport of family groups (adult females accompanied by young of the year) would occur when possible. Since previous relocation efforts of mountain goats (Myatt et al. 2010, Olson et al. 2010) found low survival rates for goats orphaned during translocation, the NPS would consider placing orphaned offspring in an accredited zoo facility instead of translocating and releasing them without a mother.

Mountain goat translocations

Comment 13: Multiple individuals commented on mountain goat transplant locations. Some recommended that mountain goats be translocated to specific geographic areas, including areas where mountain goats are not native. One commenter also noted that they did not see a need to translocate mountain goats to locations where they are native. Others requested that the NPS provide more details on the locations where mountain goats may be translocated.

Response 13: The NPS will carefully evaluate options for translocating mountain goats from the Teton Range. As stated in the EA, in order to ensure similar problems/issues with mountain

goats are not created or magnified elsewhere, areas/regions where goats are native and/or do not overlap with bighorn sheep populations will be given priority. The NPS will work closely with agencies and entities on all potential translocation activities.

Comment 14: One commenter requested additional information on the type of facilities necessary to hold and process goats prior to translocation and a better description of the whole translocation process.

Response 14: Translocations will be closely modeled after recent efforts in Olympic National Park (2018–19), as they have translocated hundreds of mountain goats. No holding or processing facilities are anticipated; as noted on page 17 of the EA, captured mountain goats will be transported by helicopter to frontcountry staging areas, where they will be transferred to approved land-based transport. Time at processing locations will be dependent on requirements of the receiving agency/entity and/or state(s) that are to receive the animals (e.g., disease testing). As stated in the EA, throughout capture, handling, and translocation, animals will receive the highest standards of care as required by federal and state laws and policies.

Prioritize mountain goat removal locations

Comment 15: The WGFD suggested that the NPS prioritize locations for mountain goat removal using a process similar to the way the WGFD address the removal of bighorn sheep that wander into areas where there is known, suspected, or likely contact with domestic sheep and goats.

Response 15: Aerial, and ground-based removals as well as translocations are complex operations that are largely dependent on timing, weather, and animal locations to be successful. The objective of lethal removal is to safely and humanely remove as many mountain goats as quickly as possible. This objective is within NPS policy, while quickly reducing competitive interactions and the risk of pathogen transmissions between mountain goats and sheep. As stated in the EA, efforts are expected to focus on the Cascade-Snowshoe Canyon areas.

Timing of removal actions

Comment 16: One commenter raised an issue related to bighorn sheep vulnerability during the winter months when the majority of mountain goat removal activities would occur.

Response 16: The environmental analysis in Chapter 3 of the plan/EA describes in detail the direct, indirect, and cumulative impacts on the park's bighorn sheep population from conducting mountain goat removal activities during the winter months. Chapter 2 of the plan/EA provides conservation measures, including specific conditions to avoid and protect important bighorn sheep winter habitat when utilizing helicopter-based management activities.

ELEMENTS COMMON TO THE ACTION ALTERNATIVES (B and C)

Carcass disposal

Comment 17: Commenters expressed concerns about leaving mountain goat carcasses on the landscape following lethal removal operations. Several individuals thought that leaving carcasses would violate Wyoming Statute 23-3-107, which prohibits wanton destruction of big game. Multiple commenters were also opposed to leaving mountain goat carcasses on the

ground and offered alternatives to doing so including: using pelts/skulls for educational purposes and donating meat to Native American Tribes or the public.

Response 17: The EA sufficiently addressed the environmental impacts of leaving mountain goat carcasses within the backcountry and wilderness areas of the park. The NPS has modified the preferred alternative to include the potential donation and distribution of mountain goat meat under the "Selected Alternative and Rationale for the Decision" section of the FONSI. If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. The ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

WS 23-3-107 is intended to preclude waste of animals subject to legal harvest managed by the WGFD. In general, hunting-related statutes such as this do not apply within the park.

Education

Comment 18: One commenter recommended the park develop a program to educate the public about the mountain goat situation.

Response 18: As provided on page 20 the plan/EA, the NPS would continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, and the potential impacts of mountain goats on bighorn sheep and other park resources.

Coordination

Comment 19: Several commenters inquired if the NPS had coordinated with WGFD on the proposal or suggested that coordination with the Idaho Department of Fish and Game (IDFG) and WGFD was needed. One commenter was interested in the status of the mountain goat population in the Snake River Range and how the populations are managed (i.e., for increasing numbers). This commenter was also interested in whether mountain goats were continuing to disperse and, if so, if efforts could be made to reduce dispersal or reduce herd sizes to limit dispersal.

Response 19: The NPS has coordinated with and discussed the proposal with both WGFD and IDFG personnel and coordination with these agencies continues. Specifically, the NPS sent letters to both agencies during the scoping process and both were supportive of the park initiating an EA. The WGFD also provided comments on the draft plan/EA (see Comments/Responses 15, 24, 26). The WGFD agreed that the expansion and proliferation of mountain goat poses a risk to the Teton Range bighorn sheep. While they were generally supportive of removing mountain goats from the Teton Range, they suggested several

modifications to the preferred alternative including the use of skilled volunteers to remove mountain goats in conjunction with capture and translocation, and prioritize removals in locations where mountain goats and bighorn sheep overlap (See Comments/Responses 15 and 26). The use of qualified (skilled) volunteers has been incorporated into the selected alternative. The NPS will consider focusing the removal of mountain goats in areas where they overlap with bighorn sheep during the implementation of the management plan.

The state wildlife management agencies publish annual reports detailing the status and management of big game species. Links to the most recent state mountain goat reports can be found at 2017 WY Job Completion Report and 2017 ID Statewide Mountain Goat Report.

Preliminary results from a recent genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations. This suggests that dispersal events may be infrequent. In regard to current management of mountain goats outside park boundaries in western Wyoming, please see response 7.

Maintenance

Comment 20: Several commenters asked about plans to address mountain goats in the long-term.

Response 20: Based on current estimates of mountain goat numbers, significantly reducing or eliminating the population is achievable in 1–5 years. If lethal and non-lethal removal is effective, it could be 5–30 years before mountain goats disperse to the Teton Range again. The actual time frame of dispersal would depend on where goats are dispersing from, the current management framework in place, and population trends at those locations outside the park. NPS management activities to remove individual goats that enter the park during this period would likely be infrequent and of short duration (1−2 days) and involve removal of mountain goats by park staff, other federal personnel, and/or contractors as needed.

CONSERVATION MEASURES

Comment 21: One commenter questioned why the NPS was not proposing to use silencers all the time to minimize impacts to the acoustic environment.

Response 21: One of the acoustic environment conservation measures in the plan/EA included the use of firearm silencers, as possible, during lethal removal efforts to mitigate soundscape impacts (page 22). There may be certain situations when expedience or safety of personnel would outweigh the benefits of using silencers (e.g., opportunistic removals when personnel are not equipped with silencers or when the sounds of gunshots are necessary to ensure the safety of individuals and groups participating in mountain goat removal activities).

Comment 22: The Wyoming Department of Agriculture stated they were unaware of “specific conservation measures” the NPS has implemented to benefit bighorn sheep.

Response 22: The sentence referenced by this commenter occurs on page 37 of the mountain goat management plan/EA and states “given implementation of specific conservation measures for bighorn sheep adverse impacts to individuals from management actions are expected to be minimal…” The conservation measures this sentence refers to are found on pages 22–25 in the

mountain goat management plan/EA. The following, taken from page 24 of the mountain goat management plan/EA, are specific to bighorn sheep:

- Helicopter-based management activities would avoid sensitive bighorn sheep lambing areas during the lambing season (May–June).
- Helicopter-based removal of mountain goats would be permitted within important bighorn sheep habitat ONLY under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon when bighorn sheep are less likely to be bedded and ruminating.

ALTERNATIVES CONSIDERED BUT DISMISSED

Public hunting in the park

Comment 23: Many commenters, including WGFD, suggested the use of hunters to manage the mountain goat population in the park. Specific suggestions included:

- Deputize rangers similar to the Grand Teton National Park elk reduction program where the State of Wyoming issues a hunting license or
- Amend the park's enabling legislation, which provides for a controlled reduction of elk, when necessary, to meet management objectives, to allow for hunting of mountain goats in the park.

Response 23: During the preparation of the draft plan/EA the NPS considered but dismissed an alternative that would use hunting as a tool to manage mountain goats in the park. The reasons for the dismissal can be found on page 28 of the plan/EA. Amending the park's enabling legislation requires Congressional action. Additionally, ground-based removals per se are not the most expedient or efficient means of removing goats, and they would need to be conducted annually into the foreseeable future.

Comment 24: The WGFD requested that the NPS provide a summary of situations in the NPS where hunters are used to manage overabundant wildlife in other NPS units and clarify the statutory authority that allows the elk reduction program in GRTE.

Response 24: Outside of Alaska, national parks are generally closed to hunting. In accordance with specific management plans, qualified volunteers supervised by NPS staff have been used to remove elk at Theodore Roosevelt, Rocky Mountain, and Wind Cave National Parks and feral goats from Hawai'i Volcanoes National Park (Demarais et al. 2012). Olympic National Park (NPS 2018) and Grand Canyon National Park (NPS 2017) have proposed the use of skilled public volunteers to assist with removal of mountain goats and bison, respectively. A controlled reduction of elk within Grand Teton National Park by licensed hunters deputized as rangers is allowed for, when necessary for proper management of the elk herd, by the park's enabling legislation (Public Law 81-787, 64 STAT 849).

Fertility control

Comment 25: Several commenters requested that the NPS consider the use of fertility control, including surgical sterilization (spay/neuter) of mountain goats.

Response 25: The use of fertility control as a mountain goat management tool was considered but dismissed on page 28 of the plan/EA. In short, fertility control would not be effective due to the difficulty in accessing animals and the fact that there is no approved chemical contraception available for mountain goats. Surgical sterilization would require live capture and subsequent surgery on mountain goats which would be cost prohibitive and challenging due to low capture success rates. Additionally, goats would remain on the landscape and continue to impact other park resources (e.g., native vegetation).

Use of Skilled Volunteers

Comment 26: Several comments, including those provided by the WGFD, recommended the preferred alternative be modified to include the use of skilled volunteers to remove mountain goats.

Response 26: The NPS has reconsidered the dismissal of the use of skilled (qualified) volunteers to remove mountain goats. The selected action described in this FONSI has been modified. The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the "Use of Volunteers for Wildlife Management in Parks," and Director's Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: BIGHORN SHEEP

Bighorn sheep decline

Comment 27: Multiple commenters offered their thoughts and insights on potential reasons for the decline of the sheep herd that were not related to mountain goats; including predation or predator activity influencing movements/distribution, high lamb mortality, disease due to domestic sheep, habitat loss, impediments to movements, human activity on summer and winter ranges, lack of breeding between the northern and southern subpopulations, and climate change.

Response 27: The mountain goat management plan/EA (beginning on page 29) reviews the current status and issues facing Teton Range bighorn sheep. Commenters are correct in their assessments that the Teton sheep face multiple environmental stressors. The Teton Range bighorn sheep working group is actively working to investigate and address many of these issues. In particular, the group is currently examining the genetic status of Teton Range bighorn sheep and evaluating several new population estimation techniques. Previously, winter range protections for bighorn sheep were implemented within the park and the working groups continues to engage with the public on ways to protect wintering bighorn sheep.

Comment 28: Some comments questioned whether the removal of mountain goats would successfully stop or reduce the decline of the Teton Range bighorn sheep population. Others suggested that the Teton Range bighorn sheep may go extinct regardless of actions taken to address the mountain goats.

Response 28: As stated in response 2 and restated here: NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and the non-native species interferes with, disrupts, or damages park resources. Additionally, the Organic Act (1916) and its amendments, directs the NPS to manage park lands in a manner that would not degrade park values, which is to conserve park resources and provide for their use and enjoyment "in such a manner and by such means as will leave them unimpaired" for future generations. As stated in response 27, there are multiple stressors on this sheep population, of which mountain goats are an important and manageable one that is not native to the Teton Range.

Comment 29: Multiple commenters reported that they have observed bighorn sheep and mountain goats coexisting without any ill effects suggesting that mountain goats are not a concern. Others noted that bighorn sheep populations are struggling where mountain goats are not present and therefore mountain goats could not be an issue.

Response 29: Anecdotal observations of bighorn sheep overlapping with mountain goats and their apparent coexistence is confounded by whether or not the goat population is native or introduced. Both species do indeed coexist in some areas where they have evolved together over long periods of time (e.g., Glacier National Park in Montana); in such areas, competitive overlap is limited by each species' partitioning of habitats (niche separation). However, in locations where mountain goats have been introduced, such as Colorado, bighorn sheep populations may cede habitat to mountain goats primarily due to competitive interactions (Adams et al. 1982, Gross 2001). Additionally, non-native mountain goat populations typically fare better than native goat populations (as observed in Montana: Smith and DeCesare 2017), with potential implications to native bighorn sheep populations that overlap with non-native mountain goat populations that are stable or expanding (Gross 2001).

It is accurate that some bighorn sheep populations have declined or are struggling in locations where their distribution does not overlap with mountain goats. However, suggesting that this means that mountain goats could not be factor in declines or struggling populations assumes that the problems affecting bighorn sheep are the same everywhere, which is not the case. A variety of factors can contribute to declines or prevent populations from fully recovering and each set of factors will be unique to the population. In the case of the Teton Range bighorn sheep, biologists agree that the presence of mountain goats is a potential threat to the bighorn sheep population. Mountain goats are known to host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). The mountain goats that reside in the Snake River Range from which the mountain goats in the Teton Range are most likely descended have tested positive for all of the pathogens involved in pneumonia in bighorn sheep. Consequently, there is a risk that additional mountain goat individuals could disperse to the Teton Range bringing these pathogens with them. A growing and expanding mountain goat population may also compete with bighorn sheep, particularly in limited winter ranges.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: VEGETATION AND SOILS

Comment 30: One commenter provided correction-related input on errors to scientific plant names and plant species descriptions, wildlife consumption of native high-elevation plants, impacts of mountain goat wallowing on soils, and effects on soils and plants from the use of salt baits.

Response 30: Several scientific plant names were incorrectly spelled on pages 39 – 41 of the plan/EA. The correct spellings to these scientific names, an updated statement regarding plant descriptions in the sub-alpine herbaceous section are provided in the Errata. These changes do not affect the environmental analysis in the EA.

The commenter pointed out a different interpretation of the effects of mountain goats and bighorn sheep on native vegetation; while both mountain goats and bighorn sheep would forage on high-elevation native plants the pattern of use of mountain goats and their higher fecundity is likely to have a greater impact on native plants than the effects of a healthy population of bighorn sheep.

Impacts from the use of salt baits on vegetation and soils was not specifically described and analyzed in the EA because these devices would be placed in specific small denuded areas during the snow-free seasons to attract mountain goats primarily during the first one to two years of removal activities. Due to limited placement of these devices, any impacts to vegetation and soils in these specific areas would not be discernible.

Mountain goats wallow in particularly sensitive soils - high elevation, very shallow, readily disturbed with a short growing season; therefore, colonization is slow. The mountain goats are also known to use the same winter sites for many years so repeated disturbance damages soils.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: WILDERNESS CHARACTER

Impacts to Jedediah Smith Wilderness

Comment 31: One commenter was concerned about impacts to the Jedediah Smith Wilderness on the west side of the Tetons.

Response 31: Mountain goat removal and other management actions described in the plan/EA would be limited to wilderness and non-wilderness areas within Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. No management actions would occur outside of these areas.

NEW ALTERNATIVES OR ALTERNATIVE ELEMENTS

Comprehensive plan for conserving bighorn sheep

Comment 32: Several commenters suggested that the mountain goat management plan/EA lacked a comprehensive vision for addressing the multiple concerns facing bighorn sheep. Some of these commenters suggested that the NPS include specific management actions to

protect bighorn sheep in the management plan/EA. Some suggestions included winter closures, off trail restrictions, and acquiring low elevation winter range.

Response 32: The plan/EA is intended to address the current situation of an expanding and growing population of non-native mountain goats within the park before the situation becomes untenable. Accordingly, the NPS opted to propose the rapid removal of mountain goats because a limited time remains before it may be difficult or impossible to effectively remove the goat population from the park. In addition to mountain goat removal, the NPS will continue to work closely with federal and state land and wildlife management agencies, non-governmental organizations, and others on a variety of potential management actions and measures to ensure the continued conservation of the park's bighorn sheep population. The Teton Range bighorn sheep working group is actively addressing many of the other threats facing Teton Range bighorn sheep.

Bighorn sheep vaccinations

Comment 33: One commenter suggested the NPS should invest in developing a vaccine against pathogens involved in pneumonia.

Response 33: Currently there is no effective vaccine against pneumonia for bighorn sheep. Vaccine development is very expensive and unless wildlife disease threatens humans or livestock there is little available funding. Pneumonia in bighorn sheep involves multiple bacterial species (Besser et al. 2013), with evidence suggesting that *M. ovi* may initiate or predispose animals to polymicrobial pneumonia infections (Besser et al. 2008). While an effective vaccine for *M. ovi* may be helpful in addressing pneumonia in bighorn sheep, it would not provide protection against the Pasteurella pathogens and evidence suggests that immunity to *M. ovi* is strain specific (Cassirer et al. 2016) which means developing a single vaccine effective against all strains would be extremely difficult. Once an effective vaccine is developed, which can take many years due to testing and regulatory approval, a suitable delivery method must be identified. Because bighorn sheep live in remote, mountainous areas where access is challenging, the logistics of vaccine delivery will be difficult and perhaps infeasible. Often times multiple doses of a vaccine are needed to induce the immune response, adding more time and expense. Given that vaccine development can take many years, is costly, and has challenges related to delivery, it is not a cost-effective option to address the mountain goat issue. In addition, this approach would leave mountain goats on the landscape and therefore would not address the other concerns with their presence, including impacts to wilderness character or potential for competition with bighorn sheep and potential impacts to vegetation (see response 35).

Bighorn sheep relocation

Comment 34: One commenter asked why the NPS is not considering translocating bighorn sheep to areas where they have historically done well, and leave the mountain goats in the park.

Response 34: Bighorn sheep are a native component of the park. Relocating bighorn sheep from the Teton Range but leaving the mountain goats in place would not meet the mission of the NPS, which is to *preserve and protect the natural resources, processes, systems, and values… in an unimpaired condition to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them*, NPS Management Policies on the removal of non-native species (see comment and response 2), or the purpose and need of the

plan/EA. Also, bighorn sheep translocation would require considerable additional effort to identify recipient agencies and locations, and sheep translocations present considerable risk to the animals.

Leave a small mountain goat population in place

Comment 35: Several commenters suggested that the NPS should leave a small mountain goat population in place.

Response 35: Leaving a small population of mountain goats in the park would not meet the intent of the NPS Organic Act (16 USC 1–4) and NPS Management Policies on the removal of non-native species (see comment and response 2) or the purpose and need of the plan/EA. If allowed to remain in the park, mountain goats would continue to negatively affect park resources and values, including bighorn sheep and wilderness character.

Hunting outside of the park

Comment 36: Several commenters had suggestions related to hunting outside the park including the elimination of the once-in-a-lifetime rule that currently exists for mountain goat licenses in Wyoming.

Response 36: Outside the boundaries of the park, the WGFD is responsible for the management of mountain goats. The NPS does not have the authority to manage mountain goats through hunting or other means outside of the park. However, the park has and continues to cooperate with the WFGD as they consider management options specific to the west side of the Tetons. In 2019, the WGFD made several changes related to mountain goat hunting in northwest Wyoming, including:

- Designating a new hunt area (HA 4) on the west side of the Teton Range outside of the park;
- Issuing a new Type A license for any mountain goat. The Type A license is not restricted to once-in-a lifetime; and
- Offering 48 Type A licenses in HA 4 (August 15–November 15).

Mountain goat management outside of the park

Comment 37: One commenter noted that it was shortsighted for the NPS to limit removal efforts to the park and suggested that resource managers should take a broader approach to management of mountain goats, including removing them from the Snake River Range and Palisades so that recolonization and the need for recurring control efforts is eliminated.

Response 37: The NPS does not have management authority outside of park boundaries. However, the land (USFS–Caribou-Targhee National Forest and Bridger-Teton National Forest) and wildlife (WGFD, IDFG) management agencies who do have management authority in the Snake River Range are well aware of the concerns and issues related to the presence of mountain goats in the Tetons. In particular, WGFD recognizes the need to manage mountain goats in the Teton Range to conserve bighorn sheep as demonstrated by their management approach to mountain goats outside park boundaries in western Wyoming (Hunt Area 4; please see response 7 for further details). The NPS continues to work very closely with our agency partners in the conservation and management of bighorn sheep and their habitat in the Teton Range.

OTHER TOPICS

Other mountain goat populations

Comment 38: One commenter voiced their opposition to killing the Gros Ventre herd of mountain goats.

Response 38: The proposed plan addresses the population of mountain goats that resides in the Teton Range within the park. The Teton Range is separated from the Gros Ventre Mountains by the Jackson Hole valley. Any goats residing there are managed by the WFGD. The plan/EA does not propose any actions to address mountain goats in this area.

Bureau of Land Management/US Forest Service risk of contact model

Comment 39: The Wyoming Department of Agriculture stated that they did not support the use of the Risk of Contact Tool (ROC; US Forest Service/US Bureau of Land Management 2015) to guide management decisions for bighorn sheep. The Department also expressed concern that NPS is attempting to manage wildlife outside the boundaries of the park and suggested that the NPS should reference the Statewide Bighorn Sheep/Domestic Sheep Working Group Plan.

Response 39: The ROC Tool is a geospatial platform developed and used by the US Forest Service and Bureau of Land Management personnel to assess the probability and rates of contact between bighorn sheep and active domestic sheep allotments (US Forest Service/US Bureau of Land Management 2015). The NPS did not use this model to evaluate potential impacts from the three alternatives or establish probabilities or rates of contact between mountain goats and bighorn sheep. The confusion may stem from the use of similar wording (i.e., risk of contact) to disclose potential impacts of a growing and expanding mountain goat population in the park and potential dispersal of additional mountain goats from the Snake River Range, but the NPS did not intend to imply that the ROC Tool was used. At the population level, all pathogens, including *M. ovi*, which can lead to pneumonia in bighorn sheep, have been detected in goats residing in the Snake River Range. If goats continue to disperse to the Tetons and enter the park, this is a potential avenue by which the Teton sheep could become infected with pathogens to which they may be immunologically naive.

There are no actions identified in the mountain goat management plan/EA that would occur outside of the park boundary. The state of Wyoming is responsible for the management of mountain goats in the Teton Range outside of the park, and Wyoming and the State of Idaho are responsible for the management of mountain goats in the Snake River Range. The park has and will continue to coordinate with both state wildlife management agencies.

Although the 2004 Wyoming Bighorn Sheep/Domestic Sheep Interaction Working Group Final Report was provided as a general bighorn sheep reference on page 30 of the park's Mountain Goat Management Plan/EA, the final report was not extensively referenced because the plan/EA did not propose any specific actions related to the interaction of bighorn sheep and domestic sheep.

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Appendix C: NON-IMPAIRMENT DETERMINATION

Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway Mountain Goat Management Plan

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the Interior and the National Park Service (NPS) to manage units "to conserve the scenery, natural and historic objects, and wildlife in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wildlife in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 U.S.C. 100101). NPS Management Policies 2006, Section 1.4.4 explains the prohibition on impairment of park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment the NPS must evaluate the "particular resources and values that will be affected; the severity, duration, and timing of the impact the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact on any park resource or value may constitute impairment but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance OIPS 2005, Section 1.4.5).

Fundamental resources and values for Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively the park) are identified in the enabling legislation and the 2017 Foundation Document. Based on a review of these documents, the fundamental resources and values comprise the park’s scenery, geologic features and processes, ecological communities and natural process, aquatic resources and processes, cultural history and resources, visitor experiences in an outstanding natural environment, and natural soundscapes and night skies. Other important resources and values comprise the park’s recommended, potential, and eligible wilderness; other historic properties; and park museum and archive collection.

Resources that were carried forward for detailed analysis in the environmental assessment (EA) and are considered necessary to fulfill specific purposes identified in the enabling legislation of the park, are key to the natural or cultural integrity of the park, and/or are identified as a goal in relevant NPS planning documents include bighorn sheep, vegetation and soils, and wilderness character. Accordingly, this non-impairment determination has been prepared for each of these resources.

Non-impairment determinations are not necessary for human health and safety or visitor use and experience because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act.

Bighorn Sheep

Under the selected alternative, reduction and ultimate elimination of the non-native mountain goat population is expected to be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats. During the first few years of active management, the selected alternative will include live capture and translocation of mountain goats as well as lethal removal. Live capture and translocation requires more time per individual and is more costly than lethal removal. Consequently, the time to achieve a 90−100% reduction in the mountain goat population is likely to require the full time identified for the reduction phase (5 years). This means that risks to bighorn sheep from the presence of mountain goats will continue to exist until all mountain goats are removed. Beneficial impacts are expected to be long-term (10−20 years).

Helicopter overflights, landings, and firearm use could interrupt normal activity patterns of bighorn sheep (i.e., resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, and/or stop eating or ruminating. Overflights of bighorn sheep habitat could cause individual sheep below or in close proximity to become alert. Given the limited current spatial overlap between wintering bighorn sheep and mountain goats, bighorn sheep are not expected to be exposed to much direct overflight. Nevertheless, helicopter noise may still be audible from a distance, and sheep could be more alert while those sounds are audible (~5–30 minutes). However, in locations where the two species co-occur in winter, it is likely that bighorn sheep will flee if a helicopter makes a direct or close approach. Because relatively few mountain goats currently winter in areas used by bighorn sheep, such disturbance impacts are expected to be limited to the time it takes to remove those individuals (several minutes to several hours). Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

In the short-term (several months annually over approx. 5 years), the selected alternative will result in numerous carcasses on the landscape, which could result in temporary increases in predators and scavenger activity for the time carcasses are present. Although numerous carcasses on the landscape could affect the risk of predation on bighorn sheep, such a response is not anticipated. In mid-winter, the wolverine is the species most likely to be present

in the high elevations where mountain goats occur. Wolverines are territorial, occur at low densities, and have relatively large home ranges. If wolverines find and cache carcasses for later use, individuals may benefit through improved condition and higher survival or higher reproductive success. This is unlikely to translate into higher predation risk for bighorn sheep because instances of wolverines successfully preying on large ungulates such as bighorn sheep are uncommon. Given implementation of specific conservation measures for bighorn sheep, adverse impacts to individual bighorn sheep from management actions are expected to be minimal and population-level impacts are not anticipated.

Vegetation and Soils

Under the selected alternative, the impacts of non-native mountain goat herbivory, trampling, bedding, and wallowing is expected to decrease incrementally as the population of mountain goats in the park decreases. This will improve overall and long-term ecosystem function as native plant growth and regeneration proceed naturally, though not as rapidly when utilizing only lethal removal techniques. Similarly, as mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover).

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. It's anticipated these flight operations will occur ≤ 25 days per year, with ≤ 10 landings annually. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses from lethal removal activities. These carcasses will likely be utilized as a food source by native animals. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures could affect a visitor's opportunity for solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

Conclusion

In conclusion, based on the preceding analysis and in consideration of the park's purpose and significance, it is the Superintendent's professional judgment that park resources will continue to be present for enjoyment by current and future generations. Therefore, implementation of the selected alternative will not constitute an impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway.