

Chapter 2: Alternatives



CHAPTER 2: ALTERNATIVES

INTRODUCTION

The *National Environmental Policy Act* (NEPA) requires federal agencies to explore a range of alternatives representing substantively different options to meet the purpose and need, including alternatives considered but dismissed from detailed analysis; and to analyze impacts that any reasonable alternatives could have on the human environment. The “Environmental Consequences” chapter of this *Mountain Goat Management Plan / Environmental Impact Statement* (plan/EIS) presents the results of the analyses. The alternatives under consideration must include a no-action alternative, as prescribed by 40 CFR 1502.14. Alternative A in this plan/EIS is considered to be the no-action alternative because it is the continuation of current management as presented in the *Mountain Goat Action Plan* (appendix A). The three action alternatives presented in this chapter were developed by the interagency planning team, which included federal and state agencies, and through feedback received during the public scoping process (see “Chapter 5: Consultation and Coordination”).

Each of the three action alternatives analyzed in this plan/EIS meets the management objectives to a large degree and addresses the purpose of and need for action as described in chapter 1. Because each action alternative responds to the objectives and is technically and logistically feasible to implement, all are considered “reasonable.”

This chapter first provides an overview of the alternatives in table form. Next, the alternatives, including elements common to all alternatives, are described in detail. The remainder of the chapter presents alternatives that were considered but dismissed from further analysis; how alternatives meet the plan/EIS objectives; mitigation measures common to the action alternatives; the National Park Service (NPS) preferred alternative; and the environmentally preferable alternative.

OVERVIEW OF ALTERNATIVES

As required by NEPA, the alternatives described in this chapter represent options for managing mountain goats in Olympic National Park and adjacent areas of Olympic National Forest on the Olympic Peninsula. As a result of the alternatives development process, three action alternatives were identified for detailed analysis, two of which include actions to translocate mountain goats to National Forest System (NFS) lands administered by the Mt. Baker-Snoqualmie and Okanogan-Wenatchee National Forests (North Cascades national forests) in the North Cascades ecosystem. Table 1 shows a summary of actions proposed under each alternative and their associated management elements.

Outcomes of this planning process will result in a plan that will serve as the authorized Mountain Goat Management Plan for Olympic National Park. An implementation plan outlining detailed actions for mountain goat management on the Olympic Peninsula will be developed following completion of this planning process and formal selection of an alternative and a management plan.

TABLE 1. SUMMARY OF ALTERNATIVES AND THEIR MANAGEMENT ELEMENTS

Element	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Combination of Capture and Translocation and Lethal Removal
General Description of Alternative				
	Full implementation of the 2011 <i>Mountain Goat Action Plan</i> (appendix A). Manage individual mountain goats in visitor use areas, including hazing or lethal removal activities.	Capture mountain goats within the park and adjacent Olympic National Forest and transfer them to Washington Department of Fish & Wildlife (WDFW) ownership for translocation to the North Cascades national forests.	Lethal removal of mountain goats within the park and adjacent Olympic National Forest.	Combination of management activities under alternatives B and C. Capture and translocation would take place prior to initiation of lethal removal activities. Once capture operations become unfeasible, use lethal removal of mountain goats.
Management Elements				
Nuisance Mountain Goat Control	Employ nuisance control based on a continuum of mountain goat-human interactions and the appropriate park responses as presented in the 2011 <i>Mountain Goat Action Plan</i> (appendix A). Specific actions range from hazing to lethal removal.	Employ nuisance control measures as needed on a case-by-case basis.	Same as alternative B.	Same as alternative B.
Information and Education	Continuation of current public education methods, including backcountry use notices, informational handouts, interpretive programs, and direct interaction between park staff and visitors.	Same as alternative A, with the addition of the following: <ul style="list-style-type: none"> Increased education, including media outreach and website resources. Detailed information provided to the public regarding potential areas of temporary closures. 	Same as alternative B.	Same as alternative B.

Element	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Combination of Capture and Translocation and Lethal Removal
Helicopter Use	Helicopter use on the Olympic Peninsula for surveying or removing conditioned goats on an as-needed basis.	Use helicopters on the Olympic Peninsula and North Cascades national forests during two separate 2-week management periods in a given year: once in mid- to late July, and the second in late August to mid-September. Helicopter flight paths would be determined by weather, but would usually take the most direct routes to and from staging areas and areas where mountain goats are either being captured or released.	Similar to alternative B, but would require fewer helicopter flights on the Olympic Peninsula and no helicopter use in the North Cascades national forests.	Combination of alternatives B and C, with helicopter use on the Olympic Peninsula and in North Cascades national forests.
Staging Areas	Minimal use of established NPS staging areas for surveying or removing conditioned goats. No additional site preparation would be necessary.	Staging areas required for safe and accessible mobilization of staff and equipment during mountain goat management activities.	Similar to alternative B, although alternative C would have fewer flights and would have less use of the staging areas.	Combination of alternatives B and C.
Receiving Locations	Not applicable.	Following transfer of mountain goats to WDFW at staging areas on Olympic Peninsula, mountain goats would be transported to the North Cascades national forests to supplement existing populations in areas identified as suitable for supporting larger conservation herds. Translocation would be managed by WDFW. Mountain goats may be translocated to other locations or entities as deemed appropriate by WDFW (e.g., translocation of mountain goat kids to zoos or transfer of mountain goats to other wildlife agencies outside of Washington State).	Not applicable.	Same as alternative B.

Element	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Combination of Capture and Translocation and Lethal Removal
Management Access	Hiking into areas to haze or lethally remove mountain goats. Helicopter use to transport crews for emergencies.	Hiking into areas for ground-based capture operations. Helicopters used to drop off equipment (e.g., nets and crates), to drop off and pick up capture or release crews, to capture or release mountain goats in remote areas, and to transport mountain goats to staging areas or release sites. Helicopters would need to land in wilderness at these times (up to three landings for each capture).	Hiking into areas for ground-based lethal removal. Helicopter or fixed-wing airplane used for lethal removal of mountain goats from the air. Helicopter landings within wilderness may be necessary for lethal removal and mountain goat carcass retrieval, on an infrequent basis.	Combination of alternatives B and C.
Tools for Capturing Mountain Goats	Drop nets, clover traps, and dart guns used to capture problem mountain goats for ear tagging or fitting with radio collars according to the <i>Mountain Goat Action Plan</i> .	Ground-based capture methods including drop nets, clover traps, and darting. Helicopter-based capture methods including net guns and darting. As applicable, use of methods in 351DM2 – 351DM3 “Aerial Capture, Eradication and Tagging of Animals (ACETA) Handbook” (DOI 1997).	Not applicable.	Same as alternative B.
Area Closures	Temporary short-term closures of limited areas for ground capture, hazing, and lethal removal actions.	Same as alternative A, with temporary short-term closures of certain trails and trailheads surrounding staging areas for takeoff and landing of helicopters. Closures could last the full duration of each 2-week management period, but would depend on specific management activities, environmental conditions, and behavior or density of mountain goats.	Same as alternative B.	Same as alternative B.
Baiting	Not applicable.	Salt blocks could be used as a tool to attract mountain goats for capture and to acclimate mountain goats to release areas.	Salt blocks could be used as a tool to attract mountain goats for lethal removal.	Combination of alternatives B and C.

Element	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Combination of Capture and Translocation and Lethal Removal
Lethal Removal	Lethal removal of mountain goats displaying aggressive behaviors or presenting threats to human safety. Euthanize mountain goats with life-threatening injuries during management activities.	Euthanize mountain goats with life-threatening injuries during capture and translocation activities.	Lethal removal of mountain goats on the Olympic Peninsula using park staff, other federal personnel, hired contractors from Animal & Plant Health Inspection Service (APHIS) or US Department of Agriculture (USDA) Wildlife Services, state personnel, or trained volunteers.	Combination of alternatives B and C.
Animal Welfare Tools and Considerations	All humane management methods and regulations would be taken into consideration and implemented as applicable.	Same as alternative A.	Same as alternative A.	Same as alternative A.
Number of Mountain Goats to be Removed				
Mountain Goat Population Goal	Not applicable.	Desired eventual population size of zero, while acknowledging that goal may not be met because a substantial percentage of mountain goats could be uncatchable or capture and translocation operations activities would cease once they become unfeasible. Estimated population reduction is approximately 50%.	Desired eventual population size of zero, while acknowledging that it may not be possible to lethally remove more than approximately 90% of the population.	Desired eventual population size of zero, while acknowledging that it may not be possible to capture or lethally remove more than approximately 90% of the population. Same as alternative C.

Element	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Combination of Capture and Translocation and Lethal Removal
Initial Management	Displace habituated mountain goats from areas with high levels of visitor use according to the management continuum presented (appendix B).	Capture and translocate as many mountain goats as possible from the Olympic Peninsula. It is estimated that approximately 50% of the mountain goat population could be captured and translocated, or approximately 325–375 animals based on the projected 2018 population size.	Lethally remove as many mountain goats as possible from the Olympic Peninsula. It is estimated that approximately 90% of the mountain goat population could be lethally removed, or approximately 625–675 animals based on the projected 2018 population size.	Combination of alternatives B and C. It is estimated that approximately 50% of the mountain goat population could be captured and translocated, or approximately 325–375 animals based on the projected 2018 population size. Capture and translocation would take place prior to lethal removal activities. It is estimated another 40% of the original mountain goat population (approximately 275–325 animals) would be lethally removed. Similar to alternative C, this would ultimately result in an approximately 90% reduction of the mountain goat population.
Maintenance Activities	Same as “initial management” element. Level of management effort would likely increase over time as the mountain goat population on the Olympic Peninsula would continue to increase.	Approximately 50% of the mountain goat population would remain following initial management. Maintenance activities would target mountain goats in areas that reoccupy areas of high visitor use. Maintenance activities are expected to require a greater level of effort than under alternatives C and D because fewer mountain goats would be removed during initial maintenance and it is expected the population would rebound to previous levels within 10 to 15 years.	Approximately 10% of the mountain goat population would remain following initial management. Maintenance activities would be prioritized in areas of high visitor use and would target larger groups of mountain goats that appear most likely to increase in number.	Same as alternative C.

Element	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Combination of Capture and Translocation and Lethal Removal
Timing and Duration of Management Actions				
Initial Management	<p>Existing management activities would continue, primarily in summer and fall.</p> <p>Duration of management activities would depend on visitor usage, environmental conditions, and behavior of mountain goats.</p>	<p>Duration of 3 to 5 years, with most of the activity in years 1 to 2.</p> <p>Most mountain goats would be captured and translocated in years 1 and 2, with decreasing feasibility or need in years 3, 4, and 5.</p> <p>Helicopter-based capture and translocation activities would take place during two 2-week management periods: one in mid- to late July and the second in late August to mid-September. Helicopters would operate up to a maximum of 12 days, and a maximum of 8 hours per day, although conditions would likely limit the actual number of days.</p> <p>Capture and translocation activities would take place primarily during cool early morning hours to reduce mountain goat distress.</p>	<p>Duration of 3 to 5 years, with most of the activity in years 1 to 3.</p> <p>Most lethal removal of mountain goats in years 1 to 3, with decreasing feasibility or need in years 4 and 5.</p> <p>Helicopter-based lethal removal activities would take place during two 2-week management periods: one in mid- to late July and the second in late August to mid-September. Helicopters would operate on up to a maximum of 12 days, and a maximum of 8 hours per day. Ground-based lethal removal activities would take place opportunistically at any time during the year as needed, with peak management in summer and fall.</p>	<p>Duration of 3 to 5 years, with most of the activity in years 1 to 4.</p> <p>As a combination of alternatives B and C, mountain goats would first be captured and translocated in years 1 to 2, with decreasing feasibility or need in years 3, 4, and 5. Management would switch to lethal removal when mountain goats become more difficult to capture, there are no willing recipients, funding becomes limited, or it is no longer safe and efficient to capture mountain goats.</p>

Element	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Combination of Capture and Translocation and Lethal Removal
Maintenance Activities	Same as "initial management" element.	<p>As early as 5 to 15 years after initial management and include the same capture and translocation activities, assuming there is available funding and WDFW is willing and able to translocate additional mountain goats or broker their translocation.</p> <p>The amount of time needed for capture operations would likely increase over time, as the mountain goat population decreases and mountain goats move to increasingly remote areas where capture operations would require greater effort.</p>	<p>The timing of maintenance activities would depend on the success of initial lethal removal of mountain goats, which if highly successful, additional lethal removal may not be needed at all, or may not be needed until 5 to 15 years following the cessation of initial management.</p> <p>Management activities would include use of ground based and helicopter operations and would be short duration (1 to 5 days).</p> <p>Lethal removal of mountain goats under the maintenance phase would cease when it was determined that the cost for lethal removal operations exceeds the resources available, there is no funding available, or the risk to those engaged in lethal removal is determined to be too high.</p>	Same as alternative C.
Other Considerations				
Research and Monitoring	Potential may exist for research on the efficacy of hazing on altering mountain goat behavior, habitat use and movements. Periodic surveys would be needed to monitor the mountain goat population, which would include periodic (every 4 to 6 years) helicopter flights for approximately 6 days, for 4 to 5 hours per day.	Periodic surveys would be needed to monitor the mountain goat population, with the same frequency and duration as in alternative A.	No need for aerial surveys, but may need reconnaissance flights prior to maintenance operations to search for remnant goats; likely over one to two mornings (4 to 8 hours over 2 days). Remnant mountain goats would be documented opportunistically during elk surveys.	Same as alternative C.

Element	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Combination of Capture and Translocation and Lethal Removal
Carcass Handling and Disposal	Carcasses of mountain goats would be left in the field and would be moved approximately 325 feet from visitor use areas.	Same as alternative A, but carcasses could be donated for human consumption or to tribes or other willing recipients for horns and hides, depending on the condition of the carcass and arrangements that could be made.	Same as alternative B.	Same as alternative B.
Management Activities Outside of the Park	Management of nuisance mountain goats in Olympic National Forest by USDA Forest Service and WDFW would continue. Tribal and sport hunting would continue during the fall.	Same as alternative A, plus management activities would involve the capture and translocation of mountain goats outside of park boundaries, on Olympic National Forest lands.	Same as alternative A, plus management activities would involve the lethal removal of mountain goats outside of park boundaries, on Olympic National Forest lands.	Combination of alternatives B and C.

ALTERNATIVE A: NO ACTION

The Council on Environmental Quality (CEQ) requires that the alternatives analysis in an EIS “include the alternative of no action” (40 CFR 1502.14(d)).

Alternative A, the no-action alternative, would be a continuation of existing management practices and assumes no new management activities would be implemented beyond those available when this plan/EIS planning process started.

The no-action alternative would be a continuation of existing management practices and assumes no new management activities would be implemented beyond those available when this plan/EIS planning process started.

Under the no-action alternative, options for the management of mountain goats in the park would be limited to those actions outlined in the *Mountain Goat Action Plan* (appendix A) and the *Mountain Goat Action Plan Continuum* (appendix B), which was revised by an NPS workgroup in 2015. The goal of the action plan is “that [mountain] goats in the park exhibit natural behaviors consistent with other portions of their range, to not have those natural behaviors altered by human use of their habitats (i.e. become habituated or conditioned), and to minimize the potential for hazardous mountain goat human encounters” (appendix A).

Unacceptable mountain goat behaviors include the following:

- failing to retreat when coming in sight of people;
- allowing people to approach within 150 feet;
- approaching and following people on trails or at camp or rest sites;
- aggressively seeking out areas where humans urinate and consuming soil and vegetation where human urine is deposited;
- making contact with clothing or equipment; chewing gear, seeking salt;
- displaying aggressive postures or behavior to people when encountered on or off trail;
- attacking and making contact with humans.

habituated: *Habituated mountain goats have not necessarily become overly familiar with humans, but are comfortable in the presence of humans.*

conditioned: *Conditioned mountain goats display aggressive (non-defensive) behavior toward humans, or have become overly familiar with humans.*

(Refer to the Glossary for complete definitions of these terms.)

Management under the *Mountain Goat Action Plan*, and therefore under alternative A, would be an integrated effort between all park divisions with an emphasis on preventing unacceptable mountain goat behavior. Management according to the action plan is set up according to a continuum of mountain goat-human interactions and the appropriate park response to each. For additional details regarding management activities associated with the no-action alternative, see the complete *Mountain Goat Action Plan* (appendix A).

Management Elements

Common management activities currently conducted in Olympic National Park, which would continue under the no-action alternative, are described below. Under a continuation of current management, an Olympic National Park biological technician would be on duty 7 days per week as funding allows

conducting foot patrols in problem areas (e.g., the Hurricane Ridge / Klahhane Ridge Trail complex) during times when mountain goats are known to actively interact with people (approximately late June until mid-September). Additional areas where mountain goats have been recently reported, or where mountain goats have historically interacted with humans, would be patrolled during daylight hours. When mountain goats are encountered, they would be evaluated for their level of habituation and hazed if they do not keep distances greater than 150 feet from humans. Tools used for hazing would include clapping, shouting, throwing rocks, yelling, and using paintball guns or nonlethal shotgun rounds. The NPS would continue to mark mountain goats that interact at close distances to people with paintballs or capture and radio-collar them if possible. Focused patrols would be conducted by rangers who are trained in animal hazing to educate visitors on hazing methods.

Under the no-action alternative, NPS would continue to collaborate with Olympic National Forest and WDFW partners to implement mountain goat management activities beneficial to the protection of park resources and visitors. Specific actions would include collaborating with Olympic National Forest to provide information to the public pertaining to safety guidelines for recreating in mountain goat habitat and coordinating with Olympic National Forest and the WDFW on nuisance mountain goat issues. The NPS may also coordinate with Olympic National Forest on closures in areas where mountain goat ranges are close to the boundary between the park and NFS lands, such as The Brothers, Buckhorn, and Mount Skokomish wilderness areas, as necessary. To monitor the future abundance of exotic mountain goats on the Olympic Peninsula, NPS would also coordinate with USDA Forest Service and WDFW to perform aerial population surveys.

In Olympic National Forest, the USDA Forest Service would continue to maintain voluntary visitor registries to record mountain goat sightings and interactions in areas with overlapping high visitor use and high mountain goat densities, such as Mt. Ellinor. Temporary area closures would continue to be implemented as necessary to protect human safety in the event of conflicts between humans and aggressive mountain goats. The USDA Forest Service would continue to conduct outreach to visitors in areas where mountain goats are known to occur, such as Mt. Ellinor, Mt. Washington, and other areas, and signs would be posted at trailheads advising visitors of mountain goat presence in the area. The USDA Forest Service would coordinate with WDFW as necessary regarding the lethal removal of nuisance mountain goats from NFS lands. Any actions on NFS lands would be carried out consistent with Forest Plan Standards and Guidelines (appendix D).

Other general management approaches that would continue to be available and employed under alternative A are described below.

Interpretive Tools. Park and national forest staff would continue to provide information and warnings regarding hiking safely with mountain goats, and educational opportunities to the public through interpretive programs and visitor interactions regarding the management of mountain goats on the Olympic Peninsula. Interpretation would include efforts to increase the public's awareness of the current mountain goat situation on the Olympic Peninsula, as well as associated management activities.

Nuisance Mountain Goat Control. In the *Mountain Goat Action Plan*, aversive conditioning consists of immediate and short-term hazing activities intended to modify mountain goat behavior and to drive mountain goats away from visitor use areas. Under the no-action alternative, nuisance control tools would vary from hazing actions, such as shouting and throwing rocks at mountain goats, to lethal removal of conditioned and aggressive goats, as described in the *Mountain Goat Action Plan* (appendix A).

Access. Park and national forest staff would primarily access mountain goat management areas on foot. Management activities under the no-action alternative would take place primarily in areas with high

visitor use that are accessed via hiking, but could also take place in more remote areas using helicopters as needed to complete necessary management activities.

Area Closures. Under the no-action alternative, it would be necessary to occasionally close areas of the park or national forest for human safety reasons or to conduct hazing activities associated with the no-action alternative. Often when hazing, management staff involve visitors in the process of shouting and throwing rocks at the mountain goats. If it is determined that lethal removal actions are required for a habituated mountain goat, that particular area of the park or national forest would be temporarily closed for the duration of the process. Closures for management may last from a few hours to a few weeks.

Lethal Removal. Under the no-action alternative, there would be the potential for lethal removal of individual mountain goats in the park and Olympic National Forest. This would involve using firearms such as high-powered rifles for the removal of mountain goats that have exhibited conditioned and aggressive behavior or have presented a clear threat to human safety. As necessary, park staff would be involved with such lethal removal and associated activities, which may include temporary area closures, shooting, and carcass handling. Each individual's role would be identified prior to lethal removal activities, and could include any of the actions noted above. The process for identifying mountain goats requiring lethal removal and specific protocols for lethal removal under the no-action alternative are described in the *Mountain Goat Action Plan* (appendix A) and is based on a continuum of observed mountain goat behavior (appendix B).

Timing and Duration of Management

The timing of management activities under alternative A would be based on the need for action, but would likely take place primarily during times of high visitor use within the park when there is greater potential for mountain goat-human interactions. The frequency of management activities would vary depending on the level of mountain goat-human interaction observed at a given time within the park. If mountain goat-human interactions are occurring often, then the frequency of management activities would increase. The short-term duration of management activities would vary depending on mountain goat responses to management activities. If management activities are effective, then the duration may last long enough to only haze the mountain goats out of an area. If mountain goats are not responsive to management activities, then the duration could increase to longer than one week or would take place sporadically throughout the spring and summer as mountain goats change their seasonal areas of concentrated use. The long-term duration of management activities would continue indefinitely into the future because the mountain goat population within the park would continue to increase.

Research and Monitoring

Under alternative A, research and monitoring activities would continue as necessary and based on available funding. There could exist future opportunity for research on the efficacy of hazing on altering mountain goat behavior, habitat use, and movements. Park staff would continue to perform mountain goat population monitoring, which would include periodic (every 4 to 6 years) helicopter flights for approximately 6 days, for 4 to 5 hours per day. Park and national forest staff would also continue to collect information on visitor interactions with mountain goats.

ELEMENTS COMMON TO ALL ACTION ALTERNATIVES (ALTERNATIVES B, C, AND D)

Some elements associated with mountain goat management on the Olympic Peninsula are considered common to all action alternatives. Implementation of any of the following actions is subject to available funding. Management elements that would be employed under all action alternatives are presented below.

Interpretive Tools. Under all action alternatives, park and national forest staff would provide information and educational opportunities to the public through interpretive programs and visitor interactions regarding the management of mountain goats on the Olympic Peninsula.

Under all action alternatives, there would be enhanced public outreach regarding actions related to the management of mountain goats and more in-depth interpretation. Interpretation would include efforts to increase the public's awareness of the current mountain goat situation within the park and adjacent areas in the Olympic National Forest, as well as about management activities that would be undertaken under the selected alternative. In addition to direct interactions between park interpretive staff and park visitors, interpretive tools could include enhanced outreach to media outlets, expanded website resources, additional backcountry notices, and informational handouts. Detailed information would be provided to the public regarding areas of potential temporary closures in the park and national forest.

Helicopters. Under all action alternatives, helicopters would be used during initial mountain goat management activities and less frequently for periodic maintenance activities as funding allows. The type of helicopter used would likely be either a Bell 206 or Hughes 500. Helicopter operations would take place over the course of two separate 2-week management periods in a given year, during which initial management activities would be most intensive. The first management period would likely be during mid- to late July, and the second would be during late August to mid-September. Taking into account the time needed to mobilize and demobilize, and depending on weather conditions, helicopter operations would more likely take place on 9 to 10 days out of the 2-week management period. Flight operations would take place for a maximum duration of 8 hours per day. Helicopters would operate from a combination of two out of five possible staging areas (described below) during any given 2-week management period. Helicopter flight paths would be determined by weather (cloud layers and winds), and helicopters would avoid high visitor use areas as much as possible. In general, helicopters would take the most efficient routes to and from the staging areas, most often flying over passes (e.g., Upper Cat Pass, Long Pass, and Boulder Creek Pass) and down river valleys such as the Elwha River Valley.



Credit: WDFW

Helicopter moving a mountain goat to a staging area for translocation

Area Closures. Under all action alternatives, there would be temporary area closures within both the park and national forests during management activities, which include lethal removal, capture, and translocation operations. Closures on NFS lands would be implemented under 36 CFR Part 261, Subpart B, “Prohibitions in Areas Designated by Order.” In general, trails and campgrounds would remain open to the public in both backcountry and frontcountry areas as long as management personnel determine it is safe to do so. As applicable for each alternative, closures would include areas near ongoing management activities and immediately surrounding staging areas. There would be no parkwide or national forest-wide closures. Closures in specific areas could last for several days, potentially up to the full duration of the two separate 2-week management periods during each year when initial management activities are taking place. For example, backcountry and wilderness areas, including trails and campgrounds, on NPS or NFS lands with high mountain goat densities and high levels of visitor use (including High Divide, Hurricane Hill, Klahhane Ridge, Mt. Olympus, Lake of the Angels, Lena Lakes, Mt. Ellinor, and other areas) would be closed during management operations taking place in those areas, in order to allow for more efficient management of larger mountain goat populations and to ensure operator and visitor safety. If certain staging areas were used, closure of nearby trailheads and campsites could be implemented for safety reasons during the use of those staging areas. These closures may include the Hurricane Hill Trailhead near the Hurricane staging area, as well as the Mt. Ellinor and Mt. Washington trailheads and the Big Creek Campground trail system near the Mt. Ellinor staging area. No frontcountry campground closures are anticipated, although campgrounds located near staging areas, such as the Big Creek Campground near the Mt. Ellinor staging area, the Deer Park Campground near the Deer Park staging area, or the Lena Lakes Campground near the Hamma Hamma staging area, would have signs posted notifying campers of ongoing management activities. The NPS would coordinate a schedule of area closures six months in advance with the Wilderness Information Center, which issues wilderness use permits, to ensure that no permits are issued for areas impacted by management activities. In addition, area closure signs would be posted at the Hamma Hamma staging area when it is in use, even though it is already gated and locked. Olympic National Forest closures associated with the Hamma Hamma staging area would be coordinated through the recreation and wilderness program. Closures would be advertised to the public and would also be coordinated with wilderness and law enforcement rangers, volunteer staff, and all other agency staff that could potentially be working in closed areas.

Staging Areas. Under all action alternatives, staging areas would be required for mobilization of staff and equipment during management activities. The use of helicopters to access remote areas of the park and national forest would require a safe and accessible space for taking off, landing, and refueling. Staging areas would require easily navigable road access with an adequate road surface for ease of access by trucks that would be transporting mountain goats, as well as trucks carrying fuel for helicopters. Space for animal care and handling would be required for the action alternatives that involve capture and translocation activities; this would include areas for unloading mountain goats from slings, providing veterinary care, processing, and loading mountain goats into vehicles for transport to receiving areas. Areas for helicopter landing would be located adjacent to mountain goat handling areas, but would be located far enough away to ensure maintain goat and employee safety. Five staging areas have been identified; three in the park and two on NFS lands. Each staging area is described below; the northern staging areas located in the park are shown in figure 3 and the southern staging areas on NFS lands are shown in figure 4.



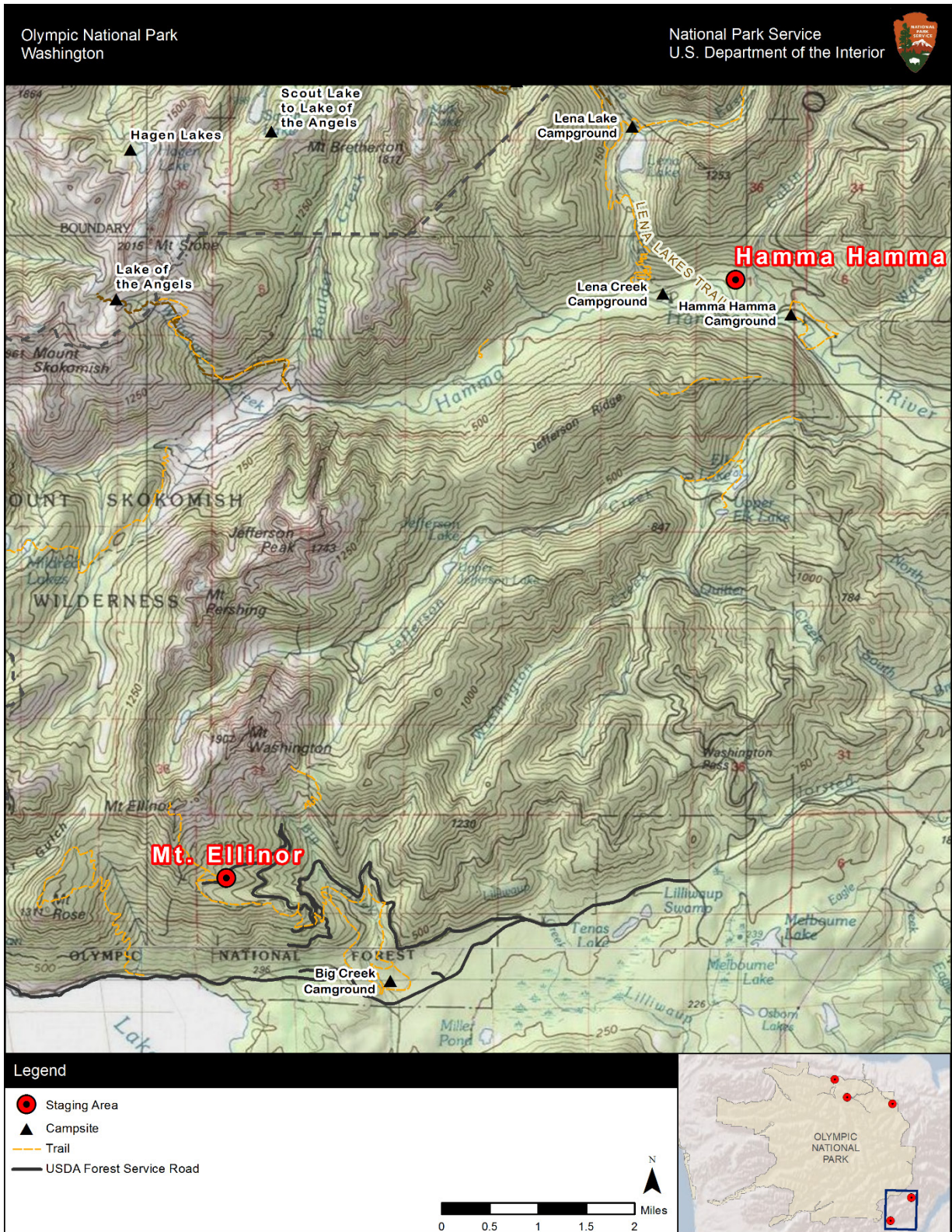


FIGURE 4. SOUTHERN STAGING AREAS IN OLYMPIC NATIONAL FOREST

Sweets—The Sweets staging area is located in the park and is the furthest northwest and lowest elevation of the five staging areas. At approximately 275 feet above sea level, it is accessed by a paved road (Olympic Hot Springs Road) and is located by the Madison Falls Trailhead parking lot. This area is already used for helicopter-based management activities in the park. Helicopters can land in the meadow to the south of the parking lot. Site preparation at this staging area would consist of mowing and removing shrubs and a limited number of small trees (less than 20 inches in diameter at breast height) within the meadow. Areas surrounding the staging area would generally not be closed to use, with the possible exception of the Madison Falls Trailhead, a day-use trail, if the decision were made that staging activities could affect hiker safety. No road closure would be necessary, but public access would need to be controlled during the use of this staging area because this road is used to access the upper Elwha River Valley.

Hurricane—The Hurricane staging area is located in the park, at the Hurricane Hill Trailhead parking lot, a paved parking area accessed via Hurricane Hill Road and approximately 1 mile beyond the Hurricane Ridge Visitor Center (figure 3). Its elevation is approximately 5,000 feet above sea level. Both the Hurricane Hill Trailhead and overflow parking area at Picnic Area B are anticipated to be used, and these areas would be temporarily closed during operations. Picnic Area A would remain open during operations and Hurricane Hill Road would be closed between Picnic Area A and Picnic Area B. Some small (less than 20 inches in diameter at breast height) subalpine firs and snags may need to be removed, and the area near the bulletin board may need to be leveled to allow safe helicopter operation. Use of this staging area would require closure of the Hurricane Hill Trail, a day-use trail, for the duration of staging activities.

Deer Park—The Deer Park staging area is located in the park and is the northeastern-most and highest elevation of the five staging areas (figure 3). At approximately 6,000 feet above sea level, the helicopter landing is on a flat, graveled area on a ridgetop accessed by Deer Park Road. Staging activities would be either adjacent to the landing area, near the Deer Park Ranger station or possibly nearby in a loop of the campground. Minimal site preparation would be necessary but some small (less than 20 inches in diameter at breast height) trees and snags may need to be removed at this staging area. Access to the Deer Park site is easily controlled, so if the site is used, it is possible that a temporary closure would only be required in the immediate vicinity of ongoing operations. The trail from Obstruction Point to Deer Park Trail would not likely need to be closed unless visitor safety concerns are identified. There is a primitive campground near the staging area as well, and campers at this site would be impacted by helicopter noise.

Mt. Ellinor—The Mt. Ellinor staging area is located on NFS land at the Upper Ellinor Trailhead parking lot, in the southeastern portion of the Olympic Mountains (figure 4) at approximately 3,500 feet above sea level. The site is accessed via a maintained, gravel NFS Road 2419-014. NPS would use the 0.25-acre trailhead parking lot as a landing zone, and could use a 0.3-acre gravel area north of the trailhead for additional parking if necessary (figure 4). A small number of small diameter (less than 8 inches in diameter at breast height) conifer trees would need to be removed to create a clear helicopter flight path. The trailhead area would need to be closed during operations, since much of the parking area would be taken up with operational needs. This staging area would not be used during July in order to reduce disturbance to park and national forest visitors. Big Creek Campground, located less than 2 miles from the staging area, would remain open and visitors would likely hear helicopter noise.

Hamma Hamma—The Hamma Hamma staging area is located on NFS land and is the southeastern-most of the five staging areas (figure 4), at approximately 700 feet above sea level. The site is an irregularly-shaped, 3.3-acre area that formerly hosted a gravel pit on NFS Road 2500-011. The ground surface is composed of areas of gravel and low vegetation. It is in a flat area, accessed by paved roads, located off of a spur that is gated; therefore, public access could be easily controlled with a temporary closure when in use. Some tree clearing (< 0.25 acre) would be necessary in areas along the perimeter of the site to create a clear 300-foot helicopter flight path. Trees would all be less than 20 inches in diameter at breast

height and would consist of a mix of alders and conifers. The Lena Lakes and Hamma Hamma campgrounds are both located approximately 0.75 mile away and helicopters would be audible to campers, but a flight path would be designated in order to minimize impacts.

Staging areas would not be located in designated wilderness, and would be located on previously disturbed, large, flat, open areas such as disturbed meadow areas or trailhead parking lots. For each 2-week management period, two staging areas would be operational: one on the northern side of the Olympic Mountains and one on the southern side, to reduce flight time and stress for mountain goats, conserve fuel, and provide for flexibility given changing weather conditions. Whenever possible, helicopters would use the staging areas closest to the locations of ongoing management activities, as indicated by the general helicopter flight paths between staging areas and mountain goat habitat shown in figure 5. For example, mountain goats from Mt. Olympus, High Divide, and the Bailey Range area would most likely be taken to either the Sweets or Hurricane staging area, and mountain goats from the Mt. Ellinor area would be taken to the Mt. Ellinor staging area. Operations concentrating on mountain goats in the northeastern portion of the Olympic Mountains would use the Deer Park staging area. Approximately 50% of flights would be operating from staging areas in the northern portion of the range and 50% of flights would be operating from staging areas in the southern portion of the range. Some minor improvements (e.g., ground leveling and grading, removal and trimming of vegetation, and treatment for noxious weeds) may be required in some of the staging area locations; however, any improvements would be made within the existing footprint of the disturbed area. Improvements to staging areas would be implemented by NPS for staging areas located on park land and by the USDA Forest Service (or partners) for staging areas located on NFS lands.

Baiting. Salt blocks may be placed in remote areas of the park and national forest to attract mountain goats to suitable areas for carrying out management activities. Pre-baiting with salt and trace mineral blocks up to one year prior to removal actions can increase mountain goat management effectiveness. Locations would be identified to provide for the greatest efficacy of either capture or lethal removal depending on the alternative being implemented. Baiting areas would either be located away from public use areas or temporarily closed to public access to minimize mountain goat-human conflicts. Bait sites would consist of a salt block enclosed within an impermeable livestock feed tub, as shown in figure 6, to prevent salt from leaching into soils or impacting vegetation. Salt blocks would be removed once management activities are complete to limit effects on other wildlife species.

Lethal Removal. Under all action alternatives, there would be the potential for lethal removal of mountain goats. The number of mountain goats and occasions for lethal removal would vary for each action alternative. Lethal removal would be used as the only approach for mountain goat management under alternative C, but would be a secondary management approach under alternative D. Shotguns and high-powered rifles would be used for lethal removal actions. Personnel involved, which could include NPS or other federal personnel, state personnel, or trained volunteers, would have the appropriate skills and proficiencies in the use of firearms to maximize public safety, including experience in the use of firearms for the removal of wildlife. Any lethal action would be completed as humanely as possible. Under all alternatives, mountain goats that sustain life-threatening injury during management activities would be dispatched as quickly as possible to minimize suffering. The decision to euthanize an injured mountain goat would be made on site by a wildlife veterinarian who is certified in zoological medicine.

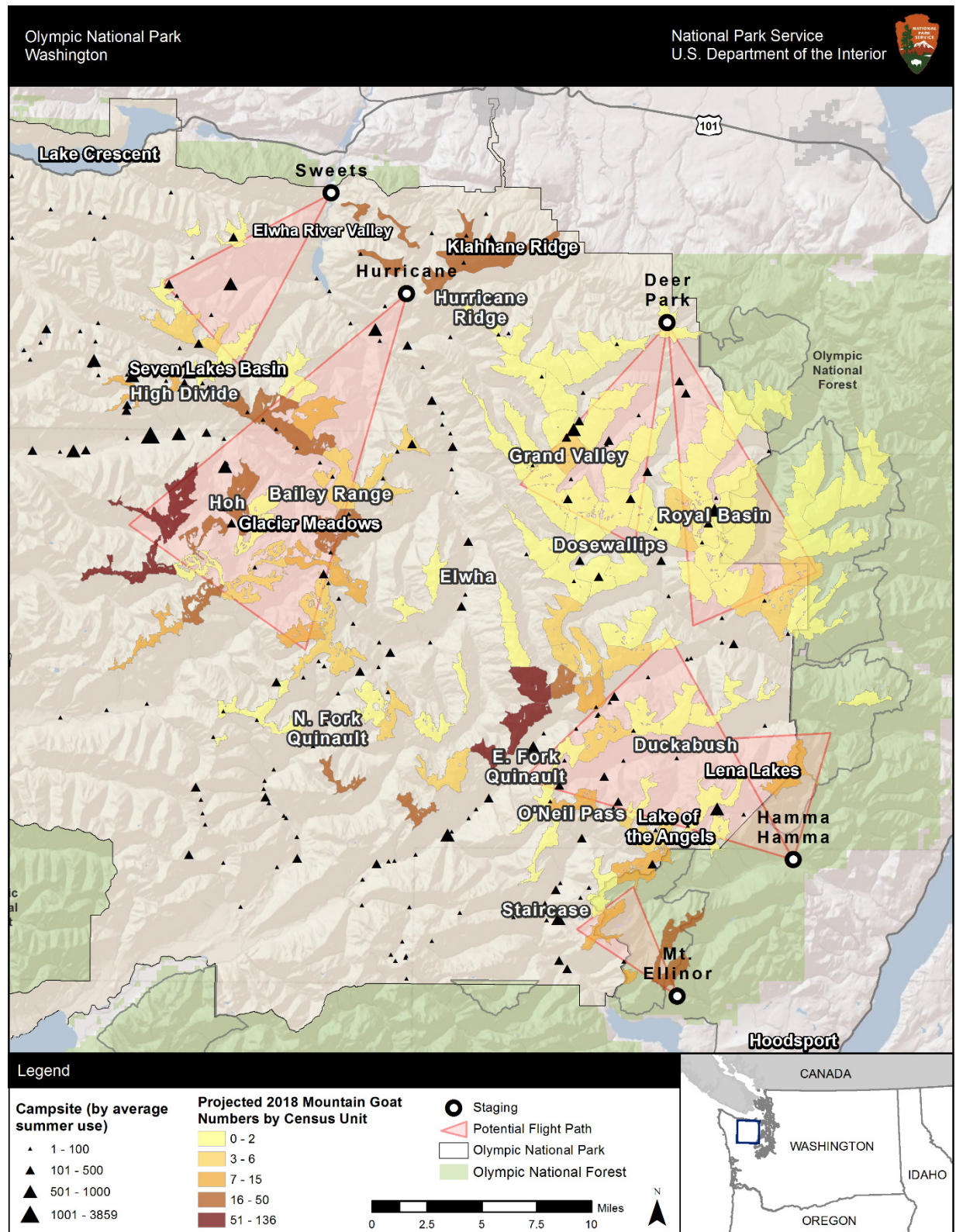


FIGURE 5. PROJECTED MOUNTAIN GOAT DENSITY, STAGING AREAS, AND POTENTIAL FLIGHT PATH AREAS ON THE OLYMPIC PENINSULA

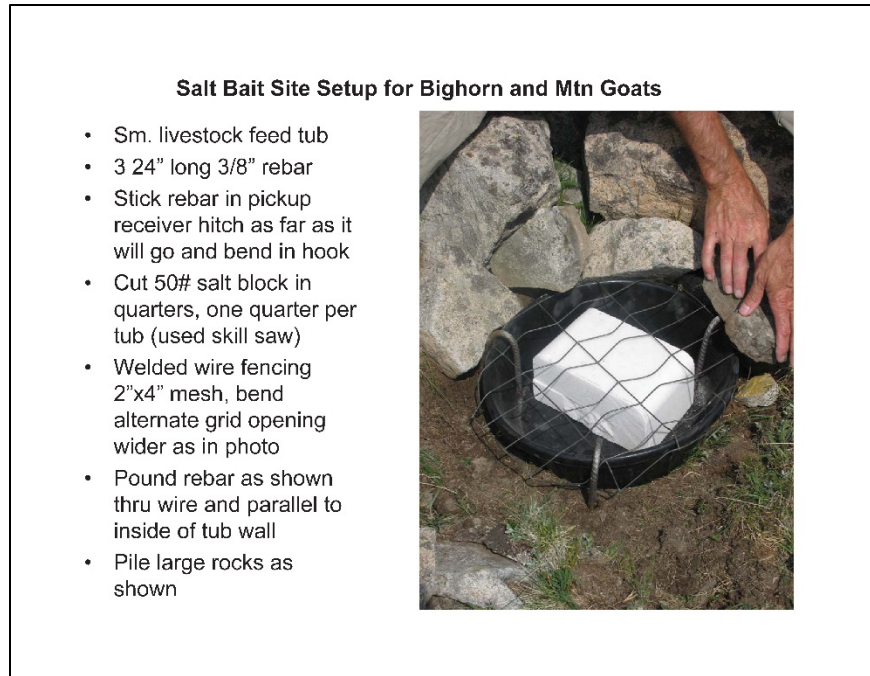


FIGURE 6. EXAMPLE OF SALT BLOCK SITE

Animal Welfare Tools and Considerations. The NPS would strive to use the most humane techniques possible for animal capture, transport, and handling, given the existing circumstances, to maximize individual animal welfare and health. When capturing mountain goats for translocation, management activities would be designed to maximize the humane treatment of animals, including attempting to capture dependent young together with nannies when possible in order to enhance the likelihood of survival. This may include but would not be limited to trapping nannies with young in clover traps and transporting them together to holding areas (if young did not enter the traps, it is expected that they could be caught adjacent to nannies with net guns). When using helicopters, dependent young could be captured along with the nannies by isolating nannies together with their young during pursuit using net guns to capture both animals in the same area, and keeping them together during transport, processing, and translocation. If immobilizing drugs are used, nannies would be captured first, and then young as they stayed near the immobilized adult or once the adult is caught pursuing the dependent young. Although management personnel would have the ability to use methods deemed appropriate at the time of capture, kids would be live captured with net guns to the extent possible, as opposed to being immobilized with drugs. If drive traps are used, these would be implemented following the methods described by Smith (2010). Nannies and their young would be transported together in the same helicopter flight. Translocation activities would be conducted in accordance with WDFW translocation protocols. When conducting lethal removal using firearms, consideration would be given to the choice of firearm and shot placement to ensure the humaneness of the action.

The NPS would strive to use the most humane techniques possible for animal capture, transport, and handling, given the existing circumstances, to maximize individual animal welfare and health.

Carcass Handling and Disposal. Under all action alternatives, mountain goat carcasses resulting from management activities would be left in the field but ground crews would relocate carcasses at least 325 feet away from high-use trails, campsites, or where visible from areas with high visitor use. On rare

occasion, a carcass may need to be moved using a helicopter. If feasible, mountain goats that have been killed could be donated for processing and human consumption, provided that their meat has not been contaminated by drugs and they can be easily removed to a roadway for transportation. Carcasses could be provided to the Skokomish Indian Tribe or other willing recipients who may wish to obtain hides and horns.

ALTERNATIVE B: CAPTURE AND TRANSLOCATION

Under alternative B, mountain goats would be captured within the park and on adjacent areas in Olympic National Forest then transferred to the ownership of WDFW. Based on aerial surveys, it is estimated that about 90% of the mountain goat habitat on the Olympic Peninsula occurs within Olympic National Park (Jenkins et al. 2016). Consequently, most capture operations would be focused within the park, as opposed to the national forest (figure 5). Areas in the Olympic National Forest where captures would likely be conducted, where high visitor use overlaps with mountain goat habitat, include the following areas: near Mt. Ellinor, Mt. Washington, and Mt. Jupiter; in the Buckhorn Wilderness / Mt. Townsend area; in the Mount Skokomish Wilderness; in The Brothers Wilderness; and in the Lena Lakes area. For mountain goat capture activities in Olympic National Forest, the NPS would coordinate closely with USDA Forest Service staff. WDFW would assist at the staging areas with processing of captured mountain goats and preparing them for transport and relocation.

Subsequent translocation would be conducted at the discretion of WDFW to areas of the Mt. Baker-Snoqualmie and Okanogan-Wenatchee National Forests (North Cascades national forests) in the North Cascades Mountains in Washington State, where mountain goats are native and the augmentation of existing populations would further mountain goat conservation efforts (e.g., improve genetic diversity and enhance demographic vigor to depleted populations). Over the course of 3 to 5 years, mountain goats would be captured through the use of helicopters and via ground-based capture and transported by helicopter to specified staging areas for transfer to WDFW. WDFW would then translocate mountain goats to receiving areas in crates, by refrigerated truck. If necessary, mountain goats would be transported using pickup trucks with ice blocks placed in their crates or at night when temperatures are coolest.

Management Elements

In addition to management elements that are common to all action alternatives, the potential management elements that could be employed under alternative B are presented below.

Access. Management activities under alternative B would involve several tools for accessing remote areas of the park and Olympic National Forest. Park staff would access frontcountry and accessible backcountry and wilderness areas via foot in order to bait and trap mountain goats. Helicopters could be used to access backcountry and wilderness areas to drop off and pick up ground crews that may be engaging in ground-based capture techniques. Spotter aircraft, consisting of either fixed-wing aircraft operating from the Port Angeles airport or small helicopters operating from staging areas, could be used to identify areas for aerial capture operations. Helicopters would be used to capture mountain goats and to transport them to one of two staging areas that would be in operation during a given management period for transfer of ownership to WDFW and translocation to receiving areas. Helicopters would land in backcountry and wilderness areas to provide access for animal handling crews to process and prepare mountain goats for sling loading and transport by helicopter to staging areas. Given the potential need to drop off and pick up ground capture crews as well as transport captured mountain goats, an average of three helicopter landings per mountain goat capture event would be necessary under this alternative.

Capturing Mountain Goats. Mountain goats would be captured in the park and Olympic National Forest through a variety of potential methods, including air- and ground-based capture methods. From the air,

mountain goats would be captured through either the use of tranquilizing darts shot from specialized guns or net guns delivered from a helicopter. Capture operations may include the use of a small fixed-wing aircraft or helicopter to assist in spotting mountain goats for capture. Ground-based capture methods could include drop nets, clover traps, and darting. Helicopters would be used to transport animal handlers to the capture sites and to transport captured mountain goats to staging areas. Once mountain goats are netted or darted, the helicopter would land to drop off the crew in order to subdue the animals for transport. Mountain goats would be subdued, placed in a transport bag, and attached to a helicopter by a sling for transport to staging areas where they could be safely prepared for translocation. Half of the mountain goats captured would be transported to a staging area in the northern portion of the Olympic Mountains and half would be transported to a staging area in the southern portion of the range. Captured mountain goats may or may not be sedated prior to transporting them to staging areas.

To minimize stress, capture operations would seek to herd mountain goats over a 1- to 2-minute period per mountain goat and pursuits lasting for more than 5 minutes would be abandoned. Animal processing time—from when the handler reaches the animal on the ground until the animal is in the transport bag—would typically be less than 10 minutes. The animal would be blindfolded, fitted with horn caps, and then placed in specially designed bags that minimize stress and overheating. An animal would wait in a bag for transport for a maximum of 1 hour, depending on ambient temperature. A maximum of four mountain goats would be transported by sling at a time, and maximum ferry times to staging areas would be 45 minutes.

Capture efficiency would be greatest at the onset of operations, when mountain goats are naive and a significant portion of the population is in terrain where capture can be achieved safely. As the program continues, the remaining mountain goats would seek areas where operations are more difficult (steep, rocky terrain), and would be more likely to flee from the helicopter in order to elude capture.

The determination about whether it is no longer safe to capture more mountain goats, from a human and mountain goat safety standpoint, would be made by a consensus of the project lead, consulting veterinarians, and the capture contractor, and would be based on the rate and type of capture-related mountain goat mortalities and environmental conditions. Ceasing operations would also be based on capture efficiency. When it takes approximately three times as long to safely capture a mountain goat, as compared to the hours during the initial capture operation phase during the first year, capture operations would cease.

Following transport of captured mountain goats to staging areas, animals would be processed by NPS and WDFW veterinarians prior to transferring them to WDFW possession, at which point they would be loaded into transport boxes and placed onto trucks for transport to receiving locations at the discretion of WDFW. Processing would include checking mountain goats for sex, age, and health status. This may or may not involve taking blood and fecal samples. All animals would be checked and deemed to be in good condition for transport prior to loading. Animals may be fitted with radio collars or other markings to better monitor and evaluate survival after release.

Capture efforts would focus on areas of sensitive resources, high numbers of mountain goat-human interaction, and areas with high densities of mountain goats. Figure 5 shows projected mountain goat distribution and abundance for 2018. Mountain goat-human interactions would be most likely along park trails. Hurricane Ridge, High Divide, and Lake of the Angels have the highest number of mountain goat-human interactions recorded from 2011 to 2013 (appendix A).

In the years following initial management, if the mountain goat population increases and it is determined that additional capture and translocation are needed to meet NPS management objectives, WDFW may consider either translocating more mountain goats, or brokering their translocation to other willing

recipients. Future participation by WDFW is not guaranteed and would be dependent on WDFW funding, whether WDFW is close to meeting mountain goat recovery objectives in the North Cascades national forests area, or the availability of other receiving locations.

Lethal Removal. Lethal removal would not be included as a management tool under alternative B. However, if mountain goats were to sustain life-threatening injury as a part of capture and translocation activities, or were found injured prior to capture, then they would be dispatched as quickly as possible, using firearms or other approved means of euthanasia. The decision to euthanize an injured mountain goat would be made on site by a wildlife veterinarian.

Number of Mountain Goats To Be Removed

Initial Management. Initial capture and translocation actions would most likely involve the capture of approximately 50% of the projected 2018 mountain goat population for translocation by WDFW, or roughly 325–375 animals. The goal of initial management is to reduce the population of mountain goats to a level where maintenance activities could keep the population from rebounding to pre-reduction numbers. Capture operations would continue until there are no additional mountain goats available for capture, the cost per effort exceeds the resources available, there is no funding available, there are no willing recipients of captured mountain goats, or the risk to those engaged in capture operations is determined to be too high.

The goal of initial management is to reduce the population of mountain goats to a level where maintenance activities could keep the population from rebounding to pre-reduction numbers.

Maintenance Activities. Maintenance activities would consist of additional capture and translocation efforts as described above, which would be focused in areas of high visitor use and areas experiencing high levels of resource damage in order to mitigate ongoing impacts by the remnant mountain goat population. Maintenance activities would be performed opportunistically and periodically, during such times that it is effective to conduct capture and translocation operations. However, these operations would be limited by the accessibility of mountain goats for capture, funding, availability of receiving locations and willing recipients, and the risk to those engaged in capture operations. Maintenance would be necessary to keep the population at lower levels, because after a 50% initial reduction, the population would likely stabilize over several years but then increase over time, and could reach previous levels within 10 to 15 years, based on the park's past management experience.

Maintenance activities are those actions that would be taken after initial management to keep mountain goat populations low and avoid their conflicts with humans.

Timing, Duration, and Intensity of Capture and Translocation Actions

Initial Management. Under alternative B, initial management would involve the capture and translocation of as many mountain goats as possible. Initial management activities under alternative B could last 3 to 5 years, with most of the activity in years 1 and 2. The capture and translocation of mountain goats would continue if necessary and feasible in years 3, 4, and 5, meaning there would be additional mountain goats available for capture, there would be willing recipients of captured mountain goats, funding would remain, the cost per effort would not exceed the resources available, and the risk to those engaged in capture operations would not be too high.

Initial management activities are anticipated two times per year: once in mid- to late July, and once in late August to mid-September. The management period for each operation would last 2 weeks and capture

operations could take place on up to 12 days per management period. Taking into account the time needed to mobilize and demobilize, and potential inclement weather, helicopter operations would more likely be conducted on 9 to 10 days out of each 2-week management period, although a maximum of 12 days could be fully used. Helicopter operations would last up to 8 flight hours per day, so there would be a maximum possible total of 96 flight hours over each 2-week management period, which would be divided between flights to the staging areas on the northern side of the Olympic Mountains and staging areas in the national forest on the southern side. Capture operations would take place primarily from sunrise to mid-morning (around 11 a.m.) when temperatures are lower to facilitate the safe capture and transfer of mountain goats. Operations could continue later in the day if appropriate weather conditions exist (temperature and wind), mountain goats are still visible later in the day, and there are sufficient daily flight hours available. Operations would cease no later than one hour before sunset. Capture operations would be suspended if excessive heat posed a threat to animal safety. The specific duration of a given management activity would vary depending on environmental conditions, distance from a staging area to the management area where mountain goats are being captured, and mountain goat behavior or density.

Maintenance Activities. Maintenance activities under alternative B would take place opportunistically and periodically if and when mountain goats increase in population, which is expected to be as early as 5 to 15 years following initial management. The timing of maintenance activities would depend on the recovery of the mountain goat population following the estimated 50% population reduction. The timing of maintenance-phase capture and translocation activities would be cyclical (e.g., every 5 to 10 years) and the duration during a given year would involve 2-week management periods, using helicopters and other management elements as under initial maintenance activities. The amount of time needed for capture operations would likely increase over time, as the mountain goat population decreases and mountain goats move to increasingly remote areas where capture operations would require greater effort. As with the no-action alternative, future surveys to monitor the abundance and distribution of mountain goats on the Olympic Peninsula would continue with the use of helicopters approximately every 4 to 6 years for approximately 6 days, for 4 to 5 hours per day.

Translocation to North Cascades National Forests

The action of translocating mountain goats captured on the Olympic Peninsula would be overseen by WDFW, including the transportation of mountain goats to one of nine staging areas in the North Cascades national forests and their release to nearby alpine habitat. Twelve release sites are identified both within and outside of designated wilderness on the Mt. Baker-Snoqualmie and Okanogan-Wenatchee National Forests. Mountain goats are a native species on these national forests in the Cascade Mountains, where there is unoccupied mountain goat habitat capable of supporting them, and where existing populations have not recovered. Mountain goats translocated from the Olympic Peninsula would join existing herds in the selected locations or would be used to start new herds in areas where mountain goats have been extirpated, and would be managed according to Washington State law.



Credit: WDFW

Helicopter lowering mountain goat crates during a previous translocation project

After processing and transport of mountain goats from the Olympic Peninsula to staging areas in the North Cascades national forests, the animals would be transported via helicopter to release sites that have been determined based on accessibility and other requirements of receiving locations by WDFW, in cooperation with the USDA Forest Service. WDFW would work closely with the NPS and USDA Forest Service throughout the translocation process. WDFW would provide all necessary support for the transport and release of captured mountain goats as quickly as possible, ideally within approximately 24 to 36 hours of capture.

To reduce stress and capture-related mortality, mountain goats would be released as soon as possible after capture. Mountain goats would likely be transported overnight from staging areas on the Olympic Peninsula to staging areas in the North Cascades national forests, and released the following morning. Vehicular transport would be done when temperatures are cool, by either refrigerated trucks or pickup trucks. Mountain goats would be airlifted by helicopter from one of nine staging areas in the North Cascades national forests, one or two crates at a time, to one of 12 release sites. Approximately 6 to 12 mountain goats would be released together at a time (nannies first), allowing subsequent animals to see and smell previously released animals. Approximately 25 to 45 helicopter flights would take place between staging areas and each release site (10 to 25 flights to deliver and 10 to 25 flights to return crates, gear, and personnel to receiving area) in order to release approximately 20 to 45 mountain goats at each release site (Harris pers. comm. 2015a). The numbers of translocated mountain goats and associated helicopter trips and total flight times are summarized in table 2 for each staging and release site in the North Cascades national forests. These sites are shown in figure 7.



Credit: WDFW

Biologists releasing a mountain goat from a crate during a previous translocation project

TABLE 2. SUMMARY OF STAGING AND RELEASE SITES IN THE NORTH CASCADES NATIONAL FORESTS AND CORRESPONDING HELICOPTER TRIPS NEEDED

Type	Name	Ownership	Wilderness	Temporary Closure needed?	Number of goats	Number of Helicopter Trips	Total Flight Time (minutes)
Staging	Alpental parking	MBSNF / Private	No	No, lot is already closed to public.			
Release	Chikamin	OWNF	Alpine Lakes	No	30	36	468
Release	Kaleetan	MBSNF	Alpine Lakes	No	30	36	288
Release	Preacher Mountain	MBSNF	Alpine Lakes	No	30	36	504

CHAPTER 2: ALTERNATIVES

Type	Name	Ownership	Wilderness	Temporary Closure needed?	Number of goats	Number of Helicopter Trips	Total Flight Time (minutes)
Staging	FSR 49	MBSNF	No	Intermittent road/trailhead closure with flagger. Some tree removal (<1/4 acre) to accommodate helicopter landing.			
Release	Upper White Chuck Basin	MBSNF	Glacier Peak	No	40	46	736
Release	Cadet Lake Ridge	MBSNF	Henry M. Jackson	No	34	40	200
Staging	Independence Lake Trailhead	MBSNF	No	Temporary trailhead closure.			
Release	Mount Stillaguamish	MBSNF	No	No	34	40	289
Staging	CERCLA site	MBSNF	No	No, already behind a locked gate.			
Release	Vesper Sperry	MBSNF	No	No	34	40	383
Staging	Proctor Creek	Private	No	Possible road closure.			
Release	Mt. Index	MBSNF	No	No	34	40	320
Staging	Swamp Creek	OWNF	No	No			
Release	Tower Mountain	OWNF	No	No	34	40	320
Staging	Green Mountain pasture	MBSNF	No	No, site is off the road behind a gate.			
Release	Buckindy	MBSNF	Glacier Peak	No	34	40	480
Staging	Irene Creek rock pit	MBSNF	No	Possible road closure. (<1/4 acre) to accommodate helicopter landing.			
Release	Snowking meadow	MBSNF	Glacier Peak	No	34	40	636
Staging	150 pit	SPU	No	N/A			
Release	Goat meadow	SPU	No	No	20	26	312

MBSNF = Mt. Baker-Snoqualmie National Forest; OWNF = Okanogan-Wenatchee National Forest; SPU = Seattle Public Utilities

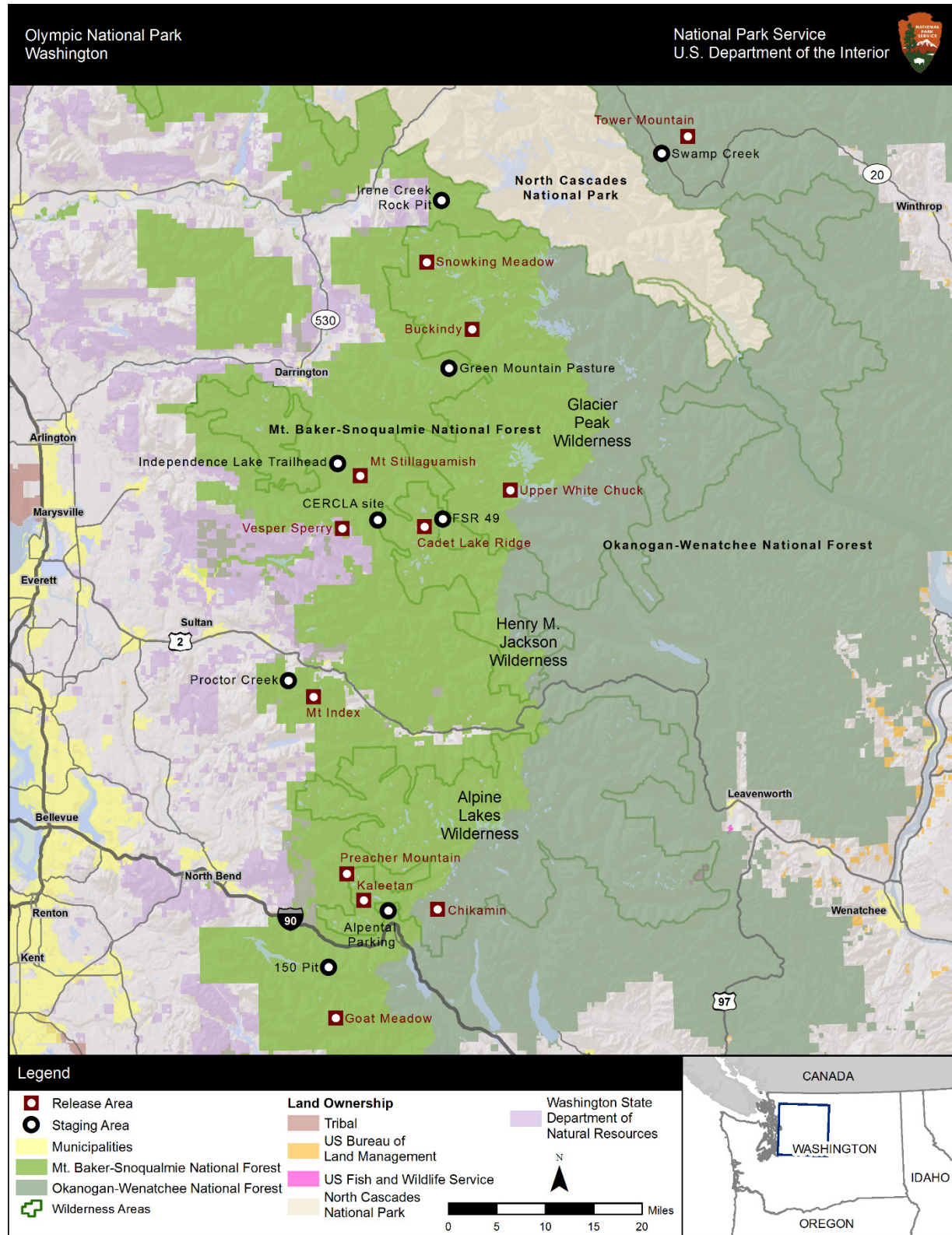


FIGURE 7. STAGING AREAS AND RELEASE SITES IN THE NORTH CASCADES NATIONAL FORESTS

Helicopters would not need to land in order to lower mountain goats in crates to the release sites. Round-trip helicopter flights between staging and release sites would require an average of about 11 minutes per trip for mountain goat placement and an additional 2 minutes per trip to land and off load crew members. Approximately 100 meters of temporary, plastic, portable “snow fencing” would be flown to each release site and erected to herd mountain goats from release site toward escape terrain, a technique used successfully in the Passmore mountain goat translocation in British Columbia from 1990 to 1992 (Blood 2000), as well as an reintroduction to Mt. Jefferson, Oregon (ODFW/CFWSRO 2010).

The actual timing of release would vary based on when the mountain goats are captured on the Olympic Peninsula, transported to staging areas, and then transferred to release sites by helicopter. Capture and translocation activities would be undertaken two times per year in 2-week intervals (e.g., 2 weeks in mid-to late July and 2 weeks in late August to mid-September). Capture (via helicopter on the Olympic Peninsula) and release (via helicopter in the Cascades) are weather dependent and could be delayed by hours or days in cases of inclement weather.

It is not possible to predict the exact number of days or the sequence of days (e.g., consecutive days or every other day) that each site would be used, because it is not known how many mountain goats would be captured and ready for transport on any given day. However, this analysis assumes that to translocate 25–35 mountain goats to a given release site, 3 to 4 days of work would be required (i.e., 6 to 12 mountain goats transported and released per day). These days would be spread across both of the 2 to 3 years of expected translocation activities (summers of 2018 through 2020), but may extend up to 5 years if necessary.

Transporting Equipment and Personnel to and from Release Sites. Three helicopter trips would be required for the operation of each release site for communication, transfer of gear, transfer of personnel, or other unanticipated events. The first two helicopter flights would be to transport ground staff (six individuals) from the staging area to the release site. A third flight would transport additional supplies and equipment (portable and flexible cloth material, posts to hold it). Helicopters would need to land at release sites to allow for personnel and equipment loading. Following the release of mountain goats at each site, an additional three helicopter flights would be required to transfer gear and personnel back to the staging areas.

Temporary Placement of Salt Blocks. Salt blocks would be placed at each release site to help provide a central “meeting place” for mountain goats released. Salt would be placed in a manner to minimize introducing salt to the environment, in a manner similar to that shown in figure 6, and used for baiting mountain goats. Salt blocks would be one-time installations that would be removed approximately one year after installation by ground crews hiking to the area. Only one salt block would be used at each wilderness release site. The salt blocks would be placed in a small tub that would not be visible to most visitors, and the salt would be buried under snow for much of the winter months. Any salt and other components of the bait sites remaining the following summer would be removed.

Research and Monitoring

Under alternative B, research and monitoring activities would continue, based on available funding. Possible research and monitoring could involve management efficacy analysis and mountain goat population studies. Mountain goat population surveys would remain necessary in order to monitor the population, and would be conducted in a similar manner as under the no-action alternative. This would include periodic (every 4 to 6 years) helicopter flights for approximately 6 days, for 4 to 5 hours per day.

ALTERNATIVE C: LETHAL REMOVAL

Under alternative C, lethal removal would be used to significantly reduce or eliminate mountain goats from the park and adjacent areas in Olympic National Forest. Mountain goats would not be translocated under this alternative. Specific management activities for the lethal removal of mountain goats would include the use of helicopters to access backcountry and wilderness areas and helicopter-based use of firearms to lethally remove mountain goats from all areas on NPS and NFS lands on the Olympic Peninsula. Park staff and other authorized personnel would access backcountry and wilderness areas on foot in order to lethally remove mountain goats in areas that are accessible by foot, but in more remote areas where mountain goats are too sparsely distributed for efficient ground-based lethal removal, a helicopter would be used. Under this alternative, approximately 625-675 mountain goat carcasses could be left on the landscape over the course of the duration of initial management activities spanning several years, assuming that 90% of the projected population would be removed (see the section “Number of Mountain Goats To Be Removed,” below). Carcasses would be distributed across the entire acreage of mountain goat habitat. Ground crews would enter the backcountry and wilderness in order to move mountain goat carcasses at least approximately 325 feet away from high visitor use trails or other high visitor use areas in order to prevent conflicts between visitors and predators or scavenging animals and to avoid visitors viewing any carcasses. On the infrequent occasion when it is not feasible for ground crews to move a carcass, a helicopter could be used.

Management Elements

In addition to management elements common to all action alternatives, the potential management elements that could be employed under alternative C are presented below.

Access. Management activities under alternative C could include several methods for accessing remote areas of the park and adjacent NFS lands for lethal removal actions. Helicopters may be used as the primary method for lethally removing mountain goats from remote areas of the Olympic Peninsula, potentially with the assistance of spotter aircraft (fixed-wing aircraft or small helicopters, depending on the contractor). Helicopters may also be used to drop off or pick up ground-based crews that would be entering backcountry and wilderness areas to lethally remove mountain goats or to move carcasses; generally, helicopters would touch down briefly to unload and retrieve ground-based crews, although this would be infrequent.

Lethal Removal. Alternative C would involve the use of firearms for lethal removal of mountain goats in the park and in Olympic National Forest. These would likely consist of shotguns for helicopter-based lethal removal activities and high-powered rifles for ground-based lethal removal activities. Ammunition would be non-toxic. As described in the section “Elements Common to All Action Alternatives (Alternatives B, C, and D),” personnel involved (which could include NPS or other federal personnel, hired contractors from APHIS or USDA Wildlife Services, state personnel, or trained volunteers) would have the appropriate skills and proficiencies in the use of firearms to maximize public safety, including experience in the use of firearms for the removal of wildlife.

For lethal removal operations that take place near and outside of the park’s boundary, within Olympic National Forest, NPS would coordinate with the USDA Forest Service, WDFW, and tribes to predetermine areas where mountain goats may be pursued for lethal removal outside of the park. Lethal removal would be conducted during initial management, in conjunction with continued tribal and sport hunting. Lethal removal could take place anywhere within occupied mountain goat range in the national forest, but would be most likely in areas near Mt. Ellinor, Mt. Washington, and Mt. Jupiter; in the Buckhorn Wilderness / Mt. Townsend area; in the Mount Skokomish Wilderness; in The Brothers

Wilderness; and in the Lena Lakes area. After initial management has ceased, NPS would rely on tribal and sport hunting to reduce or eliminate the mountain goat populations outside the park.

Number of Mountain Goats To Be Removed

Initial Management. Initial management would involve lethally removing as many mountain goats as possible. The intent of initial management would be to reduce the population of mountain goats to a level where only limited population growth would be expected following initial reduction, and implementation of maintenance activities would eventually reduce the mountain goat population to zero. Lethal removal would be significantly more efficient and effective than mountain goat captures under alternatives B and D, because lethal removal could take place more quickly than capturing mountain goats. It is expected that approximately 90% of the projected 2018 mountain goat population, or approximately 625 to 675 mountain goats, could be removed during the initial management phase and whose carcasses would be left on the landscape.

Maintenance Activities. Approximately 10% of the mountain goat population would remain following initial management. Maintenance activities under alternative C would involve opportunistic lethal removal of mountain goats by park staff, other federal personnel, hired contractors from APHIS or USDA Wildlife Services, state personnel, or trained volunteers who would enter backcountry and wilderness areas primarily on foot during the summer and fall seasons; however, helicopter-based lethal removal would also be necessary to target any mountain goats remaining in remote areas that are inaccessible due to steep and rugged terrain. It is anticipated that maintenance activities could eventually reduce the number of mountain goats to zero.

Timing, Duration, and Intensity of Lethal Removal Actions

Initial Management. Under alternative C, initial management would involve the lethal removal of as many mountain goats as possible. Initial management activities under alternative C could last 3 to 5 years, with most of the activity in years 1 to 3. Lethal removals would be conducted only if necessary in years 4 and 5. Helicopter-based lethal removal would occur within the same two 2-week management periods as under alternative B, one in mid- to late July and another in late August to mid-September, as described for alternative B. Ground-based lethal removal would take place opportunistically at any time during the year as needed, with peak management in summer and fall.

Maintenance Activities. Maintenance activities under alternative C would be conducted if and when mountain goats return to areas where it is safe and efficient to conduct lethal removal operations. The timing of maintenance activities would depend on the success of initial management activities. If initial management is effective at removing approximately 90% of the mountain goat population, maintenance activities are likely to be needed 5 to 15 years later since it may take years for mountain goats to reoccupy areas that are accessible for lethal removal operations. However, maintenance-phase lethal removal could take place as soon as one year after initial management ends in the unlikely event that large numbers of mountain goats still remain in unexpected areas. As opposed to alternative B, maintenance activities under alternative C would be infrequent and of short duration (1 to 5 days) because initial management activities are anticipated to reduce the mountain goat population by approximately 90%, although the remaining mountain goats would likely move to increasingly remote areas where removal operations require additional time. Both ground- and helicopter-based lethal removal would be considered for maintenance activities and would depend on the accessibility of where targeted mountain goats remain, funding availability, and logistical requirements. Similar to the initial management period, helicopter-based lethal removal activities would take place during the same two 2-week management periods in mid- to late July and late August to mid-September, while ground-based lethal removal could take place

opportunistically any time during the year. Maintenance activities would be prioritized in proximity to areas of high visitor use and areas experiencing high levels of resource damage. Lethal removal of mountain goats under the maintenance phase would cease when it was determined that the cost for lethal removal operations exceeds the resources available, there is no funding available, or the risk to those engaged in lethal removal is determined to be too high.

Research and Monitoring

Under alternative C, research and monitoring activities would continue, based on available funding. Similar to alternative B, possible research and monitoring efforts could involve management efficacy analysis and mountain goat population studies. There would be less need for aerial surveys, but reconnaissance flights could be needed prior to maintenance operations to search for remnant goats; these surveys would likely be conducted over one to two mornings (4 to 8 hours over 2 days). Remnant mountain goats could also be documented opportunistically during elk surveys.

ALTERNATIVE D: COMBINATION OF CAPTURE AND TRANSLOCATION AND LETHAL REMOVAL (PREFERRED ALTERNATIVE)

Under alternative D, a combination of capture and translocation and lethal removal tools would be used to reduce or eliminate mountain goats from the park and adjacent areas in Olympic National Forest. The specific management elements and actions that could be used for capture and translocation are described in the description of alternative B. The specific management elements and actions that could be used for the lethal removal of mountain goats are described in alternative C. The intent of alternative D is to conduct capture and translocation activities prior to initiating lethal removal activities. Once a point of diminishing returns for capture operations is reached, management would continue using lethal removal activities.

Management Elements

In addition to management elements common to all action alternatives, the management elements that could be employed under alternative D are the same as described for alternative B (for translocation) and alternative C (for lethal removal).

Number of Mountain Goats To Be Removed

Initial Management. Similar to alternative C, it is anticipated that initial management under alternative D would remove approximately 90% of the projected 2018 mountain goat population, or approximately 625 to 675 mountain goats. Capture and translocation would take place prior to lethal removal activities. Thus, compared to alternative C, alternative D would take longer to reduce mountain goat numbers because capture and translocation operations would require more resources than exclusive lethal removal. It is estimated that approximately 50% of the mountain goat population could first be captured and translocated, or approximately 325–375 animals based on the projected 2018 population size. It is expected that another 40% of the original mountain goat population (approximately 275–325 animals) could be lethally removed.

Maintenance Activities. Approximately 10% of the mountain goat population would remain following initial management. Similar to alternative C, maintenance activities under alternative D would involve opportunistic ground-based lethal removal of mountain goats in accessible areas, and helicopter-based

lethal removal of in remote areas that are inaccessible due to steep and rugged terrain. It is anticipated that maintenance activities could eventually reduce the number of mountain goats to zero.

Timing, Duration, and Intensity of Capture, Translocation, and Lethal Removal Actions

Initial Management. Under alternative D, initial management would involve the capture and translocation of as many mountain goats as possible, similar to alternative B, followed by a switch to lethal removal, similar to alternative C. Initial management activities under alternative D could last 3 to 5 years, with most of the activity in years 1 to 4. This may be one year longer than alternatives B or C, as a result of the combined management approaches and the goal of translocating as many mountain goats as possible prior to a transition to lethal removal. It is anticipated that nearly all management activities in year 1 would consist of live capture and translocation, which would continue to be the primary reduction tool during years 2 to 3. Some lethal removal could be scheduled as early as the second capture bout in year 1, but only for those mountain goats that are determined to be uncatchable. The timing and duration of capture and translocation operations within a year would be the same 2-week management periods as described for alternative B.

It is anticipated that the success rate for capturing mountain goats would diminish over time and a greater proportion of mountain goats would be lethally removed after 2 years of effort. Capture operations would continue until there are no additional mountain goats available for capture, the cost per effort exceeds resources available, there is no funding available, there are no willing recipients of captured mountain goats, or the risk to those engaged in capture operations is determined to be too high. It is anticipated that management would likely switch to almost exclusively lethal removal by some time during the years 3 or 4 of initial management, but could begin as early as year 2. By year 5, most mountain goats encountered would be lethally removed. Once a switch to lethal removal is made, the timing and duration of both air- and ground-based lethal removal efforts within a year would be similar to those described for alternative C.

Maintenance Activities. Maintenance activities under alternative D would be conducted if and when mountain goats return to areas where it is safe and efficient to conduct lethal removal operations. The timing of maintenance activities would depend on the success of initial management activities. If initial management is effective at removing approximately 90% of the mountain goat population, maintenance activities are likely to be needed 5 to 15 years later since it may take years for mountain goats to reoccupy areas that are accessible for lethal removal operations. However, maintenance-phase lethal removal could take place as soon as one year after initial management ends in the unlikely event that large numbers of mountain goats still remain in unexpected areas. As opposed to alternative B, maintenance activities under alternative D would be infrequent and of short duration (1 to 5 days) because initial management activities are anticipated to reduce the mountain goat population by approximately 90%, although the remaining mountain goats would likely move to increasingly remote areas where removal operations require additional time. Both ground- and helicopter-based lethal removal would be considered for maintenance activities and would depend on the accessibility of where targeted mountain goats remain, funding availability, and logistical requirements. If more feasible in some locations, NPS would also rely on tribal and sport hunting to maintain or eliminate the mountain goat populations outside the park. Maintenance activities would be prioritized in proximity to areas of high visitor use and areas experiencing high levels of resource damage. Lethal removal of mountain goats under the maintenance phase would cease when it was determined that the cost for lethal removal operations exceeds the resources available, there is no funding available, or the risk to those engaged in lethal removal is determined to be too high. After initial management has ceased, NPS would rely on tribal and sport hunting to maintain or eliminate the mountain goat populations outside the park.

Translocation to North Cascades National Forests

Translocation operations under alternative D would be similar to those described for alternative B.

Research and Monitoring

Under alternative D, research and monitoring activities would be similar to those described for alternative C.

HOW ALTERNATIVES MEET OBJECTIVES

All alternatives analyzed in this plan /EIS were individually assessed in light of how well they would meet the objectives of this plan/EIS, which are described in chapter 1. Table 3 compares how each of the alternatives carried forward for consideration would meet the plan/EIS objectives.

ALTERNATIVES CONSIDERED BUT DISMISSED FROM FURTHER ANALYSIS

A number of additional alternatives addressing mountain goat management within the Olympic Mountains were considered based on the results of internal discussion and public and agency scoping. These alternatives were not carried forward for detailed analysis because they would not meet the purpose, need, or objectives of the plan/EIS; would be inconsistent with NPS mandates; would be legally or technically infeasible; or would require a major change to a law, regulation, or policy. This section discusses those alternatives considered and why each was dismissed from further analysis.

Increased Nuisance Control

An increase in the level of nuisance control within the park was considered as an alternative for the management of mountain goats within the park, particularly as it relates to bands of mountain goats in areas of high visitor use. However, this alternative would not meet plan objectives because there would still be impacts on sensitive resource areas and over time the mountain goat population would continue to increase within the park. As a result, this alternative would not meet the stated purpose, need, and objectives of this plan/EIS.

In addition, increased nuisance control would be redundant with the no-action alternative. Under the no-action alternative, NPS would have the discretion to manage individual mountain goats and bands of mountain goats. NEPA does not require consideration of alternatives that are significantly similar to other alternatives. Since the no-action alternative would be similar in nature to an alternative that focused on increased nuisance control, increased nuisance control was dismissed as a stand-alone alternative.

Fertility Control

The use of any form of fertility control was eliminated as an alternative to manage the mountain goat population in the park. Fertility control would not be effective in meeting the plan/EIS objectives for several reasons including the following: there is no registered chemical contraceptive technology available for use on mountain goats; surgical sterilization methods could present increased human safety concerns and would be extremely resource intensive; fertility control is not consistent with NPS policy for maintaining natural processes in wildlife populations; and the use of fertility control would not be consistent with maintaining wilderness character in the park. Additionally, this alternative would be

inconsistent with NPS mandates related to the management of exotic species because mountain goat populations would not be reduced to a level at which impacts on natural resources and human safety would be alleviated.

Introduction of Wolves

The gray wolf (*Canis lupus*) was extirpated from the Olympic Peninsula in the 19th century. Consideration was given to reintroducing this apex predator to the park as a potential means for managing mountain goats since it is a native species. However, this alternative would be ineffective in meeting the plan/EIS objectives for two main reasons: predation by wolves would not play a significant role in limiting mountain goat populations, particularly where other prey species such as Roosevelt elk (*Cervus canadensis roosevelti*) are available; and reintroduction of wolves could result in a change in the distribution of mountain goats in areas of high visitor use due to predator avoidance behavior, exacerbating mountain goat-human interactions. As a result, this alternative would be inconsistent with NPS mandates for managing exotic species because mountain goat populations would not be reduced to a level at which impacts on natural resources and human safety would be alleviated.

Use of Salt Blocks as a Long-term Management Measure

This alternative would involve placing salt blocks strategically within the park in order to attract mountain goats away from areas with high visitor use as well as areas with high levels of endemic species. This alternative would not meet the plan/EIS objectives and would be inconsistent with NPS mandates because mountain goats would continue to impact natural resources and human safety within the park. Additionally, the use of salt blocks would not be consistent with maintaining wilderness character in the park. Although this alternative could result in concentration of impacts away from important park resources, it could result in impacts on species native to the park (e.g., deer, elk and marmots) that may be attracted to the salt blocks, which could make them more susceptible to predation or diseases. This was dismissed as a stand-alone alternative for the management of mountain goats within the park; however, it may be used as a management element within the action alternatives being considered.

Public Hunting in the Park

During public scoping for this plan/EIS, several comments were received advocating for public hunting within the park as a tool for managing mountain goats. An alternative that involved public hunting to manage mountain goats inside the park would be inconsistent with existing law and regulatory authority regarding public hunts in the park. The likelihood that congress would change its longstanding policy regarding hunting in parks is remote and speculative (Natural Resources Defense Council, Inc. v. Morton, 458 F.2d 827 (D.C.C. 1972); National Rifle Association v. Potter, 628 F. Supp. 903 (1986); Headwaters, Inc. v. Bureau of Land Management, 914 F.2d 1174, 1181 (9th Cir. 1990); Seattle Audubon Society v. Moseley, 80 F.3d 1401, 1404 (9th Cir. 1996); Kootenai Tribe of Idaho v. Veneman, 313 F.3d 1094 (9th Cir. 2002)). In 1984, after careful consideration of congressional intent with respect to hunting in national parks, the NPS promulgated a rule (236 CFR 2.2) that allows public hunting in national park areas only where “specifically mandated by federal statutory law.” The NPS has reaffirmed this approach in the NPS *Management Policies 2006* (NPS 2006).

Congress has not authorized hunting in any legislation for the park. Therefore, to legally allow hunting at the park, congress would need to specifically authorize hunting and NPS would need to promulgate a new regulation to implement the congressional action.

TABLE 3. SUMMARY OF HOW ALTERNATIVES MEET PROJECT OBJECTIVES

Objective	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Combination of Capture and Translocation and Lethal Removal
Develop a scientifically based method for the management of exotic mountain goat populations in an extensive mountainous wilderness area.	Does not meet the objective; no such method is developed under no action.	Meets the objective; all action alternatives were developed based on science of mountain goat population ecology and behavior.	Same as alternative B.	Same as alternative B.
Reduce or eliminate impacts on sensitive environments and unique natural resources from mountain goats in the park.	Does not meet the objective; impacts projected to get worse based on increased mountain goat populations.	Partially meets the objective but would require long-term management to sustain reduced population. This could result in disproportionate impacts in some areas based on mountain goat presence in areas where capture is not possible.	Meets the objective. Goats would be removed from the landscape in the fastest and most efficient manner. Would require little long-term management of the goat population.	Same as alternative C, but initial actions associated with live capture may take longer. Would require little long-term management of mountain goat population.
Reduce or eliminate the potential for visitor safety issues associated with mountain goats in the park and in Olympic National Forest.	Somewhat meets the objective, but safety concerns could get worse based on increased mountain goat populations.	Partially meets the objective. Would greatly reduce safety risks but not eliminate them. The goal of eliminating mountain goats is not likely to be reached because the population of mountain goats would continue to persist and eventually grow.	Meets this objective with a goal of elimination. Mountain goats would be removed from the landscape in the fastest and most efficient manner. Would require little long-term management of mountain goat population.	Meets this objective with a goal of elimination. Mountain goats would be removed from the landscape in a faster and more efficient manner compared to alternative B. Would require little long-term management of mountain goat population.
Further public understanding of the Olympic high-elevation ecosystems and native species, and the ecology and conservation of mountain goats in their native range.	Partially meets objective. Would provide public information about current situation but would not include the opportunity for better understanding of mountain goat population ecology based on actions taken and monitoring.	Would provide better opportunities for understanding of mountain goats in their native range and the ecology of the ecosystem through implementation and monitoring involved in the alternative.	Same as alternative B, but would not provide positive messaging for conservation of mountain goats in their native range.	Would provide the best opportunities for both furthering public understanding of the Olympic high-elevation ecosystems and native species and providing positive messaging for conservation of mountain goats in their native range.
Protect the biosphere reserve and natural heritage designations of Olympic National Park and preserve the integrity of these designations.	Does not meet the objective because the presence of exotic mountain goats is considered a threat to the designations.	Somewhat meets the objective because although the exotic mountain goat population would be substantially reduced, it is expected that they could not be eliminated	Fully meets the objective because this action would likely result in removal of all exotic mountain goats.	Same as alternative C.
Protect the wilderness character of designated park wilderness and wilderness in Olympic National Forest.	Does not meet the objective because would result in both short- and long-term impacts from mountain goats.	Would have the most severe short-term impacts and would not resolve long-term impacts, since it would perpetuate issues associated with management. Would alleviate some impacts from mountain goat behavior.	Meets the objective. Although it would have short-term adverse impacts; it would have long-term benefits.	Similar to alternative C but the short-term impacts would last slightly longer because of the additional time needed for capture before changing over to lethal removal.
Work cooperatively with co-managers of mountain goats or habitats in Washington State (USDA Forest Service, WDFW, and tribes).	Partially meets this objective because NPS would continue to cooperate with Olympic National Forest but would not assist with the needs of WDFW, USDA Forest Service, and tribes in the Cascades.	Meets the objective to a large degree in working across boundaries.	Meets the objective to some degree in cooperating with the USDA Forest Service on the Olympic Peninsula.	Same as alternative B.
Support the wildlife management objectives of cooperating agencies and tribes, to the extent practicable, with respect to mountain goats	Does not meet the objective because it would not help WDFW achieve its management goal of restoring depleted populations of mountain goats in the North Cascades national forests.	Meets the objective by working across boundaries to help WDFW achieve its management goal of restoring depleted populations of mountain goats in the North Cascades national forests, and by involving tribes in the disposal of mountain goats.	Same as alternative A.	Same as alternative B.
Provide opportunities to reestablish or augment sustainable native mountain goat populations in suitable mountain goat habitat on NFS lands in the North Cascades national forests.	Does not meet the objective because there would be no translocation of mountain goats to the North Cascades national forests.	Meets the objective because of translocation of mountain goats to suitable habitat in the North Cascades national forests.	Same as alternative A.	Same as alternative B.

In conclusion, the NPS eliminated public hunting within the park as a reasonable alternative for managing mountain goats for the following reasons: allowing a recreational hunt would require changes to federal law; case law supports dismissing an alternative that would require a major change in long-standing basic policy; and other alternatives, such as using trained park staff, other federal personnel, hired contractors from APHIS or USDA Wildlife Services, state personnel, or trained volunteers, would be more effective in adhering to NPS policy, meeting the plan/EIS objectives, and ensuring public safety.

Tribal Hunting in the Park

During public scoping for this plan/EIS, comments were received advocating for tribal hunting within the park as a tool for managing mountain goats. However, although tribes reserved hunting on “open and unclaimed” lands under various Stevens’ treaties, the park is not considered “open and unclaimed.” As such, any tribal hunting would need to be considered similarly to public hunting. Therefore, the NPS eliminated tribal hunting within the park as a reasonable alternative for managing mountain goats for the same reasons as eliminating public hunting within the park.

Hunting Outside the Park

An alternative that would increase hunting of mountain goats in areas surrounding the park was suggested as a way to decrease the mountain goat population on the Olympic Peninsula, potentially resulting in a decreased population within the park. Hunting of mountain goats on adjacent lands managed by tribes and the USDA Forest Service is currently authorized by tribes and by WDFW. The NPS has no authority to dictate management activities on these adjacent lands. The NPS would, however, coordinate with the USDA Forest Service and WDFW to identify potential opportunities for maximizing harvest of mountain goats within the adjacent Olympic National Forest. However, this would not address reducing goat populations inside the park.

Discontinue Management – Allow Mountain Goat Population to Fluctuate Naturally

During the public scoping process, comments were received suggesting that mountain goat populations within the park should not be actively managed and that they should be allowed to fluctuate naturally. This alternative would be inconsistent with NPS *Management Policies 2006* related to the removal of exotic species. These policies require that exotic species be managed “up to and including eradication” (NPS 2006). Additionally, impacts under this alternative would increase over time as the mountain goat population continued to increase within the park. As a result, discontinuing management of mountain goats would not meet the purpose and need of this plan/EIS.

Capture and Translocate Mountain Goats within the Olympic Peninsula

An alternative that would capture mountain goats within the park and translocate them to other areas on the Olympic Peninsula was suggested. This alternative was eliminated from further consideration because it would be likely that mountain goats would return to the park and would continue to impact natural resources and human safety, given that the majority of mountain goat habitat on the Olympic Peninsula is within park boundaries. Additionally, once mountain goats returned to the park, impacts would increase over time as the mountain goat population continued to increase within the park. This alternative was also eliminated because WDFW does not want additional mountain goats on NFS lands on the Olympic Peninsula.

Capture and Euthanize Mountain Goats

An alternative that would capture mountain goats within the park and chemically euthanize them at the location of capture was eliminated from further consideration. This alternative would not be considered a good use of park resources, because it would be financially and technically more efficient to use other American Veterinary Medical Association approved euthanasia methods. Lethal removal would also align more closely to humane animal care standards due to the quickness of culling compared to a prolonged stress associated with capture.

Fencing

An alternative that would construct a fence around the boundaries of the park was eliminated from further consideration for many reasons including the following: a boundary fence would interfere with native wildlife species and ecosystem processes; a boundary fence would not address impacts on natural resources and visitor safety within the park; and a boundary fence would present issues associated with development within designated wilderness areas.

MITIGATION MEASURES

The following mitigation measures were identified by both the NPS and USDA Forest Service for all actions discussed in this chapter. This list is followed by specific project design criteria that are specific to and are followed by the USDA Forest Service; some of the project design criteria may be included in the mitigation measures listed below.

General

- Helicopter staging area preparation, if necessary, would be scheduled prior to the proposed action, preferably during the early to late fall, unless otherwise agreed.
- Project staff would coordinate flight schedules and paths with Naval Air Station Whidbey Island to ensure that operations on the Olympic Peninsula or in the North Cascades national forests do not interfere with active military training routes.
- Helicopter flight paths would avoid highly developed areas and residences.
- During management activities at staging areas, staging areas that are not already behind gates would be otherwise secured.

Mountain Goats

- Capture and translocation efforts would strive to minimize stress and to protect the welfare of individual animals, including attempts to keep nannies and kids together.

Wilderness

- Public notification of activities affecting wilderness would be provided, and appropriate information would be distributed at visitor centers.
- Project staff would access wilderness areas via foot or by riding stock where possible, without risking life or limb. This would be considered for travel to sites accessible by trail or non-technical cross-country travel (e.g., without the use of crampons, ice axes, rope, or other

specialized equipment). “Leave no Trace” principles would be applied during all management activities.

- Foot travel would be considered for both baiting mountain goats ahead of time and during the capturing operational period, to limit impacts on wilderness character from the use of motorized equipment and mechanized transport and impeding solitude or primitive recreation from helicopter operations. Capture sites to be considered for primitive travel of personnel include, but are not limited to, Marmot Pass in the Buckhorn Wilderness and Mt. Ellinor in the Mount Skokomish Wilderness.
- Duration and geographic scope of actions and disturbances would be minimized in wilderness areas.

Acoustic Environment

- Helicopter flight paths would be a minimum of 500 feet above marbled murrelet and northern spotted owl habitat.
- Helicopter flight paths to and from staging areas would be designed to minimize noise impacts on wildlife and visitors to the greatest practicable extent.
- Temporary area closures in the immediate vicinity of mountain goat capture, lethal removal, and release operations would minimize noise impacts on backcountry and wilderness visitors.

Wildlife and Wildlife Habitat

- Once established based on conditions, previously agreed upon travel corridors and flight altitudes for helicopters would be used during operations.
- Contractors and other project workers would properly store and dispose of food and garbage while working on site.
- Staging areas would be located in areas that are previously disturbed, and would necessitate the least impact on wildlife and wildlife habitat.
- Lead-free ammunition would be used for lethal removal activities to prevent environmental contamination.

Vegetation

- Inspections for invasive plants would take place prior to any activities at staging areas.
- If existing invasive plant infestations are documented, or if management activities introduce any invasive plants into the project area, they will be treated with appropriate herbicide, mechanical, or manual methods when practical.
- Vegetation removal would be minimized near staging areas as necessary to facilitate helicopter flight paths and safe operating procedures.
- All equipment and tools shall be cleaned completely and free of weeds, seed, debris, and mud to prevent the introduction or spread of exotic, invasive plants.
- Prior to entering the backcountry and wilderness, all workers shall check boots, backpacks, and tools for weed seeds, mud that could harbor weed seeds, and plant parts to prevent the spread and introduction of invasive plants.

Threatened or Endangered Species

- If any individual northern spotted owl or marbled murrelet is observed during project operations, a wildlife biologist would be notified and measures to minimize or eliminate take would be applied.
- Once established based on conditions, previously agreed upon travel corridors and flight altitudes for helicopters would be used during operations.

Soils

- At staging areas, restoration activities would be conducted, such as soil aeration and restoration and erosion control structures (if needed) to reverse the effects of compaction.
- At staging areas, removal of loose rock in pits would be minimized as necessary, but would be required for safe helicopter operation.

Archeological Resources

- If previously unidentified cultural resources are encountered during implementation of the project, activities would cease pending an investigation and evaluation of these materials by a qualified archeologist, who would determine appropriate mitigation measures. Project staff would fulfill its consultation requirements in accordance with 36 CFR 800.11.
- Baiting locations would be reviewed by cultural resource staff prior to their use to ensure that baits are not placed within or near archeological sites.
- Staging areas would be surveyed if ground disturbing activities are required. These would go through Washington State Historic Preservation Office (SHPO) review prior to implementation and use.

Visitor Use and Experience

- Project vehicles would maintain a speed at or below 15 mph along unpaved roads leading to and from staging areas.
- A traffic control plan would be developed for NFS Road 2419 and NFS Road 2500 prior to implementation, and would be coordinated with wilderness and law enforcement rangers, volunteer staff, and all other agency staff that could potentially be working in closed areas.
- Mountain goat capture or lethal removal efforts would strive to minimize disturbance to areas of high public visitation and pursuit of mountain goats via helicopter would be aborted if humans are observed in the immediate area.

Visitor and Employee Safety

- A communication plan would be developed by the NPS, USDA Forest Service, and WDFW that would include information on the purpose and need of management activities and any associated temporary area closures to visitors. News releases, signage, website, and other forms of communication would be prepared well in advance of proposed mountain goat management activities.
- Project staff would be properly trained regarding adherence to safety protocols identified in the Olympic National Park *Mountain Goat Action Plan* (appendix A).
- Equipment would be well-maintained and helicopter flights would only take place during favorable weather conditions. In addition, an aviation safety plan would be developed and a safety briefing would be performed for each day of aerial operations.

Project Design Criteria

The USDA Forest Service developed the following project design criteria to address overall project objectives, to minimize resource impacts, and ensure Forest Plan or legal compliance. They are based on law, policy, and the professional judgment of the USDA Forest Service resource specialists.

Olympic National Forest

- A special use permit would be issued to WDFW for use of the staging areas within the Olympic National Forest. Furthermore, a public communication plan would be developed by the USDA Forest Service, in coordination with NPS and WDFW.
- Where there are site-specific uncertainties about the applicability of a restriction, an appropriate USDA Forest Service specialist would be consulted. Any request for modification to a project design criterion is subject to approval by the Forest Responsible Official, in consultation with appropriate resource specialists.
- Additional project design criteria that apply to proposed management activities in the Olympic National Forest are described in table 4.

TABLE 4. PROJECT DESIGN CRITERIA FOR THE OLYMPIC NATIONAL FOREST

Feature	Definition / Description	Management Requirement Description	Applicable Area
Staging Areas			
Helicopter landing (staging area) reconstruction	Helicopter landing sites, including grading surface and clearing of vegetation	<p>All helicopter landing sites would be reconstructed for staging areas prior to the proposed action, preferably during the early-late fall, unless otherwise agreed. Some vegetation may need to be removed to facilitate helicopter flight paths and safe operating procedures. Any clearing or removal of merchantable timber shall be treated in accordance with USDA Forest Service policy and decked in a location designated by the USDA Forest Service.</p> <p>Disposal of all clearing, slash, debris and other unsuitable material generated shall only be placed within an area designated by the USDA Forest Service and approved for that purpose.</p> <p>Any proposed changes to the physical character, slopes, access roads, etc., within the pit boundary shall be approved in advance by the USDA Forest Service prior to conducting the work.</p>	Hamma Hamma gravel pit (NFS Road 2500-011), Mt. Ellinor Trailhead, and NFS Road 2419-014
Treat existing infestations of invasive plants	Invasive plant infested areas	Invasive plant inspections must take place prior to any operations within or adjacent to the existing pit or quarry limits. Existing invasive plant infestations would be treated with appropriate herbicide, mechanical, or manual methods before ground disturbing activities begin when practical. If timing or resources prevent treatment before the project begins, then infestations would be treated in the project area upon completion of the project in order to prevent invasive plants from colonizing the disturbed ground.	Hamma Hamma gravel pit (NFS Road 2500-011), Mt. Ellinor Trailhead, and NFS Road 2419-014
Invasive plant infestations	Cleaning of vehicles	All equipment to be used shall be cleaned and inspected in order to prevent the infestation or spread of invasive plants.	Hamma Hamma gravel pit (NFS Road 2500-011), Mt. Ellinor Trailhead, and NFS Road 2419-014
Recreation			
Visitor safety	Notification of planned activities	A communication plan would be developed by the NPS, USDA Forest Service and WDFW that includes information on the ecological purpose and need of the activity and any temporary area closures for visitors. News releases, signage, website, and other forms of communication would be prepared well in advance.	Applies to all areas
NFS Road 2419 and 2500	Area restrictions	A traffic control plan would be developed for NFS Road 2419 and NFS Road 2500 prior to implementation. A temporary and limited closure of NFS Road 2419 would be required during goat translocation. Involvement with federal law enforcement officials would be needed.	NFS Road 2419 and 2500

Feature	Definition / Description	Management Requirement Description	Applicable Area
Mt. Ellinor Trailhead and adjacent trail system	Area restrictions	During translocation of goats to the Mt. Ellinor staging area, limited areas may be temporarily closed for a 2-week period (late August to mid-September). Project vehicles must maintain a speed at or below 15 mph along this section of road.	Mt. Ellinor Trailhead and adjacent trails
Helicopter flight path	Areas of avoidance	When possible, helicopter overflight paths would avoid high developed areas and residences.	Applies to all areas
Wilderness			
Designated wilderness	Area restrictions	A news release would be prepared well in advance. Temporary and limited area closures during capture, translocation, and lethal removal would take place in two periods in 2-week intervals (mid-to late July and late August to mid-September).	Mount Skokomish Wilderness, The Brothers Wilderness, Buckhorn Wilderness, Wonder Mountain Wilderness, Colonel Bob Wilderness
Designated wilderness	Area restrictions	Staff would access wilderness areas via foot or riding stock where possible, without risking life or limb. This should be considered for travel to sites accessible by trail or non-technical cross-country travel (e.g., without the use of crampons, ice axes, rope or other specialized equipment). Foot travel should be considered for both baiting mountain goats ahead of time and during the capturing operational period, to limit trammeling and impeding solitude/primitive recreation from helicopter operations. Capture sites to be considered for primitive travel of personnel include, but are not limited to, Marmot Pass in the Buckhorn Wilderness and Wilderness portions of Mt. Ellinor, Mount Skokomish Wilderness.	Mount Skokomish Wilderness, The Brothers Wilderness, Buckhorn Wilderness, Wonder Mountain Wilderness, Colonel Bob Wilderness
Archeology			
Previously undetected archeological, historical, or cultural resources	Area restrictions	If subsurface archeological evidence or previously unidentified cultural resources were located during implementation of the project, activities would cease pending an evaluation of cultural eligibility by a qualified USDA Forest Service archeologist, who would determine appropriate mitigation measures. The USDA Forest Service would fulfill its consultation requirements in accordance with 36 CFR 800.11.	Applies to all areas
Vegetation			
Invasive weeds		Actions conducted or authorized by written permit by the USDA Forest Service that would operate outside the limits of the road prism, would require the cleaning of all heavy equipment prior to entering NFS Lands. If weeds were present in the project area, all equipment and gear must be cleaned before leaving the project area to avoid spreading the infestation further. If weeds were present in the project area, work from relatively weed-free areas into the infested area.	Applies to all areas

Feature	Definition / Description	Management Requirement Description	Applicable Area
Wildlife			
Individual spotted owls or marbled murrelets	Adult or young spotted owls or marbled murrelets observed during project operations	If any individual spotted owl or marbled murrelet is observed during project operations, a USDA Forest Service wildlife biologist would be notified and measures to minimize or eliminate harassment will be applied.	Applies to staging areas
Marbled murrelets	To minimize nest predation by corvids (crows, ravens, jays)	Contractors and other project workers would properly store and dispose of food and garbage while working on site.	Applies to all areas

North Cascades National Forests

Table 5 shows the project design criteria for the North Cascades national forests.

TABLE 5. PROJECT DESIGN CRITERIA FOR THE NORTH CASCADES NATIONAL FORESTS

Feature	Definition / Description	Management Requirement Description	Applicable Area
Staging Areas			
Helicopter landing (staging area) reconstruction	Helicopter landing sites, including grading surface and clearing of vegetation	Helicopter staging sites would be reconstructed prior to the proposed action, preferably during the early-late fall, unless otherwise agreed. Some vegetation may need to be removed or mowed to facilitate helicopter flight paths and safe operating procedures. Loose rock in pits may need to be removed for safe helicopter operation.	Irene Creek rock pit, Curry Gap TH - FR 49, Green Mountain Pasture - FR 26, FR 62
Recreation			
Visitor safety	Notification of planned activities	A communication plan would be developed by the NPS, USDA Forest Service, and WDFW that includes information on the ecological purpose and need of the activity and any temporary area closures for visitors. News releases, signage, website updates, and other forms of communication would be prepared well in advance.	Applies to all areas
Gated staging areas	No restrictions	These areas are all located behind gates.	Green Mountain Pasture, Monte Cristo Comprehensive Environmental Response, Compensation, and Liability Act site, Alpentel Parking Lot, FR 62 may or may not be gated
Ungated staging areas	Area restrictions	Temporary and limited road closures during translocation of goats to release sites would be required for FR 1550 and FR 49. This would result in closure of the La Rush/Bear Lake and Curry Gap Trails while translocation staging is taking place. This may be scheduled during two periods in 2-week intervals (mid- to late July and late August to mid-September).	FR 1550, FR 49, FR 62

Feature	Definition / Description	Management Requirement Description	Applicable Area
Helicopter flight path	Areas of awareness	Some release sites are in areas with active military training routes. Project should check flight schedule with Naval Air Station Whidbey Island.	Applies to all areas, but in particular the White Chuck Basin and Chikamin Ridge (Alta Mountain) release sites
Wilderness			
Designated wilderness	Area restrictions	A news release would be prepared well in advance. Follow mitigation for release sites documented in the Minimum Requirements Analysis (appendices E and F).	Glacier Peak Wilderness, Henry M. Jackson Wilderness, and Alpine Lakes Wilderness
Archeology			
Previously undetected archeological, historical, or cultural resources	Area restrictions	If subsurface archeological evidence or previously unidentified cultural resources were located during implementation of the project, activities would cease pending an evaluation of cultural eligibility by a qualified USDA Forest Service archeologist, who would determine appropriate mitigation measures. The USDA Forest Service will fulfill its consultation requirements in accordance with 36 CFR 800.11.	Applies to all areas
Vegetation			
Invasive weeds		Actions conducted or authorized by written permit by the USDA Forest Service that would operate outside the limits of the road prism, would require the cleaning of all heavy equipment prior to entering NFS Lands. If weeds were present in the project area, all equipment and gear must be cleaned before leaving the project area to avoid spreading the infestation further. If weeds were present in the project area, work from relatively weed-free areas into the infested area.	
Wildlife			
Individual northern spotted owls or marbled murrelets	Adult or young spotted owls or marbled murrelets observed during project operations.	If any individual spotted owl or marbled murrelet is observed during project operations, a USDA Forest Service wildlife biologist would be notified and measures to minimize or eliminate harassment would be applied.	Applies to staging areas
Marbled murrelets	To minimize nest predation by corvids (crows, ravens, jays)	Contractors and other project workers would properly store and dispose of food and garbage while working on site.	Applies to all areas

NATIONAL PARK SERVICE PREFERRED ALTERNATIVE

The preferred alternative is the alternative that “would best accomplish the purpose and need of the proposed action while fulfilling [the NPS] statutory mission and responsibilities, giving consideration to economic, environmental, technical, and other factors” (46.420(d)). The preferred alternative ultimately may not be the selected alternative and identification of the preferred alternative is not a final agency decision.

The NPS has identified “Alternative D, Combination of Capture and Translocation and Lethal Removal,” as the preferred alternative. In identifying the preferred alternative, NPS considered factors such as public safety, long-term management, impacts on park resources, and how well the alternatives meet the purpose and need and objectives of the plan. The preferred alternative best accomplishes the purpose and need for action, in accordance with NPS Director’s Order 12 Handbook (NPS 2015e), because it would allow the NPS to reduce or eliminate impacts on park resources from mountain goats, which includes interference with

The NPS has identified “Alternative D, Combination of Capture and Translocation and Lethal Removal,” as the preferred alternative because it meets the purpose and need for action and allows the NPS to reduce or eliminate impacts on park resources from mountain goats, which includes interference with natural processes, native species, and natural habitats, while reducing potential public safety issues associated with the presence of mountain goats in the park.

natural processes, native species, and natural habitats, while reducing potential public safety issues associated with the presence of mountain goats in the park. At the same time, alternative D meets NPS statutory mission and responsibility because mountain goats would be translocated, contributing to conservation of the species in their native range where populations have been historically depleted. Although the preferred alternative would require more time and would have more short-term impacts related to the reduction of mountain goats on the landscape compared to alternative C, it would remove mountain goats from the landscape in a faster and more efficient manner compared to alternative B, and it would result in beneficial environmental impacts over the long term. Alternative D would provide the best opportunities to further public understanding of both the Olympic high-elevation ecosystems and native species as well as the ecology and conservation of mountain goats in their native range. Alternative D meets the objective of working cooperatively with co-managers of mountain goats or habitats in Washington State (USDA Forest Service, WDFW, and tribes) and also meets the objective of providing opportunities to reestablish or augment sustainable native mountain goat populations in suitable mountain goat habitat on NFS lands, whereas alternative C does not.

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

CEQ NEPA regulations define the environmentally preferred alternative as the one that “...causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves and enhances historic, cultural and natural resources.”

The environmentally preferable alternative is identified upon consideration and weighing of long-term environmental impacts against short-term impacts in evaluating what is the best protection of these resources. The NPS has identified “Alternative D, Combination of Capture and Translocation and Lethal Removal,” as the environmentally preferable alternative because this alternative “causes the least damage to the biophysical and physical environment, and best protects, preserves, and enhances” the natural resources being analyzed (NPS 2015e). Alternatives A and B would result in greater environmental impacts than alternatives C or D because the duration of management activities under alternatives A and B would involve more long-term management, and the mountain goat population would likely persist and potentially grow larger. When considering the broader geographic scale, alternative D would eliminate the need for long-term management and associated impacts related to mountain goats on the Olympic Peninsula, but unlike alternative C, would also contribute to conservation of the species in their native range in areas in Washington outside of the Olympic Peninsula where populations have been historically depleted.

The NPS has identified “Alternative D, Combination of Capture and Translocation and Lethal Removal,” as the environmentally preferable alternative because this alternative “causes the least damage to the biophysical and physical environment, and best protects, preserves, and enhances” the natural resources being analyzed.
