

Appendices



Appendices

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APPENDIX A: 2011 OLYMPIC NATIONAL PARK MOUNTAIN GOAT ACTION PLAN

MOUNTAIN GOAT ACTION PLAN

Revised June 2011

I. Background:

Biology:

Mountain goats are ungulates that typically inhabit high elevation alpine and subalpine habitats. They are most prevalent in areas that contain rugged and steep terrain and cool areas often with persistent snow (17, 20). In most areas of their range mountain goats are reclusive (5), and do not allow humans to approach closely. When threatened or alarmed, mountain goats will seek steep rocky areas, often referred to as escape terrain (7, 15). They are renowned for their exceptional speed and agility on steep terrain, reaching short term speeds of 10-15 mph.

In most areas where they occur, they are reclusive and keep large distances between themselves and humans. In a hunted population in the Washington Cascades, the mean closest distance an observer could approach goats on foot was 351 m (> 1000 ft.) for females with kids and 213 m (> 600ft) for males (21). However in some areas where unhunted populations come in repeated contact with humans, goats have become habituated to the presence of humans (2, 12) and allow people to approach much closer, including within 10 feet.

Although they can occur in large groups, in most portions of their range mountain goats occur in small groups of adult females (nannies) and their dependent young (kids) and occasionally a few associated immature males and females. Adult males (billies) are usually solitary or found in small groups (2, 5, 21) except during the breeding season (rut) when they seek out and tend breeding females. Within groups, goats have an established hierarchy and fair amount of intra-specific aggression. Both males and females have sharp horns which can cause severe injury (2, 6). Consequently, goats have evolved behaviors in which dominance and aggression are communicated through display and aggressive contact is avoided, minimizing the chance for injury.

Alarm, threat and aggressive behaviors include (Figures and nomenclature primarily from Geist [6] and deBock [4]).

1) Stare threat

Intense stare at opponent.

2) Horn threat

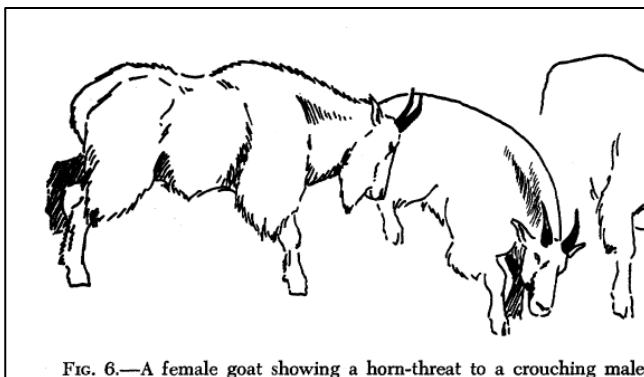
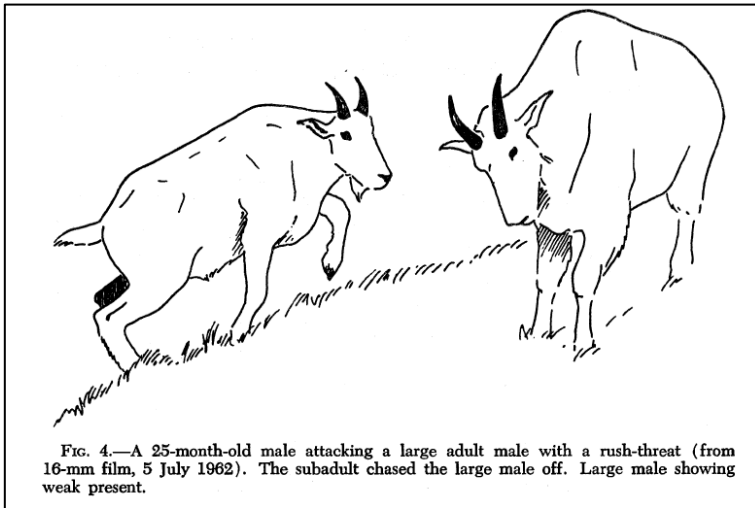


FIG. 6.—A female goat showing a horn-threat to a crouching male.

Goat lowers head and pulls in chin, prominently showing horns to opponent.



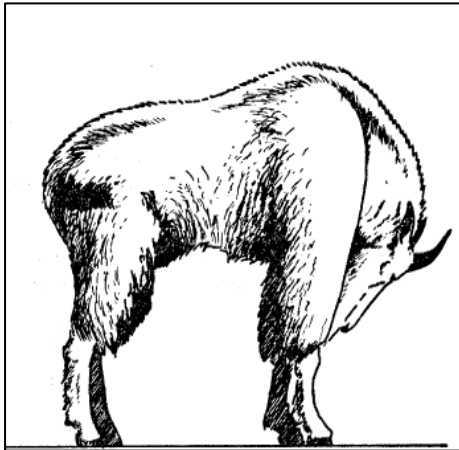
3) Rush threat

This threat is poorly developed in mountain goats as compared to other ungulates. The goat will walk or trot, but rarely run, at an opponent. At the end of the rush threat females and sub adults usually do a horn threat or horn swipe and males do an upward swipe with their horns.

4) Horn swipe

Goat lowers head and sweeps its horns upwards in a half circle motion.

5) Present threat (can follow up with Horn swipe)

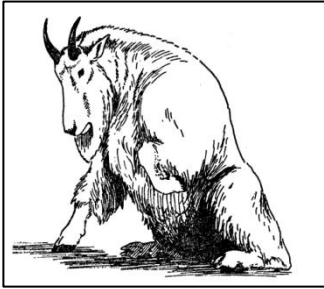


This is a dominance display, done by both male and female goats. It is a fronto-lateral body display, in which the goat raises high on its legs while arching its back and pulling its head down and away, as if ready to strike upwards with its horns. At the same time the displaying goat moves ponderously, slowly, with a nod of the head. The opponent is thus presented with the body mass and height of the displayer. The message is simple: I am bigger than you! If the onlooker is less than impressed he or she will display back. Consequently, the two rivals move in ever-tightening circles about one another, till one loses the nerve and jumps aside, or one of the rivals utters suddenly a harsh roar. At this point the opponent jumps away, or one of the opponents strikes the other with its sharp, dagger-like horns precipitating a fight (Giest, pers. comm. 2010).

In most situations females are dominant to males (2, 14); dominance status has been observed to increase with age (3). Dominance status has also been observed to persist even after horns are lost (17).

Rut in mountain goats typically occurs from November through December (6, 18). Ages of sexual maturity usually range from 2-4 for females, although it can occur earlier in areas where goats are on an exceptionally high plane of nutrition (8, 13). Typically only the most mature and dominant males breed.

Behaviors of billies in rut:



1) Pitting

During the rut billies will sit on the ground similar to a sitting dog. With an arched neck and head looking towards the ground, the male will paw quickly and vigorously with a front leg, throwing snow and dirt at his belly, hind legs and flanks creating a rutting pit (6). This often results in males having “dirty trousers’ appearance of dark patches on flanks, rump, and bellies.



2) Brush rubbing

Males will stand and rub the supraoccipital glands (located at the base of their horns) on twigs or bunches of grass by brushing their horns and frontal area of the skull from side to side.

Salt and Mineral Licks: In most areas where they have been studied, mountain goats make regular use of natural or man-made salt licks. Although they can be used throughout the spring through fall months, in most studies peak salt or mineral lick use is June – July (4,10,12,17). In salt lick situations normal patterns of dominance in goat groups are usually NOT observed; males are dominant over females, with adult males being the most dominant and aggressive (19, 17). Males also can be more resistant than nannies to moving out of the area (12). There are no known natural salt licks in the Olympic range.

Hazardous Encounters: Reports of hazardous interactions between goats and humans are extremely rare. In all reported instances, the encounters were between large, mature males in areas where there was a history of both habituation and salt conditioning.

- 1) Glacier National Park (198??), Gunsight Pass. *Details of this encounter are reported in Doug Chadwick’s book ‘The Beast the Color of Winter’ – reference #2.*

The incident took place in midsummer, in an area where hikers lingered, lunched and urinated. Consequently the goats were habituated to people and made a positive association between people and salt. Doug observed that the goats at Gunsight Pass behaved in the same way they behaved at natural salt lick sites – with males being dominant to nannies. Doug used the presence of habituated animals to allow him to get close-up observations of goat behaviors. At first they treated him as a dominant animal and gave him wide berth. However, eventually Doug realized that the largest male in the group was behaving in a manner similar to a goat in rut, and was exhibiting dominance displays towards Doug. This

culminated one day with the large male came in very close to Doug, and performing a stare threat. As Doug looked away, the male drove his horn into Doug's knee and jerked his head upright, knocking Doug to the ground.

- 2) Mt Ellinor (1999), Olympic National Forest, Washington. *There is no formal report on this incident. The details of this incident, including date and time, are unknown; all information comes from accounts that were printed in local papers following the Boardman death in 2010.*

The reporting party states that he was gored in the thigh by a large mountain goat minutes after he left a group of friends on the top of Mt. Ellinor. "We were eating lunch on the top...While we were eating lunch, a big male goat came up to us. I've never seen a real aggressive goat like this...He was licking us and our packs and getting in our food and everything. Eventually, he just left...Usually, you move and they kind of move back. This one was in your face." The injured party had to leave the summit before his friends. As he was changing into ski pants for the descent, the mountain goat jumped from a rock about 15 feet away. "He drilled me right in the upper thigh...It was the last thing that I expected. Fortunately, it turned its head." It knocked him back and opened a 4-inch deep wound in his upper right leg. Instinctively, he swung at the buck (Sic.) with an ice ax. He missed but scared away the animal by yelling at it. Hearing the shouts, his three friends came to his aid and helped him cover the wound with bandages and duct tape. He said the mountain goat waited until he was alone. "It was odd because it was similar to what happened to the guy in Port Angeles...That's exactly what happened to me. His mission was to hit me. He wasn't going to be stopped...The doctor said I was very lucky...It missed the femoral artery by about an inch."

- 3) Hurricane Ridge (October 2010), Olympic National Park, Washington.

This incident took place in an area with high visitor use (primarily day hikers) and year-round goat occupancy. There was a history of habituated goats in the area for over 5 years, with reports of a large male goat (or goats) not yielding way to, following, and occasionally being aggressive to hikers for over 3 years. The victim, Bob Boardman, and two others were hiking on Klahhane Ridge when they encountered a large male while they were eating lunch. The goat approached them and then followed them on the trail for about $\frac{3}{4}$ of a mile. Boardman sent the other two people ahead of him on the trail as they attempted to leave the goat behind. One member of the group said she saw Boardman and the goat walking side by side several hundred yards behind her. The actual attack was un-witnessed but the evidence shows the goat gored Boardman in the lower thigh/knee area and severed a major artery causing fatal blood loss. Emergency care for Boardman was hampered because the goat would not move away from him after the attack until several bystanders were able to scare it away in a concerted effort. Rangers shot the goat later the same day and a necropsy was done on the animal. The necropsy showed no disease or other significant health issues, and confirmed the goat was in rut.

Situation in OLYM:

Eleven or 12 mountain goats were introduced to the Olympics near Lake Crescent from 1925 to 1929, prior to the formation of the park (1, 13). By 1983 it was estimated that the population had grown to 1175 + 171 (SE) animals, with mountain goats occurring throughout suitable habitat on the Olympic Peninsula (13). Over 200 goats occurred in the highest density population – Klahhane Ridge. In the 1980's OLYM implemented a series of live capture operations and removed over 325 animals from the population, and the numbers in the park declined significantly. The latest population estimate, from

2004, is that there are approximately 300 goats in the park (9).

Because many of the areas that goats inhabit are also popular destinations for park visitors, both in the front country (e.g. Hurricane Ridge) and back country (eg. Glacier Meadows), there is a high potential for goat - human interactions in OLYM. Most notable are the many areas where mountain goats are habituated to human presence have also become conditioned to seeking salts from humans. They can be a nuisance along trails and around wilderness campsites where they will persistently seek salt and minerals from human urine, packs and sweat on clothing. They will often paw and dig areas on the ground where hikers have urinated or disposed of cooking wastewater and chew unattended clothing. The nature of goat – human interactions in OLYM can vary widely, ranging from benign (observing goats from several hundred meters away across a ridge) to, from now what we know from the October 2010 fatality, extremely hazardous.

For further information on mountain goat behavior and biology and other material relevant to the formulation of this action plan, see the References section.

II. ACTION PLAN

The goal of this management plan is that 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 goat human encounters.

Examples of **acceptable** mountain goat behavior include:

- Goat retreats at the sight of humans, stays at least 300 feet (100m) away from people at all times.
- When a surprise encounter occurs along a trail, the goat quickly retreats and either puts 100m distance between self and humans, or may seek escape terrain.
- If a human comes in-between a nanny and kid, nanny may display some aggressive postures, but does not make contact and quickly retreats with young.

Examples of **unacceptable** mountain goat behavior include:

- Goat does not retreat when comes in sight of people, lets people approach within 150 feet (50 m).
- Goat approaches and follows people on trails or at camp or rest sites.
- Goat aggressively seeks out areas where humans urinate and consumes soil and vegetation where human urine is deposited.
- Goat makes contact with clothing or equipment; chews gear seeking salt.
- Goat displays aggressive postures or behavior to people when encountered on or off trail.
- Goat attacks and makes contact with humans.

As with the other species management plans contained in this Hazard and Nuisance Animal Plan, mountain goat management in OLYM is an integrated effort between all park divisions, and the emphasis is on prevention. For roles of each division, see Section III.

An overview of the continuum of mountain goat-human interactions, and the appropriate park response, is presented on Table 1. For serious incidents (4 and greater on the table), the Wildlife Incident Team will make decisions about the appropriate response.

Table 1. Goat Management Continuum.

Occurrence	Responses to situation	Management Action Alternatives
1) Single and multiple observations of goats at > 100m (300f)	<ul style="list-style-type: none"> • Record observations on daily logs and pass onto RM when page is full. • All logs turned in at the end of the year. 	<ul style="list-style-type: none"> • Input observation data into database (RM) • Post level 1 signs at trailheads, distribute to back-country permittees (RP, WIC) • no further action needed
2) Reports of goats not moving off trail as hikers approach until people get within 100 feet; letting people get within 100 ft. but not less than 20 ft.; easily shooed away.	<ul style="list-style-type: none"> • Report on goat incident form and turn into district ranger and WB immediately 	<ul style="list-style-type: none"> • Input observation data into database (RM) • Inform Wildlife Incident team of situation • Post level 2 signs (RP) • NPS staff implement aversive conditioning on all goats exhibiting unacceptable behavior during regular patrols. • Record aversive conditioning incidents on log and pass information on to WB and Chief Ranger.

Occurrence	Responses to situation	Management Action Alternatives
3) Goats occasionally following people on trail, coming into campsites; not easily chased away; no aggressive postures in adult males	<ul style="list-style-type: none"> Report on goat incident form and turn into district ranger and WB immediately 	<ul style="list-style-type: none"> Input observation data into database (RM) Inform Wildlife Incident team of situation Post level 2 signs (RP) NPS staff increase patrols in area; mark animals with paint balls; implement aversive conditioning on all goats exhibiting unacceptable behavior during regular patrols (RP) Record aversive conditioning incidents on log and pass information on to WB and Chief Ranger.
4) Goats persistently following people on trail, repeatedly coming into campsites; obviously seeking salts; not easily chased away; aggressive postures in adult males	<ul style="list-style-type: none"> Report on goat incident form and turn into district ranger and wildlife bio. immediately 	<ul style="list-style-type: none"> Input observation data into database (RM) Inform Wildlife Incident team of situation Post level 2 signs (RP) Evaluate need for area closure (WIT), implement closure if needed NPS Aversive Conditioning team patrol area for at least one week; mark goats encountered; implement aversive conditioning on all goats exhibiting unacceptable behavior during regular patrols. (RP,WB) Area closed for one week during aversive conditioning. More intensive patrols when trail opened to assess goat response to aversive conditioning.
5) Goats aggressively seeking salt; exhibits threat posture when encountered on trail; will not leave area without aggressive hazing	<ul style="list-style-type: none"> Report on goat incident form Contact Park Dispatch Dispatch Contact Wildlife Incident Team 	<ul style="list-style-type: none"> Close trail for 2 weeks Mark goats in area; consider use of permanent marks (ear tag or radio collar) (RP,WB) Implement aversive conditioning with trained personnel for 1 week. Patrol closed trail for 1 week to assess efficacy of aversive conditioning (not in uniform) Consider lethal removal if behaviors are observed to continue after the actions taken above. Removal can occur during the patrol period following the week of conditioning or later if behavior is repeated following opening of the trail.
6) Goat attacks human; makes contact or corners people making egress impossible	<ul style="list-style-type: none"> Contact Park Dispatch Dispatch Contact Wildlife Incident Team, 	Lethal removal

RM=Resource Management; RP= Resource Protection; WB=Wildlife Biologist; WIC= Wilderness Information Center; WIT= Wildlife Incident Team

Management actions at levels 2 and 3 are extremely important, as aversive conditioning is much more effective and long lasting before an animal has gotten a reward for being in an area. Level 4 is often colloquially called the “point of no return” when our tools for discouraging the behavior are probably less of a negative incentive than the reward they get.

Education and Training:

Staff:

1. All affected employees will receive information on mountain goat interactions. Briefings by work group supervisors and staff training by the Natural Resources Management Division will be provided to answer questions and concerns of employees, advise of new information or research, etc. Such briefings and related training will normally be scheduled at the beginning of the summer season, but may be conducted at other times, as needed.

2. The staff of the park Dispatch Center will have an up-to-date SOP for reporting incidents, and all new communications center employees will be made familiar with the procedures.
3. Those involved with wildlife management (capture, hazing, handling etc.) will be current on all applicable animal-handling training (NPS-77).

Public:

Various safety and interpretive materials will be developed and widely distributed to park visitors. This will include a park handout describing mountain goats and recommendations for safe hiking and camping. It will emphasize need for not habituating wildlife to the close presence of people, the need to stay at least 150 feet or 50 yards away, salt and urine management, and that the potential for negative goat-human encounters can be minimized, but not eliminated, by controlling human behavior (Appendix 3). This handout will be available at all visitor centers, ranger stations, and concession facilities.

MANAGEMENT OPTIONS

In escalating order, the following management options are available in response to goat incidents. A combination of tactics [e.g. hazing combined with area closures] will most often be used.

Aversive Conditioning: When animals are openly frequenting an area where a number of people are present, an attempt may be made to scare or frighten the animal with aversive conditioning or hazing techniques. If a decision is made to haze a goat or a group of goats in an area, they should be marked if possible. If marking is not possible, information on the animal's behavior, degree of habituation and/ or conditioning, and detailed description of size/weight and identifying marks must be collected and photographs or video should be obtained if at all possible.

One consideration however is that although problem goats may be encouraged to leave an area with hazing techniques, they will probably return if whatever attracted them to the area remains. It is best if all possible attractants in the area are removed, but this is difficult to achieve in a situation where goats are seeking salts from human urine that are of necessity consistently and continually distributed throughout areas of high human use. What we seek to achieve is to re-instill a pattern of avoidance of humans by goats, and to have them seek salts when and where no humans are present.

Hazing techniques include noise stimuli (sirens, compressed air horns, cracker shells) and contact stimuli (thrown rocks, use of a slingshot, paintballs, or rubber projectiles or bean bags fired from specialty shotgun ammunition). A separate protocol on the use of specialty shotgun shells has been prepared, and reference should be made to that document for appropriate uses of such devices.

If hazing is used, field personnel will ensure the safety of non-involved bystanders and employees when performing hazing actions. When such hazing techniques are applied, the goat's behavior should be carefully noted and recorded on a wildlife hazing form (Appendix 1).

Animal Marking: If a goat or a group of goats is frequenting an area and are candidates for hazing, or if there has been a series of incidents in an area and there is uncertainty as to which goat is involved, the park should attempt to mark each animal to better evaluate 1) the situation, and 2) effectiveness of hazing (if animal returns), and 3) help identify the animal if it offends in another area.

There are 3 levels of animal marking that are available for use in goats:

- 1) Paint balls – relatively easy to deploy, no animal capture is needed, but marks are not permanent and care must be taken to a) mark different animals in groups in a manner that they are easy to distinguish between each other (e.g. paint ball color or placement combinations) and b) carefully record color and placement combinations used. An additional advantage of paintballs is that they also can serve as an aversive conditioning technique.
- 2) Ear tags – relatively inexpensive, long lasting, and through the use of different color and number combinations each animal is distinguishable. The disadvantage is that animals must be captured to deploy ear tags. For goat capture protocols, see Appendix 2.
- 3) Radio collar – Because a goats' home range can encompass several different areas where it can come in contact with humans, and can also move periodically to habitats not visible from trails (Jenkins et al 2011), radio-transmitting collars marked with distinct color bands can be used to both mark goats and monitor their activities. The advantage to this technique is that the animals are permanently marked and movements and activities in developed areas can be monitored. The disadvantage is that animals must be captured to deploy radio collars and radio-tracking is fairly expensive. For goat capture protocols, see Appendix 2.

Area Closure: Temporary closure of an area to public use and travel may be used to mitigate the hazard presented by a goat frequenting and exhibiting aggressive behaviors at a specific location. Closures invoked under 36 CFR 1.5(a) require written documentation from the Superintendent to the files and public notification. Emergency closure signs will be posted, access to the area controlled, and enforcement patrols routinely performed. Closures will be maintained for approximately 14 days, or until no unacceptable goat behavior is observed in an area that has been thoroughly searched in 3 consecutive patrols covering a period of at least 1 week.

Aversive Conditioning (e.g. hazing): The use of various noise and contact devices to frighten or haze mountain goats to modify their behavior [such as approaching and following hikers] will be employed when goat interactions reach level 2 - 5. With mountain goats a combination of noise and contact stimuli will be most effective (Chadwick, pers. comm.). To be effective, these techniques must be precisely and consistently applied. For guidelines for the use of specialty rounds refer to the protocol for use of specialty firearms in wildlife management.

Animal Destruction: Where warranted goats may be lethally removed from the Park using firearms or other means of humane euthanasia. For a list of situations in which goat destruction should be considered, see Table 1. Except for emergency situations, the recommendation to destroy a goat will be made by the Wildlife Incident Team with

final approval by the superintendent.

In cases where a goat attack occurs, responding personnel should treat incident site as if it was a crime scene: close the area and secure the scene to preserve evidence. A key goal is to authenticate the association between the specific goat and the victim. The Wildlife Incident ICS plan should be implemented (Chapter 1, Appendix 1). The incident commander will be the Chief Ranger.

Highlights are below:

- Contact Dispatch, Superintendent or acting superintendent, WIT, and WIC and advise of closure.
- Contact PIO who will work with the press.
- Gather all available information that will help interpret what actually happened and aid in identifying the offending individual.
- If lethal removal is approved, aim for heart area; the head needs to be saved for analysis.
- Preserve animal for necropsy (bag head and feet with paper bags covered by plastic), that should be done by a crime lab (i.e. Ashland). All people touching the animal must wear proper protection, due to risk of transmission of zoonotic diseases.

III. Roles and Responsibilities

In addition to responsibilities laid out in Section 1 of the Nuisance and Hazard Animal Plan, the following additional duties are associated with implementing the Mountain Goat action plan:

1. All employees:

- **The KEY action to prevent hazardous encounters with mountain goats is to not let them get habituated to human presence.** All staff must keep a safe distance between themselves and goats (optimal 300 feet, **minimum 150 feet or 50 yards**; visualize $\frac{1}{2}$ the length of a football field). If goats approach closer, encourage them to leave the area with loud noises, arm waving, snapping plastic bags, and rock throwing.
- All staff encountering visitors violating the 50 yard rule will communicate park policies and the rationale behind it, and encourage its enforcement to the best of their abilities. Encourage visitors to shout and wave arms and throw rocks to keep goats at a distance.
- In selected areas of high goat use (e.g. Hurricane Ridge) staff and visitors will be advised to **NOT** urinate on trails in backcountry. Urine deposits on the trail entice goats to use trail areas, and turn trails into long linear salt licks.
- In backcountry campsites in goat range, campers will be advised to seek sites 200 feet away from campsites on the trail for urination, or to urinate in the privies.
- Record all mountain goat observations, using back-country, ranger station, or

visitor center logs as appropriate. Turn in observation forms as soon as the page is filled out, or the end of the season –whichever comes first. Appendix 1.

- Record and report mountain goat incidents (observation class 2 to 6) on a mountain goat incident form, and turn in immediately to the district ranger and OLYM wildlife biologist. Examples of logs and forms are in Appendix 1.
 - **If there is a serious incident report immediately to Dispatch and District Ranger immediately (observation class 5 or above). Dispatch will contact the Wildlife Incident Management Team.**
2. **Resource Protection:** Under authority delegated by the Chief Ranger, District Rangers are responsible for implementing this action plan in their area. Specifically, District Rangers will:
- Investigate incidents in a timely manner. Thoroughly interview witnesses. Check for signs in the field to verify report and pass information on to the Wildlife Biologist and Chief Ranger. If the incident is class 5 or more severe, field personnel should be armed with a rifle or shotgun and personnel should travel in pairs.
 - Consult with the Wildlife Biologist for technical support and advice on mountain goat biology, management tools and options, field assistance, and information on goat activity in the area (from the observation database) as well as the collection, necropsy, and disposition of animals that are destroyed.
 - Ensure all signs related to goat education and warnings are properly installed, and modified as a change in the situation in the local area develops, following the signage instructions contained in this plan.
 - Ensure that if a situation develops (Level 3 and greater) proper information is distributed to visitors at ranger station, entrance booths, WIC, local concessions, etc.
 - Administer emergency area closures. Closures will be implemented and coordinated through the Chief Ranger's office. Closures will be made in consultation with the wildlife incident management team, and information passed, by the District Ranger, to the WIC and dispatch ASAP.
 - Identify and train members of Wildlife Incident Response Team. Participate in aversive conditioning bouts as needed.
3. **Natural Resource Management:** Staff of Natural Resource Management (specifically the wildlife biologist in charge of Nuisance and Hazard Animal management and/or the park practitioner) will:
- Keep the database on goat observations current. Look for patterns in goat incident activity, and inform resource protection if a trend appears to be developing.

- Keep current contacts with regional managers and biologists, and keep abreast of advances in goat management.
 - Maintain cache of wildlife capture and marking supplies, and wildlife incident investigation kits that are rapidly accessible and field ready on very short notice.
 - Assist in field investigations and operations; maintain staff proficiency with dart gun and aversive conditioning tools.
 - Support closure actions by assisting in determining the size and duration of the closure.
 - Identify and train members of Wildlife Incident Team. Participate in aversive conditioning bouts as needed.
4. **Interpretation:**
- Assist in the preparation and dissemination of messaging (signs, handouts).
 - Communicate mountain goat management message to visitors.
5. **Public Affairs Office**
- Coordinate press releases.
 - Communicate with media.

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6/29/2011
Date

Approved by: *Karen Burton*
Superintendent

7/5/11
Date

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- 21) Wright, W. 1977. Ecology of the Cascade Mountain Goat, Mount Baker Snoqualmie National Forest. in W. Samuel and W. G. Macgregor eds. Proceedings of the First International Mountain Goat Symposium. B.C. Ministry of Recreations and Conservation.

1) Back-country observation forms:

2) Back-Country Incident forms

15

SUMMARY OF INCIDENT/OBSERVATION, continued

Were actions taken to deter the animal? If so, what type? (loud noise, throwing items, etc.)

Animal Response? (startled/frightened and ran, or nonchalant and remained, etc.):

was human food, trash, salt available? If yes, what and where: (eg. urine on ground, food in backpack)

If so, did the animal obtain anything? What?

How was food stowed?

Length of observation (mins):

Closest distance to animal(s):

ANIMAL DESCRIPTION

Estimated age, sex and/or size (s):

Markings (natural marks, tags, paint, etc.):

Condition (any visible injuries?):

OTHER INFORMATION

Habitat type (old growth, meadow, subalpine):


*If needed, please attach a separate sheet for additional notes that may help describe incident.

*Please tear-out and submit forms at the end of each tour to Patti Happe in NRM. Thanks!

3) Ranger Station Log

BEAR AND GOAT OBSERVATIONS AND VISITOR REPORTS OF OBSERVATIONS (for cougar use cougar observation form please)											vs.11
Please turn in observation sheets monthly, or once completed, to Patti Happe in Natural Resources Management.											
For incidents PLEASE fill out incident forms and turn in immediately (eg. If Animals < 50 yds, would not move away in presence of people, were in campsite, attempted to get food or salt, or you used aversive conditioning)											
DISTRICT / RANGER STATION							YEAR _____				
Bear / Goat / other	Date	Visitor or ranger report?	# of animals	# of young	Exact Location	Animal Activity	Animal response to person	Closest distance to people (feet)	Length of obs. (mins)	Marked? If so how?	Incident Form filled out?

4) Goat Incident Form

<p>MOUNTAIN GOAT INCIDENT FORM V1.11</p> <p><small>Prompt and Accurate information on the behavior of habituated and/or aggressive mountain goats is critical to mountain goat management in Olympic National Park. If you see or get reports of nuisance or hazardous goat-human interactions (eg. goats allowing people to approach <50 yds, following people, entering into campsite while people are present, refusing to yield the trail to hikers, exhibiting aggressive postures towards humans) please fill out this form as accurately as possible and turn in immediately to the wildlife biologist. For more information on goat biology, behavior and mountain goat management in OLYM please read the mountain goat action updated in 2011.</small></p> <p>Recorder: Duty Station:</p> <p>OBSERVER INFORMATION</p> <p>Name: _____ Phone #: _____</p> <p>Address: _____</p> <p>Email: _____</p> <p>SUMMARY OF INCIDENT/OBSERVATION</p> <p>Date: _____ Time of Observation: _____</p> <p>Location of Observation (as exact as possible): _____</p> <p>Total # of animals: # kids: # yearlings : # adult males:</p> <p>Activity of person/people when goat(s) seen (eg. hiking, camping, picnicking.): _____</p> <p>Activity of goats(s) when first seen (eg. walking, grazing, bedded): _____</p> <p>Response of goat(s) to people: (eg. stood ground, approached, horn threat, pitting) <u> </u></p> <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"> <p>Over →</p> </div> </div>	<p>SUMMARY OF INCIDENT/OBSERVATION, CONTINUED</p> <p>Was aversive conditioning used by person? Yes/ No If so, what type? (eg. loud noise, throwing items): _____</p> <p>How did goats(s) react? (eg. ran away, walked away, stood ground, aggressive pasture?): _____</p> <p>Was human salts available to the goat? If so, what form? (eg. urine on ground, sweat soaked clothing.) _____</p> <p>If so, did the goat (s) consume it? _____</p> <p>Length of observation: _____</p> <p>Closest distance to goat(s): _____</p> <p>Markings on goat(s) (Ear Tags, paint marks (color and location)): _____</p> <p>Additional notes that may help describe the incident/observation: _____</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Incident Type: 2 (close approach but easily scared away) 3 (close or following, reluctant to leave, no aggression) 4 (persistently following, not easily shooed away, some aggressive postures) 5 (aggressively seeking salts, threat postures, only will leave with aggressive hazing) 6 attack.</p> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Thank You for your help! Please submit forms as soon as possible to either: Patti Happe, Olympic National Park Wildlife Biologist, Natural Resources Management Division (e-mail: patti_happe@nps.gov; phone: 360-565-3065). <small>gph 2011</small></p> </div>
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5) Wildlife Hazing Form

Mountain Goat patrol log- 2011

Date	Observers	Weather	<u>Hrs on trail</u>	# Goats obs.	# hikers obs.
Describe route					
Describe location and behavior of goats observed					
Marked goats seen (?)					
Behavior and location of marked goats:					
Management Actions Taken – What and Where; Describe any marks given					
Goat response:					

Appendix 2.

Mountain Goat Snaring Protocol Olympic National Park

Introduction:

This protocol describes procedures that will be used to manually capture mountain goats in Olympic National Park by foot snaring. The method involves attracting habituated mountain goats to park staff using salt and catching them with a hand-held rope leg snare.

The method was used extensively in Olympic National Park during the 1970's and 1980's during investigations of mountain goat movements, dispersal, habitat selection, and reproductive biology (Stevens, Stevens, Hoffman, Houston et al. 1994), and again in 2005 and 2007 during development of a sightability model needed to refine census methodology. Advantages of the leg snare method are: (1) it is very safe for mountain goats – there is very little risk of capture-related injuries or deaths and (2) equipment and logistical requirements are minimal. Disadvantages of the method are that there is some injury risk to human field crews and it is not possible to obtain a representative sample of all mountain goats in the park using this method; some goats are not habituated or live in too inaccessible of areas to be sampled.

This protocol has been compiled from discussions with 4 experienced members of the capture crews that pioneered and used this capture method in the 70's and 80's (V. Stevens, R. Hoffman, E. Schreiner, R. Olson; Personal Comm.) and crews that used the method in the 2000's (P. Happe, D. Manson, K. Jenkins).

Selecting Sample Sites: This method will work in areas where there are consistent reports of mountain goats that are coming into human sources of salt – frequently human urine, sweat-soaked pack-straps or hiking boots, and salted cooking liquids.

Crew: Optimally a ground capture crew will consist of three members: a nooser, a primary restrainer and a secondary restrainer. Smaller female mountain goats can be handled by a two-person crew. Even with smaller goats a third person is often useful to talk with interested park visitors who may be drawn to the capture operation.

Establishing the snaring site: After a specific group of goats is targeted, the crew will select a site for the noosing operation. The site should have a vegetation-free area for applying the salts (i.e., sites that won't be damaged by goat pawing and eating) surrounded by relatively smooth terrain for setting the snares. Either human urine and/or chips from a salt block will be used as bait. First the nooses are established; then the site is baited. After locating the specific site for the bait, 3-4 snares will be set approximately 3-4 feet from the bait site. Generally we will set one rope snare for each member of the capture crew. Snares consist of a 25 foot segment of 5/16 or 3/8" braided poly cord with a loop tied or spliced on one end. The snare is created by feeding the rope through the loop to form a 12-18"-diameter noose. The noose is placed flat on the ground and the

pull-line is laid out to where the crew member will wait. There should be no kinks, loops in the pull-line. If a suitable anchor tree or log exists, the back end of the pull-line should be anchored by tying off to the tree. One variation of the set is to elevate the noose approximately 1-2” off the ground using a ‘campfire ring’ of small stones as a platform for the noose. After establishing all the nooses, apply the bait to the center of the site. If salt-block chunks are used, the salt should be offered in a 12”-diameter plastic container to prevent salt leaching into the soil.

Catching the goat: The crew will wait patiently until a goat steps into one of the set snares. The consensus of former goat ropers is to catch a rear foot, although the front foot is favored by one former roper and may also be used. The goat is caught by yanking suddenly on the pull cord. The benefit of using the hind foot is that once the goat is snared and tries to run away from the nooser it often stretches out low to the ground facing away from the nooser, a position in which the animal may be safely tackled. The disadvantage of using the front foot is that there may be a greater risk of leg or shoulder injury as the goat tries to twist away from the nooser.

Animal tackling is a dynamic and quick event—there is no text book formula. In general, the nooser will hold the rope while working his/her way down the rope to the animal and trying to stretch the animal out. The tackler will approach from the back, throw a flannel shirt over the goats head (blinding it) and grasping ahold of the goat’s horns and applying steady, heavy pressure to the upper shoulders and neck. While it is necessary to control the head, care should be taken to not pull the horn from its sheath. The tackler will wear impact resistant eye protection secured with a head band. The nooser or the third person will apply weight to the hind quarters from the back side of the animal, while helping to control the feet. The goat will be hobbled with leather buckled hobbles or hog-tied with the snaring rope. Once blindfolded and secured, the goat will generally ‘give up’ or at least reduce struggling to the point where former crews have been able to weigh, measure, and draw blood. If the goat struggles excessively, a female goat may be sedated using 25-30 mg xylazine (Jessup 1980)—a large male may require more but begin with 30mg. **(If this xylazine is used, all animal handlers must the have necessary training to handle wildlife pharmaceuticals).** All members of the capture crew should wear light, flexible leather gloves until the goat is secured.

Goat Procedures.

- A) Blindfold, hobble, place horn blunters on horns
 - a. sedate if necessary
 - i. **Females** 25-30 mg Xylazine (@300mg/ml = **0.9 ml**)
 - ii. **Males** 30-35mg Xylazine (@300mg/ml = **0.1 ml**)
- B) Apply Gentak to eyes
- C) Ready radio-collar (if used)
 - a. Test VHF
 - b. Record VHF frequency and S/N on field forms
- D) Place radio-collar on animal
- E) Install ear tags

- a. Unique color code for the area to each ear
- b. Record tag color and numbers on data sheet
- c. If use hole punch, collect tissue sample
- F) Measure animal
 - a. Measure body weight if possible (using nylon sling)
 - b. Measure chest girth (cm)
 - c. Measure neck circumference (cm)
 - d. Measure total body length (contour) (cm)
 - e. Measure hind foot length (tip of hoof to tip of calcaneum)
 - f. Measure length of horns from base to tip along outer contour
 - g. Measure distance from tip of horn to 1st ring
 - h. Measure distance from tip of horn to 2nd ring
- G) Assess body condition
- H) Draw blood (two red tops, one purple)
- I) Collect hair
- J) Collect fecal
- K) Administer Yohimbine if animal has been sedated (IV if possible or else IM)
 - wait 4 minutes for IV injection, 10 minutes for IM injection before releasing)
 - 0.3 mg/kg @ 10 mg/ml
 - a. **Yearlings @ 32 kg =1 ml**
 - b. **Sub-adult Males @ 60 kg = 1.8 ml**
 - c. **Sub-adult females @ 50 kg=1.5 ml**
 - d. **Adult males @ 110 kg=3.5 ml**
 - e. **Adult females @ 60 kg= 1.8 ml**
- L) Release Animal.

Emergency Procedures. We anticipate no emergency procedures necessary due to the unobtrusive nature of the capture operation. In the unlikely event of a serious limb injury (dislocation, break), the procedure will be to euthanize the animal either through the use of a captive bolt or firearm with a shot to the center of the head in between the eyes.

Mountain Goat Study CAPTURE FORM

Date ____/____/____
yyyy/ mm/ dd

Animal # _____
(yyyy/sex/###)

Capture

Team: _____

General Location: _____

Specific Location (GPS) LAT _____ Long _____

Weather: temp (f) _____ precip: _____ cloud cover _____

Time on _____ Time off _____

Collar# _____ VHF Freq _____ Color_ ☐ Magnet OFF

Ear Tag R (#/ Color) ____/____ Ear Tag L (#/Color) _____

DRUGS USED (military time):

	#1	#2	#3	#4
Drug Name				
Mg used				
Vol used				
Route (im, iv, subq)				
Site (hip, neck)				
Time of Injection				
Time down/up				
(time animal found)				
Induct/ReversalTime (minutes)				

Capture Notes: _____

Samples: ☐ Blood/Purple, ☐ Blood/Red ☐ Hair, ☐ Fecal, ☐ Ext. Parasites, ☐ Tissue

Treatments: (list)

Monitoring

<u>Time</u>	<u>Sign</u>	<u>Obs</u>	<u>Time</u>	<u>Sign</u>	<u>Obs</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Measurements: Estimated age_____Horns: ☐Photo

Weight_____kg

Chest girth_____cm

Neck circumference_____cm

Total length_____cm HindFoot_____cm

Lactating: ☐Yes ☐No

Horn Lengths (cm)	Left	Right
Total Length		
1 st ring		
2 nd ring		

Condition: Withers_____inch pinch.

Equipment List for Field Capture Crew (go loaded for 2 goats)

<u>General</u> Ready supply of urine :) Salt block chunks Salt tray Rope snares (4) Hobbles Flannel shirt (blindfold) Horn guards (5" segments of garden hose) Impact resistant eye protection Leather gloves (each individual) Protocol First Aid Kit Park Radio Radio collars (2) MHz Receiver and Antenna (?) <u>Drug Kit</u> Xylazine Gentak Yohimbine 4 1cc syringes 4 3cc syringes 2 10cc syringes 6 18 gauge needles Thermometer Stethoscope	<u>Collaring Kit</u> Sharpie, fine tip (2) Pencil Captive Bolt Nutdriver Ear tag applier Measuring tape Latex gloves Collections Baggie (1 per animal) -field form -ear tags -20cc syringe -18 gauge needle -Redtop tubes (2) -Lavendar tube (1) -Hair bag -Fecal bag -Tissue vial <u>Optional:</u> -Scale (what about weighting pole, can we use two hiking sticks together? I'll volunteer mine) -Weighing sling (4x4ft nylon)
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Appendix 3. Goat outreach materials and signs. 3 level warning system (similar to what is used for cougar and bears). These can be found on I:\All\wildlife\Nuisance_Hazard_Animal\wildlife signs and the OLYM sharepoint site at

<http://www.olymshare.nps.gov/sites/nrm/NRM%20Documents/Forms/AllItems.aspx>

Level 1: General about goats (yellow). For use in areas where goats are seen but where we have no reports of habituation. Implementation: post at trailheads, distribute with backcountry permits, post on backcountry trip planning website.

Mountain Goats & Your Safety



Mountain goats are a non-native animal introduced to the Olympic Mountains in the 1920s. Like any wild animal, they can be dangerous, but some goat behaviors increase the risk to humans. Following the guidelines below can help you have a safe experience if you encounter a goat:




- Mountain goats can become very tolerant of people and allow very close approach.
- If habituated, goats are more apt to “stand off” than most other large mammals, and will hold their ground rather than move away.
- Male goats become more aggressive during the breeding season, which peaks in November, but can begin in October and run will into December.
- All goats use their potentially lethal sharp horns to defend their personal space.
- Mountain goats crave salts. In some areas they seek human salts in urine or sweat soaked clothing, leading to conflicts. Do not urinate on or near the trail. Please go off trail at least 50 yards and urinate on a rock or bare ground. Don't leave sweaty clothes unattended—goats may chew them.
- **Keep a safe distance—at least 50 yards (half a football field)—from mountain goats at all times.** Animals that are closely approached may lose their natural fear of people, and become habituated to humans. Once habituated, they may develop aggressive behaviors or attempt to assert dominance over people.

If a goat approaches you, slowly move away to keep a safe distance. If it follows you be prepared to chase it off by yelling, waving coats or other objects, or throwing rocks.


If you encounter a mountain goat within 50 yards, please report it to the closest ranger station.

Level 2 (Orange): For use in areas where there are reports of habituated and salt conditioned goats (not for use in situations where we have aggressive mature billy). Implementation: post at trailheads, distribute with backcountry permits, post on backcountry trip planning website.

WARNING



Habituated Mountain Goats in Area



Goats in this area are closely approaching and following people or entering campsites. Habituated wildlife can become aggressive. Goats have sharp, lethal horns.

- Stay at least 50 yards (1/2 length of a football field) away from all wildlife. You may be cited under 36CFR1.5(f) if you are observed closer than 50 yards.
- If a goat approaches, be prepared to chase it off by yelling, waving coats, or throwing rocks!
- Goats crave salts. Urinate on rocks or snow at least 100 feet from the trail. Do not leave sweaty clothes unattended.
- Male goats become more aggressive in the autumn and early winter breeding season.
- **If these goat behaviors persist or deteriorate, this area may be closed and further actions taken.**

Following these guidelines will help protect you and park resources. If you encounter a mountain goat within 50 yards, please report it to the closest ranger station.

Level 3 (Red): Closure for NPS administered intense hazing or lethal removal.

Implementation: post at trailheads, distribute with backcountry permits, post on backcountry trip planning website, press release.

DANGER

**THIS AREA IS CLOSED DUE TO THE
PRESENCE OF AGGRESSIVE MOUNTAIN
GOATS.**

Removal of this sign is illegal under 36 CFR 1.5 and
may result in injury to you and others who follow you
into this area

APPENDIX B: OLYMPIC NATIONAL PARK MOUNTAIN GOAT MANAGEMENT CONTINUUM

MOUNTAIN GOAT MANAGEMENT CONTINUUM (ADAPTED FROM DRAFT WORKING GROUP DOCUMENT)

Classification	Occurrence/ Assessment	Potential Management Actions	Responsibility
1) Single and multiple observations of goats at > 100 meters*	Observation: goats seen at a distance or on escape terrain; natural behaviors exhibited	<ul style="list-style-type: none"> Provide informational material to visitors Post regulatory signs (no feeding, minimum distance, advice on urine deposits etc.) Record observations on daily logs and turn in to WM when page is full or end of season 	
2) Mildly to moderately habituated goats.	Reports of goats not moving off trail as hikers approach until people get within 50 meters; letting people get within 50 meters but not less than 20 meters; easily shooed away.	<p>All of the above, also consider:</p> <ul style="list-style-type: none"> Fill out goat incident form and turn into district ranger and WB. Post higher level regulatory and warning signs. Inform Wildlife Incident Team of developing situation Haze goats in area exhibiting habituated behavior. Record hazing actions and goat responses. 	<ul style="list-style-type: none"> RE, LE, WM
3) Strongly habituated and mildly conditioned goats.	Goats occasionally following people on trail, coming into campsites; not easily chased away; not exhibiting natural behaviors. No aggressive postures in adult males.	<p>All of the above, also consider:</p> <ul style="list-style-type: none"> Staff increase patrols in area; mark animals with paint balls; haze goats exhibiting unacceptable behavior during regular patrols. Increased outreach to visitors about habituated and conditioned goats. 	<ul style="list-style-type: none"> WM, LE, RE, PIO
4) Conditioned goats; some threatening or aggressive behavior	Goats persistently following people on trail, repeatedly coming into campsites; obviously seeking salts; not easily chased away; aggressive postures in adult males	<p>All of the above, also consider:</p> <ul style="list-style-type: none"> Evaluate need for area closure, implement closure if needed Dedicated trained staff implements hazing for several days; mark goats encountered and target hazing on goats exhibiting unacceptable behavior during regular patrols. Continue more intensive patrols when trail opened to assess goat response to hazing. 	<ul style="list-style-type: none"> WIT LE, WM LE, WM
5) Conditioned goats, aggressing behavior	Goats aggressively seeking salt; exhibits threat posture when encountered on trail; will not leave area without aggressive hazing	<p>All of the above, also consider:</p> <ul style="list-style-type: none"> Contact park dispatch and inform WIT of incident Close trail for longer duration. Mark goats in area; consider use of permanent marks (ear tag or radio collar) Patrol closed trail for several days to assess efficacy of aversive conditioning (not in uniform) Consider lethal removal 	<ul style="list-style-type: none"> Anyone WIT, LE WM, LE WIT

APPENDICES

Classification	Occurrence/ Assessment	Potential Management Actions	Responsibility
6) Injury	Goat attacks human; makes contact or corners people making egress impossible	All of the above, also consider: <ul style="list-style-type: none"> Lethal removal 	<ul style="list-style-type: none"> WIT

WM = Wildlife Management staff, **RE** = Resource Education, **PIO** = Public Information Officer, **LE** = Law Enforcement, **VC** = Volunteer Coordinator, **SI** = Superintendent, **WIT**=Wildlife Incident Team (in OLYM consists of Superintendent or Deputy, Wildlife Biologist, Chief Ranger, and Chief of Resources)

*Previously established acceptable distances between humans and ungulates vary by national park system unit and typically range between 25 and 100 meters. NPS units identify acceptable distances for their respective unit and the species being managed.

APPENDIX C: USDA FOREST SERVICE AQUATIC CONSERVATION STRATEGY

New project National Environmental Policy Act (NEPA) decisions must be consistent with the nine Aquatic Conservation Strategy (ACS) objectives, as described in the 1994 *Northwest Forest Plan Record of Decision* on page B-10 (FS 1994).

The nine ACS objectives are listed below along with how the preferred alternative meets them.

1. *Maintain and restore the distribution, diversity, and complexity of watershed and landscape scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted.*

The action alternatives would not prevent attainment of ACS objective 1. Augmentation of existing mountain goat populations would not affect aquatic systems.

2. *Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.*

The action alternatives do not include activities that would obstruct passage of chemical and physical processes to critical areas for fulfilling life history requirements of aquatic and riparian dependent species. Translocation, lethal removal, or moving goats into the high elevation release sites would not affect spatial or temporal connectivity between watersheds. *The action alternatives would not prevent the attainment of ACS objective #02.*

3. *Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.*

Translocation or lethal removal of mountain goats in the Olympic National Forest, or releasing mountain goats, a species native to the North Cascades ecosystem, would not affect the physical integrity of aquatic systems. *The action alternatives would not prevent the attainment of ACS objective #03.*

4. *Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.*

Translocation or lethal removal of mountain goats in the Olympic National Forest, or releasing mountain goats, a species native to the North Cascades ecosystem, would not affect the physical integrity of aquatic systems. *The action alternatives would not prevent the attainment of ACS objective #04.*

5. *Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate and character of sediment input, storage, and transport.*

Translocation or lethal removal of mountain goats in the Olympic National Forest, or releasing mountain goats, a species native to the North Cascades ecosystem, would not affect the physical integrity of aquatic systems. Local sediment transport processes would not be altered. *The action alternatives would not prevent the attainment of ACS objective #05.*

6. *Maintain and restore instream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.*

No management actions in the any of the action alternatives would involve work in water, or required water extraction, therefore *the action alternatives would not prevent attainment of ACS Objective #06.*

7. *Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.*

Activities are not located in areas of floodplain inundation. *The action alternatives would not prevent the attainment of ACS Objective #07.*

8. *Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.*

Translocation or lethal removal of mountain goats in the Olympic National Forest, or releasing mountain goats, a species native to the North Cascades ecosystem, would not adversely affect the composition or structural diversity of plant communities in riparian areas or wetlands. *The action alternatives would not prevent the attainment of ACS objective #08.*

9. *Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.*

Translocation or lethal removal of mountain goats in the Olympic National Forest, or releasing mountain goats into high elevation alpine habitat would not adversely affect habitat for riparian-dependent species. *The action alternatives would not prevent the attainment of ACS objective #09.*

REFERENCES

USDA Forest Service (FS)

- 2014 Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl. April 13, 1994
<https://reo.gov/riec/newroda.pdf>

**APPENDIX D: OLYMPIC, MT. BAKER-SNOQUALMIE, AND
OKANOGAN-WENATCHEE NATIONAL FORESTS FOREST PLAN
STANDARDS AND GUIDELINES**

Olympic National Forest – Forest Plan Standards and Guidelines

This EIS is tiered to the 1990 Olympic Land and Resource Management Plan (forest plan), as amended. Site-specific objectives and guidelines are identified in the plan. The 1990 Forest Plan was amended, in part, by the April 1994 ROD for *Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (USDA Forest Service and USDI Bureau of Land Management 1994). The ROD and associated Standards and Guidelines, provides additional standards and guidelines (USDA Forest Service and USDI Bureau of Land Management, 1994b). These two documents are commonly referred to collectively as the Northwest Forest Plan (NWFP). The 1994 ROD added land allocations that overlay many of the allocations in the 1990 Land and Resource Management Plan. The standards and guidelines it established for these new land allocations supersede management direction in the 1990 Forest Plan unless the 1990 Forest Plan is more restrictive or provides greater benefits to late-successional forest related species. The key elements of the Northwest Forest Plan are a system of Riparian and Late Successional Reserves, the Aquatic Conservation Strategy, and various standards and guidelines affecting each of the land allocations.

Forest-Wide Standards and Guidelines

Goals, Desired Future Condition elements and Standards and Guidelines relevant to the project are listed below.

Recreation

Goals (pg. IV-2)

Provide a range of undeveloped recreation opportunities aimed at maximizing user satisfaction while minimizing user conflicts, overcrowding, and the need for law enforcement intervention.

Desired Future Condition (pg. IV-34)

The Forest's interpretative and educational facilities and programs will have accomplished management goals, and will continue to provide the visitor with the information needed to ensure an enjoyable and safe visit to the Forest. Increasing the visitor's understanding and awareness of natural and cultural resources and their management will continue to be a high priority.

Project Consistency: Consistent with the goal and Desired Future Condition, the proposed purpose and need for the project is to reduce potential public safety issues associated with the presence of mountain goats, along with managing exotic species. Public education is ongoing on this issue.

Wilderness

Goals (pg. IV-3)

1. Manage Wildernesses in accordance with the Wilderness Act of 1964.

Project Consistency: A minimum requirements analysis was conducted to ensure proposed project's consistency with the Wilderness Act of 1964.

Wildlife

Wildlife Habitat

Goals (pg. IV-3)

Emphasize contacts with Olympic Peninsula Indian Tribes and Federal and State agencies to provide for coordinated wildlife habitat management.

Project Consistency: Olympic NP has been conducting Tribal government coordination prior to start of NEPA process; Olympic NF will conduct follow-up consultation with the Peninsula tribes specific to activities on NFS lands.

Wildlife, Fish and Threatened, Endangered, and Sensitive Species

Forest-wide Standards and Guidelines (IV-46)

1. Threatened, Endangered, and Sensitive Species

a. Consultation shall be initiated with the USDI Fish and Wildlife Service whenever an action may affect a Federally-listed threatened or endangered species. Protection of essential habitat for sensitive species should be coordinated with the State.

b. In all areas where threatened, endangered, or sensitive species of plants or animals may occur, surveys shall be performed prior to any major project design. If a threatened, endangered, or sensitive species is found, a biological evaluation shall be performed to determine the effect of the project on the species.

c. Federally listed endangered and threatened species shall be identified, inventoried, and managed in cooperation with the USDI Fish and Wildlife Service. Management of sensitive species should be coordinated with the Washington Department of Wildlife (animals), and Washington Department of Natural Resources (plants).

d. Where management activities or other agents threaten the continued viability of threatened, endangered, or sensitive plants, the threatening activity or agent shall be controlled, removed, or terminated.

Project Consistency: Consultation with the USDI Fish and Wildlife Service is currently being completed in compliance with the Endangered Species Act. A review of species within the project areas and potential impacts is listed in the Environmental Consequences chapter of the EIS. The purpose of the project is to remove non-native mountain goats negatively impacting vegetation and wildlife habitat.

Human and Community Development

Standards and Guidelines (LRMP, IV-55)

1. The public, including minorities and the physically challenged, shall be informed of the availability of Forest programs and opportunities.

2. The Forest shall involve American Indians in Forest planning processes.

3. If during the scoping phase for project analyses it is determined that American Indian rights are an issue, the potentially affected tribes should be involved in the project planning process.

4. The Treaty rights and privileges of affected Indian tribes shall be considered and appropriately provided for in all Forest activities. Information about proposed project activities should be shared with tribal groups whose traditional religious practices, sites, or resources may be affected.

Project Consistency: Olympic NP has been conducting Tribal government coordination prior to start of NEPA process; Olympic NF will follow-up consultation with the Peninsula tribes specific to activities on NFS lands.

Relevant Olympic National Forest Plan Land Management Allocations

Proposed project activities include lands within land management allocations listed in the table below. Relevant goals and standards and guidelines are noted below for each management allocation.

Site #	Type	Translocation Patch	Name	Management Allocation	Description of Management Allocation	Ownership	Wilderness
1	Staging	N/A	Hamma Hamma Gravel Pit (NFS Road 2500-011) (<5 acres)	LSR E1	Late Successional Reserve Timber Management	Olympic NF	No
2	Staging	N/A	Mt. Ellinor Trailhead (<5 acres)	LSR E1	Late Successional Reserve Timber Management	Olympic NF	No
3	Staging	N/A	NFS Road 2419014 (opening adjacent to Mt. Ellinor Trailhead) (<5 acres)	LSR E1	Late Successional Reserve Timber Management	Olympic NF	No
4	Capture and Removal	N/A	Buckhorn Wilderness	B1	Wilderness	Olympic NF	Buckhorn Wilderness
5	Capture and Removal	Areas within and adjacent to Buckhorn Wilderness	The Brothers Wilderness	B1	Wilderness	Olympic NF	The Brothers Wilderness
6	Capture and Removal	N/A	Mt. Skokomish Wilderness	B1	Wilderness	Olympic NF	Mt. Skokomish
7	Capture and Removal	N/A	Wonder Mountain Wilderness	B1	Wilderness	Olympic NF	Wonder Mountain
8	Release	N/A	Colonel Bob Wilderness	B1	Wilderness	Olympic NF	Colonel Bob

9	Capture and Removal	N/A	Additional area adjacent to wilderness areas	LSR	Late Successional Reserve	Olympic NF	No
				F1	Municipal Watersheds		
				A4B	River Corridors		
				F2	Riparian Areas		
				J3	Botanical Areas		

B1 - Wilderness

Goals

To preserve and protect in perpetuity the primeval character and influence of the Wilderness. The area's naturalness and opportunities for solitude, challenge, risk, and inspiration will be key features. Opportunities for recreational, scenic, scientific, educational, conservation, and historical uses will be consistent with Wilderness values.

Standards and Guidelines (pg. IV-83-IV-84)

A. Recreation

1. Motorized vehicles, motorized equipment, motorboats, aircraft landings, or other forms of mechanical transport (including mountain bicycles) shall be prohibited except as necessary to meet minimum requirements for the administration of the area for the purpose of the Wilderness Act, including measures required in emergencies involving the health and safety of persons within the area.

C. Wildlife and Fish

4. Wildlife and fish populations should be managed to prevent damage to habitat that affects Wilderness values. Unacceptable changes shall be determined through the LAC process.

Project Consistency: A minimum requirements analysis was conducted to ensure proposed project's consistency with the Wilderness Act of 1964 and these associated Standards and Guidelines.

A1A - Undeveloped Recreation (Non-motorized)

Standards and Guidelines (pg. IV-63)

1. Motorized vehicles should not be permitted except under the following management situations: aerial fish stocking, habitat improvement, trail maintenance, construction, and reconstruction, transporting facilities necessary for public safety and health, and emergency situations involving search and rescue and firefighting.

Project Consistency: The project purpose is to improve habitat conditions and public safety.

Late Successional Reserve

Standards and Guidelines (NWFP ROD, pg. C-17)

Existing developments in Late-Successional Reserves such as campgrounds, recreation residences, ski areas, utility corridors, and electronic sites are considered existing uses with respect to Late-Successional Reserve objectives, and may remain, consistent with other standards and guidelines. Routine maintenance of existing facilities is expected to have less effect on current old-growth conditions than development of new facilities. Maintenance activities may include felling hazard trees along utility rights-of-way, trails, and other developed areas.

Project Consistency: Consistent with this standard and guideline, Mountain goat staging will take place within the existing, developed Hamma Hamma rock pit and will not impact lands outside of the existing development.

Some capture and removal activities may occur on LSR adjacent to wilderness. These actions are not in conflict with LSR standards and guidelines.

Riparian Reserves

Standards and Guidelines (NWFP ROD, pg. B-12)

As a general rule, standards and guidelines for Riparian Reserves prohibit or regulate activities in Riparian Reserves that retard or prevent attainment of the Aquatic Conservation Strategy objectives.

Project Consistency: Some capture and removal activities may occur within Riparian Reserves adjacent to wilderness. These actions are not in conflict with RR standards and guidelines and will not retard or prevent attainment of Aquatic Conservation Strategy objectives.

E1 - Timber Management, F1 – Municipal Watershed, A4B – River Corridors (General and Natural Level), J3 – Botanical Areas

Project Consistency: Some capture and removal activities may occur within parts of these four management allocations adjacent to wilderness. There are no project-relevant standards and guidelines that would apply for these allocations. Therefore, the project activities would not conflict with the goals, desired future conditions, or standards and guidelines for these allocations.

F2 – Riparian Areas

Project Consistency: See Project Consistency with Riparian Reserve management allocation above.

Wild and Scenic Rivers

Mt. Baker-Snoqualmie National Forest – Forest Plan Standards and Guidelines

Forest-Wide Standards and Guidelines

Wild and Scenic Rivers

- Recommended wild and scenic rivers shall be managed to protect those characteristics that contribute to the eligibility of these rivers at their highest potential classification until Congress formally determines their status. Mt. Baker-Snoqualmie National Forest Plan at 4-95.

Wilderness

- Administration
 - All administrative activity shall be conducted to minimize impacts on the social and biological resource. Mt. Baker-Snoqualmie National Forest Plan at 4-107.
 - Coordination should be maintained with all state, county, and federal agencies as well as private landowners that use, or influence use of the wilderness, to promote understanding of the purposes of wilderness. Mt. Baker-Snoqualmie National Forest Plan at 4-107.
- Vegetation:
 - Non-native plant species should not be introduced. Mt. Baker-Snoqualmie National Forest Plan at 4-108.
- Fish and Wildlife:
 - The Forest Service should continue to work closely with the Washington Departments of Wildlife and Fisheries in all aspects of fish and wildlife management. Forest recommendations will be predicated on need for protection and maintenance of the wilderness resource, including fish and wildlife and their respective habitats. Mt. Baker-Snoqualmie National Forest Plan at 4-111.
 - Native species shall be maintained, with special emphasis on the preservation of threatened or endangered species, plus designated management indicator species and their habitats. Fish or wildlife indigenous to an area, maybe re-established if previously eliminated by the influence of man. Mt. Baker-Snoqualmie National Forest Plan at 4-112.
- Aircraft: The landing of aircraft within the wilderness is prohibited. Air dropping supplies is also prohibited. Exceptions may be granted for emergencies, significant administrative purposes, and fish stocking. Mt. Baker-Snoqualmie National Forest Plan at 4-116.

Wildlife Habitat Management

- Introduction of fish and wildlife species shall be carefully coordinated with the various State and Federal wildlife agencies and considered on a case-by-case basis through NEPA analysis. Mt. Baker-Snoqualmie National Forest Plan at 4-124.
- Activities that adversely affect mountain goats on their spring and summer range shall be identified and mitigated.

Land Uses

- Special use evaluation, permit issuance, fees and administration will be in accordance with Forest Service Manual 2700 or as revised, and 36 CFR 251. Mt. Baker-Snoqualmie National Forest Plan at 4-137.

Okanogan National Forest – Forest Plan Standards and Guidelines

North Cascades Scenic Highway, Management Area 07

Forest Wide Standards and Guidelines

6-8 Manage disturbing activities so they occur outside of critical periods to protect wildlife. Olympic National Forest at 4-35.

8-4 Potential conflicts between recreation users shall be considered in project planning. Users should be involved in creating solutions. 8-15 Seasonal trail closures may be used for safety, resource protection, and to meet Management Area goals. Olympic National Forest at 4-38.

12-3 Emphasis on noxious weed control shall be on the prevention of infestations especially into unroaded and wilderness. Olympic National Forest at 4-45.

Wenatchee National Forest – Forest Plan Standards and Guidelines

Wilderness

Standards and Guidelines

Trampled area of vegetation with season recovery should not exceed 400 square feet. Wenatchee Forest Plan at IV-69

No noticeable modification of natural plan succession due to stock grazing or human activity. Wenatchee Forest Plan at IV-69.

Posting of information and regulations regarding this class will be located at trail heads. Wenatchee Forest Plan at IV-70.

Wildlife and Fisheries

Standards and Guidelines

- Coordinate and cooperate with the Washington Department of Wildlife in relocation of animals. Add additional animals where habitat is under-utilized and remove animals where habitat is over utilized. Wenatchee Forest Plan at IV-81.

Alpine Lakes Management Plan

The 1981 Alpine Lakes Management Plan Final Environmental Impact Statement.

Relevant Management Direction

Recreation

- The landing of aircraft within the wilderness is prohibited. Air dropping supplies is also prohibited. Exceptions may be granted for administrative purposes and fish stocking. ALMP/FEIS at 162.

Fish and Wildlife

- The Forest Service will continue to work closely with the Washington Department of Game in all aspects of fish and wildlife management. Forest recommendations will be predicated on need for protection and maintenance of the Wilderness resource, including fish and wildlife and their respective habitats. Hunting, fishing and trapping will be permitted in accordance with State law under the same restrictions as other recreation use of the Wilderness. ALMP/FEIS at 163.
- Native animal species will be maintained, with special emphasis on the preservation of threatened or endangered species and their habitats. Wildlife may be reestablished in the area if eliminated by the influence of man. ALMP/FEIS at 163.

This plan/EIS is tiered to the final environmental impact statements for the 1990 *Mt. Baker-Snoqualmie National Forest Land and Resource Management Plan*, as amended, the 1989 *Okanogan National Forest Land and Resource Management Plan* as amended, and the 1990 *Wenatchee National Forest Land and Resource Management Plan* as amended. Site-specific objectives and guidelines are identified in the plan. Forest plan management allocations and accompanying standards and guidelines provide the direction for the proposed action. Table 1 identifies the management allocations associated with the mountain goat translocation alternatives (staging and release), land ownership, and whether or not the actions are in wilderness. Two sites (one staging and one release) managed by the Seattle Public Utility District (PUD) are also included in this table for information, but are not guided by Forest Plan direction.

TABLE 1. MANAGEMENT ALLOCATIONS

Name	Management Allocation	Description of Management Allocation	Ownership	Wilderness
Release Sites				
Tower Mountain	34	Administratively withdrawn, Management Area 07 North Cascades Scenic Highway Corridor	OWNF (Okanogan NF LRMP)	No
Chikamin	WI	Wilderness	OWNF (Wenatchee NF LRMP)	Alpine Lakes
Kaleetan	10C	Wilderness - General Trailless	MBSNF	Alpine Lakes
Preacher Mountain	28DRLSR	28/Late Successional Reserve	MBSNF	Alpine Lakes
Upper White Chuck Basin	10D	Wilderness - Dedicated Trailless	MBSNF	Glacier Peak
Buckindy	10D	Wilderness -Dedicated Trailless	MBSNF	Glacier Peak
Snowking Meadow	10C	Wilderness - General Trailless/Late Successional Reserve	MBSNF	Glacier Peak
Cadet Lake Ridge	10C	Wilderness - General Trailless	MBSNF	Henry M. Jackson
Mt. Stillaguamish	1BLSR	Semi-Primitive Nonmotorized/Late Successional Reserve	MBSNF	No
Mt. Index	1B	Semi-Primitive Nonmotorized	MBSNF	No
Vesper Sperry	22B	Sultan River Municipal Watershed	DNR/MBSNF	No
Goat Meadow	N/A	N/A	Seattle Public Utilities	No

Name	Management Allocation	Description of Management Allocation	Ownership	Wilderness
Staging Areas				
Swamp Creek	34	Administratively withdrawn, Management Area 07 North Cascades Scenic Highway Corridor	OWNF (Okanogan NF LRMP)	No
Alpental parking area	27D	Alpine Lakes Management Area - Dev eloped Site	MBSNF/private	No
Forest Road 49	LSR	Late Successional Reserve	MBSNF	No
Independence Lake Trailhead	LSR	Late Successional Reserve	MBSNF	No
CERCLA site	LSR	Late Successional Reserve	MBSNF	No
Proctor Creek	N/A	N/A	Private	No
Green Mountain Pasture	6	Skagit Wild and Scenic River	MBSNF	No
Irene Creek Rock Pit	LSR	Late Successional Reserve	MBSNF	No
150 pit	N/A	N/A	Seattle Public Utilities	No

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980

DNR = Department of Natural Resources

LRMP = Land and Resource Management Plan

MBSNF = Mt. Baker-Snoqualmie National Forest

OWNF = Okanogan-Wenatchee National Forest

APPENDIX E: OLYMPIC NATIONAL PARK MINIMUM REQUIREMENTS ANALYSIS

Olympic National Park

Wilderness Project Proposal Form and Minimum Requirements Worksheet



PART ONE: Wilderness Project Proposal Information

Project Originator(s):	Christina Miller
Division:	Superintendent's (Planning and Compliance Office)
MRW Preparer:	Christina Miller
Date:	December 14, 2016 (Revised March 6, 2017)
PEPC #:	49246
What is the <u>issue</u> or <u>problem</u> to be solved?	The presence of exotic mountain goats in Olympic National Park (the park).
What is the underlying need for the project?	<p>Mountain goats are not native to the Olympic Peninsula. They were introduced to the Olympic Mountains prior to the formation of the park, and have since colonized the entire range, with the majority of the population residing within the park (Noss et al. 2000). The original need to manage this exotic species was driven by ecological concerns related to the impacts that mountain goats impose on natural resources at the park, particularly sensitive vegetation communities (NPS 1995; Houston, Schreiner, and Moorhead 1994). New concerns were raised in 2010 when a visitor was fatally gored by a mountain goat while hiking on a park trail. Mountain goats have a high affinity for salts and natural sources of salt within their native range. There are no natural sources of salt in the Olympic Mountains and mountain goats have learned to seek salts from humans. In high visitor use areas within the park, mountain goats have become habituated to the point that they are a nuisance and may be hazardous to park visitors. The Olympic National Park Nuisance and Hazardous Animal Management Plan includes the <i>Mountain Goat Action Plan</i>, which addresses mountain goat behavior and seeks to minimize the potential for hazardous goat-human encounters. This action plan focuses on the management of individual mountain goats which have been identified as potentially hazardous. Additional planning and compliance is needed to address overall management of the mountain goat population within the park.</p> <p>As a result of the above stated concerns, and based on National Park Service (NPS) policy, a plan/EIS has been developed to address the impacts of exotic mountain goats in the park, which includes the interference with natural processes, native species, and</p>

	<p>natural habitats and impacts to visitor safety.</p> <p>The plan/EIS analyzed four alternatives. While, based on impact analysis section in Chapter 4 of the plan/EIS, Alternative C (lethal removal only) was determined to have the least amount of impacts on overall wilderness character (only due to less frequent and shorter duration of maintenance activities), the planning team determined that Alternative D (combination of capture and translocation and lethal removal) within plan/EIS would provide the park with best direction for the overall management of exotic mountain goats. This determination was made during an IDT workshop with the project's Cooperating Agencies. A process was followed that identified whether and to what extent each alternative in the draft plan/EIS addressed the plan's seven objectives as identified on page 2 of the plan/EIS, one of which was, "Protect the wilderness character of Olympic National Park." A 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" (2015 NPS NEPA Handbook). These factors were also taken into consideration.</p> <p>Thus only the no action and preferred alternatives are considered in this minimum requirement analysis.</p>
Location (attach map and/or photos):	See figures 1 and 2 in the plan/EIS.
Is resolution of this issue addressed in an approved NEPA document: Categorical Exclusion (CE); Environmental Assessment, Finding of No Significant Impact (FONSI); or Environmental Impact Statement, Record of Decision (ROD)? If so, please name:	The resolution of this issue is currently being addressed in the Olympic National Park Mountain Goat Management Plan/Draft Environmental Impact Statement (plan/EIS).
What would happen if the need were not met? (NO ACTION)	If the need were not met, exotic mountain goats would remain within the park, would likely increase in population numbers, and would continue to adversely affect the natural quality of wilderness character. The mountain goats would also continue to adversely affect opportunities for solitude or a primitive and unconfined type of recreation (through incessantly seeking salts from humans) and possibly also the undeveloped quality of wilderness character (through the use of helicopters or the use of guns or other prohibited uses/means to capture or lethally remove nuisance mountain goats).

Wilderness Minimum Requirement Analysis (MRA)	
STEP ONE: Determine if action is necessary or appropriate	
1	<p>Is the resolution of this issue covered by an existing Wilderness Plan or other NEPA decision document that includes wilderness minimum requirement considerations?</p> <p>Answer: Yes____ No __X__</p>
<p>If "Yes" provide name of document and approval date:</p>	
<p>Yes ↓ No ↓</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; text-align: center;">Implement action as approved</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">Continue PPF/MRA</div> </div>	
2	<p>Has Superintendent determined this is an emergency in accordance with law & policy?</p> <p>Answer: Yes____ No __X__</p>
<p>No ↓</p> <div style="border: 1px solid black; padding: 5px;">Yes, Follow approved emergency SOPs/management plans. If they do not exist or have not gone through MRA, continue MRA.</div>	
3	<p>List guidance provided in law and policy for resolution of the issue</p> <p>See Management Policies Chapter 6, Director's Order #41 and other applicable laws, policies and directives. Add additional policy guidance as appropriate.</p>
<p>WILDERNESS MINIMUM REQUIREMENT</p> <p>Wilderness Act of 1964 – Section 2(a) In order to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition, it is hereby declared to be the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness. For this purpose there is hereby established a National Wilderness Preservation System to be composed of federally owned areas designated by Congress as "wilderness areas", <u>and these shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character</u>, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness; and no Federal lands shall be designated as "wilderness areas" except as provided for in this Act or by a subsequent Act.</p> <p>Wilderness Act of 1964 - Prohibition Of Certain Uses Section 4(c) Except as specifically provided for in this Act, and subject to existing private rights, there shall be no commercial enterprise and no permanent road within any wilderness area designated by this Act and except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act (including measures required in emergencies involving the health and safety of persons within the area), there shall be no temporary road, no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft, no other form of mechanical transport, and no structure or installation within any such area.</p> <p>NPS Management Policies 2006, § 6.3.5 Minimum Requirement All management decisions affecting wilderness must be consistent with the minimum requirement concept. This concept is a documented process used to determine if administrative actions, projects, or programs undertaken by the Service or its agents and affecting wilderness character, resources, or the visitor experience are necessary, and if so how to minimize impacts. The minimum requirement concept will be applied as a two-step process that determines whether the proposed management action is appropriate or necessary for administration of the area as wilderness and does not cause a significant impact to wilderness resources and character, in accordance with the Wilderness Act; and the techniques and types of equipment needed to ensure that impacts on wilderness resources and character are</p>	

minimized.

In accordance with this policy, superintendents will apply the minimum requirement concept in the context of wilderness stewardship planning, as well as to all other administrative practices, proposed special uses, scientific activities, and equipment use in wilderness. The only exception to the minimum requirement policy is for eligible areas that the Service has not proposed for wilderness designation. However, those lands will still be managed to preserve their eligibility.

When determining minimum requirements, the potential disruption of wilderness character and resources will be considered before, and given significantly more weight than, economic efficiency and convenience. If a compromise of wilderness resources or character is unavoidable, only those actions that preserve wilderness character and/or have localized, short-term adverse impacts will be acceptable.

Although park managers have flexibility in identifying the method used to determine minimum requirement, the method used must clearly weigh the benefits and impacts of the proposal, document the decision-making process, and be supported by an appropriate environmental compliance document. Parks must develop a process to determine minimum requirement until the plan is finally approved. Parks will complete a minimum requirement analysis on those administrative practices and equipment uses that have the potential to impact wilderness resources or values. The minimum requirement concept cannot be used to rationalize permanent roads or inappropriate or unlawful uses in wilderness.

Administrative use of motorized equipment or mechanical transport will be authorized only

- if determined by the superintendent to be the minimum requirement needed by management to achieve the purposes of the area, including the preservation of wilderness character and values, in accordance with the Wilderness Act; or
- in emergency situations (for example, search and rescue, homeland security, law enforcement) involving the health or safety of persons actually within the area.

Such management activities will also be conducted in accordance with all applicable regulations, policies, and guidelines and, where practicable, will be scheduled to avoid creating adverse resource impacts or conflicts with visitor use.

While actions taken to address search and rescue, homeland security and law enforcement issues are subject to the minimum requirement concept, preplanning or programmatic planning should be undertaken whenever possible to facilitate a fast and effective response and reduce paperwork.

For more detailed guidance, see Director's Order #41 and the National Wilderness Steering Committee Guidance Paper #3: "What Constitutes the Minimum Requirements in Wilderness?"

ADDITIONAL POLICY GUIDANCE AS APPROPRIATE

NPS Management Policies 2006, § 4.4.4.2 Removal of Exotic Species Already Present – All exotic plant and animal species that are not maintained to meet an identified park purpose will be managed – up to and including eradications – if (1) control is prudent and feasible, and (2) the exotic species

- interferes with natural processes and the perpetuation of natural features, native species or natural habitats, or
- disrupts the genetic integrity of native species, or
- disrupts the accurate presentation of a cultural landscape, or
- damages cultural resources, or
- significantly hampers the management of park or adjacent lands, or
- poses a public health hazard as advised by the U.S. Public Health Service (which includes the Centers for Disease Control and the NPS public health program), or
- creates a hazard to public safety.

Executive Order 13112, "Invasive Species" – The NPS is required to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.

4	Is resolution of this issue necessary or appropriate to meet wilderness management objectives or the requirements of other laws, policies and directives?	Answer: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
	<p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Do not proceed with action</p>	<p>Explain:</p> <p>Please see Section 3 above in regard to the Wilderness Act and additional policy guidance.</p>
5	Can the issue be resolved through visitor education?	Answer: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
	<p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Carry out visitor education</p>	<p>Explain:</p> <p>Visitor education alone would not eradicate the exotic mountain goats. The population of exotic mountain goats that currently exists within the park is estimated to be 500 individuals. Visitors are currently asked to assist in hazing activities if/when mountain goats are within range of visitors. Hazing activities (e.g., shouting, throwing rocks) are merely an attempt to create a negative association/fear of humans by mountain goats in an effort to encourage goats to refrain from approaching humans. Hazing activities do not remove exotic species from park lands.</p>
6	Can the issue be resolved through actions outside of wilderness?	Answer: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
	<p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Conduct actions outside wilderness</p>	<p>Explain:</p> <p>The exotic mountain goats reside within the Daniel J. Evans Wilderness as well as within adjacent U.S. Forest Service (USDA Forest Service) wilderness areas: Buckhorn, The Brothers, and Mount Skokomish.</p>

I have reviewed this project proposal and have determined that it meets the overall goals of Olympic National Park and can be included in my divisional work plan. I have designated a project coordinator below to represent my division and present the proposal to the Compliance Council.

Project Manager:		
Division Chief Signature:		Date:

Next step:
Contact the Planning & Compliance Office to schedule the issue for discussion by the Olympic National Park Compliance Council.

I have reviewed this project proposal and have determined that the proposed management action is appropriate or necessary for administration of the park, if in wilderness it is appropriate and necessary for the administration of the area as wilderness, in accordance with the Wilderness Act. I recommend that alternatives be developed to ensure that actions taken would not cause a significant impact to wilderness resources or character, and to develop techniques and types of equipment needed to ensure that impacts on park resources and values, and wilderness

resources and character are avoided or minimized. Complete Part Two (next page).

Deputy Superintendent:

Date:

PART TWO: Evaluate Alternatives, as appropriate determine the minimum tools, techniques and actions that would effectively resolve the issue while avoiding or minimizing adverse effects.

8		<p>Questions to answer for each alternative:</p> <ul style="list-style-type: none"> • What is proposed? • Does the proposed action involve new construction or repair/rehab to existing structures/utilities/assets? • Does the project take place in the same location/footprint/trench used before, or in a previously undisturbed area? • Would the project involve ground disturbance (cut or fill)? If so, how many cubic yards and where will materials be deposited (both temporarily and permanently)? If fill materials are taken, identify the specific site fill taken from and if the materials are native to the park. How would fill be "stored"? • How much excavation would be necessary (quantify by width, length, depth, cubic feet, number or lines, etc.) • Would the proposal involve work in or near a known archeological site or other historic property? • Would a staging area be required? If so, identify staging area(s), include map, what type of materials and/or equipment and for how long? What would be the estimated square footage of the staging area? • How/where would construction debris be disposed of? • How much surface area would be disturbed, cleared, or denuded of vegetation (quantify by square footage, # of trees removed, etc.) • Would the project involve any geologic or hydrologic features/alter stream courses, surface or ground water flow? • Would the proposal involve structures, fill, or discharge into water (example: bridge crossing, boardwalk, gravel, culverts, etc.)? • Would the proposal affect water quality or quantity? • What changes would occur in land/facility use? • What changes would occur to traffic flow or visitor circulation? • Would the proposal require aerial operations? • Would the proposal alter visitor services, activities, or experiences? • Where would the action take place? • When would the action take place? • What design and standards would apply? • What methods, tools and techniques would be used? • How long would it take to complete the action? • What mitigation would be taken to minimize action impacts on park resources and values, and
	Describe in detail alternative ways to resolve the issue (include use of minimum tools as appropriate)	
	Note: Alternatives described in other compliance documents that address this issue may be referenced. If minimum requirement considerations were not included, develop below for projects affecting wilderness.	

	wilderness resources and character (where applicable)?
--	--------------------------------------------------------

Alternative 1: No action

- **What is proposed?**

- Under the no action alternative (Alternative A in the plan/EIS), options for the management of mountain goats in the park would be limited to those actions outlined in the *Mountain Goat Action Plan* 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.” 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.
- Management under the *Mountain Goat Action Plan*, and therefore under Alternative 1, 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 the continuum of mountain goat-human interactions and the appropriate park response.
- The management actions include the following, listed in order of increasing intensity, based on an increasing (worsening) classification of goat behavior (i.e., as goats become more habituated or aggressive):
 - Providing informational material to visitors.
 - Posting regulatory signs (no feeding, minimum distance, advice on urine deposits, etc.). These signs would be posted at trailheads and bulletin boards. Very few would be in the wilderness.
 - Recording observations on daily logs and turn in to the wildlife manager when the page is full or at the end of the season.
 - Filling out goat incident forms and turning them in to the district ranger and wildlife manager.
 - Posting higher level regulatory and warning signs. These signs would be posted at trailheads and bulletin boards. Very few would be in the wilderness.
 - Informing the Wildlife Incident Team of developing situations.
 - Hazing goats in the area(s) that are exhibiting habituated behavior. Recording hazing actions and goat responses. Hazing actions include, but are not limited to; yelling, throwing rocks, banging hiking sticks, hitting habituated animals with projectiles propelled via sling shot and paint ball gun (CO2 charges) and rubber slugs and bean bag rounds propelled by a shot gun.
 - Increasing staff patrols in the area(s), marking animals with paint balls; hazing goats exhibiting unacceptable behavior during regular patrols.
 - Increasing outreach to visitors about habituated and conditioned goats.
 - Evaluating the need for area closure(s) and implementing the closure(s) if needed.
 - Dedicating trained staff to implement hazing for several days, and marking goats encountered and target hazing on goats exhibiting unacceptable behavior during regular patrols.
 - Continuing more intensive patrols when the trail is opened to assess goat response to hazing.
 - Contacting park dispatch and inform Wildlife Incident Team of incident.
 - Closing trails for longer durations.
 - Marking goats in the area, consider the use of permanent marks (ear tag or radio collar).
 - Patrolling closed trail(s) for several days to assess efficacy of aversive conditioning

- (not in uniform).
 - Consider lethal removal.
 - Conduct lethal removal.
- Management elements that could be employed under alternative A are as follows:
 - **Interpretive Tools** - Park 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 in the park. Interpretation would include efforts to increase the public's awareness of the current mountain goat situation within the park and on the Olympic Peninsula, as well as associated management activities.
 - **Nuisance 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 (by shooting) as described above under management actions.
 - **Access** - Park staff would primarily access mountain goat management areas on foot. Management activities under the no-action alternative would take place primarily in high visitor use areas that are accessed via hiking, but could also occur in more remote areas utilizing helicopters as needed to complete necessary management actions such as in emergency response (i.e., response to an attack by a goat – get staff in there quickly; haul out.)
 - **Park Closures** - It would occasionally be necessary to close *areas of the park for hazing activities associated with the no-action alternative. Often when hazing, park staff work to involve park 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, then that particular *area of the park would be temporarily closed for the duration of the process. Closures for management may last from a few hours to a few weeks. *Area is going to vary based on how well we understand just where the goat or goats in question are roaming, and where the interactions may occur. It can be as small as on top of Victor Pass (as was the case in the 2010 fatality), to the upper Royal Basin (as was the case in 2011) to the whole 7 Lakes Basin if we have an attack by an unmarked goat in that area.
 - **Firearms (Lethal Removal)** - Under the no-action alternative, there would be the potential for lethal removal of mountain goats. This would involve using firearms such as high-powered rifles for the removal of mountain goats that have exhibited habitual aggressive behavior or have presented a clear threat to human safety. As necessary, park staff would be involved with lethal removal activities, including the field activities directly related to the reduction efforts (assisting with enforcing temporary closures of management area, patrolling, shooting, carcass handling). Contracted sharpshooters or designated hunters (e.g. volunteers who have gone through training and are approved by the NPS) would also likely be involved with lethal removal activities. Each individual's role would be identified prior to reduction and could include any of the actions noted above. The process for identifying mountain goats for lethal removal is described above under management actions. Specific protocols for lethal removal under the no-action alternative are described in the *Mountain Goat Action Plan*. Carcasses may be left in place or hauled out via helicopter for necropsy.
- **Does the proposed action involve new construction or repair/rehab to existing structures/utilities/assets?**
 - No
- **Does the project take place in the same location/footprint/trench used before, or in a previously undisturbed area?**
 - Hazing and marking would continue to occur throughout the mountain goat range.
 - If the management action leads to lethal removal, this could occur in or outside of previously disturbed areas. This could entail the use of helicopter for sharpshooting and the on-the-ground removal (moving the goat to an area outside of immediate public sight (>100m and out of sight) – some areas may be visible but unsafe to access; or on-the-ground operations to assist with removal by helicopter). The same footprint as before – which is potentially the entirety of mountain goat range – however this one is a little awkward as there is no ground

- disturbance associated with our actions – however there is with the goat's activities.
- **Would the project involve ground disturbance (cut or fill)? If so, how many cubic yards and where will materials be deposited (both temporarily and permanently)? If fill materials are taken, identify the specific site fill taken from and if the materials are native to the park. How would fill be “stored”?**
 - This project does not involve cut or fill ground disturbance. The signs would not be on posts, and therefore no holes would be dug.
 - **How much excavation would be necessary (quantify by width, length, depth, cubic feet, number or lines, etc.)**
 - None
 - **Would the proposal involve work in or near a known archeological site or other historic property?**
 - Exotic mountain goat management activities could occur in or near known archeological sites or other historic property.
 - **Would a staging area be required? If so, identify staging area(s), include map, what type of materials and/or equipment and for how long? What would be the estimated square footage of the staging area?**
 - Staging areas could be utilized for lethal removal operations if it is determined that a necropsy would be needed on the goat. Staging areas would mainly be used for helicopter operations for approximately one day for goat removal. Staging areas would be determined based on the location of the incident and would be located outside of wilderness and likely be identified in existing visitor parking areas (such as Hurricane Hill and Deer Park as identified in the plan/EIS for the preferred alternative) or in Sweets Meadow (where there's a currently designated helicopter landing area outside of wilderness in the Elwha Valley).
 - **How/where would construction debris be disposed of?**
 - N/A
 - **How much surface area would be disturbed, cleared, or denuded of vegetation (quantify by square footage, # of trees removed, etc.)**
 - None to very little if there's a need to move (by dragging) a lethally removed goat out of sight of visitors/out of high use areas. The disturbance to vegetated areas would be trampling.
 - **Would the project involve any geologic or hydrologic features/alter stream courses, surface or ground water flow?**
 - No
 - **Would the proposal involve structures, fill, or discharge into water (example: bridge crossing, boardwalk, gravel, culverts, etc.)?**
 - No
 - **Would the proposal affect water quality or quantity?**
 - No
 - **What changes would occur in land/facility use?**
 - None
 - **What changes would occur to traffic flow or visitor circulation?**
 - If area closures are implemented, visitors would not be able to enter those areas/hike those trails. If there is a need to conduct a lethal removal operation, those areas would be closed to visitor use and parking areas utilized as staging areas would also be closed to visitor use. These closures would be temporary, only long enough to conduct the operation.
 - **Would the proposal require aerial operations?**
 - If it is determined that a necropsy is necessary on a lethally removed goat, then a helicopter may be utilized to facilitate in the physical removal of the goat from an area to the frontcountry for the procedure.
 - **Would the proposal alter visitor services, activities, or experiences?**
 - If area closures are implemented, visitors would not be able to enter those areas/hike those trails. If there is a need to conduct a lethal removal operation, those areas would be closed to visitor use and parking areas utilized as staging areas would also be closed to visitor use. These closures would be temporary, only long enough to conduct the operation.
 - **Where would the action take place?**
 - Wherever there are human-goat encounters occurring – both in wilderness and frontcountry areas.
 - **When would the action take place?**

- The timing of management actions would be based on the need for action, but would likely occur primarily during times of high visitor use within the park when there is greater potential for mountain goat-human interactions.
- **What design and standards would apply?**
 - Helicopter safety, developed in a Helicopter Safety Plan, as well as staff and visitor safety protocols.
- **What methods, tools, and techniques would be used?**
 - Signs, hazing, staff patrols, area/trail closures, paint ball marking of goats, firearms to lethally remove goats, helicopter to remove goats requiring necropsy.
- **How long would it take to complete the action?**
 - The frequency of management actions would vary depending on the level of mountain goat-human interactions 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 goat 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 occur 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.
- **What mitigation would be taken to minimize action impacts on park resources and values, and wilderness resources and character (where applicable)?**
 - Research and monitoring activities would continue opportunistically according to current park operations and based on available funding. Park staff would continue to collect information on the population of mountain goats in the park including topics such as goat population levels and visitor interactions. Annual aerial monitoring would continue as funding allows.
 - Lethal removal would occur by foot vs. helicopter when and where possible.
 - Public notification of activities affecting wilderness would be provided, and appropriate information would be distributed at visitor centers.
 - Duration and geographic scope of actions and disturbances would be minimized in wilderness areas.
 - The tool that would cause the least amount of disturbance to wilderness would be used for all management actions.
 - “Leave No Trace” principles would be applied to all management actions.
 - Helicopter operations would not be conducted within a minimum of 500 feet from marbled murrelet and northern spotted owl habitat.
 - Helicopter flight paths to and from staging areas would be designed to minimize noise impacts to wildlife and visitors to the greatest practical extent.
 - Area closures in the immediate vicinity of mountain goat hazing and lethal removal operations would minimize noise impacts to backcountry visitors.
 - 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 amount of affect to wildlife and wildlife habitat.
 - Lead-free ammunition would be used for lethal removal activities to prevent contamination.
 - Project staff would be properly trained regarding adherence to safety protocols identified in the Olympic National Park *Mountain Goat Action Plan*.

Alternative 2:

- **What is proposed?**
 - Alternative 2 (Alternative D in the plan/EIS – the Preferred Alternative) would utilize a combination of capture and translocation and lethal removal tools to reduce (to the point that the population cannot survive) or eliminate mountain goats from the park. Under this alternative approximately 90% of the projected 2018 mountain goat population, or approximately 625 to 675 mountain goats would be removed. Approximately 10% of the

mountain goat population would remain following initial management, or between 50 and 100 mountain goats based on the projected 2018 population size. These goats would be subject to maintenance activities of ground- and helicopter-based lethal removal in proximity to areas of high human use.

- The specific management elements and actions that could be used for capture and translocation are as follows:
 - **Personnel Access** – Management activities for capture and translocation would involve several tools for accessing remote areas. Park staff would access backcountry areas via foot in order to bait and trap mountain goats. Fixed-wing aircraft or helicopters could be used to identify areas for aerial capture operations. Helicopters would be used to facilitate capture of mountain goats and to transport them to specific staging areas for transfer of ownership to the Washington Department of Fish and Wildlife (WDFW).
 - **Capturing Mountain Goats** – Mountain goats would be captured either through the use of helicopter capture operations or ground-based capture techniques followed by transport to specified staging areas via helicopter for transfer to WDFW. WDFW would then translocate mountain goats using a combination of trucks and helicopters.
 - Each year, for 3-5 years, there would be a maximum of two 2-week operations (occurring in July and in August or September) of 8 flight hours per day. There may be up to 2 helicopters in the air at one time, weather and funding dependent (this is the maximum, the actual likelihood is much less).
- Capture and translocation would occur in most areas prior to direct reduction activities.
- Once a point of diminishing returns for capture operations is reached, management would continue using lethal removal activities.
- There would be a desired eventual population goal of zero mountain goats within the park. The desired population goal may be difficult to obtain; however, the intent of the action would be to reduce the population to a level where maintenance activities (e.g., shooting goats if and when they re-occur – activities can be either ground hunting or aerial operations) would prevent the population from rebounding to pre-reduction numbers.
- When goats become too difficult to capture, the park would switch to lethal removal. In this alternative, it is anticipated that the majority (90-100%) of operations in year 1 would be live capture. In year 2, as the mountain goats get sparser and more wary, situations would develop where the crew (of about 6 staff in two helicopters; and 99% of the operations would be in wilderness) would encounter goats that are obviously uncatchable – either in areas where it was determined in the prior year to be unworkable terrain, or when a goat that has been involved in prior capture attempts and is extremely elusive. In those situations, mountain goats would be removed lethally. It is estimated that in year 2 the majority of the mountain goats would be live captured, but a lower percentage than in year 1 (60-70% live capture, 30-40% lethal removal). In year 3, for the first capture period, the park would try to conduct live captures, but it is estimated that the success rate would be low and a greater portion of the mountain goats would be lethally removed (20-30% capture, 70-80% lethal removal). In the last operations period of year 3, almost all of the mountain goats encountered would be lethally removed. The park would continue mountain goat capture operations as long as it is safe and feasible, and there are still areas available to receive mountain goats. The switch to lethal removal may be made at the end of year 2.
- Maintenance activities (as explained above) under this alternative would be prioritized in areas of high visitor or mountain goat use and areas experiencing high levels of resource damage, and would primarily be done through lethal removal.
- Interpretive Tools:
 - Park staff would provide information and educational opportunities to the public through interpretive programs and visitor interactions regarding the management of mountain goats in the park.
 - Interpretation would include efforts to increase the public's awareness of the current mountain goat situation within the park and on the Olympic Peninsula, as well as about management activities that would be undertaken under this alternative.
 - Interpretive tools could include enhanced outreach to media outlets, expanded website resources, additional backcountry notices, and informational handouts. These signs would be posted at trailheads and bulletin boards. Very few would be in the wilderness.

- Park Closures:
 - There would be the potential for closing limited park areas while undertaking various management actions including lethal removal and capture operations (there's the potential to close 7 Lakes, Lake of the Angels, and Klahanne for ~5-12 days, not all at once; or there may be no closures at all); and Hurricane Hill would be closed while that staging area is in use and Deer Park Campground may be closed while the Deer Park staging area is in use. Park closures would include areas within the vicinity of active management activities and surrounding staging areas.
 - No parkwide closures would occur.
 - Closures in specific areas could last for several days while management activities are taking place. The closure schedule and geographic areas impacted by closures would be coordinated with the Wilderness Information Center that issues wilderness use permits to ensure that no permits are issued for areas undergoing management activities. Closures would also be coordinated with wilderness and law enforcement rangers, volunteer staff, and all other park staff that could potentially be working in closed areas.
- Staging Areas:
 - The use of helicopters would be required to access remote areas of the park and would require space for taking off and landing. Space for animal care and handling would also be required for capture and translocation activities and would include areas to unload mountain goats from slings, receive veterinary care and process (unload from sling, subdue, examine, treat any illnesses or wounds, gather biological samples and morphometric samples, tag and/ or collar, hydrate, place in shade in box until transported), and to load into vehicles for transport for translocation.
 - Staging areas would not be located in designated wilderness, but would be located on previously disturbed areas and would be used for management action mobilization of staff and equipment.
 - Areas for aircraft landing would be located adjacent to mountain goat handling areas, and would be located far enough away to maintain safety.
 - Potential staging areas have been identified and include Deer Park, Hurricane Hill parking area and potentially the overflow parking lot, and Sweets Field (alternate) in the park, and Hamma Hamma and the Mt. Ellinor Trailhead in ONF.
 - The use of staging areas would rotate to those areas closest to where management actions would occur.
 - Some minor improvement to staging areas (e.g., ground leveling and grading, removal and trimming of vegetation, and treatment for noxious weeds) may be required; however it would all occur within the existing footprint of the disturbed area and outside of designated wilderness.
 - The NPS would not be responsible for staging area improvements on USDA Forest Service property.
- Baiting:
 - Salt blocks may be placed in remote areas of the park to attract mountain goats to suitable areas for carrying out management activities. Research has demonstrated that pre-baiting with salt and trace mineral blocks up to one year prior to removal actions can significantly increase effectiveness. Locations would be identified to provide for the greatest efficacy of either capture or lethal removal actions depending on the alternative being implemented. Areas would either be located away from public use areas or closed to public access to minimize human-mountain goat conflicts. The maximum number of areas would be five. Salt blocks would be placed in impermeable containers to prevent salt from leaching into soils and would be removed once management activities are complete to limit effects to other wildlife species.
- Firearms:
 - High-powered rifles would be used in all lethal actions. Personnel involved, which could include NPS or other federal personnel, state personnel, or authorized agents 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 injured during management activities would be

- dispatched as quickly as possible to minimize suffering. The specific management elements and actions that could be used for the lethal removal of mountain goats are as follows: Helicopters and fixed-wing aircraft would be used to access areas where goats need to be dispatched and high-powered firearms would be used to dispatch mountain goats in and adjacent to the park.
- Animal Welfare:
 - The NPS would adhere to guidelines from the American Veterinary Medical Association on euthanasia of animals to ensure that management actions are conducted as humanely as possible to minimize mountain goat suffering. When capturing mountain goats for translocation, management actions would be designed to maximize the humane treatment of animals including capturing nannies with dependent young together in order to enhance the likelihood of survival. NPS would use a variety of techniques to improve the survival rates of nannies with dependent young. These include but are not limited to: trapping nannies with young in clover traps and transporting them together to holding areas, if young did not enter traps they could be caught adjacent to nannies with either net guns or immobilized with drugs. When using helicopters the same techniques could be used and every effort made to secure the dependent young with the nannies, this could be done by separating nannies with young during pursuit and keeping the groups together and then using net guns to capture both animals in one net. If using drugs then similar techniques would be applied; capturing the nannies first and then young as they stayed near the immobilized adult or once the adult is caught pursuing the dependent young. If drive traps are used they would be implemented following the methods described by Smith 2010. Nannies and their young will be transported together. When using lethal removal with firearms, consideration would be given to the choice of firearm, non-lead ammunition, and shot placement to ensure the humaneness of the action.
 - Carcass Handling and Disposal:
 - Mountain goat carcasses resulting from management activities would be left in the field but would be relocated away from trails, campsites, or where visible from high visitor use areas. If feasible, carcasses could be provided to the Skokomish Indian Tribe to obtain hides and horns.
 - **Does the proposed action involve new construction or repair/rehab to existing structures/utilities/assets?**
 - No
 - **Does the project take place in the same location/footprint/trench used before, or in a previously undisturbed area?**
 - Capture and lethal removal actions will take place range-wide – see comments on the no action alt for this question
 - If the management action leads to lethal removal, this could occur in or outside of previously disturbed areas. This could entail the use of helicopter for sharpshooting and the on-the-ground removal (moving the goat to an area outside of immediate public site; or on-the-ground operations to assist with removal by helicopter).
 - **Does the project take place in the same location/footprint/trench used before, or in a previously undisturbed area?**
 - Hazing and marking would continue to occur throughout the mountain goat range.
 - If the management action leads to lethal removal, this could occur in or outside of previously disturbed areas. This could entail the use of helicopter for sharpshooting and the on-the-ground removal (moving the goat to an area outside of immediate public sight (>100m and out of sight) – some areas may be visible but unsafe to access or on-the-ground operations to assist with removal by helicopter).
 - **Would the project involve ground disturbance (cut or fill)? If so, how many cubic yards and where will materials be deposited (both temporarily and permanently)? If fill materials are taken, identify the specific site fill taken from and if the materials are native to the park. How would fill be “stored”?**
 - This project does not involve cut or fill ground disturbance. Signs would not be placed on posts, and therefore not holes would need to be dug.
 - **How much excavation would be necessary (quantify by width, length, depth, cubic feet, number or lines, etc.)**

- None
- **Would the proposal involve work in or near a known archeological site or other historic property?**
 - Exotic mountain goat removal activities could occur in or near known archeological sites or other historic property.
- **Would a staging area be required? If so, identify staging area(s), include map, what type of materials and/or equipment and for how long? What would be the estimated square footage of the staging area?**
 - Staging areas for capture and lethal removal operations are described above. They would not be in wilderness
- **How/where would construction debris be disposed of?**
 - N/A
- **How much surface area would be disturbed, cleared, or denuded of vegetation (quantify by square footage, # of trees removed, etc.)**
 - None to very little if there's a need to move (by dragging) a lethally removed goat out of sight of visitors/out of high use areas. The disturbance to vegetated areas would be trampling.
- **Would the project involve any geologic or hydrologic features/alter stream courses, surface or ground water flow?**
 - No
- **Would the proposal involve structures, fill, or discharge into water (example: bridge crossing, boardwalk, gravel, culverts, etc.)?**
 - No
- **Would the proposal affect water quality or quantity?**
 - No
- **What changes would occur in land/facility use?**
 - None
- **What changes would occur to traffic flow or visitor circulation?**
 - If area closures are implemented, visitors would not be able to enter those areas/hike those trails. If there is a need to conduct a lethal removal operation, those areas would be closed to visitor use and parking areas utilized as staging areas would also be closed to visitor use. These closures would be temporary, only long enough to conduct the operation.
- **Would the proposal require aerial operations?**
 - Translocation operations require aerial operations. Lethal removal operations would also require aerial operations. If it is determined that a necropsy is necessary on a lethally removed goat, then a helicopter may also be utilized to facilitate in the physical removal of the goat from an area to the frontcountry. Each year there would be a maximum of two 2-week operations (in July and in August or September) of 8 flight hours per day. There may be up to 2 helicopters in the air at one time, weather and funding dependent (this is the maximum, the actual likelihood is much less).
- **Would the proposal alter visitor services, activities, or experiences?**
 - If area closures are implemented, visitors would not be able to enter those areas/hike those trails. If there is a need to conduct a lethal removal operation, those areas would be closed to visitor use and parking areas utilized as staging areas would also be closed to visitor use. These closures would be temporary, only long enough to conduct the operation.
- **Where would the action take place?**
 - The translocation and lethal removal operations would take place in areas where goats are located.
- **When would the action take place?**
 - For two weeks during the month of July or August/September for at least 2-3 years, depending on the success of the capture and translocation operations.
- **What design and standards would apply?**
 - Helicopter safety, developed in a Helicopter Safety Plan, as well as staff and visitor safety protocols.
- **What methods, tools, and techniques would be used?**
 - Nuisance control measures: Nuisance control measures would be employed minimally as needed on a case-by-case basis and the specific actions would be the same range from hazing to lethal removal as identified under the no action alternative.
 - Interpretive tools: Increased interpretation including media outreach and website resources,

- detailed information provided regarding areas of potential closure.
 - Access tools: Hiking into and out of areas for ground-based capture operations; helicopter use to drop off equipment (e.g., nets), to capture mountain goats in remote areas and to transport them out to staging areas for transfer to WDFW for translocation to receiving locations; hiking into and out of areas for ground-based lethal removal; helicopter or fixed-wing airplane use for lethal removal of mountain goats from the air.
 - Tools for capturing mountain goats: Ground-based capture methods including drop nets, foot snares, darting, and clover traps; air-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).
 - Park closure tools: Short-term closures of limited areas for ground capture, hazing, and lethal removal actions; short-term closures of areas surrounding staging areas for takeoff and landing of helicopters (outside of wilderness).
 - Baiting tools: Salt blocks could be used as a tool to attract mountain goats for capture.
 - Lethal removal firearms: Lethal dispatch of mountain goats injured during management activities, as well as in the lethal removal of non-injured goats in the park.
 - Animal welfare tools and considerations: All humane management methods and regulations would be taken into consideration and implemented as applicable.
- **How long would it take to complete the action?**
 - Approximately two to three years for initial capture and translocation actions and then another year or two for lethal removal, or occurring as needed until the goat population is at zero.
- **What mitigation would be taken to minimize action impacts on park resources and values, and wilderness resources and character (where applicable)?**
 - Research and monitoring activities would take place opportunistically based on available funding. Possible research and monitoring efforts could involve management efficacy analysis and mountain goat population studies. Mountain goat population surveys would be conducted in a similar nature as under the no-action alternative.
 - Helicopter staging area preparation, if necessary, would occur 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 operations on Olympic Peninsula and in the north cascades forests do not interfere with active military training routes.
 - When possible, helicopter overflight 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.
 - 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.
 - 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).
 - Foot travel would 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 Mount Ellinor, Mount Skokomish Wilderness.
 - Duration and geographic scope of actions and disturbances would be minimized in wilderness areas.
 - The tool that would cause the least amount of disturbance to wilderness would be used for all management actions.
 - “Leave No Trace” principles would be applied to all management actions.
 - Motorized equipment would be use on approved roads only.
 - Helicopter operations would not be conducted within a minimum of 500 feet from marbled murrelet and northern spotted owl habitat.
 - Helicopter flight paths to and from staging areas would be designed to minimize noise

	<p>impacts to wildlife and visitors to the greatest practical extent.</p> <ul style="list-style-type: none"> ○ Area closures in the immediate vicinity of mountain goat capture, lethal removal, and release operations would minimize noise impacts to backcountry visitors. ○ 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 amount of affect to wildlife and wildlife habitat. ○ Lead-free ammunition would be used for lethal removal activities to prevent contamination. ○ Exotic invasive plant management measures would be taken. ○ Vegetation removal would be minimized near staging areas as necessary to facilitate flight paths and safe operating procedures. ○ If any individual 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. ○ Previously agreed upon travel corridors and flight altitudes for helicopters would be used during operations. ○ 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. ○ If subsurface archaeological evidence or previously unidentified cultural resources are located during implementation of the project, activities would cease pending an evaluation of cultural eligibility by a qualified archaeologist, who would determine appropriate mitigation measures. Project staff would fulfill its consultation requirements in accordance with 36 CFR 800.11. ○ Staging areas would be surveyed if ground disturbing activities are required. These would go through Washington State Historic Preservation Office review prior to implementation and use. ○ Temporary and limited road closures during translocation of goats to release sites would be required on 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 occur during two periods in two-week intervals (mid-July and late August/early September). ○ Project vehicles would maintain a speed at or below 15 mph along particular roads. ○ A traffic control plan would be developed for USDA Forest Service Road 2419 and USDA Forest Service Road 2500 prior to implementation. Involvement with federal law enforcement officials would be needed. ○ A communication plan would be developed by the NPS, USDA Forest Service and WDFW that would include information on the ecological purpose and need of the activity and any area closures for visitors. News releases, signage, website, and other forms of communication would be prepared well in advance. ○ Project staff would be properly trained regarding adherence to safety protocols identified in the Olympic National Park <i>Mountain Goat Action Plan</i>.
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<p>9</p>	<p>Evaluate the impacts of each alternative</p>	<p>Potential impacts to evaluate under <u>each</u> alternative:</p> <ul style="list-style-type: none"> • Wilderness character effects • Effects on natural resources • Cultural resources considerations • Social/recreational/experiential effects • Societal/political effects • Health/safety concerns • Economic/timing/sustainability considerations
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Alternative 1: No Action

Wilderness character effects (untrammelled, natural, undeveloped, solitude or a primitive & unconfined type of recreation)

Positive effects:

- Untrammelled: None; the goat population would be intentionally manipulated under this alternative – hazing and marking would continue as would the lethal removal of nuisance goats.
- Natural: The number of goat carcasses introduced into the natural environment would be less than Alternative 2, thus there would be less scavengers feeding on carcasses and altering their normal behavior. This alternative also involves less aircraft use and less high-powered rifle use, thus reducing impacts on the natural soundscape.
- Undeveloped: Under the no action alternative there wouldn't be as much helicopter use as under alternative 2 for capture and translocation operations, as well as for lethal removal operations.
- Solitude or a Primitive & Unconfined Type of Recreation: Under the no action alternative there wouldn't be as much aircraft use as under alternative 2 for capture and translocation operations, as well as for lethal removal operations. There would be less management restrictions on visitors (i.e., area closures) due to goat removal activities than in Alternative 2.

Negative effects:

- Untrammelled: Aversive conditioning to modify goat behavior would continue, as would lethal removal of goats.
- Natural: Non-native mountain goats would still be present within the park and therefore would continue to have a negative effect on the natural quality of wilderness character. See Chapter 4 in the PLAN/EIS, specifically the impacts to wilderness/wilderness character for more detailed information.
- Undeveloped: There would be helicopter use from lethal removal operations in line with protocols in the *Mountain Goat Action Plan* as part of the park's Hazard and Nuisance Animal Plan, Helicopters would also be used for annual aerial monitoring. Paintball marking, permanent markers on goats including ear tags and radio collars would be used.
- Solitude or a Primitive & Unconfined Type of Recreation: Under this alternative, while there wouldn't be as much helicopter use as under Alternative 2, there would still be some helicopter use adversely affecting opportunities for solitude. There would still be some areas closed to visitor access during hazing or lethal removal.

Effects on natural resources

Positive effects: The number of goat carcasses introduced into the natural environment would be less than Alternative 2, thus there would be less scavengers feeding on carcasses and altering their normal behavior. This alternative also involves less aircraft use and less high-powered rifle use, thus reducing impacts on the natural soundscape.

Negative effects: Mountain goats would continue to directly compete for forage resources with native wildlife species and would continue to degrade habitat used by other wildlife species. As the mountain goat population continues to grow, it would increase the potential for heavier, sustained browsing and grazing on plant communities in existing mountain goat summer and winter range within the park and on adjacent national forest land. Additionally, it is expected that mountain goat habitat use and associated herbivory could expand over a larger area. Grazing pressure would be especially likely to intensify in areas of habitat preferentially selected by goats, such as rocky outcrops and cliffs, leading to increased impacts on plant communities in those habitats. Olympic subalpine and alpine plant communities are particularly sensitive to soil disturbance, therefore, soil disturbance associated with wallowing or rutting behavior would be expected to compound the impacts on vegetation associated with herbivory. The use of helicopters and/or firearms during lethal removal activities may cause short-term disturbance of some wildlife species causing them flee or flush their habitat. Mountain goats would continue to disturb sensitive alpine and subalpine soils by wallowing, trailing, and trampling. These behaviors would continue to remove and eliminate surface rocks and vegetation, exposing the sensitive mineral soils beneath. Over time, these impacts would expand geographically and would increase in intensity as the mountain goat population continues to grow and disperse. Considering the slow development of these sensitive soils, it is likely that they would be unable to recover in the near future resulting in long-term impacts to soils.

Cultural resources considerations

Positive effects: No salt blocks would be placed that would attract goats and have the potential for goat disturbance on any cultural resources that may be present.

Negative effects: Under the no-action alternative, the park would continue nuisance control activities such as lethal removal and hazing of mountain goats exhibiting unacceptable behavior but these management activities are not anticipated to slow the projected growth of the mountain goat population. Instead, the population is expected to increase under the no-action alternative. This increase would result in a higher likelihood of impacts to archeological resources from wallowing, trailing and trampling behaviors. These impacts would expand geographically and in intensity as the population grows and disperses. Impacts to archeological sites in the project area would therefore be adverse and permanent in nature.

Social/recreational/experiential effects

Positive effects: Mountain goats would continue to be present in alpine and subalpine areas of the park and national forest where they are currently found, and may both increase in number and expand their habitat use to additional areas. The likelihood that visitors to the backcountry could encounter mountain goats would persist and could potentially increase. Long-term beneficial impacts would result for visitors whose experience is enhanced by the presence of mountain goats. Long-term beneficial impacts would also result for hunters in Olympic National Forest (ONF), since mountain goats would continue to be available for hunting and the likelihood of harvesting a goat may increase with an increase in population. Visitors' experiences would not be affected by aircraft conducting goat operations during July for 3-5 years.

Negative effects: Mountain goats would continue to be present in alpine and subalpine areas of the park and national forest where they are currently found, and may both increase in number and expand their habitat use to additional areas. The likelihood that visitors to the backcountry could encounter mountain goats would persist and could potentially increase. Long-term adverse impacts would result for visitors who do not wish to encounter goats because of safety concerns or other reasons. Intermittent access restrictions and trail closures due to reports of negative human-mountain goat interactions would likely continue and could possibly become more frequent or widespread, resulting in long-term adverse impacts to visitor use and experience. Visitors would be adversely affected by helicopter and firearm noise disturbances during instances that warrant lethal removal of nuisance goats.

Societal/political effects

Positive effects: Some visitors, local citizens, and interest groups enjoy seeing the goats; these groups would be more amenable to having only nuisance goats being lethally removed as under the no action alternative rather than all goats being translocated and others lethally removed as in Alternative 2. Individuals or groups with values that hold that an individual animal's right to life outweigh non-native species lethal removal would be more amenable to this alternative over Alternative 2.

Negative effects: Some visitors and local citizens are very frightened of the goats, especially after the death of a local area resident who was hiking in 2010, and want the goats completely removed from the park. Under the no action alternative, no goats would be removed from the park with exception of those that become nuisance animals and then are lethally removed.

Health/safety concerns

Positive effects: The no action alternative would not have near as many helicopter flights as Alternative 2 and therefore would have a lesser risk of helicopter-related safety issues. Interpretive and educational materials would continue to be distributed to the public at NPS and USDA Forest Service visitor facilities, and would be made available online. Signage would continue to be placed at trailheads, and NPS and USDA Forest Service would continue to conduct outreach to visitors regarding mountain goat safety and proper reporting of mountain goat interactions. These actions would somewhat mitigate the potential for adverse impacts on visitor safety, but would not eliminate it.

Negative effects: Under the no-action alternative, the continued presence of mountain goats in Olympic National Park and adjacent areas of Olympic National Forest would result in a long-term visitor safety risk because the potential would remain for negative interactions between humans and mountain goats. Trail closures and access restrictions would be implemented as necessary in the event of a conflict between a goat and a visitor. Over time, the increase of the mountain goat population and potential expansion of mountain goat distribution would offset the beneficial effects of outreach, education, and access restrictions. Overall, the no-action alternative would have long-term adverse impacts on visitor safety.

There would be potential under the no-action alternative for injuries to NPS and USDA Forest Service employees and contractors during mountain goat management actions such as monitoring, aversive conditioning/hazing, animal marking, lethal removal of hazardous goats, and other mountain goat management activities. Actions associated with mountain goat management could at times involve the use of helicopters through dangerous high elevation terrain as well as the use of firearms in backcountry areas, which would present additional safety risks. The potential for employee accidents and injuries would be mitigated through proper training of staff and adherence to safety protocols identified in the Olympic National Park *Mountain Goat Action Plan* (NPS 2011a). Employee safety risks would persist in the long term, however, because mountain goats would remain in the Olympic Mountains indefinitely. Additionally, the continued growth of the mountain goat population and potential expansion of distribution in the long term would be likely to increase the need for aversive conditioning and lethal removal activities, which could exacerbate risks to employee safety. As a result, the no-action alternative could have long-term adverse effects on employee safety.

Economic/timing/sustainability considerations

Positive effects: The no action alternative requires less financial resources to manage goats than Alternative 2.

Negative effects: The park does not have the level of fiscal and staffing resources to fully implement the *Mountain Goat Action Plan*. There are also costs associated with the on-going removal of nuisance animals and with revegetation efforts (in areas where wallowing has greatly affected vegetation resources).

Alternative 2:

Wilderness character effects (untrammeled, natural, undeveloped, solitude or a primitive & unconfined type of recreation)

Positive effects:

- Untrammeled: A federally-authorized action would occur (removal of non-native mountain goats) that would manipulate the biophysical environment to help restore its natural conditions.
- Natural: Removing non-native mountain goats from the park would support the recovery of natural conditions (soils and endemic plants) of the park, as well as remove a vector for non-native species dispersal on the Olympic Peninsula.
- Undeveloped: Helicopters and firearms would be used for goat capture and translocation as well as for lethal removal operations.
- Solitude or a Primitive & Unconfined Type of Recreation: With the goats eventually removed from the park, visitors may feel less concerned about recreating in the park, especially in areas where goats are currently known to inhabit.

Negative effects:

- Untrammeled: A federally-authorized action would occur (removal of non-native mountain goats) that would manipulate the biophysical environment. Direct human intervention from the air for goat capture operation would be done through either the use of immobilizing drugs or net guns, delivered from a helicopter; ground-based capture methods would include baiting, drop nets, foot snares, and darting. Direct human intervention from lethal removal operations would include firearms and goat carcasses resulting from lethal reduction would be left in the field unless located near trails, campsites, or where visible from high visitor use areas.
- Natural: Noise from helicopter and firearm use, as well as increase and concentrated staff presence may disturb wildlife. Salt block may be used to bait goats and may also attract other

wildlife. See Chapter 4 in the plan/EIS, specifically the impacts to wilderness/wilderness character for more detailed information.

- Undeveloped: Use of helicopters and firearms for goat capture and translocation as well as lethal removal operations. Salt blocks would be placed, possibly up to a year in advance of capture events.
- Solitude or a Primitive & Unconfined Type of Recreation: Use of helicopters and firearms during capture and translocation as well as lethal removal operations would create noise disturbances and may disrupt visitor solitude; and area closures would have a negative impact on unconfined recreation.

Effects on natural resources

Positive effects: Mountain goat removal by capture and translocation as well as by lethal removal would allow natural resources and processes to return to pre-goat conditions to the extent practicable given current climate conditions. With the removal of goats there would be no damage to soils and endemic plants due to wallowing. With the removal of goats there would be less competition for habitat and food sources with other, native or endemic species. In the long term, the substantial reduction in the mountain goat population and the dispersal of the small number of goats that may remain in the ecosystem would result in much lower pressure on alpine and subalpine plant communities from goat herbivory. Lethal removal from aircraft would not have adversely affect vegetation.

Negative effects: Baiting with salt blocks could be used to concentrate mountain goats for easier capture, and these salt blocks could attract other unintended wildlife such as deer. Air-based capture operations could involve the use of drugs or net guns to immobilize mountain goats which would have disturbance effects on other wildlife due to noise. Ground-based capture operations could involve drop nets, foot snares, and darting which would also disturb other wildlife due to increased presence of humans and human activity. Once captured, mountain goats would be subdued by animal handlers at which point they may or may not be sedated for transport. While capture efforts would strive to minimize stress and to protect the welfare of individual animals (including attempts to keep nannies and kids together), there is potential for injury and death of animals from accidents and stress resulting from these capture efforts. Management activities in mountain goat habitat under Alternative 2 would also involve some level of lethal removal of mountain goats using firearms. Hunting and the use of firearms is prohibited in the national park and therefore are not normal sounds wildlife are used to, therefore, noise from firearm use could cause disturbance to wildlife. The use of aircraft in mountain goat habitat would produce sound that could impact wildlife causing them to temporarily disperse or retreat into dens. Short-term adverse impacts to vegetation from management activities in mountain goat habitat under alternative B would result from trampling or crushing of vegetation associated with management personnel entering mountain goat habitat on foot and handling of captured mountain goats on the ground. These impacts would be intermittent, localized, would occur most frequently during the initial phase of reduction, and would not be substantial.

Cultural resources considerations

Positive effects: The removal of mountain goats would eliminate the occurrence of wallowing in the park which has unearthed previously unknown archeological sites and would remove the potential to disturb any other unknown archeological sites in the future.

Negative effects: Capture and translocation activities could occur where known or unknown archeological sites are present. Baiting, such as the use of salt blocks, would likely be used to attract mountain goats to suitable areas for carrying out management activities. There is the potential for baiting to impact archeological sites if salt blocks are placed in locations where sites are present. Mountain goats would be attracted to these areas and could trample archeological materials near the bait. However, given the low density of archeological resources and the small areas where the bait would be placed, there is a low potential for these impacts to occur. Previously unknown archeological sites could be inadvertently disturbed or damaged.

Social/recreational/experiential effects

Positive effects: With the goats eventually removed from the park, visitors may feel less concerned about recreating in the park, especially in areas where goats are currently known to inhabit.

Negative effects: Use of helicopters and firearms during capture and translocation as well as lethal removal operations would create noise disturbances and may disrupt visitor experience; and area closures would have a negative impact on visitor use and experience. Some visitors enjoy seeing the goats and may be disappointed if goats are removed entirely from the park.

Societal/political effects

Positive effects: Some visitors and local citizens are very frightened of the goats, especially after the death of a local area resident who was hiking in 2010, and want the goats completely removed from the park.

Negative effects: Some visitors, local citizens, and interest groups enjoy seeing the goats; these groups would not want to see the goats removed from the park. Individuals or groups with values that hold that an individual animal's right to life outweigh non-native species lethal removal would be more amenable to this alternative over Alternative 2.

Health/safety concerns

Positive effects: Under Alternative 2, areas where active capture and removal operations are ongoing would be temporarily closed to park visitors. NPS park rangers would patrol public areas to ensure compliance with park closures and public safety measures. The public would be notified of closures in advance. Information regarding mountain goat management activities would be available at visitor centers and posted on the park's website to inform the public of mountain goat management actions. Capture and translocation of mountain goats within the park and adjacent areas of Olympic National Forest would be carried out only by qualified, properly trained NPS employees and contractors. Employees would apply safety training and awareness measures designed to reduce safety risks, including adherence to safety protocols outlined in the Olympic National Park *Mountain Goat Action Plan* (NPS 2011a). The greatest potential for adverse impacts to employee and visitor safety under Alternative 2 would be in the short term, during initial capture and translocation activities. In the long term, with a reduced population size, the potential for hazardous interactions between humans and mountain goats would be substantially reduced, resulting in long-term beneficial impacts on visitor safety. The frequency with which employees would need to engage in aversive conditioning, animal marking, and other activities used to manage dangerous goats would also decrease, resulting in beneficial impacts on employee safety. While occasional mountain goat management actions would be necessary over the long term to maintain the mountain goat population as close to zero as possible, these activities would be expected to take place on an increasingly infrequent basis.

Negative effects: Short-term adverse impacts on employee safety could result from potential injuries (kicks, bites, stabbing with horns) that may occur during handling of live goats during capture. Helicopter-based capture operations would present risk of accidents or injuries to NPS employees and contractors during capture and translocation efforts. If an accident occurred, the adverse impact to employee safety could be substantial, even catastrophic; however, the likelihood of an accident occurring is considered to be minimal. NPS employees and contractors taking part in helicopter-based operations would be highly trained and qualified, and required to observe proper safety protocol.

Economic/timing/sustainability considerations

Positive effects: With the removal of goats completely from the park, over the long-term this action would save the park significantly from having to hire seasonal staff each year to perform hazing actions to implement the *Mountain Goat Action Plan*.

Negative effects: The costs over the 3-5 years or more to implement this project are substantial in the short-term but would provide greater long-term benefits in costs, resource protection, and visitor and staff safety.

10

After approval by the Deputy Superintendent to proceed, update the PPF/MRA with input provided by the Compliance Council and/or the Interdisciplinary Planning Team (IDP) and provide an electronic copy to the Planning and Compliance Office to initiate park internal review and comment.

Comments due by: _____

Wilderness Specialist Comments:

Comments have been integrated throughout.

Reviewed by: _____ **Ruth Scott** _____ **Date:** 8-14-16/12-14-16 _____

After the established review period, contact the Planning and Compliance Office to schedule a discussion of your issue at a park Compliance Council meeting to recommend a preferred alternative and complete the review process.

11

Select the alternative that will most effectively resolve the issue while having the least overall adverse impact on park resources & values and wilderness resources, character and the visitor experience

Note: When selecting the preferred alternative for actions in wilderness, the potential disruption of wilderness character and resources will be considered before, and given significantly more weight than, economic efficiency and convenience. If a compromise of wilderness resources or character is unavoidable, only those actions that preserve wilderness character and/or have localized, short-term adverse impacts will be acceptable.

Preferred alternative: 2 (PLAN/EIS Alternative D)

Describe rationale for selecting this alternative including how it meets minimum requirement guidelines and how impacts to wilderness will be minimized and mitigated (if applicable). Also, describe the safety risks and the preventive/mitigation measures that would be implemented:

Alternative 2 has short-term negative impacts to all qualities of wilderness character, however, the long-term beneficial impacts far outweigh the short-term negative, while meeting NPS Management Policies 2006 Removal of Exotic Species (section 4.4.4.2) management requirements. Alternative 2 was selected as the preferred alternative because, over the long-term, it has less negative impacts and greater beneficial impacts to wilderness character, specifically, the natural quality of wilderness character. This alternative would remove a non-native species; would help the restoration of soils and endemic plant species; and would reduce competition for forage and habitat between a non-native and native wildlife species. This alternative would also have greater long-term beneficial impacts on the undeveloped quality of wilderness character as there would be less need for helicopter flights and the use of firearms for lethal removal of nuisance goats for the long-term. Additionally, Alternative 2 would also have greater long-term beneficial impacts on opportunities for solitude and unconfined types of recreation as with the removal of mountain goats there would be less need for area closures for lethal removal of nuisance goats, less need for hazing operations, and no need for visitors to avoid areas of the park due to their fear of goats.

There are safety risks involved with Alternative 2 and these include potential injuries (kicks, bites, stabbing with horns) that may occur during handling of live goats during capture. Helicopter-based capture operations would present some risk of accidents or injuries to NPS employees and contractors during capture and translocation efforts. If an accident occurred, the adverse impact to employee safety could be substantial and could result in death; however, the likelihood of an accident occurring is considered to be minimal. NPS employees and contractors taking part in helicopter-based operations would be highly trained and qualified, and required to observe proper safety protocol. Areas where active capture and removal operations are ongoing would be temporarily closed to park visitors. NPS park rangers would patrol public areas to ensure compliance with park closures and public safety measures. The public would be notified of closures in advance. Information regarding mountain goat management activities would be available at visitor centers and posted on the park's website to inform the public of mountain

goat management actions. Capture and translocation of mountain goats within the park and adjacent areas of Olympic National Forest would be carried out only by qualified, properly trained NPS employees and contractors. Employees would apply safety training and awareness measures designed to reduce safety risks, including adherence to safety protocols outlined in the Olympic National Park *Mountain Goat Action Plan* (NPS 2011a). The greatest potential for adverse impacts to employee and visitor safety under Alternative 2 would be in the short term, during initial capture and translocation activities. In the long term, with a reduced population size, the potential for hazardous interactions between humans and mountain goats would be substantially reduced, resulting in long-term beneficial impacts on visitor safety. The frequency with which employees would need to engage in aversive conditioning, animal marking, and other activities used to manage nuisance goats would also decrease, resulting in beneficial impacts on employee safety. While occasional mountain goat management actions would be necessary over the long term to maintain the mountain goat population as close to zero as possible, these activities would be expected to take place on an increasingly infrequent basis.

The plan/EIS analyzed four alternatives. While, based on impact analysis section in Chapter 4 of the plan/EIS, Alternative C (lethal removal only) was determined to have the least amount of impacts on overall wilderness character (only due to less frequent and shorter duration of maintenance activities), the planning team determined that Alternative D (Alternative 2 in this MRA - combination of capture and translocation and lethal removal) within plan/EIS would provide the park with the best direction for the overall management of exotic mountain goats. This determination was made during an IDT workshop with the project's Cooperating Agencies. A process was followed that identified whether and to what extent each alternative in the draft plan/EIS addressed the plan's seven objectives as identified on page 2 of the plan/EIS, one of which was, "Protect the wilderness character of Olympic National Park." A 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" (2015 NPS NEPA Handbook). These factors were also taken into consideration.

Reviewed by: _____ Date _____
Wilderness Specialist

Leadership Team Comments on Preferred Alternative (recommendation to Superintendent for final review and approval)

Administration Division comments/recommended mitigations:

Reviewed by Administrative Officer: _____ Date _____

Interpretation Division comments/recommended mitigations:

Reviewed by Chief of Interpretation: _____ Date _____

Cultural Resources comments/recommended mitigations (include next steps for compliance with NHPA, other applicable cultural resource law/policy):

Reviewed by Section 106 Specialist: _____ Date _____

<p>Visitor and Resource Protection Division comments/recommended mitigations:</p> <p>Reviewed by Chief Ranger: _____ Date _____</p>
<p>Facilities Management Division comments/recommended mitigations:</p> <p>Reviewed by Chief of Facilities Mgmt: _____ Date _____</p>
<p>Natural Resources Division comments/recommended mitigations:</p> <p>T & E Species Determination of Effect (No Effect (NE), Not Likely to Adversely Affect (NLAA), Likely to Adversely Affect (LAA):</p> <ul style="list-style-type: none">• Bull Trout: _____• Marbled Murrelet: _____• Northern spotted owl: _____• Other: _____ <p>Reviewed by Chief of NRM: _____ Date _____</p>
<p><u>Compliance Pathway Determination:</u></p> <p>Categorical Exclusion: _____ EA: _____ PLAN/EIS: ____X____</p> <p>Recommended by Env. Protection Specialist: _____ Date: _____</p>

Approved by:

Superintendent

Date

**APPENDIX F: OLYMPIC, MT. BAKER-SNOQUALMIE, AND
OKANOGAN-WENATCHEE NATIONAL FORESTS MINIMUM
REQUIREMENTS ANALYSIS**



United States Department of Agriculture

Draft Minimum Requirements Analysis

Mountain Goat Removal from Olympic National Forest Wilderness Areas



Forest Service

Olympic
National Forest

Hood Canal
Ranger District

September
2016

Responsible Official:

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For More Information Contact:

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Mountain Goat Removal from Olympic National Forest Wilderness Areas

Purpose

This minimum requirements analysis is an assessment of proposed administrative actions associated with the removal of mountain goats, affecting Olympic National Forest Wilderness Areas. This analysis is a mandatory procedure, required by the Wilderness Act of 1964, to determine whether the proposed restricted activities are appropriate methods or actions for achieving the desired land management objectives in wilderness. Discussion of advantages or disadvantages of the proposed mountain goat removal project are beyond the scope of this inquiry.

Introduction

Olympic National Park proposes the elimination of the mountain goat (*Oreamnos americanus*) populations in the Olympic Mountains. Mountain goats are not locally indigenous to the Olympic peninsula (Festa-Bianchet, Côté 2012, 11-12). Populations primarily reside in Olympic National Park (Noss et al. 2000). However, groups range from the Olympic Wilderness in the park into neighboring The Brothers, Buckhorn, Colonel Bob, Mount Skokomish, and Wonder Mountain Wilderness areas, in Olympic National Forest. Mountain goat migration between National Park Service and Forest Service lands necessitates cooperative management action.

The proposed administrative actions on wilderness areas affect the “biophysical, experimental, and symbolic ideals” described as *wilderness character* (Landres et al. 2005, iii). Wilderness character qualities include the following distinct attributes:

- Untrammeled—areas essentially unhindered and free from human manipulation
- Natural—areas with ecological systems largely separate from direct human influence
- Undeveloped—areas restrict permanent improvements and are unoccupied
- Solitude or Unconfined Recreation—provides outstanding opportunities for solitude or primitive types of unconfined travel for the purposes of enjoyment
- Other features of Value—areas may contain other features of value that enhances wilderness character.

Wilderness character attributes derive from the Wilderness Act. While the qualities are not specifically mentioned in the law, these qualities are foundational to wilderness management decision-making.¹

¹ Wilderness Act of 1964. Section 4 (b): “Except as otherwise provided in this Act, each agency administering any area designated as wilderness shall be responsible for preserving the wilderness character of the area and shall so administer such area for such other purposes for which it may have been established as also to preserve its wilderness character.”

Wilderness character attributes on Olympic National Forest potentially impacted include: *untrammeled*—manipulation of herbivore populations by translocating or culling the species; *natural*—direct human influence to the environment with the original introduction of mountain goats in the early 20th century; *solitude*—actions involve helicopters and other modern technology creating noise and visual impacts, detracting from visitor’s experience of the primitive landscape; and *Other features of Value*—specifically, the unique and significant ecological value of the alpine ecosystem, the introduced mountain goat’s primary habitat.

The intent of this minimum requirements analysis is to show, through a transparent process, trade-offs to wilderness character qualities that are likely to result on the forest (Cole and Yung 2010, 8-9). This document is a determination that ‘prohibited uses’ by the Wilderness Act, including helicopters and other and motorized equipment, meet the minimum necessary requirement for accomplishing the administrative goals for the project. It considers whether the utilization of non-compliant activities and methods in Wilderness are warranted and are concurrent with directives in Forest Service Manual 2320.

Background

The alpine ecosystems on the Olympic Peninsula is distinctive, resulting from areas relative geographic isolation. The Olympic Mountains are surrounded by open ocean, the Strait of Juan de Fuca, Hood Canal and a broad coastal plain. The region was further isolated during the Holocene by glaciers. The region is, in effect, a biotic island. As a result, the ecosystem hosts flora and fauna found nowhere else in the world (NPS PMIS 2016). At least sixteen animals and eight plant species or species or subspecies are only found on the Olympic Peninsula. Examples include the Olympic Marmot, Olympic pocket gopher and Olympic milkvetch (NPS PMIS 2016). As a result of these scientific and scenic values, portions of Olympic National Park are designated as both an International Biosphere Reserve and a World Heritage site (UNESCO 2016a; UNESCO 2016b).

Mountain goats, first introduced in 1920 on the Olympic Peninsula, have since colonized most of the suitable high-country habitat in the Olympic Mountains. Long-term inventorying and monitoring studies show the non-indigenous mountain goats have a significant impact to the local alpine environment, as the largest herbivore (NPS DEIS 2016). The mountain goat population reached a peak of over 1000 goats in the early 1980’s and was reduced to about 300 goats in the 1980’s through live capture (in the National Park) and hunting (in the National Forest). In June of 2016, an aerial survey conducted by Olympic National Park and Washington Department of Fish and Wildlife estimated the mountain goat population greater than 600, increasing at approximately eight percent a year (National Park Service unpublished data). Statistical models show, with 95 percent confidence level, between 53 and 89 individuals in Olympic National forest. The preferred estimate is 59 mountain goats (USGS, Olympic Field Station unpublished analysis, September 2016).

The mountain goat population’s impact to fragile alpine ecosystems is significant, according to the Park Service draft mountain Goat management plan. Their browsing, trampling and wallowing behavior impact delicate skeletal soils and rare plants, ultimately degrading wilderness character values (NPS PMIS 2016).

Olympic National Park and Washington Department of Fish and Wildlife recommend the use helicopters for the following actions:

- Capture live mountain goats and haul via nets to locations outside of Wilderness
- Facilitate the lethal removal of mountain goats as a platform for sharpshooters
- Transport of personnel and equipment to accomplish operations in a safe and timely manner

In the initial phase of the operation, healthy mountain goats will be captured and transported by truck to sites on the Mount Baker-Snoqualmie and Okanogan-Wenatchee National Forests in the North Cascades. The translocation activities will occur in six operational episodes. Two, twelve-day periods in the summer months, over three years, 2018 through 2020. Proposed lethal removal of certain mountain goats is also estimated to take three years, as well. The project may possibly be extended for two additional years, 2021 through 2022 (NPS DEIS 2016).

Are the actions necessary in Wilderness?

The proposed actions are deemed necessary because mountain goat primary summer range on the Olympic Peninsula is within wilderness boundaries (Overflight survey, 2016). Mountain goats range outside of wilderness areas during winter months (Rice 2008). However, removal operations are only feasible while the animals are utilizing their summer range for the following reasons:

- Locating and capturing or shooting the animals is not possible when they are dispersed under canopy, below the timberline in non-wilderness areas. The animals are elusive and extremely difficult to locate.
- They should be captured during the time of year when they experience the least amount of environmental stress for successful translocation (Harris and Steele 2014).
- Capture or lethal removal only taking place in the Olympic Wilderness (NPS jurisdiction) will have no lasting effect since mountain goats will recolonize from the NFS wilderness areas. Multi-agency collaboration is required for success to meet agency objectives.

Options outside of Wilderness

Mountain goat populations range fluidly between Forest and Park wilderness areas. Their summer range is in wilderness alpine areas, as stated above. The Mount Washington group (approximately 31 individuals surveyed in 2012) in the vicinity of Mount Elinor and Mount Washington is, at times, an exception. The southeast face of the ridge where the group forages is outside the Mount Skokomish Wilderness. All other groups require capturing or lethal removal in wilderness areas.

Helicopter staging on forest

All proposed staging sites for helicopter and ground transportation operations are outside of wilderness areas. Overflights to and from the capture areas has the potential of

impacting wilderness character quality of Solitude. However, activities at staging areas pose no long-term effects to wilderness.

Helicopter staging areas requires a large space for taking off and landing as well as an adequate area for veterinary examination, containing the goats in portable pens, and room for transport vehicles. The staging areas also require adequate access, via an improved road, for moving the mountain goats from the forest to North Cascades release sites.

Hamma Hamma Gravel Pit

This administrative site, historically used for excavating and staging road-building materials, is located south of the Brothers Wilderness. The site is accessed by a gated spur drive, branching from the paved Hamma Hamma Road. The gravel pit is close in proximity to multiple mountain goat groups, both on Forest and in the Park.

Upper Mount Ellinor trailhead and FS Road 2419

This is a high-use public access point to the summit of Mount Ellinor, bordering the Mount Skokomish Wilderness. The 1.6 mile trail gains 2,444 feet of elevation from the parking lot to the summit. It is accessed from the paved State Route 119 to a gravel spur from FS Road 24. There are multiple points of access to the Mount Ellinor trailhead, both by designated trails and user-built trails from roads. System trails accessing the trailhead include number 812.1, 812.2, 827, 827.1 and 827.2. A complete closure of the trailhead to use as a helicopter staging area could be achieved by barricading FS Road 2419 at the junction of FS Road 24. The trailhead is within a mile of the largest group of mountain goats on the Forest on Mt. Ellinor and Mt. Washington.

Time constraints

The seasonal requirement for both capturing and translocating mountain goats is between July and early September. Capture operations will tentatively occur for twelve days in July and an additional twelve days in September. Time constraints are a primary factor in this analysis in several ways: the project must occur during the warmer/low-snow season when avalanche conditions make it safe for the goat team to be in the area, and when the goats are more readily accessible for capture.

Wilderness capture locations

The Olympic National Forest contains five designated Wilderness areas, totaling 88,256 acres. Established by the Washington State Wilderness Act of 1984, Public Law 98-339, these areas are contiguous with the Olympic Wilderness located in the National Park. The majority of the mountain goats are in the National Park, with about 12% in National Forest Wilderness.

The Brothers Wilderness

The Brothers Wilderness, totaling 16,682 acres, is located south of Buckhorn Wilderness and north of Mt. Skokomish Wilderness, between the Dosewallips and Hamma Hamma Rivers. There is abundant mountain goat habitat in the vicinity of The Brothers Peaks, elevation 6,866 feet, and Mount Jupiter, 5,701 to the north. There are seventeen miles of established trails within the wilderness. The 2016 survey estimates seven individual mountain goats in the group. They range in the vicinity of a popular climbing route to the

summit of South Brothers Peak. Removal of goats is a high priority in this area (USFS 2016d).

Buckhorn Wilderness

Buckhorn Wilderness totals 44,258 acres, and is divided into northern and southern management units by the Dungeness River and an access road system. The smaller northern portion, drained by the Gray Wolf River, descends from higher mountainous terrain with abundant mountain goat habitat. There are 59 miles of trail provide hiking, backpacking, and stock access to the Buckhorn Wilderness (approximately eleven miles in the North Unit and 48 miles in the South Unit). The Gray Wolf River trailhead and the Slab Camp trailhead provide access to the North Unit. Main access points to the South Unit include the Upper Dungeness trailhead, Tubal Cain trailhead, Upper Big Quilcene trailhead, Mt. Townsend trailhead, Tunnel Creek trailhead, and Little Quilcene trailhead (USFS 1993a). High elevations host a small mountain goat groups. The 2016 survey located three animals in four survey areas (mostly in Olympic Wilderness, adjacent to the forest). These groups are a lower priority for removal.

Colonel Bob Wilderness

The Colonel Bob Wilderness, 11,961 acres, is located in the south boarder of the Olympic Wilderness near Quinault Lake. Terrain is steep, rising from 1,300 feet to 4,509 feet in less than a mile. Colonel Bob Wilderness has three access points: the Ziegler Creek trailhead, Pete's Creek trailhead, and Fletcher Canyon trailhead. There are twelve miles of established trails that accesses the sub-alpine reaches of the management unit (USFS 2016b). While there is suitable mountain goat habitat in the wilderness, only one verified identified male mountain goat has been documented (2015). Mountain goat management activities are not a priority for the area.

Mount Skokomish Wilderness

Skokomish Wilderness, 13,015 acres, is southeast of the Olympic Wilderness. The wilderness is primarily accessed from the south from the Lake Cushman area, having the highest concentrated recreational use on the Forest. The wilderness hosts the largest groups of mountain goats on the Forest. The mountain goat groups range in the vicinity of Mounts Washington, Rose, Ellinor, and Jefferson Peak to Mount Pershing and from Mount Lincoln north to Mount Skokomish at 6,434 feet in elevation, on the northern boundary of the wilderness. There are twelve miles of established trails in the wilderness. Access to the southern boundary of the wilderness is from the Mount Rose and Mount Ellinor trails, the highest use in the forest. The interior of the wilderness is accessed from the Hamma Hamma River drainage on from the steep the Mildred Lakes Trail (SFS 2016c). The 2016 helicopter survey identified forty mountain goats, the largest population of mountain goats in the Forest. Removal of goats in this wilderness is the highest priority.

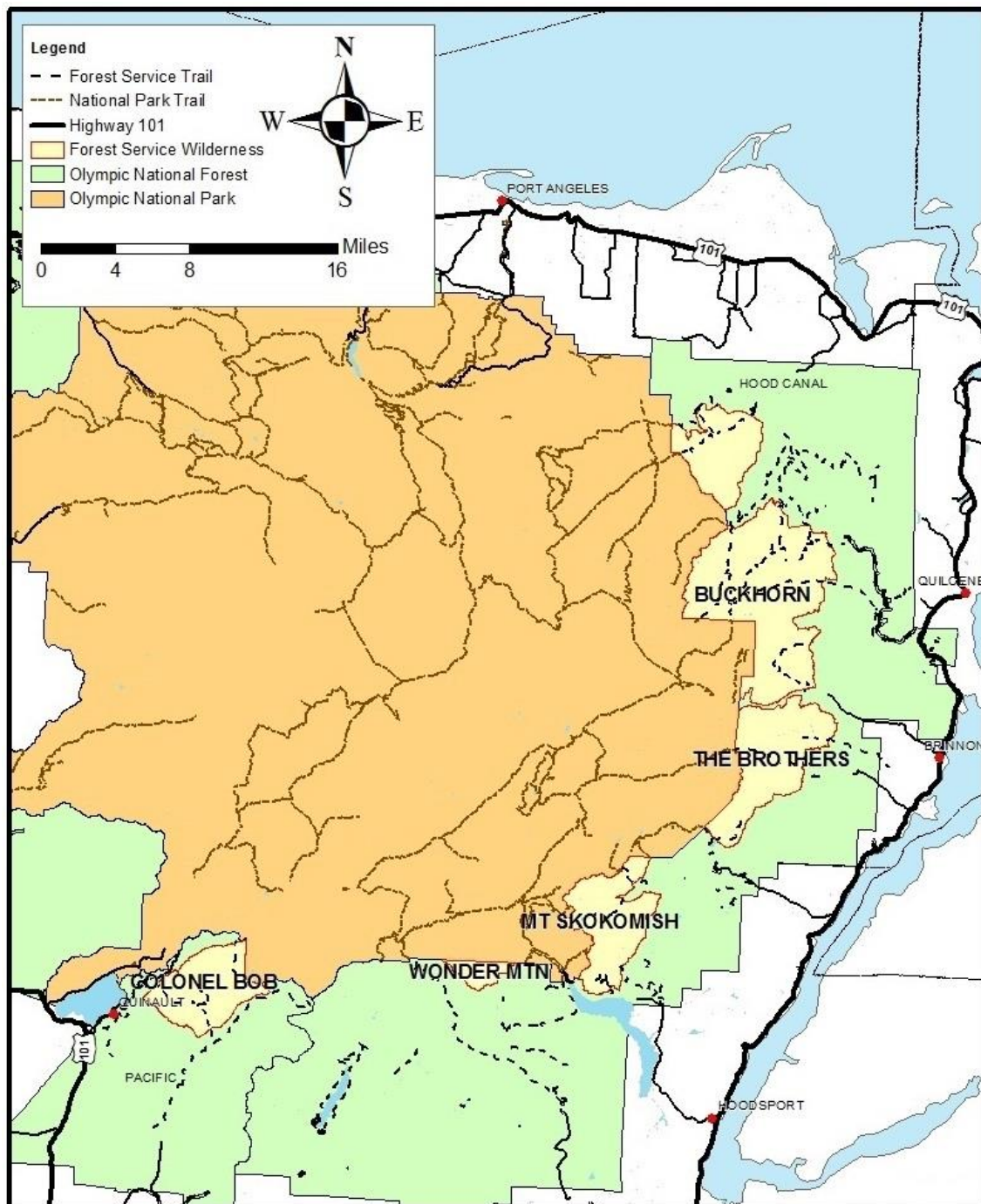
Wonder Mountain Wilderness

The 2,349 acre Wonder Mountain Wilderness is one of the smallest wildernesses in the Western United States (USFS 1993d). It is located on the southwestern side of the forest, east of Colonel Bob Wilderness and west of Lake Cushman. Wonder Mountain Wilderness rises from 1,740 feet to the 4,758 foot summit of Wonder Mountain. This wilderness is unique within Olympic National Forest because there are no established trails in the wilderness. The two main access roads to Wonder Mountain Wilderness have seasonal

closures from October 1 to April 30, to protect wildlife (USFS 2016e). The mountain goat population is unknown, making action in this area a low priority.

Olympic National Forest wilderness areas

An overview of the five wilderness areas potentially affected by the proposed actions, including removal of mountain goats by capturing and/or lethal removal are as follows (listed clockwise): Buckhorn, The Brothers, Mount Skokomish, Wonder Mountain, and Colonel Bob.



Criteria for determining necessity

Wilderness character

Administrative actions, or abstaining from actions, affects the untrammelled, natural, solitude or unconfined recreation as well as other features of value, specifically the ecological integrity of the wilderness areas. According to the proposal, ecological intervention actions are necessary to lessen negative effects to biotic communities resulting from introduction of the non-indigenous species. While outcomes to the wilderness areas are not predictable, removal of mountain goats is likely to have tangible long-term affects to the alpine and subalpine reaches for each of the wilderness areas.

Trade-offs include both the immediate potential negative effects of *trammeling* from helicopter landings and the potential for visual and noise disturbances, impeding the individuals' *solitude* experience. In addition, expected is long-term trammeling, since current management of the mountain goat population involves direct manipulation of the natural environment. However, there are long-term potential positive effects to the overall quality of the alpine ecosystem by intervening in ecological processes directly caused by the recent introduction of the non-indigenous species. In addition, negative habituated mountain goat and human interactions pose safety concerns. There is also the potential for future short-term recreational use limitations.

Desired outcomes include revegetation of heather, grasses and other alpine plant communities heavily impacted from mountain goat browsing and wallowing behavior, especially in areas where no natural salt is available and goats seek human-created salt. More subjective results include greater opportunities for visitor solitude and primitive recreation. Currently, mountain goat management activities impede on visitors' solitude from daily patrols monitoring conditioned mountain goats in wilderness to the occasional lethal removal of animals, as an extreme measure.

Minimum activity

As proposed, the administrative actions necessary to achieve the wilderness objective requires the use of methods and equipment noncompliant with wilderness regulations. Therefore, the minimum activity to bring about the desired management outcomes should be considered. This analysis considers whether essential methods for the capture, lethal removal and translocation activities are the minimum activity.

Policies and guidance

Valid existing rights or special provisions of wilderness legislation

Provisions in the Wilderness Act of 1964, Sec. 2 (c) (4) and Sec. 4 (d) (8), prohibits proposed actions, exclusive of meeting Wilderness Act "minimum requirements."

There are no known valid existing rights that the proposed actions infringes upon in the Olympic National Forest Wilderness areas, as referenced in the Washington State Wilderness Act of 1984, Public Law 98 through 339.

Requirements of other legislation

National Park Service is preparing a Mountain Goat Management Plan and an associated Draft Environmental Impact Statement addresses the requirements of the Environmental Policy Act of 1970. Alternatives outlined in the draft management plan influence the need for actions to take place in wilderness. Additionally, consultation for the Endangered Species Act of 1973 is addressed by the lead agencies, Olympic National Park and Washington Department of Fish and Wildlife. Forthcoming Biological Assessments associated with the proposed actions are likely to be concurrent with wilderness management objectives since mountain goats are not locally ingenious. Their ecological impacts may affect both threatened and endangered species as well as wilderness character qualities.

Agency directives and other requirements

Policies and Guidelines for Fish and Wildlife Management in National Forests and Bureau of Land Management Wilderness (United States Forest Service, Bureau of Land Management and International Association of Fish and Wildlife agencies, June 2006). Referenced in Forest Service Manual (2323.32 (5)) Policy.

This document is intended as a framework for projects in Wilderness between state Fish and Game agencies and the BLM and Forest Service. In section F. 'Project Implementation,' subheading 1.) Use of Motorized Equipment' it states that mechanized equipment can be used "only if these devices are necessary to meet the minimum requirements for the administration of the area as wilderness or are specifically permitted by other provisions of the Act".

Forest Service Manual (FSM) 2326, Use of Motorized Equipment or Mechanical Transport in Wilderness

FSM 2326.1(5)

Guidelines cites conditions under which the use of motorized and/or mechanized equipment use may be approved in wilderness. Directives specify conditions meeting minimum needs for protection and administration of the area as wilderness. These include:

- a) A delivery or application problem necessary to meet wilderness objectives cannot be resolved within reason through the use of non-motorized methods.
- b) An essential activity is impossible to accomplish by non-motorized means because of such factors as time or season limitations, safety, or other material restrictions.

Components of activities

Olympic National Park's proposed activities are grouped into the following steps. Specific details are covered in later sections under the *Alternatives* description.

- Transporting equipment and personnel by helicopter from remote landing sites to capture locations. Loads transported both inside the aircraft requiring a complete

landing and by external cargo net dropped to the location using a long line and remote hook.

- Teams of personnel capture mountain goats, one at a time. This occurs in open terrain, primarily along ridgelines and rocky outcrops. Loading the immobilized animal into a cargo net and attaching the load to the helicopter via a cable. Flying the goat to the staging area.
- Culling mountain goat groups using helicopters as a sharpshooting platform and to transport sharpshooter.

Capturing operations originate from two staging areas, to facilitate faster processing times. Mountain goats are captured, transported and processed at one time. Two stations are required because of the large spatial extent of mountain goat habitat, the dispersed nature of mountain goat groups, and the tendency for localized poor flying weather during summer months. Proposed staging areas are outside of wilderness. However, flight paths to and from staging areas may require flights below the 2000 feet above ground level recommendation, to minimize noise and visual impacts to recreationalists and affected wildlife.

Capture and translocation occur in most areas prior to culling mountain goats. Staff anticipate most, if not all, operations in the first year are live capture and transport. In the second year, more than half of operations are expected to be live capture. However, staff considers shooting habituated, unhealthy or difficult to access animals. In the final years, staff will conduct live captures, but then shift to a majority of lethal removal towards the end of the operational period.

Description of alternatives

Proposed activities on National Forest lands will be carried out by the lead organizations, Olympic National Park and Washington Department of Fish and Wildlife. Specific operational information is taken nearly verbatim from the Park's Draft "Wilderness Project Proposal Form and Minimum Requirements Worksheet" May 5, 2016, since they are the responsible agency. While proposed project details originate from materials provided by Olympic National Park, the selection of alternatives and the subsequent analysis herein is independent.

Olympic National Forest is considering three alternatives (two action and one no-action alternative) addressing the wilderness minimum requirements of the project:

- Alternative 1.) Helicopters for both mountain goat handling and transportation.
 - Helicopters utilized to capture and/or shoot mountain goats.
 - Fixed-wing aircraft will be used as spotting planes, for the purpose of locating groups of mountain goats. No landing of this type of aircraft will occur.
 - Helicopters utilized to transport for crew and equipment to remote sites in alpine areas.
 - Mineral salt blocks are used to bait goats at alpine capture locations.

- Alternative 2.) Helicopters combined with pack stock.
 - All mountain goat capture, handling and personnel operations utilize helicopters and fixed-wing aircraft as in alternative 1.).
 - Pack stock utilized to help facilitate the transport of equipment and gear to the nearest point along access trails. Teams of climbers carry equipment cross-country to the base of climbing routes. Climbers then use non-mechanical rigging apparatus to haul equipment to capture locations.
 - Mineral salt blocks are used to bait goats at alpine capture locations.
- Alternative 3.) No-action alternative. All operations in wilderness areas occur without engaging in restricted activities, such as using mechanized transport or equipment.

Alternative 1.) Helicopters for mountain goat handling and transportation

Proposed management elements and actions likely used for capture and translocation are as follows.

Transportation

Management activities for capture and translocation involve several modes of transportation for accessing remote areas in wilderness.

- Fixed-wing aircraft or helicopters are used to identify areas for aerial capture operations.
- Helicopters utilized to mobilize support equipment to spike camps near capture locations.
- Helicopters utilized to demobilize spike camp equipment at remote locations.
- Helicopters used to transport capture teams and other support staff to and from remote wilderness sites.

Capturing mountain goats

Mountain goats are captured utilizing helicopters as well as ground-based capture techniques. Immobilized mountain goats are placed individually in nets or slings to be transported by belly hook or long line by the helicopter to specified staging areas.

- Ground-based capture methods including drop nets, foot snares, darting, and clover traps
- Air-based capture methods including net guns and darting following guidelines in 351DM2-351DM3 "Aerial Capture, Eradication and Tagging of Animals (ACETA) Handbook" (DOI 1997).
- Helicopters land both external cargo nets and physically touchdown at remote locations to move the animals.

Forest area closures

Limited areas of the Forest, inside and outside of designated Wilderness, would be temporarily closed while lethal removal and capture operations take place. Visitor use locations and roads in vicinity of staging areas are closed for safety.

- Where closures are implemented, visitors are prohibited from entering wilderness sites by trail, route or cross country travel.
- Closures would also be coordinated with wilderness and law enforcement officers and all other forest staff working nearby.
- Closures may be in effect for several days.
- Forest-wide closures do not occur.

Baiting mountain goats

Mineral salt lick blocks placed to attract mountain goats to suitable locations for greater efficacy for either capture or lethal removal actions.

- Preferred locations for salt licks are distant from public use areas or difficult to access to lessen human and mountain goat interactions.

Alternative 2.) Helicopters combined with pack stock

Proposed management elements and actions for the capture and translocation by helicopter are identical to Alternative 1. However, activities such as moving personnel and equipment for support occur by foot or riding and pack stock. Stock travel on designated trails and routes. Under this alternative, staff access mountain goat groups on foot using trails and extensive cross country travel.

- Off-trail areas are accessed by backpack and climbing teams. In many locations high-angle climbing techniques will be utilized.
- Some capture locations require multiple day expeditions, transferring equipment from one camp to another at higher elevations.

Capture teams require additional equipment, primarily for camping. Equipment is designed or retrofitted to be broken down to be carried by backpackers, or in some cases stock animals. Some sites may take multiple days for travel.

Alternative 3.) No-action alternative

Under the no-action alternative, options for the management of mountain goats in wilderness remain the same. Activities affecting wilderness character are limited to disturbances to future management activities associated with controlling human-mountain goat interactions. The frequency of management actions is dependent on the level of mountain goat-human interactions.

Research and monitoring activities would continue on the forest in wilderness areas. Staff continues to collect demographic and other information. Annual aerial monitoring with helicopters and fixed-wing aircraft continues.

Aerial activities

Guidance on low-level flights over designated wilderness are recommendations. All aircraft are requested to maintain a minimum altitude of 2,000 feet above the ground surface of Wilderness. There is no statutory requirements except that noise from aircraft can be considered harassment of wildlife (16 USC 742j-1; 50 CFR Part 19).

The following table shows the number of estimated helicopter landings in wilderness, under the proposed action alternatives. A landing is the touching down of any part of the airship, including external loads suspended from longlines or other apparatus, in Wilderness. Data is taken from 2012 mountain goat survey, organized by geographic location.² Sums are the number of landings possible, based on the observed number of individual mountain goats. The actual number of mountain goat group complexes, with few or no sightings, is likely to be greater than the number observed.

Capturing requires no more than three landings per individual and each lethal removal requires zero to one wilderness landing under Alternative 1.) Under Alternative 2.), two landings are estimated for the capture of each individual, assuming that is physically possible to access some of the locations by foot. The number of flights for lethal removal will stay the same for this alternative. Wilderness landing estimates for alternatives was provided by Olympic National Park managers at interagency internal scoping meeting May 4, 2016). The number of landings, in both options, is assumed to be less since multiple animals can be removed in a given location from one crew flight.

Estimated helicopter landings in wilderness

Mt. Goat Group Complex	Priority 1 through 5	No. Observed	Landings for translocation	Landings for lethal removal	Landings for translocation	Landings for lethal removal
			Alternative 1.)		Alternative 2.)	
Copper Mt.	5	2	6	2	4	2
Mt. Washington	1	31	93	31	62	31
Flapjack—Skokomish	4	6	18	6	12	6
Mt. Bretherton	5	0	0	0	0	0
The Brothers	2	5	15	5	10	5
Mt. Jupiter	2	0	0	0	0	0
Constance—Townsend	2	4	12	4	8	4
Royal—Fricaba	4	0	0	0	0	0
Tyler—Baldy	3	0	0	0	0	0
Total Flights			144	48	96	48

² Copper Mountain group; Mount Washington group; Flapjack—Skokomish complex, includes Flapjack Lakes, Mt Gladys, Mt. Henderson, Mt. Skokomish groups. Mt. Bretherton group; The Brothers group; Mt. Jupiter group; Mt. Constance—Townsend complex, includes Harrison Lake, Mt. Constance, Tunnel Creek, Warrior, Charlia Lakes, The Gargoyles, Marmot Pass, Buckhorn, Silver Lake, Copper Creek and Mt. Townsend Groups; Royal—Fricaba complex, includes Mt. Fricaba, Royal Lake and Royal Creek Groups. The Tyler Peak—Baldy complex includes, the Baldy and Tyler Peak Groups.

Discussion

Compared is the observed population in each complex by priority for removal (1 through 5); distance to staging area; and, the anticipated number goats to capture. For comparison, the table shows number of flights for both translocation and lethal removal. Numbers in red indicate lethal removal. The right four columns show the number of flights for each action alternative.

Affects to wilderness character

The scope and scale of the mountain goat removal activities necessitates careful consideration of untrammeled, undeveloped, natural, solitude/unconfined recreation, and other features of value, essential to the character of the five Olympic National Forest wilderness areas. The Wilderness Act identifies other features having significant ecological, geological, scientific, educational, scenic or historical value. No lasting impacts are expected to incur to geological, educational, scenic or historical wilderness features.

Translocating Olympic peninsula mountain goats benefits ecological management efforts to repopulate endemic populations in North Cascade wilderness areas, while removing a non-native species on the Olympic Peninsula, also a significant factor to the mountain goat management plan. North Cascades populations are unlikely to rebound nor maintain a healthy genetic variability (Harris and Steele 2014).

The following sections compare the three alternatives within the framework of five wilderness character elements. Information is organized into the following matrixes.

Untrammeled wilderness character elements

Untrammeled	<i>Affected primarily by the forces of nature. Unhindered and free from modern human control or manipulation</i>
Alternative 1)	Short-term: Landing of helicopters, the use of dart and net guns and other mechanized equipment constitute modern human manipulation. Long-term: Removing an established species manipulates the environment.
Alternative 2)	Short-term: Landing of helicopters, the use of dart and net guns and other mechanized equipment constitute modern human manipulation. Using stock lessens dependence on helicopters for the operation. Long-term: Same as above. Removing an established species manipulates the environment.
Alternative 3)	Managers continue to control human-mountain goat interactions through hazing and other activities.

Undeveloped and natural wilderness character elements

Undeveloped	<i>Primeval character and influence, essentially without improvements and without permanent human occupation</i>
Alternative 1)	<p>Short-term: Salt lick attractants are a temporary improvement. They may draw other wildlife to the site, altering local species composition.</p> <p>Long-term: Activities will not result in permanent improvements or sign of human occupation of the wilderness.</p>
Alternative 2)	<p>Short-term: Same as above. Salt lick attractants are a temporary improvement. They may draw other wildlife to the site, altering local species composition.</p> <p>Long-term: Same as above. Activities will not result in permanent improvements or sign of human occupation of the wilderness.</p>
Alternative 3)	No change from the current condition.

Natural	<i>Preserve natural ecological systems which are substantially free from the effects of modern civilization</i>
Alternative 1)	Removal of an introduced species may, ultimately, benefit endemic species and have a positive impact to the ecosystem.
Alternative 2)	Same as above. Removal of an introduced species may, ultimately, benefit endemic species and have a positive impact to the ecosystem.
Alternative 3)	No change from the current condition. A large ungulate introduced into the ecosystem remains.

Solitude and other features of value wilderness character elements

Solitude/ Unconfined Recreation	<i>Provides outstanding opportunities for solitude or primitive and unconfined recreation</i>
Alternative 1)	<p>Short-term: Some visitors may have their experience of solitude degraded by the presence of a helicopter for the duration of the project. Visitors may see or hear helicopters flying over wilderness and hovering to release the sling loads or drop off equipment and personnel.</p> <p>Long-term: Solitude impeded by continuous need to manage mountain goat-human interactions through visitor education and the use of hazing devices such as air horns or paintball guns.</p>
Alternative 2)	<p>Short-term: Some visitors may have their experience of solitude degraded by the presence of a helicopter for the removal portion of the operation. However, there are significantly less flights for the duration of the project disrupting fewer visitors for less time.</p> <p>Feelings of solitude are lessened where visitors come into contact with large pack stings and spike camps. The extent of time the crew would be camped is less than two weeks.</p> <p>Long-term: Solitude impeded by continuous need to manage mountain goat-human interactions through visitor education and the use of hazing devices such as air horns or paintball guns.</p>
Alternative 3)	Solitude impeded by continuous need to manage mountain goat-human interactions through visitor education and the use of hazing devices such as air horns or paintball guns.

Other Features of Value	<i>Wilderness areas "may also contain ecological, geological, or other features of scientific, educational, scenic, or historical use" unique to the wilderness area</i>
Alternative 1)	Impact to fragile alpine ecosystems from mountain goats is eliminated. Ecosystem impacts from the non-indigenous species to soils, plants and other wildlife is eliminated.
Alternative 2)	Same as above. Impact to fragile alpine ecosystems from mountain goats is eliminated. Ecosystem impacts from the non-indigenous species to soils, plants and other wildlife is eliminated.
Alternative 3)	Human-caused impacts from mountain goats continue to affect the ecological integrity

Other factors for consideration

Other factors considered are the proposed activities role in maintaining or perpetuating traditional skills such as stock packing; project costs and economic constraints for attaining

the desired administrative outcome; and, lastly, safety for both the general public and for employees.

Maintaining traditional skills

Traditional skills are not utilized with the use of helicopters. However, Alternative 2.) utilizes pack stock for portions of the operation, employing traditional skills, not often practiced in Olympic National Forest.

Economic costs

As proposed, Olympic National Forest does not directly contribute to the cost of the operation, except for time for the preparation of planning documents, as outlined in a memorandum of understanding between the agencies for mountain goat management.

While there are no direct costs incurred by the Forest Service, economic information is included in this minimum requirements analysis is provided as an overview of costs for the proposed actions. Overall economic costs of the multi-year proposed action, including all aspects of the translocation project on the Olympic Peninsula and in the Northern Cascades, is \$1,600,000. Of this cost, Washington Department of Fish and Wildlife is contributing \$461,000 (NPS PMIS 2016). If the total population is estimated to be 600 individuals, then the cost for both translocating and lethal removal is \$2,667 per individual. The proportion of cost for the National Park Service and Washington Department of Fish and Wildlife on Olympic National Forest is approximately \$157,353 (based on the 2016 estimate of 59 mountain goats).

Cost differences for actions outlined in alternative 2.), the use of pack stock for a portion of the operations are not calculated. However, it can be assumed that it would be significantly greater since it would lengthen the overall time needed to attain the management goals. Note that areas not accessible by trail are extremely difficult to access and take multiple days to reach sites.

Safety of visitors and workers

Risk of injury is significant due to the work environment. Mountain goats live in extremely rough and inaccessible terrain, at high elevations. Hazards include, snowfields, cliffs, difficult route-finding under canopy and unstable montane weather. Access to capture sites may involve traversing ridges or other alpine features such as ice fields. Likewise, helicopter transport in mountainous terrain is hazardous. Challenges include poor weather for flying, erratic winds and temperature fluctuations. Landing and taking off from remote sites involves risk. Risk to visitors, agency personnel, or contractors, associated with implementing either of the action alternatives is substantial.

The significant trade-offs between the two action-alternatives is the length of exposure to potentially catastrophic activities versus the severity of an accident from operations more dependent on helicopters. The use of climbing parties and pack and saddle stock may lessen flight times and exposure to air accidents but significantly increases the time personnel are engaged in other risky activities such as alpine fourth and fifth class aid climbing. Mitigation actions to decrease risk include providing information to the public and temporary area closure or employing 'best practices,' for helicopter operations and for cross-country travel.

The no-action alternative 3.), poses no direct safety hazard for managers that impede wilderness character elements.

Conclusion

The long-term impacts of mountain goats on the Olympic peninsula are significant. Removal of mountain goats is essential to the overall ecological integrity of Wilderness areas on the Olympic Peninsula. Removal activities solely in Olympic National Park likely will have no lasting impact on the mountain goat population since they can recolonize from forest service lands. Specifically, the no-action alternative on forest service lands will not mitigate ecological impacts to multiple wilderness character elements. Therefore, the two action alternatives meet priorities to preserve, unhindered, the unique assemblage of alpine and subalpine flora and fauna on Olympic National Forest.

After considering the options for this project, Alternative 1.) is consistent with Forest Service Manual directives for minimum requirements to accomplish wilderness management objectives. There are no feasible non-motorized methods that could be used to transfer goats from remote sites to the staging areas. Alternative 2.) is not feasible for most mountain goat group locations due to difficult cross-country access by foot. Pack stock cannot access most areas of mountain goat habitat. It is not possible for teams of workers to carry the necessary equipment for the operation over steep and hazardous terrain, due to costs, safety and time constraints.

Solitude in these areas would be affected by the presence of helicopters. However, these impacts are temporary and last only two weeks of each year of operation. Furthermore, the activities are dispersed over a large geographic area.

Olympic National Forest determines there is no reasonable or safe, non-motorized or mechanized alternatives for the project to proceed. The timing, scope and scale of activities justifies the use of mechanized equipment in wilderness, as minimum requirements to meet wilderness management objectives.

Recommendations

The Forest recommends to the National Park Service and Washington Department of Fish and Wildlife, to implement the project as proposed, with similar activities as outlined in Alternative 1.): Helicopters for mountain goat handling and transport. Where feasible, crews may also access capture sites via foot or horseback. Helicopters may be used for transporting personnel and equipment.

The following methods or actions are recommended to be incorporated into the project design criteria, to limit degradation to wilderness character:

- Washington Department of Fish and Wildlife is strongly encouraged to issue as many fall mountain goat hunting permits, as possible, to the general public. This action is contingent upon a Record of Decision in favor of implementing the proposed action alternatives in the Olympic National Park, Draft Mountain Goat Management Plan. Any

animals removed from the forest prior to, and during implementation, will limit flights and operational time, impacting wilderness character.

- Staff access wilderness areas via foot or riding stock where possible, without risking life or limb. This shall 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 shall be considered for both baiting mountain goats ahead of time as well as during the capturing operational period, to limit trammeling and inhibiting solitude/primitive recreation from helicopter flights.
 - 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 Mount Ellinor, Mount Skokomish Wilderness.
- Bait mountain goats, whenever possible, to lure them outside of Forest Service wilderness boundaries.

Approved: _____DRAFT_____

Date: _____DRAFT_____

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Draft Minimum Requirements

Olympic Mountain Goat Restoration Plan

Cascade Wilderness Areas Mountain Goat Population Augmentation



Forest Service

Mt. Baker-Snoqualmie and

Okanogan-Wenatchee National Forests

August 2016

Responsible Official:

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Okanogan-Wenatchee National Forest

BACKGROUND

Olympic National Park and the Olympic National Forest are proposing to reduce or eliminate mountain goats from Washington's Olympic Peninsula. Mountain goats were introduced to the Olympic Peninsula in the 1920's. Since that time the goats have been observed impacting the ecosystem and further endangering endemic plant species. To aid in restoring mountain goat populations in the North Cascades, the Washington Department of Fish and Wildlife (WDFW) proposes to translocate up to 335 goats from the Olympic peninsula into suitable habitat in the Northern Washington Cascades. Specific locations of translocation sites and staging areas are provided in Appendix A.

Mountain goats are native to the North Cascade Mountains and are the predominant large herbivore in alpine areas and an important components of these ecosystems. Mountain goats are classified as a Regional Forester Sensitive species on National Forests within Washington (USDA Forest Service memo dated 7/21/2015, see <http://www.fs.fed.us/r6/sfpnw/issssp/documents3/2670-1950-final-sss-list-enc1-20150713.xlsx>). The mountain goat also serves as a Forest management indicator species (MIS) for habitat that includes the alpine and subalpine areas of the Mt. Baker-Snoqualmie and Okanogan-Wenatchee National Forests. Habitat includes cliffs, crags or other areas of mountainous terrain and open alpine meadow areas down to conifer forest habitats. Mountain goats are a culturally important species to area Tribes who value it in many ways and is considered a Treaty Resource by Tribes. Mountain goats are also sought after as a big game trophy animal by sport hunters.

Mountain goat populations have declined substantially in most of Washington's North Cascades (Rice and Gay 2010, Rice 2012), although the precise magnitude of the decline is uncertain (WDFW 2015a, b). WDFW estimates the population of mountain goats has declined by at least 50% since 1961 across the state. The decline was not uniform, with some populations decreasing by over 90% or disappearing entirely. During the 1960's through the early 1980's 200-400 mountain goats were harvested annually. As a decline in harvest became apparent, permits were dramatically reduced to about 20 annually and only in areas where the population seemed to be doing well. Since that time mountain goat populations have recovered in some portions of Washington's North Cascades, however, in much of their range, mountain goat populations remain small and isolated (WDFW 2015a, b), and appear unlikely to recover for many decades without reintroduction and/or augmentation. Without recovery in these areas, long-term genetic and demographic health of mountain goats in the North Cascades cannot be assured. Goats are proposed to be released in the Glacier Peak, Henry M. Jackson and Alpine Lakes Wilderness Areas. (See Appendix A for specific sites).

Options Considered Outside of Wilderness

Although there are areas of mountain goat habitat outside of wilderness, the overwhelming majority of summer mountain goat habitat in the North Cascades is within the large wilderness areas straddling the Cascade crest. Many of the release sites that will ensure the greatest success necessarily are within wilderness areas. Mountain goats require alpine habitat for them to thrive. Pockets of this habitat exist on the west side of the crest, but connections from this habitat to the larger more contiguous alpine areas is often lacking. The large wilderness areas in the Cascades offer the greatest amount of alpine connectivity which should provide a more favorable outcome for augmentation. Wildlife managers feel

utilizing solely non-wilderness release sites would not adequately address the need to restore mountain goat populations in the North Cascades to their historic levels.

Special Provisions, Valid Existing Rights, and Policy

Glacier Peak Wilderness was established in 1964 as one of the 54 original wilderness areas. The wilderness was expanded in 1968 as part of the North Cascades National Park creation and further expanded by the 1984 Washington State Wilderness Act. Alpine Lakes was created in 1976 and expanded in 2014 as part of the 2015 Defense Authorization Act. Henry M. Jackson was established as part of the 1984 Washington Wilderness Act. There are no Special Provisions in any of the legislation that would be related to this project. The Wilderness Act does give the State's jurisdiction with respect to wildlife and fish within National Forest wilderness. (Wilderness Act, Section 4 (d)(7).

The legislation relevant to this proposed project does not include any other special provisions or valid existing rights.

The Association of Fish and Wildlife Agencies (AFWA) is an association representing government agencies responsible for North America's fish and wildlife resources. An agreement between the AFWA and the Forest Service documents the desire of the agencies to work in cooperation with the State's on Fish and Wildlife related issues. The policy statement allows for,

Transplants (removal, reintroduction, or supplemental introduction) of terrestrial wildlife species in wilderness may be permitted if necessary: (a) to perpetuate or recover a threatened or endangered species; (b) to restore the population of an indigenous species; or (c) to manage wildlife populations in accordance with the States' wildlife populations objectives.

The Forest Service Manual expands on the agreement with AFWA. Chapter 2323.32 provides the following policy regarding wildlife management in wilderness areas:

"1. Recognize that States have jurisdiction and responsibilities for the protection and management of wildlife and fish populations in wilderness. Cooperate and work closely with State wildlife and fish authorities in all aspects of wildlife and fish management. Base any Forest Service recommendation to State wildlife and fish agencies on the need for protection and maintenance of the wilderness resource. Recognize wilderness protection needs and identify any needed requirements in coordination efforts and in cooperative agreements with State agencies.

2. Wildlife and fish management programs shall be consistent with wilderness values."

FSM 2323.33a further provides:

"[re]introduce wildlife species only if the species was once indigenous to an area and was extirpated by human induced events. Favor federally listed threatened or endangered species in reintroduction efforts. Reintroductions shall be made in a manner compatible

with the wilderness environment. Motorized or mechanical transport may be permitted if it is impossible to do the approved reintroduction by nonmotorized methods.”

The Forest Service Manual 2670.22 also calls for the Forest Service to:

“maintain viable populations of all native and desired nonnative wildlife, fish and plant species in habitats throughout their geographic range on National Forest System Lands.”

The Mt. Baker-Snoqualmie Land and Resource Management Plan further states:

“[n]ative species shall be maintained, with special emphasis on the preservation of threatened or endangered species, plus designated management indicator species and their habitats. Fish or wildlife indigenous to an area, may be re-established if previously eliminated by the influence of man.” [Mt. Baker-Snoqualmie Forest Plan at 4-112.]

Requirements of Other Legislation

No other legislation would require any action.

Minimum Requirement Determination

Mountain goats are an indigenous and integral ecological component of the wilderness areas in Washington’s central and North Cascade Mountains. Addition of the Olympic mountain goats to these wilderness areas is will help restore mountain goat populations that have suffered substantial declines in recent decades. Augmentation of the mountain goat population will enhance wilderness character by enhancing the experience of solitude and a primitive and unconfined recreation and restoring ecological values impacted by the decline of goats.

The Minimum Requirement for this project is to recognize Washington State’s responsibility to manage wildlife populations and augment the mountain goat population in the North Cascade Mountains.

ALTERNATIVES

Two alternatives were considered to meet the minimum requirements of the project:

- Alternative 1: Use of Helicopters to Transport Goats and Crew to Release Sites
- Alternative 2: Use of Helicopters to Transport Goats to Release Sites

TABLE 1. ESTIMATED HELICOPTER TRIPS BETWEEN STAGING AND RELEASE AREAS FOR EACH ALTERNATIVE.

Release Site Name	Wilderness	# goats to release	# helicopter trips (goats, personnel, equipment) Alternative 1	# helicopter trips (goats) Alternative 2
Chikamin	Alpine Lakes	25	32	26
Kaleetan	Alpine Lakes	25	32	26
Preacher Mtn	Alpine Lakes	25	32	26
Cadet Lake Ridge	Henry M. Jackson	30	36	30
White Chuck Glacier	Glacier Peak	35	42	36
Buckindy	Glacier Peak	30	36	30
Snowking Meadow	Glacier Peak	30	36	30
	Total		246	204

Both alternatives involve moving mountain goats from non-wilderness staging areas to wilderness release sites, transporting equipment and personnel to and from the release sites and temporarily placing salt blocks at release sites.

Mountain goats are sensitive to intra-group hierarchical relationships, and typically maintain social relations via aggressive interactions (Geist 1967). In a stressful, unnatural situation (such as result from capture and retention in captivity), mountain goats are likely to engage in considerable aggression. Thus, unlike some species that can safely be transported in groups (e.g., bighorn sheep), mountain goats must be transported in individual crates (ODFW and CTWSR 2010). Mountain goats are also sensitive to stress, warm temperatures and capture myopathy (Hebert et al. 1980, Blood et al. 2001). Blood et al. (2001) reported that transplant-caused mortality rates for mountain goats in British Columbia during 1980-2000 were higher (10.6%) than for other translocated ungulates reviewed. Thus, moving mountain goats from the donor population to release sites must be conducted using individual crates, and must be done relatively quickly and with care to keeping them cool and with a minimum of human disturbance. If goats are housed together, or if the time required to move individual goats to their release sites is too lengthy, considerable mortality can be expected.

An Alternative that would not use helicopters to release goats in wilderness was not considered. There is no other method available that could negotiate terrain and timing requirements to successfully translocate goats.

A No Action in Wilderness Alternative was not considered as wildlife managers feared such an approach would not be successful due to less suitable escape terrain in non-contiguous habitat patches outside wilderness.

Forest Service Manual 2326 cites conditions under which the use of motorized equipment such as helicopters use may be approved in wilderness. Section 2326.1(5) specifies the type of conditions that

would meet minimum needs for protection and administration of the area as wilderness. Specifically, 2326.1(5)(a) and (b):

- a) A delivery or application problem necessary to meet wilderness objectives cannot be resolved within reason through the use of non-motorized methods.
- b) An essential activity is impossible to accomplish by non-motorized means because of such factors as time or season limitations, safety, or other material restrictions.

Alternative 1) Use of Helicopters to Transport Goats and Crew to Release Sites

Refrigerator trucks would be used to transport goats from the Olympic peninsula to staging areas as close to the release sites as possible. The goats would be transported in individual crates until their release at the recipient release sites. Goats would be airlifted by helicopter, 1 or 2 crates at a time, to the release sites. 15 to 20 goats would be released together (nannies first), allowing subsequent animals to see and smell previously released animals. Approximately 26-36 round-trip flights between staging area and release site (12-13 to deliver goats and 12-13 to return crates to staging area; see Table 2). Helicopters would not need to land in order to lower goats in crates to the sites. Round trip helicopter flights between staging and release sites would require an average of about 11 minutes per trip for goat placement and additional 2 minutes per trip to land and off load crew members. Approximately 100 m of temporary, plastic, portable 'snow fencing' would be flown to the release sites and erected to herd goats from release site toward escape terrain (used successfully in the Passmore goat translocation in B.C., 1990-92; Blood 2000, as well as in Mt. Jefferson reintroduction, ODFW/CFWSRO 2010).

The actual timing of release would vary based on when the goats are captured on the Olympic Peninsula, transported to staging areas and then transported to release sites by helicopter. Primary management activities would occur two times per year in two-week intervals (e.g., two weeks in July and two weeks in late August or early 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 that each release site would be used, because it is not known how many goats would be captured and be ready for transport on any given day. However, this analysis assumes that to translocate 25-35 goats, 3-4 separate days of work would be required (i.e., 6-12 goats transported and released during each active day). These days may be spread across both of the two years of expected activity (summers of 2018 and 2019).

Once goats are transferred to the release site, they would be released from the crates and the crates would be returned to the staging area two at a time.

Three landings and pick-ups would be needed for each release site. The first two helicopter flights would be to transport ground staff (6 individuals) to the site. A third flight would transport additional supplies and equipment (portable fencing). Three more flights would be needed to return equipment and personnel to the staging areas.

A salt block would be placed at each release site in order to help provide a central "meeting place" for goats released. Salt would be placed so as to minimize salt being introduced to the environment. Salt

blocks would be one-time installations that would be removed approximately 1 year after installation by ground crews hiking to the area. Only one salt bait 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 wilderness visitors, and the salt would be buried under snow for much of the winter months. Any remaining salt the following summer would be removed and all components of the bait site taken down and removed from the wilderness.

TABLE 2. ALTERNATIVE 1 - ESTIMATED HELICOPTER FLIGHT TIME OVER WILDERNESS FOR EACH RELEASE SITE.

Release Site Name	Wilderness	# flights	Flight time over wilderness per Round trip	Approximate Flight minutes per Release Site
Chikamin	Alpine Lakes	32	10	320
Kaleetan	Alpine Lakes	32	8	200
Preacher Mtn	Alpine Lakes	32	12	300
Cadet Lake Ridge	Henry M. Jackson	36	5	180
White Chuck Glacier	Glacier Peak	42	16	560
Buckindy	Glacier Peak	30	12	360
Snowking meadow	Glacier Peak	30	12	360
<i>Extra time for crew landing and pick up</i>				<i>84</i>
	Total	207		2760 minutes (46 hours)

Flights times and number of trips listed above are estimates and actual may vary due to unforeseen circumstances such as, but not limited to, weather and mechanical issues. Flight time will vary depending on the type of helicopter actually available.

TABLE 3. EQUIPMENT NEEDS UNDER ALTERNATIVE 2.

Item	# Items	Approx. Weight (pounds)	Total Pounds
Medical kit	1	2.2	2.2
Radio	1	1.1	1.1
Binoculars	4	2.2	8.8
Spotting Scope	1	4.4	4.4
Tripod	1	4.4	4.4
Receiver VHF	1	2.2	2.2
Rubber mallet or post pounder	1	5	5
Temporary fencing posts	10	2	10
Temporary fencing material	1	25	25
		Total	63.1

Alternative 2) Use of Helicopters to Transport Goats and Supplies to Release Sites

This alternative would be the same as Alternative 1 with the exception of the ground crew hiking into the release sites. Fencing, binoculars, salt blocks, additional food and supplies would be transported by helicopter. A salt block would be temporarily placed at each release site.

Snowking, Buckindy, White Chuck and Kaleetan release sites would likely require two days to reach and two more days to hike out due to the rough country and complex topography that would need to be traversed. A minimum of four days of gear and supplies (likely somewhat over 50 lbs each) would need to be carried in should the crew arrive at the release site only to be weathered in. If goats could not be delivered, the crew would then have to hike out for resupply, or wait until the weather improves and helicopter flights could begin and additional supplies brought in. While somewhat closer, Preacher, Chikamin and Cadet would still be arduous day hikes and require bringing 2-3 days of camping gear.

Total flight time of this alternative is estimated to be about 7.5 hours less than under Alternative 1.

TABLE 4. ALTERNATIVE 2 - ESTIMATED HELICOPTER FLIGHT TIME OVER WILDERNESS FOR EACH RELEASE SITE.

Release Site Name	Wilderness	# flights	Flight time over wilderness per ROUND trip	Approximate Flight minutes per Release Site
Chikamin	Alpine Lakes	26	10	260
Kaleetan	Alpine Lakes	26	8	208
Preacher Mtn	Alpine Lakes	26	12	312
White Chuck Glacier	Glacier Peak	36	16	576
Cadet Lake Ridge	Henry M. Jackson	30	5	150
Buckindy	Glacier Peak	30	12	360
Snowking meadow	Glacier Peak	30	12	360
	Total	204	0	2226 minutes (37.1 hours)

Flights times and number of trips listed above are estimates and actual may vary due to unforeseen circumstances such as, but not limited to, weather and mechanical issues. Flight time will vary depending on the type of helicopter actually available.

TABLE 5. EQUIPMENT NEEDS.

Item	# Items	Approx. Weight (pounds)	Total Pounds
Medical kit	1	2.2	2.2
Radio	1	1.1	1.1
Climbing equipment	1	11.0	11.0
Camping equipment	6	55.1	330
Binoculars	4	2.2	8.8
Spotting Scope	1	4.4	4.4
Tripod	1	4.4	4.4
Receiver VHF	1	2.2	2.2
Rubber mallet or post pounder	1	5	5
Temporary fencing posts	10	2	10
Temporary fencing material	1	25	25
		<i>Total</i>	<i>404.1 (67 pounds each person)</i>

WILDERNESS CHARACTER

The Minimum Requirements Analysis requires an evaluation of the impact of the project on Wilderness Character. Wilderness character is the combination of biophysical, experiential, and symbolic qualities that distinguishes wilderness from all other lands.

The primary mandate of the Wilderness Act of 1964 is to preserve wilderness character as described in section 4(b) of the Act:

“Except as otherwise provided in this Act, each agency administering any area designated as wilderness shall be responsible for preserving the wilderness character of the area and shall so administer such area for such other purposes for which it may have been established as also to preserve its wilderness character.”

The following sections compare the alternatives of the project within the framework of the qualities of wilderness character and other factors. Relevant other factors that are compared are maintenance of traditional skills and economics.

Untrammeled

An untrammeled area is an area where the earth and its community of life are untrammeled by man and generally appears to have been affected primarily by the forces of nature. Wilderness is essentially unhindered and free from modern human control or manipulation.

Alternative 1) Use of Helicopters to Transport Goats and Crew to Release Sites

Mountain goats are native to the release areas, and proposed translocation patches were identified in part because mountain goats are known to occupy, or have occupied in the recent past, those habitats. However, the human-controlled movement of goats into the wilderness areas would affect the untrammeled nature of these areas.

Manipulating goat behavior by placing salt blocks at the release sites, although temporary, would also affect the untrammeled character of the wilderness. The salt blocks may also have an impact on other animals in the wilderness. Moving mountain goats from the Olympic Peninsula into wilderness areas of the North Cascades would constitute a manipulation of the environment in the wilderness areas receiving goats.

Salt blocks would be designed to minimize or completely avoid leaching of salt into the ground and surrounding environment.

Alternative 2) Use of Helicopters to Transport Goats and Supplies to Release Sites

Under this Alternative there would be approximately 42 fewer helicopter flights into the wilderness as the ground crews would walk to the release sites. The alternative would bring in the same number of goats and salt blocks. This would constitute a trammeling action in the wilderness as humans would be exercising a level of control over the environment.

Undeveloped

Undeveloped areas are Federal lands without permanent improvement or human habitation and where man himself is a visitor who does not remain. Wilderness retains its primeval character and influence, and is essentially without permanent improvement or modern human occupation.

Alternative 1) Use of Helicopters to Transport Goats and Crew to Release Sites

This alternative would result in a temporary sign of human occupation of the wilderness due to the placement of salt blocks at release sites. Salt blocks would be removed after 1 year. Crews camping at the release sites would practice Leave-No-Trace techniques so that there would be no evidence remaining of their presence.

Alternative 2) Use of Helicopters to Transport Goats and Supplies to Release Sites

Same as Alternative 1.

Natural

Wilderness is managed to preserve natural ecological systems which are substantially free from the effects of modern civilization.

Alternative 1) Use of Helicopters to Transport Goats and Crew to Release Sites

This alternative would improve the natural character of the wilderness. Alternative 1 would increase the odds for the successful introduction and establishment of mountain goats in the North Cascades.

Mountain goats are native to the Glacier Peak, Henry M. Jackson, and Alpine Lakes Wilderness Areas and are the predominant large herbivore in alpine communities of these wilderness areas. Throughout much of the North Cascades mountain goat populations currently remain small and isolated. The natural quality of these wilderness areas will be improved by augmentation of existing goat populations. Reintroducing goats to high quality habitat patches historically occupied by goats, but where populations are low or non-existent, will help to reestablish those populations and ensure the long-term integrity of the natural character of these wilderness areas.

Alternative 2) Use of Helicopters to Transport Goats and Supplies to Release Sites

The benefit to the natural character of these wilderness areas could be reduced due to the risk that not all wilderness releases may be reachable by ground based crews. Under this Alternative, personnel would need to hike and from release sites from the closest trailhead. The topography of some of the more remote sites could make it infeasible for crews to reach them, making those specific release sites unusable. To restore viable mountain goat populations throughout the mountain goat's native habitat and range, and maximize the probability of long-term demographic and genetic exchange among population clusters, an interacting set of populations across the North Cascades, including wilderness, is needed. If some important wilderness sites are not accessible because of logistical constraints with reaching the sites on foot instead of by helicopter, the potential for successful establishment and long term viability of goat populations may be less than that in Alternative 1.

Solitude and Opportunities for Primitive and Unconfined Recreation

Wilderness provides outstanding opportunities for solitude or primitive and unconfined recreation.

Alternative 1) Use of Helicopters to Transport Goats and Crew to Release Sites

Solitude: It is possible that some visitors may have their experience of solitude degraded by the presence of a helicopter. Some visitors may see or hear helicopters flying over wilderness and hovering to place goat crates, supplies, or landing to off-load crew members. Due to the remote nature of some of the sites, anyone who is in the area may have their experience degraded to a greater degree than an individual who has spent far less effort to access a portion of one of these wilderness areas on an easy trail. The transportation of goats would be focused on one site at a time so that only one location would be affected by helicopter disturbance at any given time.

Opportunities for Primitive and Unconfined Recreation: There will be some temporary effects to opportunities for primitive and unconfined recreation. Although no trail closures are anticipated at release

sites within wilderness, some of the proposed staging areas outside of wilderness may require temporary closures which could limit access on certain trails.

The six-person ground crew would need to hike in and camp for an extended period of time. Solitude would be reduced where visitors may come into contact with the ground crew or in the event the camp used by the crew is visible to or accessed by visitors. Although the extent of time the crew would stay at the release site depends on numerous other factors, the total duration is expected to be approximately a week.

At the time these wilderness areas were established, one of the opportunities for primitive and unconfined recreation was the opportunity for a high quality trophy hunt of mountain goats. This was a unique opportunity afforded hunters until recent decades. There was also a greater opportunity for wilderness visitors to see mountain goats throughout their range than is currently available. Restoration of the mountain goat population may allow for some resumption of a goat trophy hunt and also afford many wilderness visitors a much better chance of seeing one of the iconic animals in the North Cascades.

Alternative 2) Use of Helicopters to Transport Goats and Supplies to Release Sites

Impacts to solitude would be similar to Alternative 1, but vary in several ways. The first would be a reduction in total helicopter use on the order of 7 hours as the result of crews not using helicopter transport to reach the release sites. Visitors may have a higher chance of encounter crews along system trails as the crews hike in to the release sites.

Other Feature of Value

The Wilderness Act also identifies other features of value (i.e. “ecological, geological, or other features of scientific, educational, scenic or historical value.”)

The Ecological Character of these wilderness areas is a paramount reason for the implementation of this project. Mountain goats play a key ecological role in the alpine environment. They help to spread nutrients across the landscape into areas not accessible by other large ungulates. Their sharp hooves can mulch hardened ground that may help plants, such as *Leutkea* gain a foothold on areas that have been recently deglaciated. They are prey animals to large predators, primarily cougars, but also wolves, and could serve as prey for grizzlies in the Cascades. Eagles can take young goats on occasion.

Other Factors

Maintaining Traditional Skills

Alternative 1 would not feature traditional skills in that a helicopter would be required for the release of goats and delivery and retrieval of the crew to and from the wilderness. Alternative 2 would use motorized equipment to transport goats, but personnel would travel to and from the release sites on foot.

Economics and Time Constraints

The most important time constraints related to this project is to have the ground crew on site at the time goats are being transported. If the ground crew is hiking to the release site, chances are that by the time they arrive, weather, goat capture, or other factors may have changed so that the crew may have to demobilize and return later.

The main difference in cost between the two alternatives will be the difference in mobilizing the 6 person crew to each release site by helicopter or on foot. The crew cost per day and helicopter cost per hour are roughly similar (\$1500) Alternative 1 would have a total helicopter cost of about \$11,250 more than Alternative 2. This would be offset by the amount of crew time spent accessing the 7 release sites on foot which would be at least 22 days or about \$33,000. If weather or mechanical issues were to arise the crew cost would climb, should they have to leave the release sites and remobilize at a later date.

Additionally, release activities must coincide with capture operations on the Olympic Peninsula to reduce transfer-related mortality to the maximum extent possible.

Safety of Visitors and Workers

Hazards for the crew involve exposure to helicopter flight in rugged mountainous terrain, as well as entry and exit from the helicopter. Helicopter transport in mountainous terrain poses numerous challenges due to vicissitudes in weather conditions, unpredictable winds, and lift conditions in varying temperatures. Disparate temperature conditions and elevations could result in modified load limits.

The potential release sites included in this project represent some of the steepest and most difficult terrain in the wilderness system. Due to the steep nature of the trails and cross-country travel, there is risk of injury to personnel hiking to the release sites. These areas are characterized by steep slopes, numerous cliffs, heavy vegetation, frequent bad weather, and snow cover, all conditions which require a very fit and technically skilled team just to access the area. Hazards for the crew involve carrying heavy packs to the release sites and injuries associated with this activity.

Decision

After considering the options for this project the decision is to implement the project utilizing helicopter transport for mountain goats, equipment and crew. **For this project, the helicopter is the minimum tool needed for a successful outcome.** It is our judgement that there is not a reasonable, or safe, non-motorized method for the project to proceed. The project as proposed under Alternative 1 satisfies both (a) and (b) of Section (5) of FSM 2326.1.

The timing of the project must take place during a relatively narrow temporal period. Flexibility in timing the utilization of release sites and staging areas will allow wildlife managers to make decisions that account for human and goat safety during flight operations while providing for the long-term success of the population augmentation.

Alternative 1 would benefit the natural character of the wilderness areas as it would contribute to restoring viable mountain goat populations throughout the mountain goat's native habitat and range. The untrammled nature of the wilderness areas would be negatively affected due to the human controlled movement of goats into the wilderness. The developed nature of wilderness would be negatively affected by the temporary placement of salt blocks at the release sites. Solitude and opportunities for primitive and unconfined recreation would see negative impacts due to the presence of the helicopter and personnel. These impacts would be temporary, of short duration, spread out over a period of years, and usually occur in areas where visitor use is generally low. Longer term, primitive and unconfined recreation opportunities may increase for remote wildlife viewing and possibly an increase in trophy hunting.

The negative impacts to wilderness character are outweighed by the potential to enhance the ecological conditions and natural character of the wilderness for the long term by ensuring successful restoration of mountain goat populations in the North Cascades wilderness areas. Mountain goats are an integral part of the native wildlife of the North Cascades, part of the wilderness character, and important to the cultural identity of local tribes. **Restoration of extirpated wildlife species, including mountain goats, is a necessary action to administer the wilderness and restore wilderness character which has been diminished by the loss of mountain goats.**

The following mitigation requirements apply to this determination:

- Where feasible, flights on weekends and holidays should be avoided to reduce potential impacts to visitors.
- Trailheads leading to the release sites will be posted with information about the project.
- Details, including timing, of the project will be posted on the Mt. Baker-Snoqualmie and Okanogan-Wenatchee NF websites.
- Kaleeten Peak area receives relatively high visitor use. (Denny Creek/Melakwa Lake). The release site would avoid the scramble route to the south.
- Limit trail and road closures as much as practicable (avoid multiple closures at once and limit duration of closures to only length of time necessary for operations)
- Limit operations to one site at a time so that only one location would be affected by helicopter disturbance at any given time.

Approved: _____ DRAFT _____

JAMIE KINGSBURY

Forest Supervisor

Mt. Baker-Snoqualmie National Forest

Date: _____ DRAFT _____

Approved: _____ DRAFT _____

MIKE WILLIAMS

Forest Supervisor

Okanogan-Wenatchee National Forest

Date: _____ DRAFT _____

Appendix A

Proposed release sites are in the Glacier Peak, Alpine Lakes, and Henry M. Jackson wilderness areas. Wilderness. Each site was evaluated by Dr. Rich Harris, a Section Manager for Bighorn sheep and mountain goats who works for WDFW. To identify and evaluate each site for suitability the following aspects were considered:

1. Habitat: Summer mountain goat habitat was defined based on the raster map of mountain goat habitat developed by Wells et al. (2011).
2. Connectivity: The degree to which areas in the habitat map should be considered as demographically connected.
3. Population Density: Population estimates for areas for which the mountain goat population has been estimated and calculated an average density of mountain goats. This density was extrapolated to areas lacking site-specific data.
4. Historic Harvest: The historic harvest for each area as an indicator of prior abundance.

Each potential reintroduction site was then scored by WDFW and Forest Service biologists on the MBS and OKW. An all-day meeting was held on 1/28/2016 with FS biologists, NEPA personnel and Wilderness staff along with RO staff and Rich Harris to reduce the number of potential reintroduction sites. Based upon that meeting, the subsequent evaluations of translocation sites by WDFW, the potential list of translocation sites was reduced to 12 sites, seven of which are in wilderness. Each site is estimated to receive 15-35 goats. While care was made to identify as many non wilderness sites as possible, the limitations of habitat that met the above criteria limited the options outside of wilderness.

Alpine Lakes Wilderness

The Alpine Lakes Wilderness was designated in 1976. A 22,000 acre addition to the Wilderness was approved by Congress as part of the National Defense Authorization Act for Fiscal Year 2015 (Public Law 113-291, December 19, 2014), expanding the Wilderness to a total area of 414,701 acres. Management is shared between the Mount Baker-Snoqualmie and Wenatchee national forests. The wilderness is between Snoqualmie and Stevens Passes in the North Cascades portion of the Cascade Range, including the sub-range called the Wenatchee Mountains. The Alpine Lakes Wilderness is characterized by sawtooth ridges, sharp summit spires, glacial valleys, and hundreds of glacially excavated lake basins. Small glaciers persist in the Stuart Range and along the high crest between Chikamin Peak and Mount Daniel.

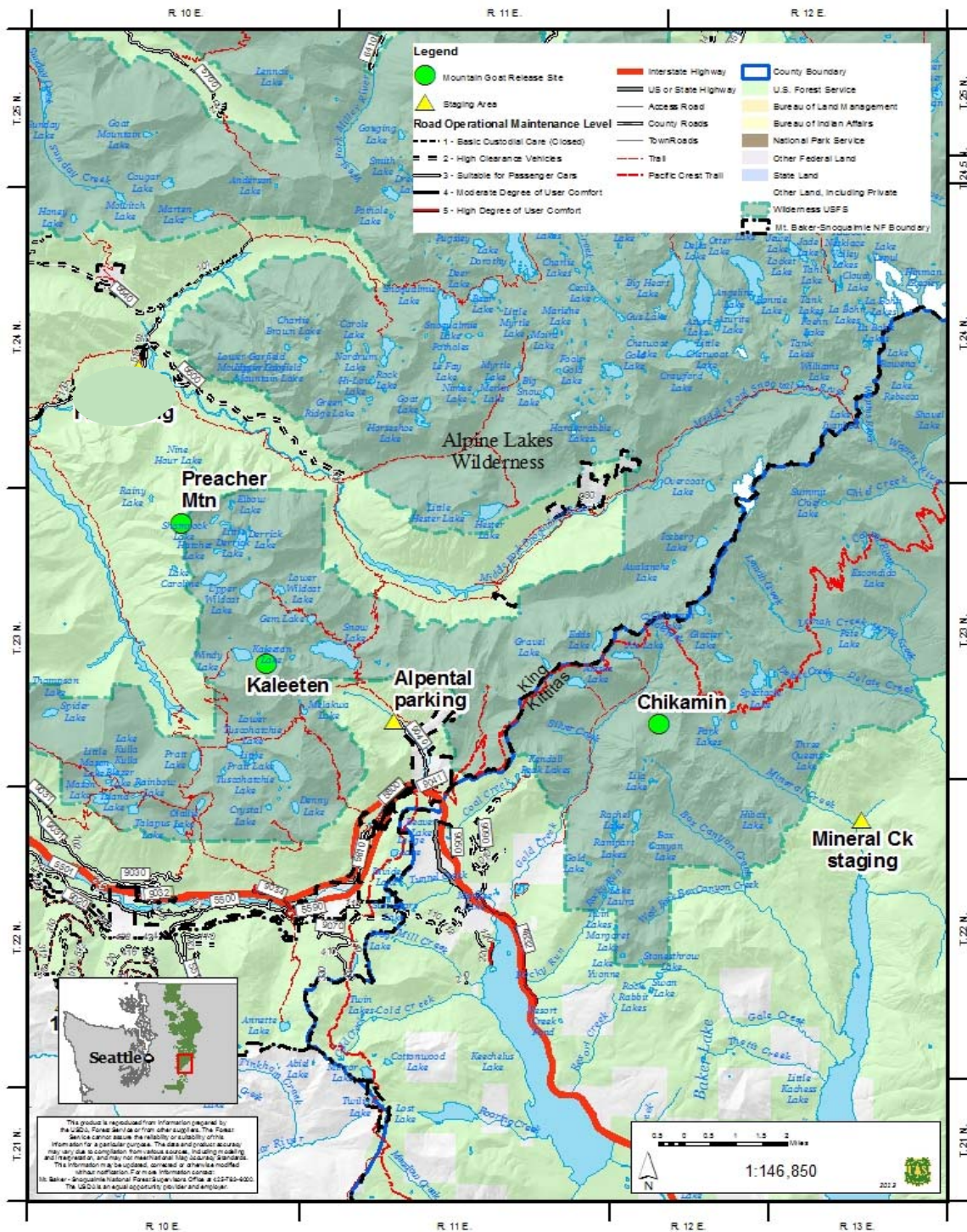
Because of the Alpine Lakes Wilderness's unique position straddling the Cascade crest and resulting variation in elevation and precipitation, a range of vegetation and alpine communities are represented from west to east. Numerous hiking trails provide access to the wilderness, including a portion of the Pacific Crest National Scenic Trail. Given its proximity to the Seattle metropolitan area and scenic qualities, the area receives high visitor use, especially where there is easy access from Interstate 90 and Highway 2.

Kaleetan, Chikamin, and Preacher Mtn. release sites – Alpine Lakes Wilderness

This large patch of approximately 86 km² is located in primarily within the MBSNF (Skykomish and Snoqualmie Districts), although parts of it east of crest are on the OWNF (Figure 1). Extending on both sides of the Cascade Divide, it includes such prominent landmarks as Chikamin Ridge, Chimney Rock, and Dutch Miller Gap, and the peaks surrounding Necklace Valley, and extending northeasterly as far as Terrace Mountain and northwesterly as far as Malachite Peak. WDFW estimates the patch could potentially support 190-210 mountain goats, although anecdotal reports suggest that fewer than 20 currently occupy the patch. This patch ranked intermediate in its geological characteristics; positive because of its relatively high proportions of volcanic and sedimentary substrates, but balanced by a high proportion of sodium-rich substrate.

Proposed staging areas and release sites, Alpine Lakes Wilderness

Site Type	Name	Latitude	Longitude	Wilderness
Staging	Alpental parking	47.421015	-121.237841	
Release	Chikamin	47.447916	-121.321893	Alpine Lakes
Staging	Alpental parking	47.447486	-121.430793	
Release	Kaleetan	47.463607	-121.483788	Alpine Lakes
Staging	Alpental parking	47.447486	-121.430793	
Release	Preacher Mtn	47.503748	-121.520026	Alpine Lakes



Henry M. Jackson Wilderness

The United States Congress designated the Henry M. Jackson Wilderness in as part of the 1984 Washington Wilderness Act and it now has a total of 102,910 acres. The Henry M. Jackson Wilderness is bordered by the Glacier Peak Wilderness to the north and the Wild Sky Wilderness to the southwest. Extending for more than 20 miles along the north-south trending crest of the Cascade Mountains, this wilderness area is characterized by deep glacial valleys spreading out east and west from the crest. Snow often accumulates to a depth of 20 feet at higher elevations, and remains well into summer, eventually melting into the 60-plus lakes scattered throughout the area. Henry M. Jackson Wilderness shares its northeast border with the huge Glacier Peak Wilderness. 32 miles of the Pacific Crest National Scenic Trail (PCT) bisect the wilderness.

Cadet Lake Ridge release site – Henry M. Jackson Wilderness

This patch of excellent mountain goat habitat had not been initially considered as among candidate patches. In 2014, WDFW flew a survey in this area, identifying a recovering population of goats, primarily on nearby Sheep Mountain. Other remnant goat populations have been reported at Goat Lake and the ridges off Sloan Peak. Given the habitat quality, this area would benefit from augmenting the known populations, to encourage growth and connectivity to goat populations to the south and north.

Proposed staging and release site, Henry M. Jackson Wilderness

Site Type	Name	Latitude	Longitude	Wilderness
Staging	Bald Eagle outhouse	48.030972	-121.291675	
Release	Cadet Lake ridge	48.019780	-121.332430	Henry M. Jackson

Glacier Peak Wilderness

The 566,057 acre Glacier Peak Wilderness is located in the northern Cascade Mountains of Washington State bordering Stephen Mather Wilderness to the north and Henry M. Jackson Wilderness to the south. The Wilderness Act of 1964 designated the Glacier Peak Wilderness, and the wilderness was increased in size (10,000 acres) by Public Law 90-544 (October 2, 1968), an act establishing the North Cascades National Park Complex and designating the Pasayten Wilderness and modifying the Glacier Peak Wilderness. The Wilderness was expanded by 112,000 acres as a result of Public Law 98-399 (July 3, 1984). A 450 mile trail system provides access to the Wilderness. The Pacific Crest National Scenic Trail (PCT) meanders around the west and north sides of Glacier Peak, descending into deep valleys and climbing alpine passes.

Glacier Peak Wilderness Area is characterized by heavily forested stream courses, steep-sided valleys, and rugged glacier covered peaks. Various species of wildlife inhabit the area and include deer, bear, mountain goat, cougar, marten, and wolverine. Numerous creeks cut through the valleys from their sharp drainages. Other bodies of water include more than 200 lakes, many unnamed and difficult to access. Snows can accumulate to depths of 45 feet on the west side of the crest.

White Chuck Glacier release site – Glacier Peak Wilderness

This large patch of approximately 90 km², is located primarily within the MBSNF (Darrington Districts), although parts of it east of the crest are on the OWNF (Figure 2). This patch is located entirely within the Glacier Peak Wilderness and is centered on Glacier Peak itself, approximately 28 km northwest of Barlow Pass. Prominent landmarks in this patch in addition to Glacier Peak include Black Mountain, White Mountain, White Chuck Cinder Cone, Kennedy Peak, Milk Lake, and Lime Ridge. WDFW estimates that this patch could support 200-220 mountain goats. This patch experienced the highest historic harvest of mountain goats, and recent surveys indicate up to 130 goats currently occupy the patch (although many may do so only seasonally, to take advantage of mineral deposits on Gamma Ridge). This patch ranked first in the WDFW analysis of connectivity to other potential goat populations.

Mt. Buckindy release site – Glacier Peak Wilderness

This large patch of approximately 92 km² is primarily within the MBNSF (Mt. Baker and Darrington Districts), and is entirely within designated wilderness (Figure 2). Prominent landmarks include Mt. Buckindy, and Le Conte Mountain. WDFW estimates, based on the size of this patch, that it might potentially support 219 goats. This site contains abundant escape terrain, but forage productivity is low and WDFW's geological score for the site, based on substrates, was much lower than other patches proposed for release sites. However, this patch could provide considerable connectivity between the Glacier Peak area to the south, and the ranges to the north, possibly all the way to the recovered population around Mt. Baker (it ranked 2nd among all patches in connectivity score).

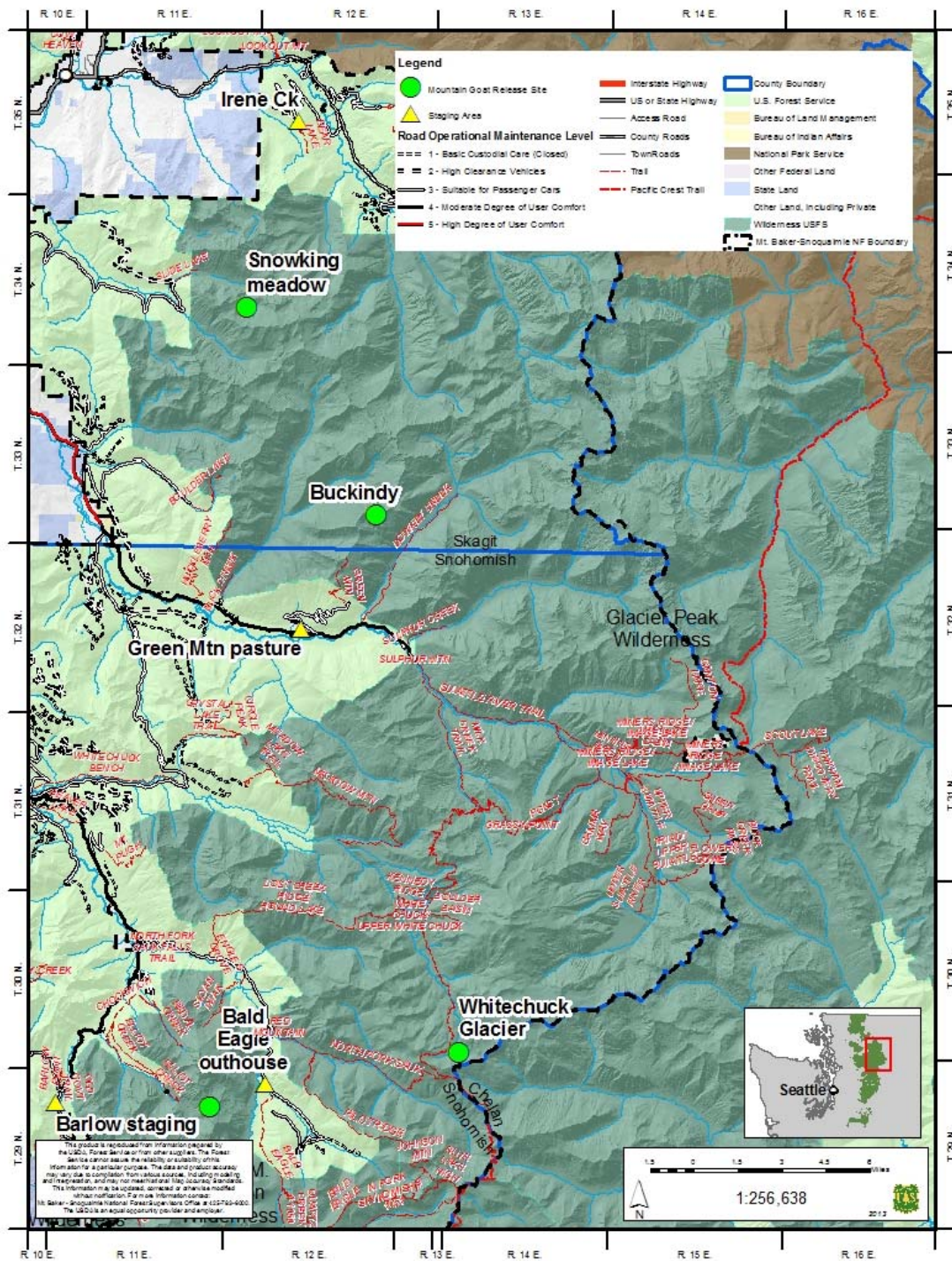
Snowking meadow release site – Glacier Peak Wilderness

This patch of approximately 46 km² (Figure 2) of summer mountain goat habitat was estimated to have a long-term capacity of 110 goats, but WDFW data suggest it has few if any at present. It ranked 5th among all patches considered in connectivity, potentially providing for connectivity

between the Glacier Peak and Mt. Baker areas. It would have ranked more highly, but most of it consists of Na-rich substrates, raising the question of whether vegetation growing in this area will ultimately support a large population of goats. However, similar to the Buckindy site Snowking Mountain has several large glaciers and perennial snowpatches, suggesting that this area may ultimately have potential as summer goat habitat.

Proposed staging and release sites, Glacier Peak Wilderness

Site Type	Name	Latitude	Longitude	Wilderness
Staging	Bald Eagle outhouse	48.030972	-121.291675	
Release	White Chuck Glacier	48.048430	-121.148910	Glacier Peak
Staging	Green Mtn Pasture	48.255760	-121.270404	
Release	Buckindy	48.312974	-121.216468	Glacier Peak
Staging	Irene Creek	48.506668	-121.278686	
Release	Snowking meadow	48.414584	-121.314399	Glacier Peak



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**APPENDIX G: USDA FOREST SERVICE SPECIAL-STATUS SPECIES
FOR THE OLYMPIC, MT. BAKER-SNOQUALMIE, AND OKANOCHAN-
WENATCHEE NATIONAL FORESTS (WILDLIFE, FISH, AND PLANTS)**

TABLE G-1. USDA FOREST SERVICE SPECIAL-STATUS FISH AND WILDLIFE SPECIES FOR THE OLYMPIC NATIONAL FOREST

Species	Common Name	Status	Species or Habitat Present in Project Area (mountain goat habitat or staging areas)	General Habitat Description	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Capture and Translocation and Lethal Removal
<i>Euphydryas editha taylori</i>	Taylor's checkerspot butterfly (and Designated Critical Habitat)	ESA listed as Threatened	Mountain Goat areas at higher elevations, outside of known occupied sites (>0.5 mile) and Designated Critical Habitat within Dungeness watershed.	Open habitats (balds, created openings) with patches of vegetation of native forbs and grasses that contain variety of host and nectar plants for feeding and overwintering.	No Effect – species and DCH	No Effect – species and DCH	No Effect – species and DCH	No Effect – species and DCH
<i>Strix occidentalis caurina</i>	Northern spotted owl (and Designated Critical Habitat)	ESA listed as Threatened	26 spotted owl home ranges overlap in project area; majority of sites are historic. Designated Critical Habitat, NCO-2, outside of Wilderness (staging areas).	Nests in complex forested habitats with multi-layered canopies, large overstory trees, snags, and downed wood. Roosting and foraging similar to nesting but with lesser habitat components. Utilize younger, denser stands for dispersing.	No Effect – species and DCH	No Effect – species and DCH- based on field reconnaissance conducted by FS in November 2016	No Effect – species and DCH	No Effect – species and DCH- based on field reconnaissance conducted by FS in November 2016
<i>Brachyramphus marmoratus</i>	Marbled murrelet (and Designated Critical Habitat)	ESA listed as Threatened	No historical occupied sites or <0.5 mile from historical site from staging or mountain goat areas. Hamma Hamma and Mt. Ellinor staging areas within Designated Critical Habitat, WA-06-b. No suitable habitat adjacent to mountain goat areas and staging areas.	Seasonal forest inhabitant for nesting only. Nests in older forested stands which may include remnant trees with one or more platforms on branches >4 inches diameter in large diameter live conifers.	No Effect – species and DCH	No Effect – species and DCH- based on field reconnaissance conducted by FS in November 2016	No Effect – species and DCH	No Effect – species and DCH- based on field reconnaissance conducted by FS in November 2016
<i>Salvelinus confluentus</i>	Bull trout (and Designated Critical Habitat)	ESA listed as Threatened	Habitat not present in project area.	Rivers and riparian.	No Effect – species and DCH	No Effect – species and DCH	No Effect – species and DCH	No Effect – species and DCH

Species	Common Name	Status	Species or Habitat Present in Project Area (mountain goat habitat or staging areas)	General Habitat Description	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Capture and Translocation and Lethal Removal
<i>Oncorhynchus mykiss</i>	Puget Sound Steelhead (and Designated Critical Habitat)	ESA listed as Threatened	Habitat not present in project area.	Rivers and riparian.	No Effect – species and DCH	No Effect – species and DCH	No Effect – species and DCH	No Effect – species and DCH
<i>Oncorhynchus keta</i>	Hood Canal Summer Chum Salmon (and Designated Critical Habitat)	ESA listed as Threatened	Habitat not present in project area.	Rivers and riparian.	No Effect – species and DCH	No Effect – species and DCH	No Effect – species and DCH	No Effect – species and DCH
<i>Oncorhynchus tshawytscha</i>	Puget Sound Chinook Salmon (and Designated Critical Habitat)	ESA listed as Threatened	Habitat not present in project area.	Rivers and riparian.	No Effect – species and DCH	No Effect – species and DCH	No Effect – species and DCH	No Effect – species and DCH
<i>Oncorhynchus clarkii</i>	Coastal cutthroat trout – Puget Sound and Olympic Peninsula	Forest Service Strategic	Habitat not present in project area.	Rivers and riparian.	No Impact	No Impact	No Impact	No Impact
<i>Oncorhynchus kisutch</i>	Coho salmon – Puget Sound/Strait of Georgia	Forest Service Strategic	Habitat not present in project area.	Rivers and riparian.	No Impact	No Impact	No Impact	No Impact
<i>Catostomus sp.</i>	Salish sucker	Forest Service Strategic	Habitat not present in project area.	Rivers and riparian.	No Impact	No Impact	No Impact	No Impact
<i>Lampetra tridentata</i>	River lamprey	Forest Service Strategic	Habitat not present in project area.	Rivers and riparian.	No Impact	No Impact	No Impact	No Impact
<i>Novumbra hubbsi</i>	Olympic mudminnow	Regional Forester Sensitive	Habitat not present in project area.	Wetland, bog, low gradient rivers.	No Impact	No Impact	No Impact	No Impact

Species	Common Name	Status	Species or Habitat Present in Project Area (mountain goat habitat or staging areas)	General Habitat Description	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Capture and Translocation and Lethal Removal
<i>Rhinichthys cataractae</i>	Nooksack dace	Forest Service Strategic	Habitat not present in project area.	Rivers and riparian.	No Impact	No Impact	No Impact	No Impact
<i>Martes pennanti</i>	Pacific fisher	Forest Service Sensitive	No known den location in project area, but suitable habitat present adjacent to staging areas.	Same habitat as for northern spotted owl. Requires multiple rest sites that are often tree cavities, downed trees or snags.	No Impact	No Impact	No Impact	No Impact
<i>Accipiter gentilis</i>	Northern goshawk	Forest Service Sensitive	No known territories within the project area. Habitat is present adjacent to staging areas.	Nests in dense, mature and late successional conifer forests.	No Impact	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)
<i>Falco peregrinus</i>	Peregrine falcon	Regional Forester Sensitive	No known locations, but habitat is present in project area.	Nests on cliff or rock outcrops. Primary forage along large bodies of water.	No Impact	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)

Species	Common Name	Status	Species or Habitat Present in Project Area (mountain goat habitat or staging areas)	General Habitat Description	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Capture and Translocation and Lethal Removal
<i>Gavia immer</i>	Common loon	Regional Forester Sensitive	Habitat not present in project area.	Inhabits salt and fresh water bodies, nesting in inland lakes and ponds.	No Impact	No Impact	No Impact	No Impact
<i>Haliaeetus leucocephalus</i>	Bald eagle	Regional Forester Sensitive, Olympic National Forest Management Indicator Species	No known nest sites in project area, but have been observed roosting and foraging in watersheds of project area.	Nests in conifer forests containing old-growth components typically within one mile of water.	No Impact	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)
<i>Histrionicus histrionicus</i>	Harlequin duck	Regional Forester Sensitive	Habitat not present in project area.	Seasonal forest inhabitant. Nests along fast-flowing streams with loafing sites nearby.	No Impact	No Impact	No Impact	No Impact
<i>Plethodon vandykei</i>	Van Dyke's salamander	Regional Forester Sensitive	Habitat not present in project area.	Associated with streams, seeps and springs, wet talus and forest litter from sea level to 3,600 feet (2,000 meters).	No Impact	No Impact	No Impact	No Impact
<i>Rhyacotriton olympicus</i>	Olympic torrent salamander	Regional Forester Sensitive	Habitat not present in project area.	Found around the splash zone of cold, clear streams, seeps or waterfalls. Seeps running through talus slopes also provide habitat.	No Impact	No Impact	No Impact	No Impact

Species	Common Name	Status	Species or Habitat Present in Project Area (mountain goat habitat or staging areas)	General Habitat Description	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Capture and Translocation and Lethal Removal
<i>Cryptomastix devia</i>	Puget Oregonian	Regional Forester Sensitive	Habitat not present in project area.	Associated with hardwood shrubs and trees.	No Impact	No Impact	No Impact	No Impact
<i>Fluminicola virens</i>	Olympia pebblesnail	Regional Forester Sensitive	Habitat not present in project area.	Typically found in cold, clear streams with near-saturation amounts of dissolved oxygen, nor or minor nutrient enhancement and continual current and coarse stable substrate.	No Impact	No Impact	No Impact	No Impact
<i>Hemphillia malonei</i>	Malone jumping slug	Forest Service Strategic	Habitat not present in project area.	Found in moist forested habitats, generally over 50 years old with greater than 50% canopy cover; dense sword fern, coarse wood, exfoliated bark piles.	No Impact	No Impact	No Impact	No Impact
<i>Hemphillia burringtoni</i>	Keeled (Burrington) jumping-slug	Regional Forester Sensitive	Habitat not present in project area.	Associated with low to mid-elevation rain forests. Usually found within or under rotting logs, or forest floor litter.	No Impact	No Impact	No Impact	No Impact
<i>Megomphix hemphill</i>	Oregon megomphix	Forest Service Strategic	Habitat not present in project area.	Found at low elevations, normally below 500 ft. Most occupied sites are on well-shaded north slopes and terraces, and many are near streams and have a thin mantel of soil; bigleaf maple is closely associated.	No Impact	No Impact	No Impact	No Impact

Species	Common Name	Status	Species or Habitat Present in Project Area (mountain goat habitat or staging areas)	General Habitat Description	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Capture and Translocation and Lethal Removal
<i>Pristiloma johnsoni</i>	Broadwhorl tightcoil	Regional Forester Sensitive	Habitat not present in project area.	Associated with exceptionally moist and very diverse forest sites at lower elevations. Typically in abundant ground cover (<i>Gaultheria</i> , <i>Oxalis</i> , sword fern, grasses), conifer or hardwood overstory, and moderate to deep litter.	No Impact	No Impact	No Impact	No Impact
<i>Pristiloma johnsoni</i>	Mottled tail-dropper	Forest Service Strategic	Habitat not present in project area.	Found near waterfalls and associated with slopes; known to occupy in southern end of Olympic mountains.	No Impact	No Impact	No Impact	No Impact
<i>Prophysaon obscurum</i>	Pacific vertigo	Forest Service Strategic	Project area outside the suspected range of species.	Occurs in forested sites at lower elevations and may be found on tree trunks and lower branches of deciduous trees and shrubs and among litter beneath them.	No Impact	No Impact	No Impact	No Impact
<i>Vertigo sp.</i>	Hoko vertigo	Forest Service Strategic	Project area outside the suspected range of species.	Old-growth riparian associate species, possibly in low elevations (40–300 feet) near streams. Habitat characterized by old trees, riparian hardwoods and mesic conditions. Detected on undersides of limbs and leaning trunks of alder.	No Impact	No Impact	No Impact	No Impact

Species	Common Name	Status	Species or Habitat Present in Project Area (mountain goat habitat or staging areas)	General Habitat Description	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Capture and Translocation and Lethal Removal
<i>Prophysaon coeruleum</i>	Blue-gray tail-dropper	Regional Forester Sensitive	Habitat not present in project area.	Associated with moist conifer and mixed conifer-hardwood forests, partially decayed logs, leaf and needle litter, mosses and moist plant communities.	No Impact	No Impact	No Impact	No Impact
<i>Agonum belleri</i>	Beller's ground beetle	Forest Service Strategic	Habitat not present in project area.	Occurs only in low to mid-elevation (less than 3,280 feet) Puget trough sphagnum bogs; unique, peat-forming wetlands.	No Impact	No Impact	No Impact	No Impact
<i>Bombus occidentalis</i>	Western bumble bee	Regional Forester Sensitive	No known locations, but potential habitat is present in project area.	Associated with meadows and openings in forested areas. Habitat including flowering plants for foraging and rodent burrows for nesting.	No Impact	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)
<i>Callophrys johnsoni</i>	Johnson's hairstreak	Regional Forester Sensitive	Habitat not present in project area.	Depends on old-growth hemlock that contains dwarf mistletoe.	No Impact	No Impact	No Impact	No Impact
<i>Habrodais grunus</i>	Golden hairstreak	Regional Forester Sensitive	Habitat not present in project area.	Associated with golden chinquapin.	No Impact	No Impact	No Impact	No Impact

Species	Common Name	Status	Species or Habitat Present in Project Area (mountain goat habitat or staging areas)	General Habitat Description	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Capture and Translocation and Lethal Removal
<i>Lycaena mariposa charlottensis</i>	Makah copper	Regional Forester Sensitive	Habitat not present in project area.	Associated with meadow and wetland habitats particularly peat bogs. Host is <i>Vaccinium</i> .	No Impact	No Impact	No Impact	No Impact
<i>Oeneis chryxus valerata</i>	Olympic arctic	Regional Forester Sensitive	Habitat is present in project area. Known locations include Obstruction Pt., Hurricane Ridge, Mt. Townsend.	Associated with higher elevation meadows and along shale ridges and summits with sparse grasses.	No Impact	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)
<i>Icaricia icarioides blackmore</i>	Puget blue	Regional Forester Sensitive	Habitat is present in project area. Known locations include Mt. Townsend.	Associated with dry alpine meadows. Host on lupine. May occur on roadside and forest openings.	No Impact	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)

Species	Common Name	Status	Species or Habitat Present in Project Area (mountain goat habitat or staging areas)	General Habitat Description	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Capture and Translocation and Lethal Removal
<i>Plebejus lupini texanus</i>	Lupine blue	Regional Forester Sensitive	Habitat is present in project area. Known locations include Obstruction Pt., Hurricane Ridge, and Mt. Townsend.	Alpine and subalpine dry meadows. Host plant Cushion buckwheat.	No Impact	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)
<i>Polites sonora siris</i>	Dog star skipper	Forest Service Strategic	No known locations, but potential habitat is present in project area.	Found in native prairies, grasslands, and alpine meadows; woodland edges and clearings, streambanks and springs. Also found along opening such as roadsides.	No Impact	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)

Species	Common Name	Status	Species or Habitat Present in Project Area (mountain goat habitat or staging areas)	General Habitat Description	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Capture and Translocation and Lethal Removal
<i>Speyeria zerene bremnerii</i>	Valley silverspot	Regional Forester Sensitive	Known locations include Deer Park., Mt. Townsend habitat is available in project area.	Occupies subalpine habitat, forest openings, prairies, grasslands.	No Impact	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)
<i>Nisquallia olympica</i>	Olympic grasshopper	Forest Service Strategic	No known locations, but potential habitat is present in project area.	Favors large scree at edges of low foliage which is found at higher elevations.	No Impact	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)
<i>Rhyacophila pichaca</i> and <i>Rhyacophila viquaea</i>	Caddisfly	Forest Service Strategic	Habitat not present in project area.	Rivers and riparian areas.	No Impact	No Impact	No Impact	No Impact

Species	Common Name	Status	Species or Habitat Present in Project Area (mountain goat habitat or staging areas)	General Habitat Description	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Capture and Translocation and Lethal Removal
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	Regional Forester Sensitive	Habitat not present in project area.	Uses areas beneath sloughing bark, most often found in old-growth trees and snags. Commonly roosts in caves, large trees, mines, buildings and bridges for roosting.	No Impact	No Impact	No Impact	No Impact
<i>Marmota olympus</i>	Olympic marmot	Regional Forester Sensitive	Known locations in project area is within mountain goat habitat.	Alpine and subalpine habitats; talus slopes.	No Impact	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)
<i>Myotis keenii</i>	Keen's myotis	Regional Forester Sensitive	No known locations, but potential habitat is present in project area.	Utilizes a variety of moist coastal forests of lower elevations dominated by western hemlock, Sitkum spruce, and other conifers. Day roosts in forested stands with increase in tree diameter, presence of defect, decreasing bark, and increasing proportion of old-growth in landscape or increasing proportion of trees in the early to late stages of decay.	No Impact	No Impact	No Impact	No Impact

Species	Common Name	Status	Species or Habitat Present in Project Area (mountain goat habitat or staging areas)	General Habitat Description	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Capture and Translocation and Lethal Removal
<i>Thomomys mazama melanops</i>	Olympic pocket gopher	Regional Forester Sensitive	No known locations, and suitable habitat is undetermined in the project area.	Associated with glacial outwash high elevation habitats.	No Impact	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)	May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability (MIIBNLPV)
<i>Myotis lucifugus</i>	Little brown myotis	Regional Forester Sensitive	No known locations, but suitable habitat is present in project area.	Habitat generalist and found in buildings and other structures, in conifer and hardwood forests (crevices and cavities of live trees, snags and stumps). Also found in open forests and forest margins associated with riparian areas and sites with open water.	No Impact	No Impact	No Impact	No Impact
<i>Martes caurina</i>	Pacific marten	Forest Service Strategic; Olympic National Forest Management Indicator Species	No known locations, but suitable habitat is present in project area.	Coniferous forest, normally older stands; use large logs, snags and live trees for denning/resting.	No Impact/Effect	No Impact/Effect	No Impact/Effect	No Impact/Effect

Species	Common Name	Status	Species or Habitat Present in Project Area (mountain goat habitat or staging areas)	General Habitat Description	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Capture and Translocation and Lethal Removal
	Primary cavity excavators (various species)	Olympic National Forest Management Indicator Species	Species and habitat present in project area.	Standing dead and dying trees of various sizes for feeding, resting and nesting in conifer and hardwood forests.	No Effect	No Effect	No Effect	No Effect
<i>Hylatomus pileatus</i>	Pileated woodpecker	Olympic National Forest Management Indicator Species	Species and habitat present in project area.	Nests in decadent live trees and in snags (primarily broken top). Pacific silver fir favored species, but will nest in older western hemlock. Roosts in larger diameter western hemlock snags or live western redcedar. Forage in closed-canopy habitat with large, relatively hard snags.	No Effect	No Effect	No Effect	No Effect
<i>Cervus canadensis roosevelti</i>	Roosevelt elk	Olympic National Forest Management Indicator Species	Species and habitat present in project area.	Species uses wide variety of successional conditions for life stages (farmland, riparian, openings, older forests). Higher quality habitat found in younger aged habitats.	No Effect	Would not contribute toward a negative trend in viability (WNCTNTV)	Would not contribute toward a negative trend in viability (WNCTNTV)	Would not contribute toward a negative trend in viability (WNCTNTV)

Species	Common Name	Status	Species or Habitat Present in Project Area (mountain goat habitat or staging areas)	General Habitat Description	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Capture and Translocation and Lethal Removal
<i>Odocoileus hemionus columbianus</i>	Columbia black-tailed deer	Olympic National Forest Management Indicator Species	Species and habitat present in project area.	Occupy a range of habitats, often with dense vegetation. Consume variety of browse including woody shrubs, forbs, lichens and some grasses. Food source more abundant in recently disturbed areas with less canopy cover than denser, mid-age to older forests.	No Effect	Would not contribute toward a negative trend in viability (WNCTNTV)	Would not contribute toward a negative trend in viability (WNCTNTV)	Would not contribute toward a negative trend in viability (WNCTNTV)
	Neotropical migratory birds	Migratory Landbirds	Species and habitat present in project area.	Focus in coniferous forests; depending on species may have close association with understory shrubs or early successional habitats; hardwoods; snags and conifers.	No Effect	Project would not alter or decrease habitat, and would not impact individuals or not contribute toward the need for additional conservation actions	Project would not alter or decrease habitat, and would not impact individuals or not contribute toward the need for additional conservation actions	Project would not alter or decrease habitat, and would not impact individuals or not contribute toward the need for additional conservation actions

Species	Common Name	Status	Species or Habitat Present in Project Area (mountain goat habitat or staging areas)	General Habitat Description	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Capture and Translocation and Lethal Removal
	Survey and Manage species (mollusk)	Survey and Manage	Species and habitat not present in project area.	Downed wood, deciduous overstory, and high level of leaf litter.	No Effect	Project is not a habitat-disturbing activity within habitat of the species, therefore pre-disturbance surveys are not required for these species.	Project is not a habitat-disturbing activity within habitat of the species, therefore pre-disturbance surveys are not required for these species.	Project is not a habitat-disturbing activity within habitat of the species, therefore pre-disturbance surveys are not required for these species.

DCH = Designated Critical Habitat; ESA = Endangered Species Act; MIIBNLPV: May impact individuals, but is not likely to cause a trend toward federal listing or a loss of population viability;
WNCTNTV: Would not contribute toward a negative trend in viability.

TABLE G-2. USDA FOREST SERVICE SENSITIVE PLANT SPECIES FOR THE OLYMPIC NATIONAL FOREST

Species	Common Name	Status	Species or Habitat Present in Project Area (mountain goat habitat or staging areas)	General Habitat Description	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Capture and Translocation and Lethal Removal
<i>Dermatocarpon meiophyllizum</i>	Lichen	USDA Forest Service Sensitive	No	Aquatic and semi-aquatic zones of stream channels.	No Impact	No Impact	No Impact	No Impact
<i>Erioderma sorediatum</i>	Lichen	USDA Forest Service Sensitive	No	Epiphyte on Ericaceous shrubs, alder, and western hemlock in coastal fog zone.	No Impact	No Impact	No Impact	No Impact
<i>Leptogium cyanescens</i>	Lichen	USDA Forest Service Sensitive	No	On shaded twigs of deciduous trees and shrubs in humid habitats.	No Impact	No Impact	No Impact	No Impact
<i>Niebla cephalota</i>	Lichen	USDA Forest Service Sensitive	No	Open forest, forest edges, and scrublands along the immediate coast.	No Impact	No Impact	No Impact	No Impact
<i>Ramalina thrausta</i>	Lichen	USDA Forest Service Sensitive	No	Moist, cool forests in the coastal fog belt, typically in riparian areas.	No Impact	No Impact	No Impact	No Impact
<i>Tholurna dissimilis</i>	Lichen	USDA Forest Service Sensitive	Yes. Not known to occur in project area, but habitat present.	Krummholz or flag-form subalpine fir and Engelmann spruce on windswept ridges in the upper montane and subalpine zones up to timberline. Also found near sea level near Port Angeles, WA.	No Impact	No Impact	No Impact	No Impact

Species	Common Name	Status	Species or Habitat Present in Project Area (mountain goat habitat or staging areas)	General Habitat Description	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Capture and Translocation and Lethal Removal
<i>Astragalus australis</i> var. <i>cottonii</i>	Cotton's milk-vetch	Forest Service Sensitive, State Threatened	Yes. Olympic peninsula endemic; occurs in Buckhorn Wilderness.	High elevation alpine zone on unstable talus or scree slopes, and ridges with a mostly southerly or westerly aspect.	May impact individuals but would not likely cause a trend toward federal listing or a loss of population viability.	Impact, but beneficial. Camp and Gamon (Field Guide to Rare Plants of WA) list introduced mountain goats as a threat to this species.	Impact, but beneficial. Camp and Gamon (Field Guide to Rare Plants of WA) list introduced mountain goats as a threat to this species.	Impact, but beneficial. Camp and Gamon (Field Guide to Rare Plants of WA) list introduced mountain goats as a threat to this species.
<i>Astragalus microcystis</i>	Least bladderly milk-vetch	USDA Forest Service Sensitive	Yes. Occurs in Buckhorn Wilderness.	Dry, gravelly soils in cushion plant communities of the alpine and subalpine zones.	May impact individuals but would not likely cause a trend toward federal listing or a loss of population viability.	Impact, but beneficial. Camp and Gamon (Field Guide to Rare Plants of WA) list introduced mountain goats as a threat to this species.	Impact, but beneficial. Camp and Gamon (Field Guide to Rare Plants of WA) list introduced mountain goats as a threat to this species.	Impact, but beneficial. Camp and Gamon (Field Guide to Rare Plants of WA) list introduced mountain goats as a threat to this species.
<i>Botrychium ascendens</i>	Upward-lobed moonwort	USDA Forest Service Sensitive	No	Coniferous forests, wet and dry meadows, stream banks, and roadsides.	No Impact	No Impact	No Impact	No Impact
<i>Carex anthoxanthea</i>	Yellow-flowered sedge	USDA Forest Service Sensitive	No	Moist, open areas near bogs, on grassy slopes, and in wet meadows at low to middle elevations.	No Impact	No Impact	No Impact	No Impact

Species	Common Name	Status	Species or Habitat Present in Project Area (mountain goat habitat or staging areas)	General Habitat Description	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Capture and Translocation and Lethal Removal
<i>Carex circinata</i>	Coiled sedge	USDA Forest Service Sensitive	Yes. Not known to occur in project area, but habitat present.	Rocky and moist areas, including cliffs, talus, outcrops, and wet meadows.	No Impact	No Impact	No Impact	No Impact
<i>Carex obtusata</i>	Blunt sedge	USDA Forest Service Sensitive	Yes. Occurs in Buckhorn Wilderness.	Dry or vernal moist grasslands, bluffs, sandy flood plains, vernal moist scree meadows, alpine talus, and ridgetops.	May impact individuals but would not likely cause a trend toward federal listing or a loss of population viability.	Impact, but beneficial.	Impact, but beneficial.	Impact, but beneficial.
<i>Carex pauciflora</i>	Few-flowered sedge	USDA Forest Service Sensitive	No	Wetlands, boggy lake margins, prairies, stream banks, and coastal inland areas, often in Sphagnum or peaty soils.	No Impact	No Impact	No Impact	No Impact
<i>Carex scirpoidea</i> ssp. <i>scirpoidea</i>	Canadian single-spike sedge	USDA Forest Service Sensitive	Yes. Occurs in Buckhorn and Mt. Skokomish Wilderness.	Moist alpine meadows, stream banks, and open rocky slopes in the mountains, often above timberline.	May impact individuals but would not likely cause a trend toward federal listing or a loss of population viability.	Impact, but beneficial.	Impact, but beneficial.	Impact, but beneficial.

Species	Common Name	Status	Species or Habitat Present in Project Area (mountain goat habitat or staging areas)	General Habitat Description	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Capture and Translocation and Lethal Removal
<i>Carex stylosa</i>	Long-styled sedge	USDA Forest Service Sensitive	No	Ponds, bogs, fens, shallow marshes, streambanks, and moist meadows.	No Impact	No Impact	No Impact	No Impact
<i>Chrysolepis chrysophylla</i> var. <i>chrysophylla</i>	Golden chinquapin	USDA Forest Service Sensitive	No	Dry open sites to woodlands; infertile and droughty sites.	No Impact	No Impact	No Impact	No Impact
<i>Claytonia multiscapa</i> ssp. <i>pacifica</i>	Pacific lance-leaved springbeauty	USDA Forest Service Sensitive	Yes. Occurs in Mt. Skokomish Wilderness.	Wet subalpine to alpine meadows, often flowering at the edge of melting snowfields.	No Impact	Impact, but beneficial.	Impact, but beneficial.	Impact, but beneficial.
<i>Coptis asplenifolia</i>	Spleenwort-leaved goldthread	USDA Forest Service Sensitive	No	Moist, cool sites with a well-developed litter layer.	No Impact	No Impact	No Impact	No Impact
<i>Dodecatheon austrofrigidum</i>	Frigid shootingstar	USDA Forest Service Sensitive	No	Open or shaded in rock crevices, under overhanging cliffs, on steep basalt slopes and rock outcrops along rivers and ridges, and in vernal moist areas.	No Impact	No Impact	No Impact	No Impact
<i>Draba cana</i>	Lance-leaved draba	USDA Forest Service Sensitive	Yes. Not known to occur in project area, but habitat present.	Alpine and subalpine open, dry meadows and knolls, in rock crevices, and on dry stony slopes.	No Impact	No Impact	No Impact	No Impact
<i>Draba juvenilis</i>	Long-stalked draba	USDA Forest Service Sensitive	Yes. Not known to occur in project area, but habitat present.	Moist meadows, rocky slopes, and cliffs in subalpine and alpine zones.	No Impact	No Impact	No Impact	No Impact

Species	Common Name	Status	Species or Habitat Present in Project Area (mountain goat habitat or staging areas)	General Habitat Description	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Capture and Translocation and Lethal Removal
<i>Dryas drummondii</i> var. <i>drummondii</i>	Drummond's mountain-avens	USDA Forest Service Sensitive	Yes. Occurs in Buckhorn Wilderness.	Crevices of steep, rocky, dry cliffs, and limestone along rivers.	May impact individuals but would not likely cause a trend toward federal listing or a loss of population viability.	Impact, but beneficial.	Impact, but beneficial.	Impact, but beneficial.
<i>Erigeron aliceae</i>	Alice's fleabane	USDA Forest Service Sensitive	No	Open places in moist to dry montane forested zones.	No Impact	No Impact	No Impact	No Impact
<i>Erigeron peregrinus</i> var. <i>thompsonii</i>	Thompson's wandering daisy	USDA Forest Service Sensitive	No	Moist sphagnum bogs and swamps with peaty, organic soil.	No Impact	No Impact	No Impact	No Impact
<i>Erythronium quinaultense</i>	Quinault fawnlily	USDA Forest Service Sensitive	No	Openings and rock ledges in coniferous forests.	No Impact	No Impact	No Impact	No Impact
<i>Hedysarum occidentale</i> var. <i>occidentale</i>	Western hedysarum	USDA Forest Service Sensitive	Yes. Not known to occur in project area, but habitat present.	Rocky exposed sites, including meadows, shrub fields, bare rock outcrops, boulder fields, and talus slopes.	No Impact	No Impact	No Impact	No Impact
<i>Lycopodiella inundata</i>	Bog club-moss	USDA Forest Service Sensitive	No	Sphagnum bogs, wet, sandy places, wetlands adjacent to lakes, marshes, and swampy ground.	No Impact	No Impact	No Impact	No Impact

Species	Common Name	Status	Species or Habitat Present in Project Area (mountain goat habitat or staging areas)	General Habitat Description	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Capture and Translocation and Lethal Removal
<i>Montia diffusa</i>	Branching montia	USDA Forest Service Sensitive	No	Moist forests and open fir woodlands in lowland and montane zones.	No Impact	No Impact	No Impact	No Impact
<i>Ophioglossum pusillum</i>	Adder's-tongue	USDA Forest Service Sensitive	No	Seasonally wet areas, from forested sites to meadows to roadside ditches.	No Impact	No Impact	No Impact	No Impact
<i>Oxytropis monticola</i>	Yellowflower locoweed	USDA Forest Service Sensitive	Yes	Prairies, alpine meadows, open woodlands, and gravelly floodplains in moist or dry soils.	No Impact	No Impact	No Impact	No Impact
<i>Parnassia palustris</i> var. <i>tenuis</i>	Northern grass-of-parnassus	USDA Forest Service Sensitive	No	Seepy road cuts and rock faces, wet meadows and along streams.	No Impact	No Impact	No Impact	No Impact
<i>Pellaea breweri</i>	Brewer's cliff-brake	USDA Forest Service Sensitive	Yes. Occurs in Buckhorn and Mt. Skokomish Wilderness.	Open rocky alpine areas; crevices, ledges, and bases of cliffs and rock outcrops; rocky slides.	May impact individuals but would not likely cause a trend toward federal listing or a loss of population viability.	Impact, but beneficial.	Impact, but beneficial.	Impact, but beneficial.
<i>Pinus albicaulis</i>	Whitebark pine	USDA Forest Service Sensitive	Yes. Occurs in Buckhorn Wilderness.	Alpine and subalpine habitats.	No Impact	No Impact	No Impact	No Impact

Species	Common Name	Status	Species or Habitat Present in Project Area (mountain goat habitat or staging areas)	General Habitat Description	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Capture and Translocation and Lethal Removal
<i>Polemonium carneum</i>	Great polemonium	USDA Forest Service Sensitive, State Threatened	No	Woody thickets, open and moist forests, prairie edges, and roadsides.	No Impact	No Impact	No Impact	No Impact
<i>Ranunculus cooleyae</i>	Cooley's buttercup	USDA Forest Service Sensitive	Yes. Not known to occur in project area, but habitat present.	Montane gravelly alluvial slopes, talus slopes, stream outlets, lake edges, and the edges of receding snow fields.	No Impact	No Impact	No Impact	No Impact
<i>Synthyris pinnatifida</i> var. <i>lanuginosa</i>	Featherleaf kittentails	USDA Forest Service Sensitive, State Threatened	Yes. Olympic peninsula endemic; occurs in Buckhorn Wilderness.	Dry rocky places, usually in a typical cushion plant community at high elevations.	May impact individuals but would not likely cause a trend toward federal listing or a loss of population viability.	Impact, but beneficial. Camp and Gamon (Field Guide to Rare Plants of WA) list introduced mountain goats as a threat to this species.	Impact, but beneficial. Camp and Gamon (Field Guide to Rare Plants of WA) list introduced mountain goats as a threat to this species.	Impact, but beneficial. Camp and Gamon (Field Guide to Rare Plants of WA) list introduced mountain goats as a threat to this species.
<i>Utricularia intermedia</i>	Flat-leaved bladderwort	USDA Forest Service Sensitive	No	Shallow ponds, slow moving streams, and wet meadows.	No Impact	No Impact	No Impact	No Impact
<i>Bartramioopsis lescurii</i>		USDA Forest Service Sensitive	No	On humus, soil over rock, cliffs and in rock crevices; usually on rock substrates and vertical surfaces. Occurs in cool, humid canyons and stream terraces at low to moderate elevations.	No Impact	No Impact	No Impact	No Impact

Species	Common Name	Status	Species or Habitat Present in Project Area (mountain goat habitat or staging areas)	General Habitat Description	Alternative A: No Action	Alternative B: Capture and Translocation	Alternative C: Lethal Removal	Alternative D: Capture and Translocation and Lethal Removal
<i>Iwatsukiella leucotricha</i>	Iwatsukiella moss	USDA Forest Service Sensitive	No	Moist, fog drenched forest, usually in the Pacific Silver fir zone.	No Impact	No Impact	No Impact	No Impact
Survey and Manage species (botanical)		Survey and Manage	Species and habitat are not present in project area.	Old growth and habitat components found in old growth (downed wood, large diameter trees, etc.).	No Effect	Project is not a habitat-disturbing activity within habitat of the species, therefore pre-disturbance surveys are not required for these species.	Project is not a habitat-disturbing activity within habitat of the species, therefore pre-disturbance surveys are not required for these species.	Project is not a habitat-disturbing activity within habitat of the species, therefore pre-disturbance surveys are not required for these species.

Status Definitions

Interagency Special Status/Sensitive Species – USDA Forest Service “Sensitive” and US Bureau of Land Management (BLM) “Special Status”

Management for Sensitive species follows Forest Service Region 6 Sensitive Species policy as identified in Section 2670 of the Forest Service Manual (FS 1991). For Region 6 of the USDA Forest Service, Sensitive Species are defined as those plant and animal species identified by a Regional Forester for which population viability is a concern, as evidenced by significant current or predicted downward trends in population numbers or density and habitat capability that would reduce a species' existing distribution (FSM 2670.5). Management of sensitive species “must not result in a loss of species viability or create significant trends toward federal listing” (FSM 2670.32). The Regional Forester is responsible for identifying sensitive species and shall coordinate with federal and state agencies and other sources, as appropriate, in order to focus conservation management strategies and to avert the need for federal or state listing as a result of National Forest management activities.

Sensitive

1. All US Fish and Wildlife Service (USFWS) Candidate species that are suspected or documented on National Forest Service (NFS) lands.
2. All de-listed USFWS species that are suspected or documented on NFS lands are considered Sensitive for the duration of their delisting monitoring plan.
3. On Washington Natural Heritage Program Rare Animal and Flora lists and S1, S1S2, S1S3, S2, or S2S3 **and** G1-G5 or G1Q-G5Q or GNR or GU, **or** T1-T5 or TNR or TU ranks, **or** N1-N5 or NNR or NU.
4. On Washington Natural Heritage Program Rare Animal or Flora lists and S2S4 or S3 **and** G1-G3, or G1Q-G3Q or N1-N3, or T1-T3 ranks.

For both 3 and 4, the following must also apply:

- a. For Washington, flora species cannot have Washington Natural Heritage Program Review 1 or 2 status, and must be documented on at least one USDA Forest Service unit in Washington.
- b. Cannot be an undescribed species.

Strategic

1. Any species meeting items 3 or 4 above but:
 - a. For Washington, species is suspected only (not documented) on one or more USDA Forest Service unit in Washington, and/or
 - b. Species is undescribed and/or
 - c. For Washington, flora species is Washington Natural Heritage Program Review 1 or 2.
2. Washington Natural Heritage Program Rare Animal or Flora lists and SH or SX **and** G1-G5 or G1Q-G5Q or GH or GX.
3. On Washington Natural Heritage Program Rare Animal or Flora lists and SU or SNR **and** G1-G3 or G1Q-G3Q or GH or GX, or T1-T3 or TH or TX, or N1-N3 or NH or NX.

Olympic National Forest Management Indicator Species

A species selected under the Olympic National Forest Land and Resource Management Plan (FS 1990) that is presumed to be an indicator of the welfare of other species using the same habitat, and is a species whose condition can be used to assess the impacts of management actions on a particular area.

Survey and Manage Species

Survey and Manage are a set of standards and guidelines associated with the 1994 Record of Decision (ROD) (FS 1994) for Amendments to USDA Forest Service and BLM Planning Documents within the Range of the Northwest Spotted Owl (called the Northwest Forest Plan). They are documented in the January 2001 ROD and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines (FS 2001). These standards and guidelines are applicable to NFS and BLM lands in western Washington, western Oregon, and north-western California and are intended to reduce or eliminate (mitigate) potential effects from agency actions to just over 300 flora and fauna species including mosses, liverworts, fungi, lichens, vascular plants, slugs, snails, salamanders, great gray owl, and red tree voles. These Survey and Manage species are assigned to one of six categories based upon the relative rarity of the species, the practicality to conduct pre-disturbance surveys, and the understanding of association with late-successional or old growth forests.

Three basic criteria must be met for species to be included in the standards and guidelines:

1. The species must occur within the Northwest Forest Plan area, or occur close to the Northwest Forest Plan area and have potentially suitable habitat within the National Forest Plan area.
2. The species must be closely associated with late-successional or old-growth forest.
3. The reserve system and other Standards and Guidelines of the Northwest Forest Plan do not appear to provide for a reasonable assurance of species persistence.

REFERENCES

USDA Forest Service (FS)

- 1990 Land and Resource Management Plan. Olympic National Forest. U.S. Department of Agriculture, Forest Service, Pacific Northwest Region. 1990.
- 1991 Forest Service Manual (FSM) Directive Issuances. Title 2600 - Wildlife, Fish, and Sensitive Plant Habitat Management http://www.fs.fed.us/im/directives/fsm/2600/2600_zero_code.txt.
- 1994 Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl. April 13, 1994. <https://reo.gov/riec/newroda.pdf>
- 2001 Record of Decision and Standards and Guidelines for Amendments to the Survey and manage, Protection Buffer, and the other Mitigation measures Standards and Guidelines. January 2001. <https://reo.gov/survey-and-manage/2001/RODjan01.pdf>

APPENDIX H: FEDERALLY LISTED SPECIES (*ENDANGERED SPECIES ACT*) AND USDA FOREST SERVICE SPECIAL-STATUS SPECIES FOR THE NORTH CASCADES NATIONAL FORESTS (WILDLIFE AND PLANTS)

TABLE H-1. ESA-LISTED FISH AND WILDLIFE SPECIES IN THE OKANOGAN-WENATCHEE AND MT. BAKER-SNOQUALMIE NATIONAL FORESTS

Common and Scientific Name	Federal Status	Critical Habitat within Project Area	Occur or Potential to Occur in Project Area	Potential Effects to Species or Habitat (Alternatives B and D)
Grizzly Bear (<i>Ursus arctos horribilis</i>)	Threatened	No	Yes	Yes
Canada Lynx (<i>Lynx Canadensis</i>)	Threatened	No	Yes	Yes
Gray Wolf (<i>Canis lupus</i>)	Endangered Western 2/3 of Washington	No	Yes	Yes
Wolverine (<i>Gulo gulo</i>)	Proposed Threatened	No	Yes	Yes
Northern Spotted Owl (<i>Strix occidentalis caurina</i>)	Threatened	Yes	Yes	Yes: Mt. Baker-Snoqualmie National Forest No: Okanogan and Wenatchee National Forest
Marbled Murrelet (<i>Brachyramphus marmoratus</i>)	Threatened	Yes	Yes	Yes: Mt. Baker-Snoqualmie National Forest No: Okanogan and Wenatchee National Forest
Bull Trout (<i>Salvelinus confluentus</i>)	Threatened	Yes	Yes	No Effect
Puget Sound Chinook Salmon (<i>Oncorhynchus tshawytscha</i>)	Threatened	Yes	Yes	No Effect
Upper Columbia River spring-run Chinook (<i>Oncorhynchus tshawytscha</i>)	Endangered	Yes	Yes	No Effect
Middle Columbia River steelhead (<i>Oncorhynchus mykiss</i>)	Threatened	Yes	Yes	No Effect
Puget Sound steelhead (<i>Oncorhynchus mykiss</i>)	Threatened	Yes	Yes	No Effect
Chum Salmon (<i>Oncorhynchus keta</i>)	Threatened	No	No	No Effect

Source: FS 2015

Appendix H: Federally Listed Species (Endangered Species Act) and USDA Forest Service Special-Status Species for the North Cascades National Forests (Wildlife and Plants)

TABLE H-2. ESA-LISTED PLANT SPECIES IN THE OKANOGAN-WENATCHEE NATIONAL FOREST

Common Name	Scientific Name	Federal Status	Habitat	Occur in Project Area
Showy Stickseed	<i>Hackelia venusta</i>	Endangered	Narrow endemic, known from one population of 600 individuals in Chelan County. Open areas of steeply sloping, highly unstable granite cliffs. Sparse cover of other vascular plants and low canopy cover.	No
Wenatchee Mountains checker-mallow	<i>Sidalcea oregana</i> <i>var. calva</i>	Endangered	Endemic plant found only in mid-elevation wetlands and moist meadows within Chelan County.	No
Ute ladies'-tresses	<i>Spiranthes diluvialis</i>	Threatened	Geographically widespread orchid occurring in the Okanogan area. Habitat includes orchid occurs along riparian edges, gravel bars, old oxbows, high flow channels, and moist to wet meadows along perennial streams.	No

Source: FS 2015

TABLE H-3. USDA FOREST SERVICE REGIONAL FORESTER SENSITIVE FISH AND WILDLIFE SPECIES FOR THE OKANOGAN-WENATCHEE AND MT. BAKER-SNOQUALMIE NATIONAL FORESTS

Common Name	Scientific Name	Forest	Habitat Present/Affected	Effects Determination
Northern goshawk	<i>Accipiter gentilis</i>	MBS, OKW	Yes/No	No Impact
Gray flycatcher	<i>Empidonax wrightii</i>	OKW	No/No	No Impact
American peregrine falcon	<i>Falco peregrinus anatum</i>	MBS, OKW	Yes/No	No Impact
Common loon	<i>Gavia immer</i>	MBS, OKW	Yes/No	No Impact
Sandhill crane	<i>Grus canadensis</i>	OKW	No/No	No Impact
Bald eagle	<i>Haliaeetus leucocephalus</i>	MBS, OKW	Yes/No	No Impact
Harlequin duck	<i>Histrionicus histrionicus</i>	MBS, OKW	Yes/No	MIIBNLPV
Lewis's woodpecker	<i>Melanerpes lewis</i>	OKW	Yes/No	No Impact
White-headed woodpecker	<i>Picoides albolarvatus</i>	OKW	Yes/No	No Impact
Sharp-tailed grouse	<i>Tympanuchus phasianellus</i>	OKW	Yes/No	No Impact
Gray wolf	<i>Canis lupus (northern rocky mtn.)</i>	OKW	Yes/Yes	MIIBNLPV
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	MBS, OKW	Yes/No	No Impact
Wolverine	<i>Gulo</i>	MBS, OKW	Yes/Yes	MIIBNLPV
Little Brown myotis	<i>Myotis lucifugus</i>	MBS, OKW	Yes/No	No Impact
Mountain goat	<i>Oreamnos americanus</i>	MBS, OKW	Yes/Yes	Beneficial Impact
Rocky Mtn. bighorn sheep	<i>Ovis canadensis</i>	OKW	Yes/No	No Impact
Bighorn sheep	<i>Ovis canadensis</i>	OKW	No/No	No Impact
Pacific fisher	<i>Pekania pennanti (Outside West Coast)</i>	OKW	Yes/No	No Impact
Western gray squirrel	<i>Sciurus griseus</i>	OKW	No	No Impact
Cascade red fox	<i>Vulpes vulpes cascadenis</i>	MBS, OKW	Yes/No	No Impact
Larch mountain salamander	<i>Plethodon larselli</i>	MBS, OKW	No/No	No Impact
Van dyke's salamander	<i>Plethodon vandykei</i>	MBS	No/No	No Impact
Western pond turtle	<i>Actinemys marmorata</i>	OKW	No/No	No Impact
Striped whipsnake	<i>Coluber taeniatus</i>	OKW	No/No	No Impact
Giant palouse earthworm	<i>Driloleirus americanus</i>	MBS, OKW	Yes/No	No Impact
Washington duskysnail	<i>Amnicola sp. nov. (Washington)</i>	OKW	Yes/No	No Impact
Masked duskysnail	<i>Colligyrus sp. nov. (Masked)</i>	OKW	Yes/No	No Impact
Puget oregonian	<i>Cryptomastix devia</i>	MBS, OKW	Yes/No	No Impact
Grand coulee mountainsnail	<i>Oreohelix junii</i>	OKW	Yes/No	No Impact

Appendix H: Federally Listed Species (Endangered Species Act) and USDA Forest Service Special-Status Species for the North Cascades National Forests (Wildlife and Plants)

Common Name	Scientific Name	Forest	Habitat Present/Affected	Effects Determination
Chelan mountainsnail	<i>Oreohelix sp. nov. (Chelan)</i>	OKW	Yes/No	No Impact
Shiny tightcoil	<i>Pristiloma wascoense</i>	MBS, OKW	Yes/No	No Impact
Broadwhorl tightcoil	<i>Pristiloma johnsoni</i>	MBS	Yes/No	No Impact
Blue-gray tail-dropper	<i>Prophysaon coeruleum</i>	OKW	Yes/No	No Impact
Western bumblebee	<i>Bombus occidentalis</i>	MBS, OKW	Yes/No	No Impact
Astarte fritillary	<i>Boloria astarte</i>	OKW	Yes/No	No Impact
Meadow fritillary	<i>Boloria bellona</i>	OKW	Yes/No	No Impact
Freija fritillary	<i>Boloria freija</i>	OKW	Yes/No	No Impact
Labrador sulphur	<i>Colias nastes</i>	OKW	Yes/No	No Impact
Lustrous copper	<i>Lycaena cupreus</i>	OKW	Yes/No	No Impact
Melissa arctic	<i>Oeneis melissa</i>	MBS, OKW	Yes/No	No Impact
Mardon skipper	<i>Polites mardon</i>	OKW	Yes/No	No Impact
Peck's skipper	<i>Polites peckius</i>	OKW	Yes/No	No Impact
Tawny-edged skipper	<i>Polites themistocles</i>	OKW	Yes/No	No Impact
Great basin fritillary	<i>Speyeria egleis</i>	OKW	Yes/No	No Impact
Johnson's hairstreak	<i>Callophrys johnsoni</i>	MBS	Yes/No	No Impact
Zigzag darner	<i>Aeshna sitchensis</i>	OKW	Yes/No	No Impact
Subarctic darner	<i>Aeshna subarctica</i>	OKW	Yes/No	No Impact
Subarctic bluet	<i>Coenagrion interrogatum</i>	OKW	Yes/No	No Impact
Pacific lamprey	<i>Entosphenus tridentatus</i>	OKW	Yes/No	No Impact
Lake Chub	<i>Couesius plumbeus</i>	OKW	Yes/No	No Impact
Westslope Cutthroat trout	<i>Oncorhynchus clarkii lewisi</i>	OKW	Yes/No	No Impact
Inland Columbia Basin redband trout	<i>Oncorhynchus mykiss gairdneri</i>	OKW	Yes/No	No Impact
Pygmy whitefish	<i>Prosopium coulterii</i>	OKW	Yes/No	No Impact

MBS = Mt. Baker-Snoqualmie National Forests

MIIBNLPV = May impact individuals, but is not likely to cause a trend toward Federal listing or a loss of population viability.

OKW = Okanogan, Wenatchee National Forest

TABLE H-4. USDA FOREST SERVICE MANAGEMENT INDICATOR SPECIES FOR THE OKANOGAN-WENATCHEE AND MT. BAKER-SNOQUALMIE NATIONAL FORESTS

Management Indicator Species	Forest	Habitat Present	Habitat Affected?	Effects Determination
American marten	MBS, OKA, WEN	Yes	No	No effect on Forest wide population viability
Bald Eagle	MBS	No	No	No effect on Forest wide population viability
Barred Owl	OKA	Yes	No	No effect on Forest wide population viability
Beaver	WEN	No	No	No effect on Forest wide population viability
Gray Wolf	MBS	Yes	Yes	No effect on Forest wide population viability
Grizzly Bear	MBS	Yes	No	No effect on Forest wide population viability
Lynx	OKA	Yes	No	No effect on Forest wide population viability
Mountain Goat	MBS, WEN	Yes	Yes	Beneficial effect to Forests population viability due to resulting increased population (Alts B, D, No Effect Alt A, C)
Mule Deer	OKA, WEN	Yes	No	No effect on Forest wide population viability
Northern Spotted Owl	MBS, OKA	Yes	No	No effect on Forest wide population viability
Peregrine Falcon	MBS	Yes	No	No effect on Forest wide population viability
Pileated Woodpecker	MBS, OKA, WEN	Yes	No	No effect on Forest wide population viability
Primary Cavity Excavators	MBS, OKA, WEN	Yes	No	No effect on Forest wide population viability
Rocky Mountain Elk	WEN	Yes	No	No effect on Forest wide population viability
Ruffed Grouse	OKA, WEN	Yes	No	No effect on Forest wide population viability
Three-toed woodpecker	OKA, WEN	Yes	No	No effect on Forest wide population viability

MBS = Mt. Baker-Snoqualmie National Forests

OKW = Okanogan, Wenatchee National Forest

WEN = Wenatchee Mountains

Appendix H: Federally Listed Species (Endangered Species Act) and USDA Forest Service Special-Status Species for the North Cascades National Forests (Wildlife and Plants)

TABLE H-5. USDA FOREST SERVICE SENSITIVE PLANT SPECIES FOR THE OKANOGAN-WENATCHEE AND MT. BAKER-SNOQUALMIE NATIONAL FORESTS.

Common Name	Scientific Name	Forest
Least bladdery milk-vetch	<i>Astragalus microcystis</i>	OKW
Slender moonwort	<i>Botrychium lineare</i>	OKW
Stalked moonwort	<i>Botrychium pedunculosum</i>	MBS, OKW
Large-awn sedge	<i>Carex macrochaeta</i>	MBS, OKW
Few-flowered sedge	<i>Carex pauciflora</i>	MBS, OKW
Beaked sedge	<i>Carex rostrata</i>	MBS, OKW
Long-styled sedge	<i>Carex stylosa</i>	MBS, OKW
Pacific lance-leaved springbeauty	<i>Claytonia multiscapa ssp. pacifica</i>	OKW
Spleenwort-leaved goldthread	<i>Coptis aspleniifolia</i>	MBS, OKW
Drummond's mountain-avens	<i>Dryas drummondii var. drummondii</i>	MBS, OKW
Treelike clubmoss	<i>Lycopodium dendroideum</i>	MBS, OKW
Choris' bog-orchid	<i>Platanthera chorisiana</i>	MBS, OKW
Pale blue-eyed grass	<i>Sisyrinchium sarmentosum</i>	OKW
Lichen	<i>Dermatocarpon meiophyllizum</i>	OKW
Lichen	<i>Tholurna dissimilis</i>	OKW
Ross' avens	<i>Acomastylis rossii ssp. depressum</i>	OKW
Northern bentgrass	<i>Agrostis mertensii</i>	OKW
Sierra onion	<i>Allium campanulatum</i>	OKW
Pasqueflower	<i>Anemone patens var. multifida</i>	OKW
Palouse milk-vetch	<i>Astragalus arrectus</i>	OKW
Upward-lobed moonwort	<i>Botrychium ascendens</i>	MBS, OKW
Crenulate moonwort	<i>Botrychium crenulatum</i>	OKW
Western moonwort	<i>Botrychium hesperium</i>	OKW
Twin-spiked moonwort	<i>Botrychium paradoxum</i>	OKW
Hairlike sedge	<i>Carex capillaris</i>	OKW
Cordroot sedge	<i>Carex chordorrhiza</i>	OKW
Bristly sedge	<i>Carex comosa</i>	MBS, OKW
Yellow bog sedge	<i>Carex gynocrates</i>	OKW
Different nerve sedge	<i>Carex heteroneura var. epapillosa</i>	OKW
Poor sedge	<i>Carex magellanica ssp. irrigua</i>	MBS, OKW
Intermediate sedge	<i>Carex media</i>	OKW
Smokey Mtn. sedge	<i>Carex proposita</i>	MBS, OKW
Canadian single-spike sedge	<i>Carex scirpoidea ssp. scirpoidea</i>	MBS, OKW
Many-headed sedge	<i>Carex sychnocephala</i>	OKW
Sparseflower sedge	<i>Carex tenuiflora</i>	OKW
Valley sedge	<i>Carex vallicola</i>	OKW

APPENDICES

Common Name	Scientific Name	Forest
Obscure indian-paintbrush	<i>Castilleja cryptantha</i>	MBS, OKW
Thompson's chaenactis	<i>Chaenactis thompsonii</i>	MBS, OKW
Northern golden-carpet	<i>Chrysosplenium tetrandrum</i>	OKW
Long-bract frog orchid	<i>Coeloglossum viride</i>	OKW
Slender gentian	<i>Comastoma tenellum</i>	OKW
Steller's rockbrake	<i>Cryptogramma stelleri</i>	OKW
Yellow lady's-slipper	<i>Cypripedium parviflorum</i>	OKW
Wenatchee larkspur	<i>Delphinium viridescens</i>	OKW
Golden draba	<i>Draba aurea</i>	OKW
Lance-leaved draba	<i>Draba cana</i>	OKW
Salish fleabane	<i>Erigeron salishii</i>	MBS, OKW
Green keeled cotton-grass	<i>Eriophorum viridicarinatum</i>	OKW
Pale alpine forget-me-not	<i>Eritrichium nanum</i> var. <i>elongatum</i>	OKW
Pulsifer's monkey-flower	<i>Erythranthe pulsiferae</i>	OKW
Suksdorf's monkey-flower	<i>Erythranthe suksdorfii</i>	OKW
Swamp gentian	<i>Gentiana douglasiana</i>	MBS, OKW
Glaucous gentian	<i>Gentiana glauca</i>	MBS, OKW
Water avens	<i>Geum rivale</i>	OKW
Sagebrush stickseed	<i>Hackelia hispida</i> var. <i>disjuncta</i>	OKW
Taylor's stickseed	<i>Hackelia taylorii</i>	OKW
Oregon goldenaster	<i>Heterotheca oregona</i>	OKW
Longsepal globemallow	<i>Iliamna longisepala</i>	OKW
Howell's rush	<i>Juncus howellii</i>	OKW
Alpine azalea	<i>Kalmia procumbens</i>	MBS, OKW
Alaska curved woodrush	<i>Luzula arcuata</i> ssp. <i>unalaschensis</i>	MBS, OKW
Branching montia	<i>Montia diffusa</i>	MBS, OKW
Coyote tobacco	<i>Nicotiana attenuata</i>	OKW
Yellowflower locoweed	<i>Oxytropis monticola</i>	MBS, OKW
Harford's ragwort	<i>Packera bolanderi</i> var. <i>harfordii</i>	MBS, OKW
Kotzebue's grass-of-parnassus	<i>Parnassia kotzebuei</i>	OKW
Mt. Rainier lousewort	<i>Pedicularis rainierensis</i>	MBS, OKW
Sierra cliffbrake	<i>Pellaea brachyptera</i>	OKW
Brewer's cliff-brake	<i>Pellaea breweri</i>	MBS, OKW
Whited's penstemon	<i>Penstemon eriantherus</i> var. <i>whitedii</i>	OKW
Chelan rockmat	<i>Petrophytum cinerascens</i>	OKW
Dwarf phacelia	<i>Phacelia minutissima</i>	OKW
Common twinpod	<i>Physaria didymocarpa</i> var. <i>didymocarpa</i>	OKW
American pillwort	<i>Pilularia americana</i>	OKW

Appendix H: Federally Listed Species (Endangered Species Act) and USDA Forest Service Special-Status Species for the North Cascades National Forests (Wildlife and Plants)

Common Name	Scientific Name	Forest
Whitebark pine	<i>Pinus albicaulis</i>	MBS, OKW
Small northern bog-orchid	<i>Platanthera obtusata</i>	MBS, OKW
Skunk polemonium	<i>Polemonium viscosum</i>	OKW
Snow cinquefoil	<i>Potentilla nivea</i>	OKW
Sticky goldenweed	<i>Pyrrocoma hirta</i> var. <i>sonchifolia</i>	OKW
Idaho gooseberry	<i>Ribes oxyacanthoides</i> ssp. <i>irriguum</i>	OKW
Lowland toothcup	<i>Rotala ramosior</i>	OKW
Nagoonberry	<i>Rubus arcticus</i> ssp. <i>acaulis</i>	OKW
Glaucus willow	<i>Salix glauca</i> ssp. <i>glauca</i> var. <i>villosa</i>	OKW
Maccall's willow	<i>Salix maccalliana</i>	OKW
False mountain willow	<i>Salix pseudomonticola</i>	OKW
Black snake-root	<i>Sanicula marilandica</i>	OKW
Nodding saxifrage	<i>Saxifraga cernua</i>	OKW
Joint-leaved saxifrage	<i>Saxifragopsis fragarioides</i>	OKW
Seely's silene	<i>Silene seelyi</i>	OKW
Western ladies-tresses	<i>Spiranthes porrifolia</i>	OKW
Thompson's clover	<i>Trifolium thompsonii</i>	OKW
Velvet-leaf blueberry	<i>Vaccinium myrtilloides</i>	OKW
Kidney-leaved violet	<i>Viola renifolia</i>	OKW
Creeping snowberry	<i>Gaultheria hispidula</i>	MBS
Northern microseris	<i>Microseris borealis</i>	MBS
Adder's-tongue	<i>Ophioglossum pusillum</i>	MBS
Flat-leaved bladderwort	<i>Utricularia intermedia</i>	MBS
Alaska harebell	<i>Campanula lasiocarpa</i>	MBS
Black lily	<i>Fritillaria camschatcensis</i>	MBS
Western jewel-weed	<i>Impatiens noli-tangere</i>	MBS
Bog club-moss	<i>Lycopodiella inundata</i>	MBS
Cooley's buttercup	<i>Ranunculus cooleyae</i>	MBS
Scribner's grass	<i>Scribneria bolanderi</i>	MBS
Lichen	<i>Dermatocarpon meiophyllizum</i>	MBS, OKW
Lichen	<i>Tholurna dissimilis</i>	MBS, OKW
Moss	<i>Bartramiopsis lescurii</i>	MBS
Lichen	<i>Erioderma sorediatum</i>	MBS
Lichen	<i>Leptogium cyanescens</i>	MBS

MBS = Mt. Baker-Snoqualmie National Forests

OKW = Okanogan, Wenatchee National Forest

References

USDA Forest Service (FS)

- 2015 Final Region 6 Regional Forester Special Status Species List, July 13, 2015.
<http://www.fs.fed.us/r6/sfpnw/issssp/documents3/2670-1950-final-sss-list-enc1-20150713.xlsx>.

**APPENDIX I: CONSULTATION LETTER WITH WASHINGTON STATE
HISTORIC PRESERVATION OFFICE**



United States Department of the Interior

NATIONAL PARK SERVICE

Olympic National Park

600 East Park Avenue

Port Angeles, Washington 98362-6798

IN REPLY REFER TO:
H4217 (OLYM-RM)

October 16, 2014

Allyson Brooks
State Historic Preservation Officer
Department of Archeology and Historic Preservation
1063 South Capital Way, Suite 106
Olympia, WA 98501

Dear Dr. Brooks:

Pursuant to the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)(C)), the National Park Service (NPS) is preparing an Environmental Impact Statement (EIS) for a Mountain Goat Management Plan. When complete, this plan will provide management direction necessary to address resource stewardship and human safety issues resulting from the presence of non-native mountain goats within Olympic National Park.

The mountain goat is not native to the Olympic Peninsula. They were introduced in the 1920s. By the early 1980s, the goat population in the park grew to over 1,000 individuals. Several hundred goats were removed during the 1980s, reducing the population to less than 400 by 1990. The population remained stable at approximately 300 goats from 1994-2004, however it was observed to be increasing at a 5% annual rate in 2011.

The original need to manage the goat population was driven by ecological concerns related to the impact of goats on the park's natural resources, particularly sensitive vegetation communities. New concerns were raised in 2010 when a visitor was fatally gored by a mountain goat while hiking on a park trail. The park updated its Mountain goat Action Plan (part of the Olympic national Park Nuisance and Hazardous Animal Management Plan) in 2011. This plan addresses mountain goat behavior and seeks to minimize the potential for hazardous goat-human encounters. Planning and compliance is needed to address overall management of the mountain goat population within the park.

This effort will result in a plan that provides for the overall management of mountain goats and considers the non-native goats' effects on natural processes and habitats, as well as visitor safety.

As part of the National Environmental Policy Act (NEPA) EIS process, the NPS will evaluate different approaches for managing non-native mountain goats in Olympic National Park. Preliminary alternatives to be considered include no-action, capture and translocation, increased nuisance control, removal, and combinations of the above.

We are interested in your initial concerns and issues related to mountain goat management and its potential effects on historic properties within Olympic National Park. There will be several additional opportunities for you to review this plan as it is developed.

A Notice of Intent (NOI) was published in the Federal Register by July 21, 2014. If you are interested in meeting for consultation regarding the goat management plan please let me know. I can be reached at 360-565-3004. I look forward to working with you and your staff during this planning effort.

Sincerely,



M. Sarah Creachbaum
Superintendent

CC
Christina Miller (OLYM)
Louise Johnson (OLYM)
Patti Happe (OLYM)



United States Department of the Interior

NATIONAL PARK SERVICE

Olympic National Park
600 East Park Avenue
Port Angeles, Washington 98362-6798

IN REPLY REFER TO:
H4217 (OLYM-RM)

September 6, 2016

Dr. Robert Whitlam
State Archaeologist
Department of Archaeology and Historic Preservation
P.O. Box 48343
Olympia, Washington 98504-8343

Dear Dr. Whitlam:

Pursuant to the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)(C)), the National Park Service (NPS) is preparing an Environmental Impact Statement (EIS) for a Mountain Goat Management Plan, in order to provide management direction necessary to address resource stewardship and human safety issues resulting from the presence of non-native mountain goats within Olympic National Park. Through development of a Memorandum of Understanding (MOU), the NPS is cooperating with the USDA Forest Service, Pacific Northwest Region, and the Washington Department of Fish and Wildlife on the EIS and per this MOU the NPS is the lead agency under NEPA. The NPS is also the lead agency under NHPA. This letter serves to describe the Area of Potential Effects (APE) for this undertaking.

The APE for this undertaking includes all lands within Olympic National Park excluding the coastal strip and all lands within the Hood Canal Ranger District of Olympic National Forest. The total area of the APE is about 1.2 million acres (Attachment 1).

The mountain goat (*Oreamnos americanus*) is not native to the Olympic Peninsula. They were introduced in the 1920s. By the early 1980s, the goat population in the park grew to over 1,000 individuals. Several hundred goats were removed during the 1980s, reducing the population to less than 400 by 1990. The population was stable at approximately 300 goats from 1994-2004, however it was observed to be increasing at a 4.9% annual rate in 2011. The original need to manage the goat population was driven by ecological concerns related to the impact of goats on the park's natural resources, particularly sensitive vegetation communities. New concerns were raised in 2010 when a visitor was fatally gored by a mountain goat while hiking on a popular park trail. The park has updated internal guidance related to management of individual goats that may pose a risk to visitor safety, but planning and compliance is needed to support decisions that will address mountain goat management at the population level.

The NPS preferred alternative to be presented in the draft EIS calls for a combination of capture-relocation and lethal removal of goats from Olympic National Park and Olympic National Forest. Captured animals will be relocated to locations in the Cascade Mountains where the goats are native and populations will benefit from an influx of new goats.

We do not anticipate the need to inventory the entire APE for this undertaking. As plans are developed there may be a need to inventory selected parts of the APE where staging areas may require ground disturbing activities (Hurricane Hill, Sweet's Field, Deer Park, Hamma Hamma and Mt. Elinor Trailhead). These will be reviewed on a case by case basis in consultation with your office and tribal representatives. Capture and removal activities within the APE should not have an effect on historic properties located within the APE.

We take this opportunity to invite your comment on the Area of Potential Effect for this project as well as any specific concerns you may have regarding Inventory and Evaluation strategy within or near the project area.

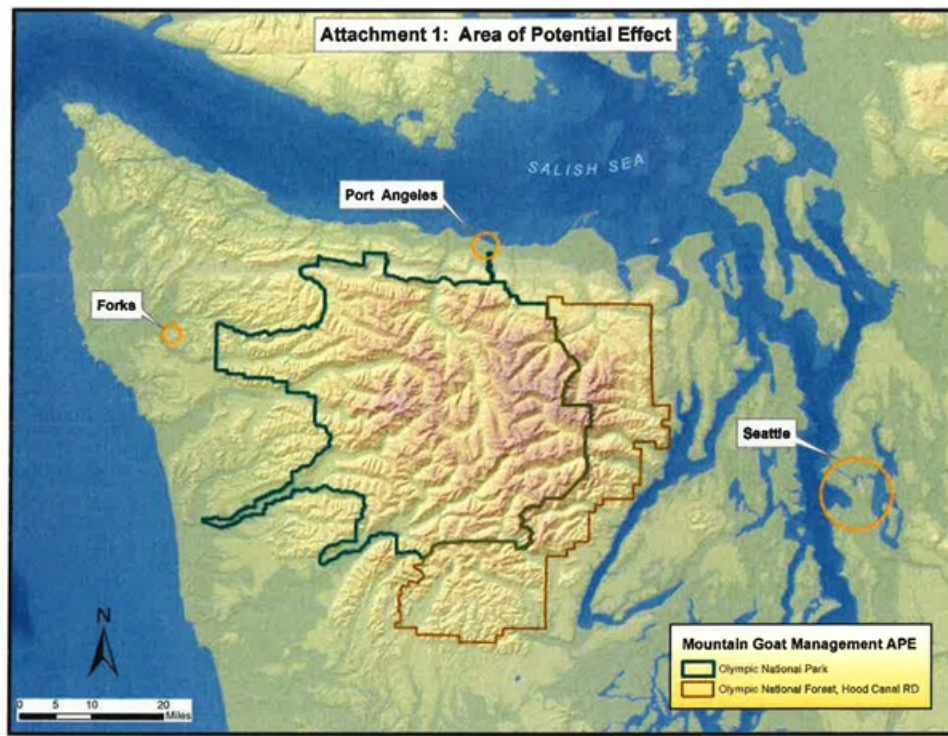
If you have further questions please contact Dave Conca, archeologist, at (360) 565-3053.

Sincerely,



Rachel Spector
Acting Superintendent

CC
Christina Miller (OLYM)
Louise Johnson (OLYM)



APPENDIX J: CONSULTATION LETTER WITH US FISH AND WILDLIFE SERVICE



United States Department of the Interior

NATIONAL PARK SERVICE

Olympic National Park

600 East Park Avenue

Port Angeles, Washington 98362-6798

IN REPLY REFER TO:

L7617(OLYM-S)

September 25, 2014

U.S. Fish and Wildlife Service
Attn: William O. Vogel
Fish and Wildlife Biologist
Washington Fish and Wildlife Office
510 Desmond Drive
Lacey, Washington 98503

Subject: Initiation of Informal Consultation Regarding the Mountain Goat Management Plan/Environmental Impact Statement

Dear Mr. Vogel:

Pursuant to the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)(C)), the National Park Service (NPS) is preparing an Environmental Impact Statement (EIS) for a Mountain Goat Management Plan. When complete, this plan will provide management direction necessary to address resource stewardship and human safety issues resulting from the presence of non-native mountain goats within Olympic National Park.

The mountain goat is not native to the Olympic Peninsula. They were introduced in the 1920s. By the early 1980s, the goat population in the park grew to over 1,000 individuals. Several hundred goats were removed during the 1980s, reducing the population to less than 400 by 1990. The population remained stable at approximately 300 goats from 1994-2004, however it was observed to be increasing at about a 5% annual rate in 2011. The original need to manage the goat population was driven by ecological concerns related to the impact of goats on the park's natural resources, particularly sensitive vegetation communities. New concerns were raised in 2010 when a visitor was fatally gored by a mountain goat while hiking on a park trail. The park has updated its Mountain Goat Action Plan (part of the Olympic National Park Nuisance and Hazardous Animal Management Plan) in 2011. This plan addresses mountain goat behavior and seeks to minimize the potential for hazardous goat-human encounters. Planning and compliance is needed to address overall management of the mountain goat population within the park.

This effort will result in a plan that provides overall management of mountain goats and considers the non-native goats' effects on natural processes and habitats, as well as visitor safety.

As part of the National Environmental Policy Act (NEPA) EIS process, the NPS will evaluate different approaches for managing non-native mountain goats at Olympic National Park. Preliminary alternative concepts considered include no-action, increased nuisance control, capture and translocation, removal, or combinations of the above. Some activities might occur within federally-threatened marbled murrelet and spotted owl habitat, though the majority of activities would occur outside of their habitat. Mitigation measures pursuant to the 2008 Programmatic Biological Opinion would be implemented to the extent practicable.

We are interested in your concerns and issues related to mountain goat management within Olympic National Park. This letter provides you with notification of our intent to prepare this plan and EIS. A Notice of Intent (NOI) was published in the Federal Register on July 21, 2014.

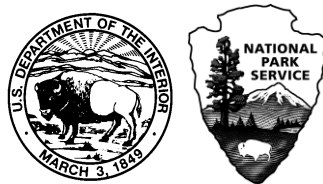
Sincerely,



M. Sarah Creachbaum
Superintendent

CC

Christina Miller (OLYM)
Louise Johnson (OLYM)
Patti Happe (OLYM)
Doug Wetmore (NPS-EQD)
Michael Mayer (LBG)



As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering wise use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historic places, and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people. The department also promotes the goals of the Take Pride in America campaign by encouraging stewardship and citizen responsibility for the public lands and promoting citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

July 2017

United States Department of the Interior · National Park Service