Amendment
to the
Biological Assessment for the Potential Effects of
Managing the Payette National Forest on the
Northern Idaho Ground Squirrel

Brownlee River Section 7 Watershed
Volume 2

Ongoing and New Actions

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I. INTRODUCTION — SUMMARY OF AMENDMENTS

A. AMENDMENT TO THE DESCRIPTION OF THE FEDERAL ACTION AND DETERMINATION OF THE EFFECTS OF LIVESTOCK GRAZING ALLOTMENTS

This document amends Biological Assessment for the Potential Effects of Managing the Payette National Forest in the Brownlee Section 7 Watershed on Northern Idaho Ground Squirrel and Lynx (Richards and Dronkert Egnew 2008a). The determination of effects to northern Idaho ground squirrel (NIDGS) from the Lick Creek, Bear Creek, Wildhorse/Crooked River, Steves Creek, and Smith Mountain livestock grazing allotments was *May Affect, Not Likely to Adversely Affect (NLAA*). The analysis and rationale for the determination is provided on pages 54-56 of Richards and Dronkert Egnew (2008a). Based on additional information and discussions by the Level 1 Team members, we have decided that the potential for effects are low, but not negligible; therefore, our determination is revised to: ***May Affect, Likely to Adversely Affect (LAA).***

Revision of our original determination was based in part on direction provided by regulatory agencies (National Marine Fisheries Service and Fish and Wildlife Service) on effects determinations for listed species (emphasis added):

> The conclusion that a project is not likely to adversely affect a listed species is appropriate when effects on listed species are expected to be discountable, or insignificant, or completely beneficial. Completely beneficial effects are contemporaneous positive effects without any adverse effects to the species. Insignificant effects relate to the scope of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not 1) be able to meaningfully measure, detect, or evaluate insignificant effects; or 2) expect discountable effects to occur. **Where uncertainty relative to the nature or likelihood of the effects exists, the benefit of the doubt should be given to the species in order to minimize the risk of significant consequences due to erroneous conclusions**.

Revision of our determination was also based on additional data and effects analysis provided below that amends page 55 of the BA (see "Amendment to Effects Analysis" below).

IV. AMENDMENTS TO THE DESCRIPTION OF THE FEDERAL ACTIONS

I. FEDERAL ACTION: LIVESTOCK GRAZING ALLOTMENTS.

The description of the federal action of livestock grazing allotments on page 23 of the BA was incorrect and is updated here.

ADDITIONAL DESCRIPTION PERTINENT TO WILDLIFE:

Allotments are managed by either the West or East Zone Range Conservationist. The current annual operating instructions (AOI) describes the season of use, maximum utilization, livestock numbers, and permittee(s) for each allotment. Utilization standards exist for both riparian and upland use. Standards vary depending on whether the allotment is used by cattle or sheep and if the allotment contains listed fish species or habitat.

Outside of areas with listed fish species and/or habitat, in cattle allotments, the riparian standard is a minimum herb stubble height of 4 to 6 inches for sedges (*Carex* spp.) and rushes (*Juncus* spp.) at the end of the grazing season and 50% maximum use for grass species on the bank and floodplain. Currently the maximum utilization levels as identified in the Forest Plan (RAST01) are:

> Riparian Ares: Maximum 45% use or retain a minimum 4 inch stubble height of hydric greenline species, whichever occurs first. Upland Vegetation Cover Types: Early season or season long pastures 40% use. Vegetative slow growth, after seed ripe conditions, or late season pastures 50% use.

Where listed fish species and/or habitat occur, in cattle allotments, the maximum use for grass species on the riparian bank and floodplain is 30% and the maximum utilization for uplands is 40% (see project description in fisheries BAs). In sheep allotments, once-over grazing is required, which equates to 30% use in both riparian and upland areas (see fisheries BAs).

AMENDMENTS TO ANALYSES OF POTENTIAL EFFECTS

DIRECT AND INDIRECT EFFECTS OF LIVESTOCK GRAZING

No studies have been conducted on the effects of livestock grazing on northern Idaho ground squirrel, but studies on other rodents, and particularly other ground squirrel species, provides insight into potential effects. The results of some of these studies are summarized below.

The question of competition between livestock and ground-dwelling rodents has been considered for more than 100 years with numerous biases. In the early 1900's, it was said: "On open range and in pasture lands ground squirrels feed largely on filaree and bur clover, two of the most valuable forage plants in California, and become serious competition for subsistence against the flocks and herds upon which man depends for his own support" (Grinnell and Dixon 1918). In the mid-1900's, scientists noted: "Even though ground-squirrel populations are no longer as dense as in former years, they are still sufficiently numerous to be of major concern locally.

In 1959, a study investigated if ground squirrel utilization of green forage in the winter resulted in changes in cattle weights. Winter was thought to be the time when competition was most likely since "surplus of forage for both rodents and livestock is usually available after vegetation starts its rapid spring growth." For the total grazing season, heifers gained an average of 74 pounds more in pastures where squirrels were removed (poisoned) than in the pasture with squirrels (Howard et. al. 1959)

Fitch (1947 and 1948), studying the seasonal feeding habits of ground squirrels, found them to be highly selective in diet, feeding for part of the year exclusively on forage plants that other researchers had shown were also being grazed at that season by cattle. These studies showed that both the ground squirrels and the cattle began feeding on the new annual plants.

Recent studies have documented a variety of effects, depending on the location of the study, the degree of impact, and life histories of the plants and rodents present. Cattle grazing was associated with a decrease in rodent species diversity in arid environments, probably due to a decline in plant species diversity (Hanley and Page 1981) or to structural changes in vegetation (Rosenzweig and Winakur 1969). Other studies have found no detectable effects of grazing on other small mammal species (e.g., Roundy and Jordan 1988; Heske and Campbell 1991).

Jones and Longland (1999) conducted a series of studies at heavily and lightly grazed sites to investigate effects of cattle grazing on desert rodent relative abundances, home range sizes and microhabitat use in salt desert shrub communities of the western Great Basin Desert. They found that different levels of grazing were associated with differences in relative abundances of some species of rodents; *Dipodomys merriami* was significantly more abundant in heavily grazed areas while *Perognathus longimembris* was significantly more abundant in lightly grazed areas. They concluded that "cattle, by preferentially feeding on certain plants, can create conditions that are more suitable for some species of rodents, while reducing important microhabitat for other species."

A study that compared California ground squirrel (*Spermophilus beecheyi*) activity on replicated grazed and ungrazed pastures in a blue oak (*Quercus douglasii*) savanna found no definitive effects from livestock grazing. During the 4-year study, squirrel activity, measured as the number of active burrows, generally declined in both grazed and ungrazed pastures without oak canopy. Interestingly, squirrel activity declined least in grazed pastures with blue oak canopy. The author concluded that "Grazing at the moderate levels (less than 50% utilization) used in the study did not affect squirrel activity in open grassland and had a variable effect in oak savanna." He further stated; "Livestock management has only moderate potential for influencing squirrel abundance on grazed blue oak rangeland." The author cautioned that "proposals to change grazing, based on the presumed impact

on squirrels, need to consider two points. If grazing affects squirrel numbers at all, it is likely to be at high grazing intensity, and any effects on the squirrels will differ considerably among and within sites" (Bartolome 1997).

The above study was published a few years later with additional analyses (Fehme et al. 2005). Study results showed no statistically significant direct effects of low to moderate levels of cattle grazing on either the density or the spatial distribution of active burrow entrances within colonies of California ground squirrels. The effects discussion noted that ground squirrels prefer more open habitats (Ingles 1965), and may move burrows or burrow entrances if vegetation grows high enough to obscure common predators, as may occur in ungrazed areas. Actual or perceived risk of predation can influence the spatial distribution and habitat selection of animals, and a trade-off exists between avoiding predation and engaging in other activities that may increase fitness (e.g. foraging and mating; Lima and Dill 1990). Thus, preferences for open habitats verses habitats with substantial vegetative cover may underlie some differences in the responses of small mammal species to grazing (Bock et al. 1984; Jones and Longland 1999). The study recognized that potential benefits of increased predator detection due to vegetation removal from grazing may be counterbalanced by other disadvantages caused by grazing such as competition for forage.

While this study did not find increases in densities of California ground squirrels associated with grazing, they noted that other studies suggest that California ground squirrels may have higher population densities in grazed compared to ungrazed areas (i.e., Linsdale 1946, Howard et al. 1959, Fitch and Bentley 1949). Some studies have documented higher predation risk for ground squirrels in habitats with high, compared to low, vegetative cover (Schooley et al. 1996; Sharpe and Van Horne 1998).

California ground squirrels are likely to share some food resources with cattle, such as new grass growth. In California, new grass growth may be limiting in the dry season, when most grasses are dormant. Fehme et al. (2005) suggested that during this time, the any competition between cattle and California ground squirrels for shared resources may have adverse impacts on the squirrels because cattle have a larger range and a less discriminating diet. They summarized that: "Our study demonstrates that, cumulatively, low to moderate levels of grazing appear to have no detectable effect on population densities of California ground squirrels. However, we found evidence that resource availability (in terms of live plant cover, native plant cover, and standing biomass) was negatively related to population densities of California ground squirrels in the presence of cattle grazing."

The authors suggested a number of reasons why they did not detect a significant effect on population densities of ground squirrels from livestock grazing. They suggest that since population dynamics of many small mammals appear to be controlled by predation, that California ground squirrel populations may be more affected by predators (e.g., raptors, coyotes, and foxes) than by effects mediated by cattle grazing. Competition may be more apparent when resources become scarcer, such as when populations of other rodents are high or in years with limited forage. Careful management may prevent forage levels from ever reaching this critical threshold. In summary, they state:

> It is clear that the effects of livestock grazing are complex and that detailed studies of potential mechanisms by which grazing impacts populations are necessary…Low to moderate levels of cattle grazing did not seem to strongly affect the population dynamics of California ground squirrels, and grazing may be compatible with maintenance of ground squirrel populations…However, we find some limited evidence that California ground squirrels may increase the impact of livestock grazing and thus reduce the capacity of the land to support other activities… Future research should include experiments with heavier grazing and more intensive sampling of forage availability as well as measuring plant heights and concealment value. Studies of dietary preferences of ground squirrels would also resolve the extent to which dietary overlap is important in this interaction.

A study of the Utah prairie dog and cattle grazing (Elmore 2006) had results similar to previous work that found that a reduction in amount of available forage increases forage time and decreases

vigilance time of Utah prairie dogs (Ritchie 1998, Cheng and Ritchie 2005). This study was not able to examine survivorship of individual prairie dogs over time. While other research found that at higher forage utilization levels by cattle, Utah prairie dog foraging time increased and survivorship decreased (Ritchie 1998, Cheng and Ritchie 2005), the census data from Elmore's study did not support this hypothesis. Elmore suggested several explanations; 1) dispersal of sub-adults from surrounding areas may have masked any losses of prairie dogs in the high utilization pastures that may have occurred because of low survival rates, 2) while foraging time did increase under high forage utilization, prairie dogs in these areas, through selective grazing, may still have been able to obtain enough energy reserves to survive hibernation without loss of fitness, 3) both of these explanations would be more likely during a wet cycle where food availability was higher. During Elmore's study, precipitation was 126% above normal the first year and 205% above normal in the second year. Cheng and Ritchie (2005) noted that their study coincided with a drought which likely exacerbated negative effects.

Elmore noted that many studies have addressed effects of prairie dog herbivory and competition on large herbivore grazing patterns, but this topic was beyond the scope of his study. He states that in general, the literature suggests that competition can be expected when plant productivity is low or animal density is high (Heske and Campbell 1991, Keesing 1998). Elmore considered both conditions to be occurring on his study site: there was low productivity (i.e., forage production estimated at 170 kg/ha and a frost free season of less than 80 days,) and cattle densities were high on the high utilization pastures. He notes that an important question yet to be answered is whether this actually affected survival of Utah prairie dogs. His study did not collect data to directly test this, but results from previous studies suggests this is likely, particularly during drought (Ritchie 1998, Cheng and Ritchie 2005). Ritchie (1998) and Cheng and Ritchie (2005) found notable survival differences based on forage utilization level during a major drought period. Elmore did not detect any reduction in shrub canopy cover or change in plant class composition during his 3-year study period.

Based on the above studies and the analysis currently presented in the BA, low levels of livestock grazing likely result in insignificant or discountable effects to NIDGS, but **uncertainty relative to the nature or likelihood of the effects exists.** Although livestock use levels on the Payette National Forest are required to be "light" (below 40% utilization and no concentrated livestock use), we have no studies to correlate the meaning of "light" use (40% or less), with foraging needs of NIDGS. Also, we are not always able to ensure that low use is occurring, although monitoring to date suggests that we are remaining below 40% utilization at our monitoring sites.

To minimize potential effects and maximize available forage for NIDGS, only **light grazing and no concentrated livestock use** will occur at occupied NIDGS sites. The following will be required:

1. The Annual Operating Instructions (AOIs), will specify for cattle allotments with occupied NIDGS sites: **use levels in early August, will be no greater than 40%;** for sheep allotments with occupied NIDGS sites: **use of 40% or less will be maintained by requiring once over grazing.**

2. To avoid concentrated use on NIDGS sites, sheep herders will be advised of the location of NIDGS sites and will be instructed to not bed sheep on those sites.

3. On all allotments, placement of salt must be a minimum of ¼ mile from NIDGS sites.

4. Currently, monitoring for seedhead counts and utilization does not occur at a standardized time. Seedhead counts will be added for the two new NIDGS discovered at higher elevations in (Smith Mountain and Lick Creek lookouts on the Brownlee Watershed). Seedhead counts will take place early in the growing season and will be replicated in early August to monitor the amount of seed heads remaining prior to NIDGS hibernation. Utilization levels will be monitored by wildlife biologists and/or range technicians at NIDGS sites during the first two weeks of August to ensure utilization levels are at or below 40%.

5. Existing nested frequency studies will be reevaluated with USFWS and the NIDGS technical team to determine their utility and if they should be continued or expanded. In particular, use of studies such as these to track changes in forbs in sheep allotments with NIDGS sites will be investigated.

6. The PNF will work with USFWS and the NIDGS technical team to design an intensive monitoring study to rigorously test potential competition between livestock and NIDGS

7. Management of livestock grazing also includes fence reconstruction and use of spring or pond developments. Maintenance of existing fences can cause ground disturbance when setting posts or braces. To avoid any impacts, prior to maintenance of existing fences and water developments in NIDGS habitat, the activity will be coordinated with a wildlife biologist (see Mitigation Measures). Action for new construction of fences or watering facilities is not considered ongoing. These actions are associated with a specific project and will be assessed for effects to NIDGS at that time.

8. Additional measures will be used in management of livestock allotments to minimize potential effects to NIDGS. Off-road vehicle use by permittees will not be allowed.

9. Cattle and sheep allotments that contain NIDGS sites will have language incorporated into the AOIs that identify the NIDGS as a threatened species under the ESA. The language will indicate that known sites and populations of NIDGS are located on the grazing allotment. The permittee will be required to avoid concentration livestock on these sites.

10. These measures will be monitored and enforced. Results of monitoring will be presented at the yearly Level 1 coordination meeting.

VIII. AMENDMENTS TO DETERMINATIONS

Table 1.— Determinations for ongoing actions.

Federal Action	NIDGS Effects Determination	Lynx Effects Determination	Expiration Date
Miscellaneous Forest Products	NLAA	NLAA	Dec. 31, 2017
Mistletoe Control and Precommercial Thinning	NLAA	NLAA	
Fire Management Activities	NLAA	NLAA	
Watershed and Fish Habitat Improvement and Maintenance	NLAA	NE	
Noxious Weed Management	NLAA	NLAA	
Road Management	NLAA	NLAA	
Trails, Recreation and Administrative Site Operation and Maintenance	NLAA	NLAA	
Travel Plan	LAA	NLAA	
Livestock Grazing	LAA	LAA	
Power & Telephone Line Easements	NLAA	NLAA	

[1] NLAA means the Federal action is not likely to adversely affect the listed fish species.
[2] May… and Will not… means the federal action may or will not (respectively) make irreversible or irretrievable commitments of resources or foreclose on the development of any reasonable and prudent alternatives should the action be carried out before the completion of consultation.

A. RATIONALE

9. LIVESTOCK GRAZING ALLOTMENTS:

The considered action was determined ***Likely to Adversely Affect*** NIDGS due to the uncertainty of effects. Effects will be minimized though mitigation measures that require utilization standards, salting and bedding areas away from occupied NIDGS sites, once over sheep grazing away from NIDGS sites, and monitoring to ensure compliance. The considered action is ***Not Likely to Adversely Affect*** lynx because of measures to protect vegetation regeneration areas and lynx prey foraging habitat from livestock grazing. For a complete discussion of effects see above.

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