



November 7, 2024

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Subject: Blue Mountains Forest Plan – Draft Preliminary Need for Change.

The following comments on the Draft Preliminary Need for Change of the Blue Mountains Forest Plan Revision are from the Wild Sheep Foundation and the Oregon and Washington Chapters.

We have provided comments to you concerning bighorn sheep (BHS) management on several occasions since 2005 when the Blue Mountain Forests began revising the Forest Plan, including during the latest Assessment Phase via a letter sent May 21, 2024. Proactive BHS management, as outlined in that letter, is critical to disease-free wild sheep populations.

As the Assessment Report points out *“Hunting and fishing remain important to Tribes, national forest visitors, and people who live throughout the region. The activities contribute to and diversify local economies, and the national forests of the Blue Mountains maintain a reputation as one of the best places to hunt big game in the Pacific Northwest.”* The assessment report also states *“Hunting was the most popular activity”* amongst all the recreational uses. Maintaining and improving this popular recreational activity should be a priority throughout the planning process.

We would like to see the Forest Plan focus on several on-going challenges for BHS management and address key factors. Habitat, wildlife, and recreational management are all important elements that WSF believes should be focal points. Healthy abundant BHS populations can only be achieved through good forest, range and recreation management practices.

Two BHS subspecies are native to Oregon: Rocky Mountain and California bighorn sheep. Expansion of American civilization without wildlife protection or management, and domestic livestock diseases led to their extirpation from Oregon by the mid 1940's. Present populations are the result of reintroductions, and BHS occupy only a small percentage of their historic ranges. Land use changes have rendered some of the original BHS ranges

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unsuitable for occupancy, but there is still considerable suitable habitat into which BHS has been or can be re-established, with the Blue Mountains being a significant area for the Rocky Mountain subspecies.

BHS restoration in Oregon has been possible because of the generosity and cooperation of states and Canadian provinces contributing transplant stock, the assistance of dedicated individuals and groups such as the WSF with its local Chapters & Affiliates, the Oregon Hunters Association, the Forest Service, the BLM, the Nez Perce and CTUIR, and funding provided by annual auction, raffle tags. Additionally, the success of Oregon's program is due to the dedication of Congress, state commissioners, state legislators, sportsmen and women, and multiple biologists working together for a common goal. The Hells Canyon Bighorn Sheep Initiative includes much of the northern and eastern Blue Mountains, and has been an established partnership since the BHS die-off in the mid-1990's.

The most significant threat facing BHS in the Blue Mountains of Oregon and Washington, Hells Canyon in Oregon, Washington, and Idaho, and throughout the West is pathogen transmission from contact with domestic sheep and goats, often leading to disease outbreaks. The effects on BHS populations can take several forms, including acute all-age die-off events, high mortality rates in lambs for decades, and chronic or sporadic adult mortality. Pathogens associated with the respiratory disease complex are spread among inter-connected BHS populations over a period of years, resulting in mortality in multiple populations, over time. Overall, respiratory disease will chronically limit BHS numbers and distribution. Additionally, the plan should address impacts to BHS habitat from invasive weed invasion, forest succession and climate change. To ensure long-term viability of BHS, the plan should include an analysis related to migration corridors and the potential for genetic exchange between BHS herds.

Multiple BHS populations in the Hells Canyon area, the Wallowa's and throughout the Blue Mountains have experienced high rates of mortality due to pneumonia outbreaks from the 1980s, through the present. We are actively monitoring another ongoing disease event as we write this letter. The origin of these outbreaks has been documented as domestic sheep and/or goat strains of *Mycoplasma ovipneumoniae* (Movi), which continues to have lingering effects. Many of these populations have not recovered, and are currently limited by low lamb survival, primarily due to persistent pneumonia-caused mortality. Pathogen transmission to BHS is controlled by maintaining effective spatial and temporal separation between BHS and domestic sheep and/or goats.

The experience of seeing BHS along the rivers, roads and trails of the Blue Mountains was not always there. BHS were extirpated from the entire state of Oregon, they were gone. BHS are only present due to the massive efforts of agencies, tribes and conservation organizations that have been willing to invest time and money in the efforts to bring them back and then continue the massive efforts to keep them on these landscapes. As an example, in the Hells Canyon area of the three states, Rocky Mountain BHS only exist due to being reintroduced from Montana, Idaho, Alberta and British Columbia. Since the 1970s, there have been multiple die-offs due to exposure to domestic sheep and goats, resulting in localized population extinctions.

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This was followed up by research tying these die-offs to disease carried by domestic sheep and goats and the subsequent removal of some domestics from the public lands. Restoration then continued until the mid-1990s, when contact occurred with a domestic goat from private lands and again, hundreds of BHS throughout the area died. This was followed by continued investment and research that identified Movi as a significant bacterium that predisposed BHS to disease and die-off episodes. It was discovered that following a die-off, there were still BHS that carried Movi that infected lambs and other naive BHS, resulting in death. This initiated the use of “Test and Remove” where carriers (spreaders) were identified by capture then testing and if found to be carriers, removed from the population. As you can imagine this is very expensive and intensive work. The partners in the Hells Canyon Initiative are investing over \$900,000 dollars this year, and invested about \$775,000 the year before to accomplish these activities with the hope to continue to provide healthy BHS populations on these landscapes. You can imagine the long-term investment, since this work has been going on for 25 or more years, and BHS populations are still at risk.

Wild sheep conservationists have consistently and strongly advocated for BHS to be designated as Species of Conservation Concern (SCC) list. We have had numerous discussions with USFS staff at the National, Regional and Forest Offices regarding their inclusion. We are pleased to see that BHS have been identified as a SCC on all three Blue Mountain Forests (Umatilla, Wallowa-Whitman, and Malheur).

We are also interested in the monitoring component of the planning rule for the SCC list. Monitoring BHS population dynamics is important to ensure that adaptive and pro-active measures are taken immediately if species population viability is threatened. We do not expect the USFS to actively monitor BHS populations; however, we propose that the Blue Mountain Forests specify the use of annually collected ODFW data to fulfill the monitoring requirement of the 2012 Planning Rule.

The Forests need to develop a site-specific monitoring plan that monitors domestic sheep straying off forest allotments and adjoining private lands. This was required in the monitoring plan on the Payette NF bighorn/domestic sheep FEIS Amendment, and it was found through radio telemetry that domestic sheep were frequently observed off the designated allotments. On the Wenatchee NF allotments, this straying is common enough that disease spreading from domestic sheep to BHS continues to lead to disease.

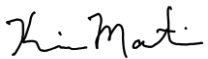
We fully respect the access sought by those that use domestic goats as pack animals. However, allowing their use in bighorn habitat is simply not worth the risk to BHS populations. Best Management Practices are NOT foolproof, and the presence of domestic goats in proximity puts BHS populations at risk. The States of Washington and Oregon have already banned the use of pack goats in wildlife management areas that contain BHS, and Federal agencies should do the same. It only takes one incident to have catastrophic consequences that could take decades to overcome.

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With the existing emergency closure order in Hells Canyon NRA, the Forest Service recognized the potential for disease transmission between BHS and domestic sheep and goats. The plan should develop guidelines for the rest of the Blue Mountains, to ensure that effective separation exists to reduce the potential for pathogen transmission and subsequent disease outbreaks.

We thank you for the opportunity to comment on the three Blue Mountain National Forests Forest Plan Revision process and we look forward to continued participation.

Respectfully,



Kevin Martin  
President, OR WSF



Garrett Grant  
President, WA WSF



Gray N. Thornton  
President & CEO WSF

The following is some information with references and links to publications related to the transmission of disease from domestic sheep/goats to wild sheep. There is good evidence for pathogen transmission from goats to BHS. It is true that domestic goats seem to pose a relatively lower health risk to BHS than domestic sheep. That is not the same as no risk, especially considering how severe the consequences can be.

1. Domestic sheep and goats carry genetically different strains of *M. ovis*. A pneumonia outbreak in BHS at Heller Bar in 2014 was associated with the introduction of a domestic goat strain (Cassirer et al. 2017).
2. A pink-eye epizootic in BHS in Arizona was associated with contact with domestic goats (Jansen et al 2006).

While accounts of disease transmission to BHS from domestic goats are less frequent than from domestic sheep, respiratory pathogens that can cause disease in BHS, including *Mycoplasma ovipneumoniae*, are regularly detected in apparently healthy domestic goats (Heinse et al. 2016, Drew and Weiser 2017). Transmission of *M. ovis* and other bacteria between BHS and domestic goats has occurred in free-ranging conditions, although spillover of *M. ovis* is detected less frequently than from domestic sheep (Rudolph et al. 2003, Kamath et al. 2019). No disease or mortality was reported in early experimental commingling of domestic goats with BHS (Foreyt 1994); however, the *M. ovis* status of those goats is unknown. More recent captive commingling experiments produced pneumonia and/or transmission of *M. ovis* to BHS, though epidemic mortality was not observed (Foreyt et al. 2009, Besser et al. 2018).

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The following is a list of scientifically published studies to support the disease transmission from domestic sheep/goats to wild sheep, many of which were associated with studies done in Washington State University. While we respect that the Blue Mountain National Forests are accessed for a wide variety of uses, it is imperative to protect fish and wildlife from uses that are scientifically proven to cause a threat.

Besser, T. E., E. F. Cassirer, K. A. Potter, and W. J. Foreyt. 2018. Exposure of bighorn sheep to domestic goats colonized with *Mycoplasma ovipneumoniae* induces sub-lethal pneumonia (vol 12, e0178707, 2017). PLoS One 13. <https://doi.org/10.1371/journal.pone.0178707>.

Cassirer, E. F., K. R. Manlove, R. K. Plowright, and T. E. Besser. 2017. Evidence for strain-specific immunity to pneumonia in bighorn sheep. Journal of Wildlife Management 81:133–143. <http://dx.doi.org/10.1002/jwmg.21172>

Drew, M. L., and G. C. Weiser. 2017. Potential disease agents in domestic goats and relevance to bighorn sheep (*Ovis canadensis*) management. PLoS One 12:e0173396. <https://doi.org/10.1371/journal.pone.0173396>

Foreyt, W. J. 1994. Effects of controlled contact exposure between healthy bighorn sheep and llamas, domestic goats, mountain goats, cattle, domestic sheep, or mouflon sheep. Proceedings of the Biennial Symposium of the Northern Wild Sheep and Goat Council 9:7–14. [media.nwsgc.org/proceedings/NWSGC-1994/1994-Foreyt.pdf](http://media.nwsgc.org/proceedings/NWSGC-1994/1994-Foreyt.pdf)

Foreyt, W. J., E. J. Jenkins, and G. D. Appleyard. 2009. Transmission of lungworms (*Muellerius capillaris*) from domestic goats to bighorn sheep on common pasture. Journal of Wildlife Diseases 45:272–278. <https://doi.org/10.7589/0090-3558-45.2.272>

Heinse, L. M., L. H. Hardesty, and R. B. Harris. 2016. Risk of pathogen spillover to bighorn sheep from domestic sheep and goat flocks on private land. Wildlife Society Bulletin 40:625–633. <https://doi.org/10.1002/wsb.718>.

Jansen B. D, J. R. Heffelfinger, T. H. Noon, P. R. Krausman, and J. C. deVos, Jr. 2006. Infectious keratoconjunctivitis in bighorn sheep, Silver Bell Mountains, Arizona, USA. Journal of Wildlife Diseases 42:407–411. <https://doi.org/10.7589/0090-3558-42.2.407>

Kamath, P. L., K. Manlove, E. F. Cassirer, P. C. Cross, and T. E. Besser. 2019. Genetic structure of *Mycoplasma ovipneumoniae* informs pathogen spillover dynamics between domestic and wild Caprinae in the western United States. Scientific Reports 9:15318. <https://doi.org/10.1038/s41598-019-51444-x>

Rudolph, K. M., D. L. Hunter, W. J. Foreyt, E. F. Cassirer, R. B. Rimler, and A. C. S. Ward. 2003. Sharing of *Pasteurella* spp. between free-ranging bighorn sheep and feral goats. Journal of Wildlife Diseases 39:897–903. <https://doi.org/10.7589/0090-3558-39.4.897>

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