

Concise Explanatory Statement (CES)

Concise Explanatory Statement for WAC 220-500-240 Domestic Goats and Sheep on WDFW Managed Lands

Rules amended as part of this rulemaking: N/A

Rules repealed as part of this rulemaking: N/A

Rules created as part of this rulemaking:

WAC 220-500-045 Domestic goats and sheep on WDFW-managed lands

1. Background/Summary of Project:

The purpose of the proposed new section to WAC chapter 220-500, WAC 220-500-240 Domestic sheep and goats on WDFW-managed lands is to reduce risk of disease transmission to bighorn sheep via contact with domestic goats and sheep on wildlife areas managed by the Department. The proposed rule prohibits visitors from bringing domestic goats or sheep onto 31 wildlife area units spread across 12 wildlife areas managed by the Department. The Department identified these wildlife area units using a risk of contact tool adapted from a tool developed for the U.S. Forest Service. The proposed rule also prohibits goats or sheep that have tested positive for *Mycoplasma ovipneumoniae* or that are displaying signs of illness from entering any WDFW-managed lands. Finally, section 3 of the proposed rule requires a goat owner or owner's agent to contact the Department by phone if a goat or sheep becomes lost on WDFW-managed lands.

CR101 was filed by the department on Aug. 23, 2021, and CR102 on Oct. 11, 2022. A SEPA DNS was issued Nov. 16, 2022. A public comment period was open from Oct. 11 until Nov. 30, 2022, and a public hearing on the proposed rule was held online on Dec. 1, 2022.

2. Reasons for adopting the rule:

At the beginning of the 1800s, there were an estimated 1.5 to 2 million bighorn sheep in North America. Today less than 70,000 remain. Overhunting, habitat loss and, most significantly, the spread of the pneumonia pathogen from domestic sheep to wild herds led to the extirpation of bighorns from Washington by the mid-1920s.

Today, about 1,500 sheep in 17 herds currently live in central and eastern Washington. The threat of disease still looms over the long-term success of bighorn restoration efforts. Bighorn sheep (*Ovis canadensis*) is listed as a species of greatest conservation need in the State Wildlife Action Plan and a priority species under WDFW's Priority Habitat and Species program.

In 2012, the Western Association of Fish and Wildlife Agencies Wild Sheep Working Group published management recommendations for domestic sheep and goats in bighorn habitat in 2012. WAFWA advocates that effective separation should be a primary management goal of state, provincial, territorial, and federal agencies responsible for the conservation of wild sheep, based on evidence that domestic sheep or goats can transfer pathogens to wild sheep. Specifically, domestic sheep and goats have been linked to the transmission of *mycoplasma ovipneumoniae*, a bacteria commonly found in the nasal cavity and sinuses of apparently healthy

domestic sheep and goats. Infection of bighorn herds can cause large all-age die-offs followed by years of poor lamb recruitment.

3. Differences between the text of the proposed rule and the rule as adopted:

The following was added to clarify penalties associated with noncompliance with the proposed rule:

[A violation of this subsection may be punishable under RCW 77.15.160 or other relevant statute depending on the circumstances of the violation.]

4. Public comments, response to comments, and consideration of comments

A public comment period on the proposed rule was open from Oct. 11 until Nov. 30, 2022, and the Director heard public testimony on Dec. 1, 2022. The Department received a total of 316 comments (8 emails, 298 survey responses, 3 letters, 7 public testimonies) between Oct. 11 and Nov. 30, 2022. Approximately 74% of commenters oppose adoption of the rule, 22% support adoption, and 3% were recorded as “other.” The following are summarized substantive comments as well as WDFW responses written by WDFW staff.

Comment: Domestic goats and especially pack goats pose minimal risk to bighorn sheep and should be excepted from the proposed rule.

This was the most common objection to the proposed rule. Packgoat enthusiasts requested scientific evidence that domestic goats pose a risk to bighorn herds.

Writing on behalf of the North American Packgoats Association (NAPgA), Andrew Irvine writes: "If the WDFW is going to implicate pack goats in disease transmission to bighorn sheep and curtail goatpacking on WDFW Lands, it must provide science showing that pack goats carry disease lethal to bighorn sheep, that there is significant risk of disease transmission from packgoats to bighorn sheep and that disease transmission from pack goats would have lasting effects on population performance."

Commenters recommend exempting pack goats from the proposed rule or revising the proposed rule to allow goat packers to visit bighorn habitat if they abide by best management practices promoted by the North American Packgoat Association (NAPgA).

WDFW staff response:

Pneumonia outbreaks are the greatest challenge to the continued conservation and recovery of bighorn sheep in their native range. This respiratory disease is polymicrobial (i.e., multiple pathogens are involved), though the pathogen *Mycoplasma ovipneumoniae* (hereafter Movi) is considered the primary agent in bighorn sheep pneumonia outbreaks (Besser et al. 2013). Domestic members of Caprinae, a subfamily that includes wild and domestic sheep and goats, are considered the natural hosts of Movi and infections of bighorn are considered spillover events from domestic sheep and goat reservoirs (summarized in Manlove et al. 2019). Outbreaks often result in all-age die offs of bighorn sheep that are followed by chronically depressed

juvenile recruitment due to continual reinfection by survivors of the initial outbreak (i.e., “chronic carriers”; Cassirer et al. 2013, Plowright et al. 2017). That is, bighorn pneumonia outbreaks typically result in significant and persistent population-level impacts.

In Washington, bighorn exist in 17 distinct populations that collectively number around 1,500 individuals. Bighorn sheep populations are generally small (i.e., <100 individuals) and their population viability is sensitive to mortality events like pneumonia outbreaks. Among the 17 populations, at least nine have experienced mortality events after the introduction of Movi into the population. In addition to immediate and persistent mortality as described above, these outbreaks require the Department to commit enormous effort and resources to manage and, without feasible vaccination or treatment options, can result in tragic consequences. For example, pneumonia outbreaks following the introduction of Movi into a herd have required the Department to selectively or entirely cull or depopulate bighorn sheep populations to prevent the spread to nearby populations. (Bernatowicz et al. 2016, Cassirer et al. 2017).

While spillover of Movi to bighorn sheep is most strongly associated with domestic sheep reservoirs, commingling trials by researchers at Washington State University have demonstrated transmission of Movi from domestic goats to bighorn (Besser et al. 2017). Although no bighorn sheep died of pneumonia during this study, they did develop respiratory disease typical of Movi infections, albeit of lesser severity than typically seen in bighorn sheep Movi-induced pneumonia. In contrast, in a more natural setting, pneumonia-induced mortality of bighorn was observed during an outbreak in Hells Canyon and was associated with a domestic goat strain of Movi (Cassirer et al. 2017). In Washington, a survey of domestic sheep and goat producers found Movi in 37.5% of sampled flocks and found an estimated 28% probability of a domestic goat being Movi positive (Heinse et al. 2016). Further, voluntary Movi screening and testing of the National Pack Goat Association’s membership flocks documented infections in 47 of 571 goats sampled (Highland, unpublished data).

The Department is mandated to “preserve, protect, perpetuate and manage [...]” Washington’s wildlife. Indeed, given their overall limited abundance and the persistent threat of pneumonia outbreaks, the Department has listed bighorn as a species of greatest conservation need (WDFW 2015). Without question, Movi infections and subsequent pneumonia outbreaks are the greatest threat to the persistence of free-ranging bighorn sheep. Domestic goat strains of Movi have been associated with bighorn pneumonia infection (Kamath et al. 2019, Cassirer et al. 2016) and, though some infections may be clinically less severe than those from domestic sheep strains (Besser et al. 2017), clearly domestic goats are a tangible reservoir of pathogenic Movi. State, federal, and tribal wildlife management and conservation agencies have, at great cost, invested decades of management and research effort to better understand and manage bighorn pneumonia outbreaks. Despite these investments, preventing exposure of bighorn sheep to the pathogen Movi remains the only viable method for disease management (WAFWA 2012, Cassirer et al. 2017). As such, the Department is adopting the rule to minimize the potential for commingling of domestic sheep and goats on Department-managed lands.

Bernatowicz, J., D. Bruning, E. F. Cassirer, R. B. Harris, K. Mansfield, and P. Wik. 2016. Management responses to pneumonia outbreaks in 3 Washington State bighorn herds: lessons

learned and questions yet unanswered. Biennial Symposium Northern Wild Sheep and Goat Council 20:38–61.

Besser, T. E., E. F. Cassirer, M. A. Highland, P. Wolff, A. Justice-Allen, K. M. Mansfield, M. A. Davis, and W. J. Foreyt. 2013. Bighorn sheep pneumonia: sorting out the etiology of a polymicrobial disease. *Journal of Preventive Veterinary Medicine* 108:85–93.

Besser, T. E., Cassirer, E. F., Potter, K. A. & Foreyt, W. J. 2017. Exposure of bighorn sheep to domestic goats colonized with *Mycoplasma ovipneumoniae* induces sub-lethal pneumonia. *PLoS One* 12:1–13.

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.

Cassirer, E.F., Plowright, R.K., Manlove, K.R., et al. 2013. Spatio-temporal dynamics of pneumonia in bighorn sheep. *Journal of Animal Ecology*, 82:518–528.

Heinse, L. M., L. M. Hardesty, and R. B. Harris. 2016. Risk of pathogen spillover from domestic sheep and goat flocks on private land. *Wildlife Society Bulletin* 40:625–633.

Kamath, P. L., Manlove, K., Cassirer, E. F., Cross, P. C., & Besser, T. E. 2019. Genetic structure of *Mycoplasma ovipneumoniae* informs pathogen spillover dynamics between domestic and wild Caprinae in the western United States. *Scientific Reports*, 9:1-14.

Manlove, K., Almberg, E., Kamath, P., Plowright, R., Besser, T., & Hudson, P. 2019. *Mycoplasma ovipneumoniae* in bighorn sheep: From exploration to action. In K. Wilson, A. Fenton, & D. Tompkins (Eds.), *Wildlife Disease Ecology: Linking Theory to Data and Application* (Ecological Reviews, pp. 368-396). Cambridge: Cambridge University Press.

Plowright, R.K., Manlove, K.R., Besser, T.E., et al. 2017. Persistent carriers explain epidemiological features of pneumonia in bighorn sheep (*Ovis canadensis*). *Ecology Letters*, 20:1325–1336.

Washington Department of Fish and Wildlife. 2015. Washington's State Wildlife Action Plan: 2015 Update. Washington Department of Fish and Wildlife, Olympia, Washington, USA.

Western Association of Fish and Wildlife Agencies Wild Sheep Working Group. 2012. Recommendations for Domestic Sheep and Goat Management in Wild Sheep Habitat.

Comment: Allowing domestic sheep and goats, including packgoats, is not worth the risk to bighorn sheep.

This is the most frequent comment from supporters of the proposed rule. Writing on behalf of the Wild Sheep Foundation, Glen Landrus, Gray Thornton and Kevin Hurley write: “WSF supports adoption of this proposed WDFW rule, consistent with Western Association of Fish & Wildlife Agencies (WAFWA) 2012 recommendations and guidance to achieve effective temporal and spatial separation between domestic sheep and goats, and wild sheep (notably bighorn sheep).”

On behalf of Safari Club International, W. Laird Hamberlin and Brook F. Minx write: “Best management practices state that spatial separation between domestic sheep and goats and wild sheep should be a primary management goal of wildlife management agencies if conservation of wild sheep is an objective of the management agency. And scientific evidence clearly shows that domestic sheep and goats can transfer disease to wild sheep and therefore spatial separation and this proposed rule is warranted.”

Some commenters suggest that there are sufficient public lands outside of bighorn range that are available for packgoat use.

WDFW staff response: The proposed rule will reduce the risk of disease transmission from domestic sheep and goats to bighorn sheep herds. The proposed rule intends to establish “effective separation,” which the Western Association of Fish and Wildlife Agencies defines as spatial or temporal separation between wild sheep and domestic sheep or goats to minimize the potential for association and the probability of transmission of diseases between species.

Bighorn sheep commingling studies with domestic sheep (*Ovis aries*) have resulted in nearly 100% pneumonia mortality. *M. ovipneumoniae* strains carried by domestic goats (*Capra aegagrus hircus*) also were transmitted to commingled bighorn sheep and triggered development of pneumonia, though the severity of the disease was found to be less severe (Besser et al., 2017). Besser et al. (2017) also note that questions remain: “1) Do other, more virulent strain-types exist within the goat *M. ovipneumoniae* clade? 2) Are goat-origin *M. ovipneumoniae* persistently carried by some bighorn sheep that recover from mild infections, as sheep-origin strains sometimes are? 3) If persistent carriers of goat-origin *M. ovipneumoniae* exist among bighorn ewes, are these strains subsequently transmitted to their lambs and do they induce lamb pneumonia? Answers to these questions will be relevant to the development of risk-appropriate management procedures to protect bighorn sheep from epidemic pneumonia.”

The proposed rule takes a precautionary approach. It restricts visitors from bringing domestic sheep and goats onto some but not all lands managed by the department. It does not impact access by goatpackers to other public lands in the state.

Mr. Irvine from NAPgA suggests that the proposed rule will result in “extreme impacts to goatpacking,” but also acknowledges that WDFW-managed lands only receive “a few visits by goatpackers per year, for a limited amount of time.” It is the hope of the Department that these impacted individuals will continue to enjoy goatpacking on WDFW-managed lands unaffected by the proposed rule and other public lands where there is lower risk of impacting bighorn sheep.

Besser TE, Cassirer EF, Potter KA, Foreyt WJ (2017) Exposure of bighorn sheep to domestic goats colonized with *Mycoplasma ovipneumoniae* induces sub-lethal pneumonia. PLoS ONE 12(6): e0178707. <https://doi.org/10.1371/journal.pone.0178707>

Comment: The proposed rule does not go far enough to protect wildlife. The department should ban domestic goats and sheep from all WDFW-managed lands.

WDFW staff response: WDFW has elected not to impose a blanket ban on domestic goats and sheep, but instead has applied a “risk of contact” analysis to identify wildlife area units where there is the risk of disease transmission to bighorn sheep. The department does not restrict access to Department-managed lands where there is no determined risk to the health of natural or cultural resources under the department’s stewardship.

Comment: Pack goats allow access to the backcountry for people with disabilities and/or limited mobility due to age or infirmity. Make an exception for packgoats.

WDFW staff response: WDFW is dedicated to improving opportunities for people with disabilities through reasonable access accommodations or equipment modifications. Special Use Permits (SUP) allow for a limited, specific exception to a recreational activity, service, equipment, or regulation. [WAC 220-200-170](#)

Special Use Permit enhancements are available to any person who has applied for, receives, and maintains in good standing WDFW "Disability Status;" and who has a permanent inoperable physical or cognitive disability; and a licensed physician through the official SUP application process certifies the impairment caused by the disability condition.

WDFW will make every effort to provide accessibility for all Washington residents if it does not:

- Result in a fundamental alteration in the nature of the program, activity, or facility;
- Create an undue financial or administrative burden; or
- Violate state or federal law.

All requests must be in writing and received by WDFW 20 days prior to the event or activity. This notification is necessary to ensure the required arrangements are made available with no cost to the person.

Requests for access will be reviewed by the Civil Rights Compliance Coordinator or their designee and approved by the agency. Applicants who are not satisfied with the outcome of a request may appeal. The agency will make every effort to respond to the appeal within 45 days of receipt.