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First name: Gary
Last name: Skiba
Organization:
Title:
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TO: Grand Mesa, Uncompahgre and Gunnison National Forests

Ms. Samantha Staley

Forest Planner

2250 South Main Street

Delta, CO 81416

gmugforestplan@fs.fed.us

GMUG EIS

Ms. Staley:

Please find the San Juan Citizens Alliance's comments on bighorn sheep management in the GMUG planning EIS in the attached file.

Note that our comments also apply to the Regional Forester's designation of Rocky Mountain bighorn sheep as a Species of Conservation Concern.

Thank you.

Gary Skiba

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Gary T. Skiba

Wildlife Program Manager

San Juan Citizens Alliance

720-301-7895 (Cell - best)

970-259-3583 (Office - not so good during remote working)

gary@sanjuancitizens.org

The San Juan Citizens Alliance, an environmental conservation organization based in Durango, CO, offers the following comments on the Grand Mesa, Uncompahgre and Gunnison (GMUG) National Forests Draft Forest Plan EIS. We are also providing input on the Regional Forester[rsquo]s list of Species of Conservation Concern in these comments. Our concerns center on the management of bighorn sheep on the GMUG. We believe that the proposed plan will limit the likelihood of bighorn sheep population persistence, viability, and expansion by allowing continued disease transmission from domestic livestock to bighorns. Designation as a Species of Conservation Concern, which is completely justified as described below, would provide greater protection for bighorn sheep, enhancing their chances for persistence and viability.

We have the following specific comments.
Disease Transmission Facilitated by Domestic Sheep Grazing is the Primary Factor Limiting Bighorn Sheep Populations
The transmission of diseases, most notably Mycoplasma ovipneumoniae (M. ovi) from domestic sheep, is universally recognized as the primary reason for poor performance of bighorn populations in Colorado (George et al 2008) [George, J. , R. Kahn, M.W. Miller and B. Watkins. 2009. Colorado bighorn sheep management plan 2009[ndash]2019. Colorado Division of Wildlife Special Report Number 81, Colorado Division of Wildlife, Department of Natural Resources, Denver, Colorado, 88 pp.] The current management of domestic sheep grazing on the GMUG creates the potential for disease transmission. More specifically, CPW[rsquo]s S21 and S22 DAU plans (covering the Rocky Mountain bighorn herds on the GMUG) contain identical language, stating [ldquo]...A traditional DAU plan includes management alternatives that revolve around a desired population and male:female ratio objective. This plan does not rely on those types of management objectives, partly due to a lack of consistent, unit specific data, but more importantly, because of the potential influence of disease on population performance.[rdquo] [Diamond, B. and B. Banulis. 2012. Bighorn sheep management plan. Data Analysis Unit RBS-21, SAN JUANS WEST, Game Management Units S-21 & S-33. Colorado Parks and Wildlife. 106 pp.; Diamond, B. and S. Ferrero. 2013. Bighorn Sheep management plan. Data Analysis Unit RBS-22. Central San Juans. Game Management Units S-22, S-36, S-52, & S-53. Colorado Parks and Wildlife. 110 pp.] CPW cannot effectively manage bighorn populations in either DAU on the GMUG due to the potential for disease transmission from domestic livestock. Even more concerning is the management direction for Herd Distribution and Density in the RBS-21 DAU Plan: [ldquo]Encourage managers to respond with targeted hunting licenses, non-lethal harassment, or managed culling if individual or small groups of bighorn expand their range into novel areas where the risk of contact with domestic sheep is considered too high.[rdquo] The potential of disease transmission from domestic sheep is forcing CPW to kill native bighorn sheep on public lands, an unacceptable outcome.

The USFS recognizes that disease is the dominant negative impact on bighorn populations on the GMUG, as reflected by inclusion in Table 78 of the Draft EIS as a species potentially impacted by insects and disease.

While domestic sheep producers continue to cast doubt on the role of M.ovi transmitted to bighorns from domestic sheep, there is no question about the source and potential severity of such transmission. Besser et. al 2021, described a deadly outbreak of respiratory disease in bighorn sheep on the National Bison Range (NBR) in Montana [Besser, T.E., E.F. Cassirer, A. Lisk, D. Nelson, K.R. Manlove, P.C. Cross and J.T. Hogg. 2021. Natural history of a bighorn sheep pneumonia epizootic: Source of infection, course of disease, and pathogen clearance.

Ecology and Evolution.

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Their key findings include: 1) the outbreak was tied to M. ovi which was formerly unknown in this bighorn population and confirmed as genetically identical to a strain found in nearby domestic sheep; 2) the outbreak was not associated with breeding movements; 3) the outbreak occurred in spite of efforts to reduce the possibility of disease transmission by reducing the bighorn population, 4) attempts to increase the genetic diversity of the bighorn population were ineffective in reducing losses due to M. ovi; 5) no other environmental factors affected the disease outbreak, and 6) [ldquo]...this case report adds to the growing evidence that free-ranging bighorn sheep populations are placed at existential risk by contacts with domestic animal reservoirs of M. ovipneumoniae.[rdquo]

Continued grazing of domestic sheep in areas with the potential for contact with bighorns is a sure recipe for continued poor performance of bighorns at best, and eradication of bighorns at worst.
Designation of Bighorn Sheep as a Species of Conservation Concern (SCC)
Designation as a Species of Conservation Concern (SCC) by the Regional Forester requires that viability of each species is a goal on the planning unit. Lack of SCC designation allows for less restrictive management, requiring only the lower standard of persistence and not viability. SCC designation also requires specific monitoring for the effectiveness of management activities.

The GMUG has determined that bighorn sheep do not meet the criteria for designation as an SCC on the GMUG, as described in FSH 1909.12.52d.3.f. We believe this conclusion is flawed, as the Draft Plan implies that a species must meet all of the criteria listed, rather than any one or more of them. Further, bighorn sheep arguably do meet all 4 of the criteria. Those criteria are:

* Significant threats, caused by stressors on and off the plan area, to populations or the ecological conditions they depend upon (habitat). These threats include climate change.
* Declining trends in populations or habitat in the plan area.
* Restricted ranges (with corresponding narrow endemics, disjunct populations, or species at the edge of their range).
* Low population numbers or restricted ecological conditions (habitat) within the plan area.

Each of these criteria is addressed below.

1. Significant threats, caused by stressors on and off the plan area, to populations or the ecological conditions they depend upon (habitat). These threats include climate change.

The threat of disease transmission from domestic sheep to bighorns and resulting significant declines in bighorn populations is real and in fact is already limiting bighorn populations due to management actions taken by CPW to reduce the potential for disease transmission. In defending continued domestic sheep grazing in areas with the potential to impact bighorn sheep, the EIS states (EIS Vol 1 p. 25) that [ldquo][t]he agency[rsquo]s national policy, however, is to provide for effective separation, and this is reflected in the draft revised forest plan and alternatives.[rdquo] (Emphasis in original).

The USFS notes on p. 202 of Vol. 1 of the EIS, that [ldquo]...[e]ffective separation is defined by science-based estimates of bighorn sheep core herd range and movements across the landscape in relationship to domestic sheep areas and managing potential contact rates to an acceptable level to reduce the risk of disease transmission. Management to maintain separation would also address the risk factor for disease epizootics and

would address competition with domestic animals. The indicator for this analysis is a qualitative discussion of the effects of plan components.[rdquo] (emphasis added). The USFS Risk of Contact tool [USDA Forest Service. 2013. Bighorn Sheep Risk of Contact Model. USDA Forest Service, Intermountain Region. Prepared by USDA FS Bighorn Sheep Working Group and Critigen] is the best available quantitative science-based methodology for assessing the likelihood of contact, and potential disease transmission, between bighorn and domestic sheep. Yet the GMUG has declined to use that tool to evaluate the threat to bighorn sheep and instead gone with a qualitative evaluation.

Quantitative analysis should be conducted and would undoubtedly show high risk for the bighorn populations on the GMUG. Without such an evaluation, with a readily available and effective tool, it is unlikely that effective separation will occur.

Further, the USFS categorizes Rocky Mountain bighorn sheep as subject to the following threats:

1.
* Species affected by genetic drift, stochastic events, and anthropogenic disturbances (Table 76 of the EIS),
* Species with high or extreme vulnerability to climate change (Table 77)
* Species potentially impacted by insects and disease (Table 78)
* Species potentially affected by habitat fragmentation (Table 80)
* Species potentially affected by livestock and wildlife grazing, browsing, and trampling (Table 82)
* Species potentially affected by vegetation management and alteration (Table 85)
* Species potentially affected by non-hunting recreation (Table 86)

It[rsquo]s clear that Rocky Mountain bighorn sheep face multiple stressors and threats on the GMUG that must be taken into account when considering potential designation as a Species of Conservation Concern.

2. Declining trends in populations or habitat in the plan area.

We know that bighorns are present on a fraction of their historical range statewide and that expansion of bighorn populations is limited both by concerns about disease transmission and disease outbreaks. Unless the situation is changed, populations and occupied habitat can at best remain stagnant and more likely only decrease.

3. Restricted ranges (with corresponding narrow endemics, disjunct populations, or species at the edge of their range).

The current distribution of bighorn populations is a textbook example of a species with disjunct distributions, created by the twin historical impacts of unregulated market hunting and disease from domestic livestock. Unregulated hunting is no longer an issue, but the disease issue is still with us, and is one that the USFS can mitigate with aggressive management of domestic sheep grazing.

4. Low population numbers or restricted ecological conditions (habitat) within the plan area.

There is no question that bighorn sheep meet this criterion. Habitat modeling indicates that bighorns occupy between 18% and 35% of the suitable habitat on the GMUG. Distribution and presumably population size could be tripled if the threat and actual effects of disease transmission were removed.

On Page 152 of the Grand Mesa, Uncompahgre, and Gunnison National Forests Revised Draft Forest Assessments: Terrestrial Species Overviews (2018), the USFS states that [ldquo]...Eight of the 14 Rocky

Mountain bighorn sheep herds on/partially on the GMUG contain 100 individuals or more, which is considered by several authorities to be a minimal size for viability (Smith et al. 1991, Singer et al. 2001, New Mexico Game and Fish Department. 2005. Long-range Plan for Management of Rocky Mountain Bighorn Sheep in New Mexico 2005-2014. Wildlife Management Division, New Mexico Department of Game and Fish, Santa Fe, New Mexico.] None of these 3 papers provided a quantitative approach to estimate bighorn population viability. Smith et al. 1991 cited Berger 1990 [Berger, J. 1990. Persistence of different-sized populations: an empirical assessment of rapid extinctions in bighorn sheep. Conservation Biology 4: 91-98]; Berger[rsquo]s methodology was a review of existing bighorn populations and concluded that populations over 100 individuals were more likely to persist than smaller populations, but it was not a mathematical population viability analysis. Further, Smith et al. 1991 in fact concluded that 125 (not 100) individuals was the best estimate for viability. The estimate from Singer et al. 2001 was based on an uncited Bureau of Land Management estimate and Berger 1990 [Berger, J. 1990. Persistence of different-sized populations: an empirical assessment of rapid extinctions in bighorn sheep. Conservation Biology 4: 91-98.], and the New Mexico Department of Game and Fish 2005 conclusion was based on much of the same anecdotal information, and broad conceptual evaluations that applied to multiple species [Soule, M. E. 1980. Thresholds for survival: maintaining fitness and evolutionary potential. Pages 151-169 in M. E. Soule and B. A. Wilcox, eds. Conservation Biology: an evolutionary-ecological perspective. Sinauer Assoc., Inc. Sunderland, MA; Soule, M.E. and D. Simberloff. 1986. What do genetics and ecology tell us about the design of nature reserves? Biological Conservation 35:19-40.] None of these efforts included an explicit evaluation of the impact of disease.

In seeking to gain a better understanding of the role of disease in the persistence of bighorn sheep populations, Cassaigne et al 2010 concluded that a minimum population of 188 bighorn sheep is necessary to insure long-term persistence in the presence of epizootic disease [Cassaigne, I, R.A. Medellin, and J.A. Guasco. 2010. Mortality during epizootics in bighorn sheep: effects of initial population size and cause. Journal of Wildlife Diseases, 46(3), 2010, 763[ndash]771 DOI: 10.7589/0090-3558-46.3.763]. Only one of the herds on the GMUG exceeds 188 individuals.

CONCLUSIONS

1. The USFS should conduct analyses of the vulnerability of bighorn sheep on the GMUG forests using the USFS Risk of Contact tool and use that analysis as the basis for managing domestic sheep grazing.
2.
Bighorn sheep on the GMUG forests meet the criteria for designation by the Regional Forester as a Species of Conservation Concern and should be so designated as soon as possible.

Sincerely,

Gary Skiba, Wildlife Program Manager San Juan Citizens Alliance

1309 E. 3rd Ave. #5

Durango, CO 81301

970-259-3583

gary@sanjuancitizens.org

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