RC RC 046

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Chairman Spraker and members of the Board,

As a biologist and an avid sheep hunter, I ask that you consider the following when addressing Proposal 64 (amended language RC 26). I am not an epidemiologist, nor a microbiologist, or a veterinarian. I am however a very concerned wildlife biologist with a personal interest in the future of Alaska's wild sheep populations as well as our domestic sheep and goat industry. There is a lot to take in with this issue. I hope I can offer some clarity.

In its original form in March 2016, Proposal 90 was offered by a group of sheep hunters as an initial attempt to keep Dall sheep and mountain goats from contracting the devastating respiratory bacteria *Mycoplasma ovipneumoniae* (*M. ovi*). Considering there is no parallel public process for putting a bacteria on the Division of Environmental Health's reportable disease list, or altering their import requirements, these hunters did what hunters do. They submitted a proposal to the Board of Game in an attempt to keep Dall sheep and mountain goats safe.

As a past manager of Dall sheep in the Wrangell, Talkeetna and Chugach Mountains as well as the South Central Alaska Range in Units 11 and 13, and a past member of the WAFWA Wild Sheep Working group, I would like to offer a little background from a wildlife management perspective. *M. ovi* has unequivocally emerged as the most widespread primary pathogen behind bighorn pneumonia and all age die-offs in case after case from British Columbia to Texas over the last 10 years. Year after year I heard first hand reports from Francis Cassier from ID, Tom Stephenson from CA, Mike Cox and Perri Wolf from NV and many others. *M. ovi*, when mixed with endemic (existing) respiratory bacteria (*Pasteurella spp., Manheimia,* etc.) in a naturally occurring wild sheep population most often results in severe respiratory disease and death of a significant portion of the herd. This has been replicated in a controlled environment many times, proven in fact by the transfer of marked individual strains of *M. ovi*. Most often, herds experience high lamb mortality for many years. Some never recover. In most cases a small number of remaining survivors emerge, only to succumb to respiratory disease years later following exposure to a new strain of *M. ovi*. Dr. Cassier has described this pattern multiple times in her research in Hells Canyon. A robust summary of this pattern can also be found in an ongoing Oregon State University project in the Mojave National Preserve Science Newsletter April 2016. Most recently, Mike Cox has offered an ongoing summary of a bighorn culling project in NV. *M. ovi* is a devastating bacteria and there is no vaccine. I feel this pathogen absolutely could destroy Alaskan Dall sheep populations as we know them, and it's not a matter of if they will contract *M. ovi*, it's when.

With a little research you'll find that *M. ovi* is very well described in the scientific literature. This bacteria was first described in the early 1970s as a significant respiratory pathogen in domestic sheep. For many years researchers had a difficult time detecting the bacteria because it doesn't grow well on standard culture plates. Researchers eventually found that the bacteria was anaerobic (doesn't grow in the presence of oxygen), and it's highly host specific, meaning it requires *Caprinae* epithelial cells to survive and replicate. To date, this is believed to be the reason *M. ovi* has not been confirmed in anything other than sheep, goats, and muskox. In the mid-2000s, research led by Dr. Tom Besser at Washington State University began to peel apart the genome of *M. ovi* through PCR (polymerase chain reaction) DNA

analysis. Parallel research was occurring in other labs as well, including that of Christiane Schnee at the Institute of Molecular Pathogenesis in Germany, among many others.

As with any genetic test, it takes a while to determine the best set of primers (portion of the genome) to use when developing quick tests that can be replicated. Dr. Besser and the Washington Animal Diagnostic Disease Lab (WADDL) have developed a commercially available test for *M. ovi* that does not result in false positives. Any veterinarian can submit samples to WADDL any time. The detail of this test offers extremely accurate results when the *M. ovi* bacteria is present on a submitted nasal swab. In rare cases results come back indeterminate. These samples can be further analyzed, where more DNA may be amplified to come to a final result. Will every animal with *M. ovi* test positive every time? No. In some cases there's simply not enough individual bacteria on the nasal swab to come back positive. This is why current *M. ovi* research entails multiple swabs 2-4 weeks apart. If an animal tests positive one time in consecutive tests, it can be identified as an *M. ovi* positive animal. If an animal tests negative in two or three consecutive tests, along with a negative blood serum antibody test, researchers have said the animal can be determined to be *M. ovi* free. Do we know everything about *M. ovi*? No. But this is a great starting point that can be part of a solution.

Incidentally, many of our Alaskan domestic owners already work with WADDL annually, submitting samples for the testing of Lentivirus spp, *Corynebacterium pseudotuberculosis* the bacterium that causes the disease CL, and the Caprine arthritis encephalitis (CAE) virus among others. Adding another pathogen to the list is doable, especially knowing AK WSF will pay for it. Determining how to handle *M. ovi* positive animals is another issue. But unlike the other pathogens, *M. ovi* is highly pathogenic when introduced into a wild sheep population, and the "cost" of such transmission could be excessive.

So the questions before you, based on 5 AAC 92.029 are whether or not domestic sheep and goats 1) present a "threat to the health or population of a species that is indigenous to Alaska", 2) are "capable of causing a significant reduction in the population of a species that is indigenous to Alaska", or 3) whether they are "capable of transmitting a disease to a species that is indigenous to Alaska"? Based on what we currently know, the answer to all three of these questions is yes.

Should the Board find the answer to any one of these questions to be yes, I believe we all need to work a little harder at finding a solution – and this includes our State Vet. I ask that you do not choose complacency when it comes to the threat we know is here. The history of lice in wolves in southcentral has been a biological disaster, but this has the potential to be so much worse. We do not know where current *M. ovi* positive domestics reside, we do not know how secure their fences are, and we have no idea how owners plan to handle these animals. There is so much left to discuss, but I encourage movement forward towards the elimination of *M. ovi* in Alaska. Other options will be much more expensive.

I truly believe the owners of domestic sheep and goats in Alaska are genuinely concerned about wild sheep and goats, but just continuing a voluntary testing program doesn't get us any closer to safer wild sheep and goats. We have come at this topic from two opposing directions, but we are getting closer. There is a significant amount of funding on the table to move the needle towards a solution. Proposal 64 still has merit, but honestly we would much rather see *M. ovi* free domestics. We cannot sit idle for too long, our Dall sheep and mountain goat resources are far too valuable.

Thank you for your time,
Becky Schwanke