

Susceptibility of Aoudad Sheep to *Mycoplasma ovipneumonia* and Possible Transfer to Desert Bighorn Sheep

Contact

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Introduction

Respiratory disease is thought to be a major contributing factor to the decline of wild sheep populations throughout the West. It is also an obstacle to reintroduction of wild sheep to their native habitats due to possible exposure to cohabitating domestic sheep or other species that are potential carriers of respiratory pathogens. The organism, *Mycoplasma ovipneumonia*, is believed to be the precursor to pathogenic organisms that cause disease in wild sheep. While Texas has not documented desert bighorn sheep declines attributed to large scale outbreaks or mortalities due to respiratory disease, the potential is real. Disease sampling conducted on several Texas desert bighorn sheep (*Ovis canadensis nelsoni*) herds has not shown exposure to *M. ovipneumonia* at this time, but increasing numbers of aoudad sheep (*Ammotragus lervia*) encroaching on desert bighorn sheep habitat are raising concerns that they could carry pathogens that could be passed to bighorns. A recent survey of two mountain ranges in West Texas showed in excess of 3,000 aoudad present. One of these mountain ranges is a site where desert bighorn sheep were recently reintroduced, and the herd does not seem to be increasing. The second is a mountain range that is a potential future site for desert bighorn reintroduction.

Some preliminary sampling of aoudad sheep has indicated exposure to *M. ovipneumonia* and the possibility of these animals being capable of shedding the organism into their environment. While there has been some research conducted on the potential for domestic sheep and other species to transmit respiratory disease to wild sheep, there is little research on the pathogens aoudad sheep may carry and their ability to transfer infection.

Justification

The 2015 Land and Water plan contains four specific goals. Research to further our knowledge of the potential for disease transmission from an introduced species to a native species and how that might affect the Department's decisions on managing desert bighorn sheep and aoudad populations would fall within goal one and associated strategies:

- Practice, encourage and enable science-based stewardship of natural and cultural resources.

- TPWD will be an exemplary steward of the public’s lands and waters by using the best available science for ecosystem-based management.
- TPWD will maintain the highest level of scientific validity and credibility.

Research Objectives

The study design should address these main objectives:

1. Attempt to experimentally infect aoudad sheep with *M. ovipneumonia* and determine:
 - a. If aoudad sheep are capable of being infected with *M. ovipneumonia* and
 - b. If aoudad sheep are capable of being persistently infected and transmitting the organism.
2. Expose naïve desert bighorn sheep to determine if:
 - a. Aoudad can infect desert bighorn sheep through indirect means such as shared watering devices, and
 - b. Aoudad can infect desert bighorn sheep through direct contact by comingling in close contact.
3. Model the risk of *M. ovipneumonia* transmission from aoudad sheep to desert bighorn sheep using data from collaring studies monitoring the relative locations of aoudad and desert bighorn sheep on a shared landscape.

Expected Management Implications

Information gained from this study will allow TPWD to better identify release sites which maximize the chances of success for future desert bighorn sheep translocations. Results will also guide TPWD in what actions to take in managing aoudad populations before reintroductions are initiated and in managing them where they already coexist with desert bighorn sheep populations.

Note to Proposal Submitters

Proposals submitted for this RFP should request no more than \$131,250 in federal reimbursement for a total project cost of \$175,000 or less.