

***Mycoplasma ovipneumoniae* Can Predispose Bighorn Sheep to Fatal *Mannheimia haemolytica* Pneumonia**

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Abstract: *Mycoplasma ovipneumoniae* has been isolated from the lungs of pneumonic bighorn sheep (BHS). However experimental reproduction of fatal pneumonia in BHS with *M. ovipneumoniae* was not successful. Therefore the specific role, if any, of *M. ovipneumoniae* in BHS pneumonia is unclear. The objective of this study was to determine whether *M. ovipneumoniae* alone causes fatal pneumonia in BHS, or predisposes them to fatal *Mannheimia haemolytica* infections. We chose *M. haemolytica* for this study because of its isolation from pneumonic BHS, and its consistent ability to cause fatal pneumonia under experimental conditions. Since *in vitro* culture could attenuate virulence of *M. ovipneumoniae*, we used ceftiofur-treated lung homogenates from pneumonic BHS lambs or nasopharyngeal washings from infected domestic sheep (DS) as the source of *M. ovipneumoniae*. Two adult BHS were inoculated intranasally with lung homogenates while two others received nasopharyngeal washings from DS. All BHS developed clinical signs of respiratory infection but only one BHS died. The dead BHS had carried leukotoxin-positive *M. haemolytica* from the onset of this study,

but did not exhibit signs of respiratory infection until after *M. ovipneumoniae* challenge. The remaining three BHS developed pneumonia and died one to five days following intranasal inoculation with *M. haemolytica*. On necropsy, lungs of all four BHS showed lesions characteristic of bronchopneumonia. *M. haemolytica* and *M. ovipneumoniae* were isolated from the lungs. These results suggest that *M. ovipneumoniae* alone may not cause fatal pneumonia in BHS, but can predispose them to fatal pneumonia caused by *M. haemolytica* infection.

Biennial Symposium of the Northern Wild Sheep and Goat Council 17:55–56; 2010

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