

Sinus Tumors



- Bighorn sheep sinus tumors are an infectious disease that causes thickening of the sinus lining or solid masses in the upper respiratory sinuses.

Species Affected

- Rocky Mountain bighorn sheep
- Desert bighorn sheep
- California bighorn sheep

What to Look For

- Thickened lining of the sinuses of the skull and horns.
- Solid masses filling the sinus cavities.
- Masses may be soft and gelatinous, hard and bony, or both.
- Masses invade bone and may cause horn or facial abnormalities.
- Thick nasal exudates, especially with secondary bacterial infections.



Bighorn sheep sinus tumor filling frontal sinus on right side of image. Photo credit Karen Fox, CPW.

Cause and Transmission

The cause of bighorn sheep sinus tumors remains unknown, although experimental transmission of the disease suggests an infectious, likely viral, etiology. Sinus tumors appear to prevent normal clearance of pathogens from the upper respiratory tract, enhancing carriage (and likely shedding) of other pathogens including *Mycoplasma ovipneumoniae* and *Pasteurellaceae*. Colorado herds that struggle with recurrent lamb pneumonia often have particularly high occurrence of sinus tumors in adults, and presence of tumors may enhance spread of pneumonia-causing bacteria to lambs. Experimental transmission of sinus tumors to domestic sheep has been demonstrated.

References

Fox, KA, SK Wootton, AJ Marolf, NM Rouse, IK LeVan, TR Spraker, MW Miller, and SL Quackenbush (2016). Experimental Transmission of Bighorn Sheep Sinus Tumors to Bighorn Sheep (*Ovis canadensis canadensis*) and Domestic Sheep. *Veterinary Pathology* 53(6):1164-1171.

Fox KA, NM Rouse, KP Huyvaert, KA Griffin, HJ Killion, JJ Gaines, WH Edwards, SL Quackenbush, and MW Miller (2015). Bighorn Sheep Sinus Tumors are Associated with Co-infections by Potentially Pathogenic Bacteria in the Upper Respiratory Tract. *Journal of Wildlife Diseases* 51(1):19-27.

Fox KA, SK Wootton, SL Quackenbush, LL Wolfe, IK LeVan, MW Miller, and TR Spraker (2011). Paranasal Sinus Masses of Rocky Mountain Bighorn Sheep (*Ovis canadensis canadensis*). *Veterinary Pathology* 48(3):706-12.