

# THE SHORT AND LONG OF IT: PNEUMONIA IN A BIGHORN SHEEP METAPOPOPULATION

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**Abstract:** We analyzed patterns of pneumonia in 14 of 16 bighorn sheep (*Ovis canadensis*) populations that comprised the Hells Canyon bighorn sheep metapopulation in Idaho, Oregon, and Washington, 1997–2010. During this period, pneumonia-caused mortalities were confirmed in 53 of 447 radio-collared sheep, 12 unmarked dead adult sheep, and 92 lambs. We identified at least 3 classes of pneumonia in populations: all-age, lamb only, and adult only. These classes differed in duration and effects on population dynamics, but also showed a high degree of variability within type. We detected weak synchrony in adult and all-age pneumonia between neighboring populations, but no spatial correlation in lamb-only pneumonia. Once a population experienced pneumonia there was a 60% or greater probability of pneumonia every year afterward. Pneumonia mortality in lambs increased over time in 3 populations monitored for the duration of the study. Pneumonia is both an acute and chronic disease that through persistence in populations, repeated introductions, or both, is having a long term impact on this bighorn sheep metapopulation.

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**Key words:** *Ovis canadensis*, bighorn sheep, pneumonia, Hells Canyon metapopulation, Idaho, Oregon, Washington.

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