

Is Rapid Horn Growth Associated with Increased or Decreased Longevity?

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Abstract: Rapid horn growth has been associated with decreased longevity in an un hunted population of bighorn sheep (*Ovis canadensis*); however, this may have been due to a cohort effect. Recent research assumes that rapid growth results in increased longevity. We tested whether rapid growth is associated with increased or decreased longevity for rams dying of natural causes in populations with little or no hunting by using horn measurements from natural mortalities of 91 male thinhorn sheep (*O. dalli*) from Yukon Territory, Canada. Horns were gathered over 36 yr from 11 populations. Rapid growth was associated with reduced longevity for sheep aged 5 yr and older. A Monte Carlo simulation clearly showed ($P = 0.016$) that environmental fluctuations and population differences in growth rate could not account for the negative association between growth rate and longevity. The negative association between growth rate and longevity in un hunted populations was similar to that in hunted populations in the Yukon. Concern has been raised that hunting policies based on horn curl can have a detrimental effect on rams, because rams with faster growth can be shot at a younger age than rams with slower growth. However, our results suggest that hunting regulations based on horn curl may reflect the natural mortality situation in which sheep with rapid horn growth die at an earlier age. Our study further highlights the need for the existence and study of protected populations to properly assess the impacts of selective harvesting.

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