THE UNIVERSITY OF ARIZONA

School of Natural Resources and the Environment

Seminar Series: Spring 2023

EXPLORING THE USE OF PHYSIOLOGICAL HEALTH ASSESSMENTS IN PREDICTING BIGHORN SHEEP SURVIVAL AND REPRODUCTION

SPEAKER: Bree Beechler, Carlson College of Veterinary Medicine, Oregon State University

DATE: Wednesday, March 29th

TIME: 3:00-4:00 pm

LOCATION: ENR2 S210 & Zoom

ABSTRACT:

In populations of conservation concern, including a biochemistry profile of serum or plasma samples during routine monitoring could provide a low-cost and informative tool for managers to identify at-risk populations or individuals. The utility of blood biochemical parameters for monitoring large ungulates has been demonstrated by Milner et al. (2003), who found that parameters reflecting energy balance and body condition were related to subsequent survival and successful calving in Svalbard reindeer. In this study, we assessed the utility of blood biochemical parameters including measurements of energy balance, organ health, micronutrients and immune function for predicting adult and juvenile survival in bighorn sheep (Ovis canadensis) in southeastern Oregon and northern Nevada. We measured biochemical indicators of energy balance in adult bighorn sheep at a single time point in January or February, and then monitored survival through August of the same year to assess how those measures related to survival of individual adults and their juvenile offspring. Juvenile survival was lower over the subsequent spring and summer when maternal adult serum beta-hydroxybutyric acid (β-HBA) concentration was high, indicating a negative energy balance in the mothers. However, serum β-HBA did not correlate with adult survival over the same period, but adult survival was correlated to whole blood selenium levels where animals with higher selenium had higher survival and improved immune responses. This suggests that β-HBA and selenium could be useful to include as monitoring tool during capture events for bighorn sheep and other threatened ruminant populations under resource limitation.

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