Evaluation of Diet Quality Predictions for Pronghorn Antelope (*Antilocapra americana*) Using Fecal Nirs Calibrations from Surrogate Species

John A. Kava[1], Douglas R. Tolleson[1], Stephen D. Prince[2], Kris K. Banik[2] and Larry R. Bright[3]; (1) The University of Arizona, (2) Texas A&M University, (3) US Forrest Service; Contact Author Email: jakava@cals.arizona.edu

Habitat quantity and quality are among the factors affecting pronghorn population dynamics. A study is being conducted to determine the ability of near infrared reflectance spectroscopy of feces (FNIRS) to monitor diet quality of free-ranging pronghorn on rangeland grazed by cattle. No FNIRS diet quality calibrations exist for pronghorn, so the first step in this study is evaluation of currently available calibrations developed for elk (*Cervus elaphus*), deer (*Odocoileus spp.),* goats (*Capra hircus*), and sheep (*Ovis aries*) for predicting pronghorn diet quality. Fecal samples were collected from free-ranging pronghorn during 2008 in central Arizona and processed for FNIRS. Percent crude protein (CP) and digestible organic matter (DOM) of the diet, as well as fecal N and P, were predicted. Mean predicted CP ranged from 11.24 ± 0.96 (goat calibration) to 21.29 ± 0.83 (elk calibration). Predicted diet DOM ranged from 57.41 ± 1.47 (goat) to 66.77 ± 2.53 (deer). Predicted fecal N and P from a multispecies calibration were 1.80 ± 0.08 and 0.61 ± 0.03 respectively. Mahalonobis distance (H) was used to evaluate spectral similarity between pronghorn feces and each respective calibration set. H values < 3.0 were considered similar. The elk diet quality calibration yielded H values of 4.40 ± 0.71, all others were > 10.0. A multispecies fecal N and P calibration yielded H values of 2.44 ± 0.28. Pronghorn fecal N and P can be predicted with existing FNIRS calibrations. Reliability of existing diet quality calibrations for use in pronghorn antelope is yet to be determined.

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