Center for Environmental Sciences and Engineering
University of Connecticut

Wildlife Conservation

Assessing Nutritional Stress in Alaskan Moose

How can you tell if a moose is not getting enough to eat? Although this question sounds like the opening line of a joke, it is a serious subject for wildlife managers. Monitoring the nutritional status of moose and other wildlife is essential to maintaining healthy, sustainable populations.

The moose is the largest living member of the deer family. Its long nose and large nostrils, its heavy body perched on long, spindly legs, and its massive antlers (on males) give it a distinctive (some might say unlovely) appearance. Adapted to cold climates, the moose browses on the leaves, twigs, and buds of shrubs and trees (such as willow, aspen, and birch) and on aquatic plants (such as water lilies).

When food is very scarce, animals may become emaciated and die. However, when food is moderately scarce or low in nutritional value, the effects on animal health are more subtle. For example, if moose cows are poorly nourished, they may provide less milk or poor-quality milk to their calves. The calves, in turn, may grow more slowly, becoming more vulnerable to disease and predators. In addition, fewer calves may be born each year.

These indirect effects of poor nutrition are difficult to quantify, but they may have substantial effects on wildlife survival and hence on population trends.

This research aims to develop a model that will give wildlife managers better tools to evaluate the nutritional status of both individual animals and wildlife populations. It combines physiological investigations of metabolic hormones with information about the foraging ecology of various moose populations to develop a model of physiological responses to nutritional stress.

Young moose calves are particularly vulnerable to nutritional stress. This calf wears a VHF-radio collar that enables researchers to track his movements.

The first step in this research is to evaluate how the availability of nutrients affects metabolic hormones that influence how nutrients are used in adult female moose. The next step is to determine the normal seasonal fluctuations in these hormones, so that abnormal fluctuations can be detected. The final step is to test whether, by measuring these metabolic hormones, we can identify the nutritional status of individual moose that have little or low-quality food.

The development of a model to assess nutritional stress in wild populations will help to support efforts to manage and conserve moose and many other species of wildlife.

Award recipient: Julie Richmond, Department of Animal Science
Mentors: Steven Zinn, Department of Animal Science, and Isaac Ortega, Department of Natural Resource Management and Engineering

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3107 Horsebarn Hill Road, Building 4 Annex, U-4210
Storrs, CT 06269-4210
Phone: (860) 486-4015 Fax: (860) 486-5488
Web: www.cese.uconn.edu Email: environment@uconn.edu