

RELATIVE CONTRIBUTIONS OF PREY, PHYSICAL CONDITION, AND HABITAT STRUCTURE TO PREDATION BY COUGARS AND WOLVES IN SOUTHWEST MONTANA^{TWS}

Todd Atwood, Eric Gese, and Kyran Kunkel, Department of Forest, Range, and Wildlife Sciences, Utah State University, Logan, UT 84322

Vulnerability to predation resulting from direct or indirect effects of physical condition allegedly is a widespread phenomenon in predator-prey systems. Yet there is a paucity of empirical support for the putative linkage between predator detection and avoidance behaviors and relative or absolute body condition. We examined patterns of prey selection by sympatric cougars (*Puma concolor*) and wolves (*Canis lupus*) to determine (i) if prey killed by wolves were in poorer absolute physical condition relative to prey killed by cougars and (ii) if declining relative physical condition resulted in prey becoming risk-insensitive, thus making them more vulnerable to predation. Additionally, we assessed the role of vegetative structure in facilitating predation. Since 2003, we have documented prey characteristics and kill site attributes in the northern Madison range of southwest Montana. Mule deer (*Odocoileus hemionus*) were the primary prey for cougars, whereas elk (*Cervus elaphus*) were the primary prey for wolves. Wolves selected prey in relatively poor absolute physical condition compared to prey selected by cougars. However, declining relative condition in mule deer may have contributed to vulnerability to predation by cougars. Wolf kills occurred in habitat that was more reflective of the study area than cougar kills. These disparities suggest that patterns in species-specific hunting behavior and prey selection differ considerably, and prey likely forage in a risk-prone manner as physical condition declines.