Behavioral Responses Of Elk To The Threat Of Wolf Predation: Sex-Specific Constrains[tws]

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We studied individual and herd-level behavioral responses of elk to spatial and temporal variation in the risk of predation by wolves over three winters in the Upper Gallatin drainage, Montana. We tested whether responses to risk were affected by body condition by measuring marrow fat levels of bulls and cows and relating differences in condition to differences in antipredator behavior and predation rate. Overall, elk responded to the presence of wolves by substantially decreasing group size and moving into or close to timber. In contrast to this general pattern, bull-only groups were smaller than average, and slightly increased in size in the presence of wolves. As a consequence, bull-only herds and mixed sex herds converged on a similar size when wolves were present. Individual vigilance levels were not correlated with herd size or distance to timber and were weakly correlated with individuals' position within the herd. Bulls were in worse body condition than cows throughout the winter, and condition deteriorated for both sexes as winter progressed. Vigilance in cows, but not bulls, increased in response to wolf presence, that indicated responses of bulls may have been constrained by condition. For cows, increases in vigilance produced a significant decrease in time spent grazing although bull grazing time was not affected by wolf presence. Some bulls moved into timber when wolves were present. Bulls were overselected by wolves, and cows were underselected. We conclude that bulls were less able to pay the foraging costs associated with the antipredator responses of cows.