

Wolves find happy hunting grounds in Yellowstone National Park

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If Mark Boyce could converse with elk, he might give them a word of advice: avoid open, flat, snowy areas near rivers and roads.

A biological scientist at the University of Alberta, Boyce analyzed 774 wolf-elk kill sites and concluded that spatial patterns of predation between wolves and elk are more strongly influenced by landscape features than by wolf distribution.

"We found that even though wolf and elk populations overlapped in many areas of our study, the kill sites did not correlate with the areas of overlap as much as they were consistent with certain landscape features, such as proximity to roads," Boyce said.

The research results were published recently in the academic journal *Ecology Letters*.

Boyce and his colleagues studied the wolf-elk interactions over a period of 10 consecutive winters in a northern range of the Yellowstone National Park in the U.S.

The area has been of special interest to researchers since 14 wolves from the Canadian Rockies were introduced to the park in 1995. Wolves had been extirpated from Yellowstone in the 1930s, and some people speculated the re-introduced wolves would doom the park's elk population. However, while the number of wolves on Yellowstone's northern range has since grown to 84, the number of elk has not declined

appreciably.

"We've found that the availability of refuge areas for elk, and their ease of accessing them, should buffer the elk population in the park from extreme levels of predation," Boyce said.

Boyce added that wolves are inefficient predators, with low rates of hunting success—usually around 20 per cent—which is due, in part, to the large size and defensive capabilities of elk, their main prey. Prime-age adult elk are largely invulnerable to predation from wolves, which are highly selective and target the young, old or weak.

"Our findings suggest that landscape features may often 'tip the balance' in predator-prey outcomes, thus influencing post-encounter outcomes," Boyce said.

Boyce and colleagues noted that "browse communities"—foraging areas in open, flat landscape near roads or rivers (which can cut off escape routes)—offer the greatest risk of wolf predation for elk. Also, deep snowy areas, which are much harder for the heavy, hoof-legged elk to move through than the lighter, wide-pawed wolves, are also dangerous.

The great challenge for the elk, however, is that the risky foraging areas provide sustenance during the critical winter months, when the elk experience shrinking fat reserves.

"Our study makes clear that elk in winter face a clear trade-off between forage quality and predation risk. How elk perceive and manage the trade-off between food and safety will ultimately determine if they will survive," Boyce said.

Source: University of Alberta

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