

Prairie dogs found to kill competing squirrels

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Photo courtesy of U.S. Fish and Wildlife Service

(Phys.org)—A pair of researchers, one with the University of Maryland, the other the University of Tulsa, has found that white-tailed prairie dogs living on the North American prairie, sometimes kill ground squirrels that live in the same area. In their paper published in *Proceedings of the Royal Society B*, John Hoogland and Charles Brown describe their multi-year study of the prairie dogs, their observations of squirrel killing, and why they believe it occurs.

Prior to this new effort, there had never been an observation of a mammalian herbivore killing another herbivore without eating it—and it was not a one-off situation. The researcher pair recorded multiple instances of squirrel killing over the course of their study covering the years 2003 to 2012 which consisted of sitting in tree-stands watching the activities of the creatures below. They report that they were astounded to

witness a prairie dog killing a squirrel four years into their study and thereafter made it a priority to look out for another such instance.

They did not have to wait long, squirrel killing, it appeared was a natural part of the lives of prairie dogs. Over the course of the remainder of their study, they witnessed 101 instances of prairie dogs intentionally killing [ground squirrels](#), and noted the carcasses of another 62 squirrels they believe were the victims of prairie dog attacks. They also identified 47 individual prairie dogs that killed squirrels—11 male and 36 female, and 19 of the animals that killed squirrels multiple times.

The researchers suggest that the prairie dogs kill the squirrels because they see them as a competitor for the same resources, not as a threat. Prairie dogs and squirrels eat the same foods, and in many cases squirrels take over abandoned prairie dog tunnels. Taking their study further, they found evidence that showed that mother prairie dogs who killed squirrels tended to have more offspring than did those that did not and that their overall 'fitness' levels were much higher than non-killing females.

The researchers also note that it is surprising that the killing of [squirrels](#) by [prairie dogs](#) has gone unnoticed for so long, which suggests that it is a possibility with other mammalian herbivores as well.

More information: John L. Hoogland et al. Prairie dogs increase fitness by killing interspecific competitors, *Proceedings of the Royal Society B: Biological Sciences* (2016). [DOI: 10.1098/rspb.2016.0144](https://doi.org/10.1098/rspb.2016.0144)

Abstract

Interspecific competition commonly selects for divergence in ecology, morphology or physiology, but direct observation of interspecific competition under natural conditions is difficult. Herbivorous white-tailed prairie dogs (*Cynomys leucurus*) employ an unusual strategy to

reduce interspecific competition: they kill, but do not consume, herbivorous Wyoming ground squirrels (*Urocitellus elegans*) encountered in the prairie dog territories. Results from a 6-year study in Colorado, USA, revealed that interspecific killing of ground squirrels by prairie dogs was common, involving 47 different killers; 19 prairie dogs were serial killers in the same or consecutive years, and 30% of female prairie dogs killed at least one ground squirrel over their lifetimes. Females that killed ground squirrels had significantly higher annual and lifetime fitness than non-killers, probably because of decreased interspecific competition for vegetation. Our results document the first case of interspecific killing of competing individuals unrelated to predation (IK) among herbivorous mammals in the wild, and show that IK enhances fitness for animals living under natural conditions.

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