

Study finds wolf predation of cattle affects calf weight in Montana

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A recent study by University of Montana faculty and graduate students found that wolf predation of cattle contributes to lower weight gain in calves on western Montana ranches. This leads to an economic loss at sale several times higher than the direct reimbursement ranchers receive for a cow killed by wolves.

The study found that wolves living on the landscape with cattle have no effect on herd weight, but once a ranch has a confirmed wolf kill, average calf weight decreases relative to if that ranch had not experienced a wolf depredation.

"Ranchers have been saying for years that wolves cause weight loss in cattle, but nobody ever had done any research on the topic," said Derek Kellenberg, a co-author on the study and UM associate professor and chair of the Department of Economics.

Kellenberg worked with UM Associate Professor Mark Hebblewhite from the Wildlife Biology Program and graduate students Joseph Ramler and Carolyn Sime. The Montana Department of Fish, Wildlife and Parks also cooperated on the study, which analyzed data from ranches in western Montana, including 15 years of records on ranch husbandry, satellite-generated climatological data, spatial data on wolf pack locations and confirmed depredations on 18 ranches.

The study quantifies the economic impact of weight loss after a confirmed wolf kill for an average ranch consisting of 264 head of calves. It finds that a decrease of 22 pounds in the average weight of calves across the herd implies a \$6,679 loss at sale for an affected ranch.

"When you compare that to the direct reimbursement of the cow that was killed – about \$900 on average – these indirect costs are about seven-and-a-half times the direct cost of depredation," Kellenberg said.

The study notes that while the economic impact of lower herd weights caused by wolf depredation is not insignificant to ranchers, other ranch-specific husbandry practices and climatological and environmental variables such as annual precipitation, average temperature and snowfall explain a much larger proportion of variance in calf weight over the years than do wolf affects. In fact, these other factors explain the vast majority of the accounted-for variation in annual calf weights.

The study started as a senior thesis by then-undergraduate student Ramler, collecting data from public cattle auction records. When he decided to pursue a master's in economics from UM, the group started collecting and analyzing data from a survey of individual western Montana ranchers.

Kellenberg hopes the study will help inform policymakers and ranchers as they work on issues related to wolf management.

"This study helps quantify some of the indirect costs that have not previously been accounted for," he said.

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More information: The study was published Jan. 10 in the *American Journal of Agricultural Economics* and is titled "Crying Wolf? A Spatial Analysis of Wolf Location and Depredations on Calf Weight."

Provided by [University of Montana](#)

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