

April 21, 2017

Representative Joel Kretz, Deputy Minority Leader
335A Legislative Building
PO Box 40600
Olympia, WA 98504

Senator Mark Schoesler, Majority Leader
307 Legislative Building
PO Box 40409
Olympia, WA 98504

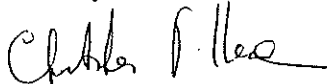
Dear Representative Kretz and Senator Schoesler:

Thank you again for meeting with Vice President Colleen Kerr, Dean Ronald Mittelhammer, and me on March 29, 2017 regarding WSU involvement in discussions of wolf depredation of livestock and its associated impacts. We found the meetings to be very informative and useful. I am writing regarding the comments you provided me on Prof. Robert Wielgus' paper entitled "Effects of Wolf Mortality on Livestock Depredations," published in the Journal Plos One in December 2014.

WSU takes the quality and integrity of its research very seriously. The University thus takes appropriate action when issues are raised regarding research results produced by WSU faculty and staff. Such issues are addressed in an objective and unbiased manner that follows University policy and best practices in research integrity. In this case, I've given the document you provided me to Professor Nairanjana (Jan) Dasgupta, Director of the Center for Interdisciplinary Statistical Education and Research and Professor of Mathematics and Statistics. Professor Dasgupta is examining the article and related information, and will provide me an analysis of the results presented in the paper. Professor Dasgupta will work with Professor Wielgus and others as needed to complete this analysis. I will be in touch with you soon to communicate the results of Professor Dasgupta's work to you.

Thank you again for our meeting on March 29th. Please let me know if you have questions, and I look forward to further discussion with you and your colleagues.

Sincerely,



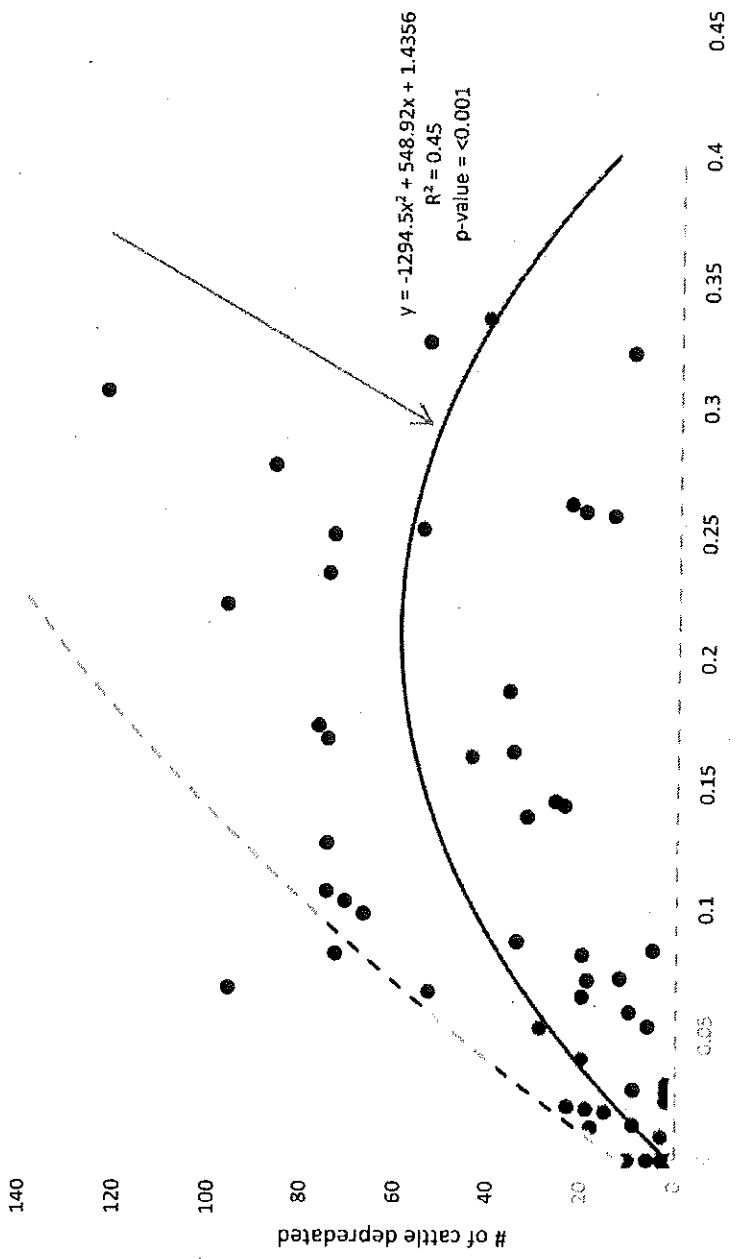
Dr. Christopher J. Keane
Vice President for Research
Professor of Physics

cc:

Senator Jim Honeyford
Representative Dan Kristiansen, Minority Leader
Representative Jacquelin Maycumber
Senator Shelly Short

Colleen Kerr, Vice President for External Affairs and Government Relations, WSU
Dr. Ronald Mittelhammer, Dean, College of Agriculture, Human, and Natural Resource Sciences, WSU
Christopher Mulick, Director of State Relations, WSU

Proportion of wolves killed vs # of cattle depredated



Proportion of wolves harvested

Figure 3. Dr. Wielgus has drawn a line here (the black line in the middle, which I pointed to with a red arrow), look at the dots on this graph. The points aren't exactly close to the line. Is it possible that he drew a regression line near a bunch of random points? I have seen stronger correlations before (this is sarcastic.).

Looking back at Figure 3, do you see the two grey dotted lines. Do you see how far apart they are? One of those lines is zero. Between the upper and lower grey lines is where you would expect the real regression line to be. I am not a mathematician, but shouldn't those two lines be closer together? If you have data to support what you are saying? Within this range, you'll note, is also zero. A flat line- says mathematically that there is NO correlation between dead wolves and depredation of livestock, a conclusion that **is within** the range that Dr. Wielgus suggests we look at. Of course you don't need me to tell you that. It takes one glance at this graph to see that the data points ignore the line.

The fundamental problem with the study is that correlation does not imply causation. Dr. Wielgus argues for his theory, the counter intuitive "source-sink" hypothesis, that hunting wolves causes greater livestock depreciation, perhaps by making the remaining wolves more aggressive. A far more likely possibility in my mind is that if there are more wolves in an area, there will be **both** more wolves getting killed and more livestock depredation. And the opposite, if you don't have any wolves in your county, you are neither hunting wolves nor are wolves killing your livestock.

I asked a mathematician to review this. Some statements made:

- they seem to be answering the questions that require the most arcane math and data tricks, as opposed to the questions I'd ask, and the data doesn't fit anything well.
- The report is B.S., they are playing with statistical anomalies, and I would argue that "in the counties with high hunting and depredations, you have jumped to the conclusion that the depredations are caused by the hunting".