



IDAHO DEPARTMENT OF FISH AND GAME

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February 18, 2009

TO: Senator Gary Schroeder, Chairman Senate Resources and Environment Committee

FROM: Lance Hebdon and Sharon W. Kiefer, IDFG

SUBJECT: Your inquiry about wolf impact on other predators and economic impact of wolves to Idaho hunting revenue.

Per your request we have evaluated the data available to the Department regarding the impact of wolves on other predators such as mountain lions and black bears and evaluated the economic impact of wolves in Idaho.

How have wolves affected other predators such as mountain lions and bears?

- (1) IDFG does not have a specific study to evaluate ecological effects of predator stacking. We do monitor harvest trends for mountain lions and black bears.
- (2) Over the previous 10 years mountain lion harvest has declined concurrent with liberalized seasons, decreasing prey availability, and a period of increased wolf populations.
- (3) Trends in black bear harvest have been stable over the previous 10 years.
- (4) A study conducted by Ruth et al. (2008) evaluated mortality of mountain lions in Yellowstone National Park during the seven years prior to wolf introduction and the seven years after wolf introduction. Wolf use and wolf densities were not significant predictors of mountain lion survival during their study.

What economic impact have wolves had on Idaho hunting revenue?

The Department of Fish and Game has not conducted an economic impact assessment on the effect of wolves on hunting revenue. From the perspective of the Department's budget, sales of big game tags have been relatively constant over the past 10 years. While we know that tag sales have been stable, we do not know if tags would have increased in the absence of wolves (Figure 1). We are documenting an emerging decline of nonresident license and tag sales since the beginning of 2009, but this probably cannot be attributed specifically to wolves.

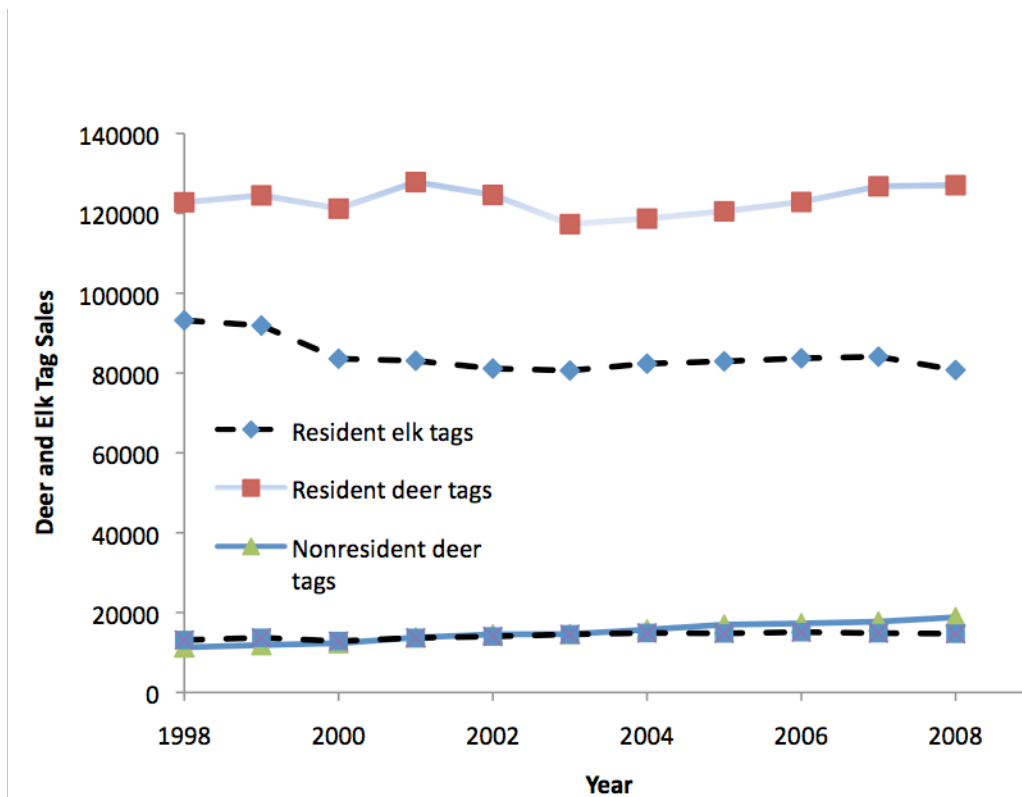


Figure 1. Trends in resident and nonresident elk and deer tag sales from 1993 to 2008.

Economic Impact Analysis of Gray Wolf Reintroduction-Statewide Assessment

The primary analysis regarding the economic effects of wolves to Idaho was the 1994 Final Environmental Impact Statement on The Reintroduction of Gray Wolves to Yellowstone National Park and Central Idaho (USFWS 1994). The EIS about wolf reintroduction estimated the impact of recovered wolf populations on the elk population in central Idaho and the “foregone benefits to hunters” from reduced antlerless elk harvest that would be expected from the recovered wolf population. The EIS used a recovered wolf population of “about 100 wolves.” Using the data in the EIS and an extrapolation of the current minimum estimated wolf population we can estimate the potential economic impact from wolves. The analysis represents a snapshot of the current conditions and assumes a linear response between the metrics of elk killed by wolves and lost hunter days and adjusts the values in the 1994 EIS for 2008 dollar values using the using the US Bureau of Labor and Statistics Consumer Price Index Calculator.

The current wolf population estimate for 2008 in Idaho is 824 wolves (draft minimum population estimate as of February 6, 2009). The 1994 EIS estimated the recovered wolf population (about 100 wolves) would kill 1,650 ungulates/year. Elk were estimated to make up 30% of the wolf kills with deer making up the remaining 70%. Research conducted in Idaho using radio-collared elk and deer have not supported the ratio of 30% elk 70% deer used in the 1994 EIS. Data from radio-collared ungulates in Idaho indicate elk have made up a larger portion of the ungulates killed. This analysis used wolf kill ratio of 70% elk.

For this extrapolated analysis it was estimated that the current population of 824 wolves would kill an estimated of 9,517 elk /year. The 1994 EIS considered mortality from wolf predation to be completely additive, we retain that assumption here. However, we know that predation is never totally additive or compensatory over time, but occurs along a continuum. Therefore, these calculations would be considered an estimate based on these assumptions. Actual impacts would range dramatically depending upon location and time. The 1994 EIS also recognized that “a reduction in big game animals available for harvest directly affects the available hunting opportunities. Reduced hunting opportunities translate into a reduced number of hunters and hunter days spent in the field (USFWS 1994).” The estimated economic value of a harvested elk in Idaho is \$8,000 (including economic multipliers). If the 9,517 elk killed by wolves were available to hunters at a rate of 20% (estimated harvest rate of elk in Idaho), the reduced harvest of 1,903 elk represents an economic loss to Idaho of over \$15 million. The value of an elk established by the Idaho Legislature for the purpose of assessing reimbursable damages (I.C. 36-1404) for illegal loss is \$750/animal. In this respect, value of 9,517 elk killed would be over \$7 million.

Another method to evaluate the economic impact of wolves on Idaho is to expand the value of “foregone benefits to hunters” assessed in the 1994 EIS by the current wolf population and adjust the dollar values for inflation. The annual economic values and expenditures associated with reduced hunting opportunity associated with a recovered wolf population of 100 wolves was estimated in the 1994 EIS as between \$571,591 and \$857,386 in 1992 dollars based on a value of elk hunting at \$39.10/day (value for day of elk hunting from 1986 US Forest Service publication). Adjusted for 2008 dollars (using the US Bureau of Labor and Statistics Consumer Price Index Calculator) the values would range from \$865,432 to \$1,298,148. Assuming a linear relationship of reduced hunting opportunity with the current wolf population, the estimated annual reduction in economic values and expenditures associated with a population of 824 wolves would be between \$7 million and \$11 million. Using the most recent estimate from Cooper et al. (2002), a day of elk hunting in Idaho is worth \$127.40/day for direct expenditures in 2008 dollars. The 1994 EIS estimated that between 14,619 and 21,928 hunter days would be lost due to wolf reintroductions in central Idaho. If the reduction in hunter days was linearly related to wolf populations then the loss of hunter days associated with 824 wolves would be between 120,460 and 180,686 resulting in an estimated value of the foregone benefits to hunters of between \$15 million and \$24 million.

References

- Cooper, A.B. , F. Stewart, J.W. Unsworth, L. Kuck, T.J. McArthur, and J.S. Rachael. 2002. Incorporating economic impacts into wildlife management decisions. *Wildlife Society Bulletin* 30(2):565-574
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- U.S. Fish and Wildlife Service (USFWS). 1994. The reintroduction of gray wolves to Yellowstone National Park and Central Idaho, Final Environmental Impact Statement. (http://www.fws.gov/mountain-prairie/species/mammals/wolf/EIS_1994.pdf)

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