Institution: UNIV OF WISCONSIN MADISON Log in • My account • Contact Us
Become a member Renew my subscription • Sign up for newsletters

POLICY FORUM | CONSERVATION POLICY

Questionable policy for large carnivore hunting

Scott Creel[1,2,*], Matthew Becker[2], David Christianson[3], Egil Dröge[1], Neil Hammerschlag[4], Matt W. Hayward[5], Ullas Karanth[6], Andrew Loveridge[7], David W. Macdonald[7], Wigganson Matandiko[1], Jassiel M'soka[1,8], Dennis Murray[9], Elias Rosenblatt[1], Paul Schuette[10]

+ Author Affiliations

*Corresponding author. E-mail: screel@montana.edu

Science 18 Dec 2015:
Vol. 350, Issue 6267, pp. 1473-1475
DOI: 10.1126/science.aac4768

Article | Figures & Data | Info & Metrics | eLetters | PDF

eLetters is an online forum for ongoing peer review. Submission of eLetters are open to all. eLetters are not edited, proofread, or indexed. Please read our Terms of Service before submitting your own eLetter.

Submit a Response to This Article

RE: Questionable policy for large carnivore hunting

Scott Creel,
Montana State University

Other Contributors:
Matt Becker,
Zambia Carnivore Programme
David Christianson, University of Arizona
Egil Droge, Montana State University
Neil Hammerschlag, University of Miami
Matthew Hayward, Bangor University

David Macdonald, Oxford University, WildCRU
Wigganson Matandiko, Montana State University
Jassiel M'soka, Zambia Department of National Parks and Wildlife
Dennis Murray, Trent University
Elias Rosenblatt, University of Vermont
Paul Schuette, University of Alaska, Anchorage

(9 June 2016)

Attached as pdf file is a detailed rebuttal of comments by Mitchell et al (including a brief comment also on comments by Treves et al.)
Competing Interests: None declared.
Attachments
Creel_et_al.pdf

Management of wolves in the US Northern Rocky Mountains is Based on Sound Science and Policy

Michael S. Mitchell, Unit Leader,
US Geological Survey, Montana Cooperative Wildlife Research Unit

Other Contributors:
Justin A. Gude, Chief, Research and Technical Services Section, Montana Fish, Wildlife and Parks
Kevin Podruzny, Statistician, Montana Fish, Wildlife and Parks
Edward E. Bangs, Western Gray Wolf Recovery Coordinator (retired), US Fish and Wildlife Service
Jim Hayden, Staff Biologist, Idaho Department of Fish and Game
Robert M. Inman, Carnivore-Furbearer Coordinator, Montana Fish, Wildlife and Parks
Michael D. Jimenez, Wyoming Gray Wolf Project Leader, US Fish and Wildlife Service

Daniel H. Pletscher, Professor, Wildlife Biology Program (retired), University of Montana
Jon Rachael, State Wildlife Game Manager, Idaho Department of Fish and Game
Robert Ream, Chair (former), Montana Fish, Wildlife and Parks Commission
John Vore, Chief, Game Management Bureau, Montana Fish, Wildlife and Parks

(7 June 2016)

Creel et al. (2015; 1) recently asserted that hunting policies for wolves in the western US do not align with ecological theory or data and that 4 aspects of policy should be amended. Their arguments are based on erroneous use of monitoring data and a lack of familiarity with policies for managing wolves in the US northern Rocky Mountains (NRM).

The conclusions drawn by Creel et al. (2015) on the effects of hunting on wolf demography in the NRM are based on monitoring data from US Fish and Wildlife Service (USFWS) reports (2) never intended for analyses such as theirs; the authors nonetheless used the data naively without acknowledging their limitations, and disregarded more detailed presentations of the data (3, 4). Contrary to their own admonition about the questionable reliability of population counts that change in parallel with sampling effort, Creel et al. (2015) used monitoring data (2) for minimum counts and pack sizes (e.g., Northwestern Montana in 2004 and 2004, Idaho in 2010) that were biased low because of strongly reduced sampling effort (3, 4). Gude et al. (2012; 5) showed that the inferential effect of using these biased data is substantial, explaining the difference between the ~25% threshold for sustainable mortality reported by Creel et al. (2015; see also 6) and the 48% threshold estimated without them. A similar problem also undermines the conclusion that the Idaho population declined 22.4% from 2008 to 2013 because the greatest decline in I...

Attachments

MToccupancymap2012.jpg

MTabundanceestimates.jpg

Missing wolves, misguided policy

Adrian Treves, Scientist,
Nelson Institute for Environmental Studies, 30A Science Hall, 550 North Park Street, University of Wisconsin, Madison, WI 53706

Other Contributors:
Miha Krofel, Scientist,
Biotechnical Faculty, Dept. of Forestry, University of Ljubljana, Večna pot 83, SI-1001 Ljubljana, Slovenia, miha
Jose Vicente Lopez-Bao, Scientist, Grimsö Wildlife Research Station, Swedish University of Agricultural Sciences Research Unit of Biodiversity, Oviedo University

(5 June 2016)

Creel et al. (18 December, p. 1473) analyzed state and federal government reports on wolf mortality from data collected in the Northern Rocky Mountains (NRM). We found critical omissions in those reports (https://www.fws.gov/mountain-prairie/es/grayWolf.php), which invalidate government mortality and survival analyses and raise doubts about the legitimacy of government determinations.

Chief among the omissions, the reports did not include the total time that radio-collared wolves were transmitting or sufficient information on missing wolves, both of which are essential for mortality analyses. Missing wolves averaged 21.1% of the 711 marked wolves across NRM 1982–2004 (1). Battery failure and emigration were very unlikely explanations (1); see the Appendix below. The most parsimonious explanation is that most missing wolves died and their radios stopped transmitting. If we assume missing wolves died of

2004 (Appendix). Poaching is the most likely cause of death because humans cause the majority of wolf deaths that go unreported to governments (2-5) and humans have also strong incentives to hide poaching events (e.g., destroy radio-transmitters), whereas other causes of death do so vanishingly rarely. Therefore, the anthropogenic kill rate presented in Creel et al. and reported by state and federal governments were minimum estimates. Moreover, those minimum estimates were systematically biased towards under-estimating actual human-caused mortality. Furthermore the credible bounds on actual human-caused mortality are asymmetrical (higher values are far more likely than lower value when one estimates minima) so standard regression techniques maybe inappropriate. As a consequence, the damage done of hunting policies to NRM wolf population health may be higher than Creel et al. depicted. Determining whether wolf-hunting policies jeopardize NRM wolves will require more transparency in wolf data published by state and federal governments.

Even without Endangered Species Act mandates for use of best available science, both state and federal governments have trustee obligations (6). The fundamental obligation of the U.S. public trust doctrine is that a good trustee is prudent about allocation of assets to current generations (e.g., hunting quotas) and account for them transparently in a sophisticated manner (7). In our context that means the prudent trustee will take into account all losses of the trust assets, which in this case includes all of the NRM wolves that died of any cause. Therefore, poaching should be estimated more carefully using more sophisticated methods (2, 4, 5) and the results integrated more wisely into wolf policies. For example, many scientists are considering how to account properly for carnivore mortality and ‘count’ poaching against legal killing, as an incentive for hunters and trappers to self-police. A prudent trustee should also preserve assets for future generations (8). The legitimate response of a trustee would be to revert to transparency and prudence so as to restore the public trust.

expected battery life and within 27 days of median time to known deaths. Also, they wrote, “Overall, during our study wolves died from legal control (30.0%...), illegal mortality (24.0%), natural causes (11.8%), other causes (e.g., vehicle accidents, strife; 21.4%), and unknown causes (11.8%) ... [n=363 deaths].“ (p.625). If one accepts that most missing wolves died near the time of disappearance, then a conservative assumption is to allocate the 21.1% of missing wolves and the 11.8% of unknown causes of death to causes of death that were not perfectly reported, i.e., excluding legal lethal control (2). When we assign those unknown deaths proportionally to the remaining causes, illegal take represents 31.3% of deaths, which makes it the major cause of death for NRM wolves in that period. Poaching is unlikely to have declined 2005–2015 after lethal control increased and hunting was added (9). Note this logic applies even if some radio-collars failed or wolves migrated because those wolves eventually died also.

Furthermore, Smith et al. (2010) noted that missing wolves were last detected in areas where the chance of arrest for poaching was low (few people), conflict risk was high (livestock areas), and visibility was good (more open habitat). We find no evidence that conditions changed 2004–2009 and thereafter the implementation of regulated hunting and trapping complicates the calculations but the logic persists.

References

1. D. W. Smith et al., Survival of colonizing wolves in the Northern Rocky Mountains of the United States, 1982 – 2004. J. Wildl. Manage. 74, 620 – 634 (2010).

2. A. Treves, J. A. Langenberg, J. V. López-Bao, M. F. Rabenhorst, Gray wolf mortality patterns in Wisconsin from 1979 to 2012. J. Mammal., (in press).

3. L. G. Adams, R. O. Stephenson, B. W. Dale, R. T. Ahgook, D. J. Demma, Population dynamics and harvest characteristics of wolves in the Central Brooks Range, Alaska Wildlife Monographs 170, 1-25 (2008).

4. O. Liberg et al., Shoot, shovel and shut up: cryptic poaching slows restoration of a large carnivore in Europe. Proceedings of the Royal Society of

Interior Mountains of British Columbia, Alberta, Montana, Washington, and Idaho. J. Wildl. Manage. 63, 911-920 (1999).
6. Department of Commerce, Department of the Interior, Revised Interagency Cooperative Policy Regarding the Role of State Agencies in Endangered Species Act Activities. Federal Register 81, 8663-8665 (2016); published online Epub, Feb. 5, 2016
7. J. L. Sax, The Public Trust Doctrine in natural resource law: Effective judicial intervention. Michigan Law Review 68, 471-566 (1970).
8. A. Treves et al., Predators and the public trust. Biological Reviews DOI: 10.1111/brv.12227, (2015).
9. R. B. Wielgus, K. Peebles, Effects of wolf mortality on livestock depredations. PLoS One 9, e113505 (2014).

Authors: Adrian Treves 1*, Miha Krofel 2, Jose V. Lopez-Bao 3
Affiliations:
1Nelson Institute for Environmental Studies, 30A Science Hall, 550 North Park Street, University of Wisconsin, Madison, WI 53706, USA, atreves@wisc.edu.
2Biotechnical Faculty, Dept. of Forestry, University of Ljubljana, Večna pot 83, SI-1001 Ljubljana, Slovenia, miha.krofel@gmail.com.
3Grimsö Wildlife Research Station, Swedish University of Agricultural Sciences,SE - 73091 Riddarhyttan and Research Unit of Biodiversity, Oviedo University, 33600 Mieres, Spain, jv.lopezbao@gmail.com.
*Corresponding author: atreves@wisc.edu.

Show Less
Competing Interests: None declared.

View Full Text

Science
Vol 350, Issue 6267
18 December 2015

Classified (PDF)
Masthead (PDF)

ARTICLE TOOLS

Email
Download Powerpoint
Print
Save to my folders
Alerts
Request Permissions
Citation tools
Share

SIMILAR ARTICLES IN:

- PubMed
- Google Scholar

CITING ARTICLES IN:

- Web of Science (6)

RELATED JOBS FROM SCIENCECAREERS

- Science and Policy

Science

10 February 2017

Vol 355, Issue 6325

FEATURE

A matter of fact

SCIENCE AND POLITICS

Science advice in the Trump White House

SCIENCE EDUCATION

Game changers

SCI COMMUN

News at a glance

MICROBIOME

Finding enzymes in the gut metagenome

WORKING LIFE

Coping with class in science

Table of Contents

Subscribe Today

Receive a year subscription to *Science* plus access to exclusive AAAS member resources, opportunities, and benefits.

First Name

Last Name

Email Address

Subscribe Today

send you a newsletter digest with the latest published articles. See full list

- [x] *Science* Table of Contents
- [x] *Science* Daily News
- [x] *Science* News This Week
- [x] *Science* Editor's Choice
- [x] First Release Notification
- [x] *Science Careers* Job Seeker

Email address

Sign up today

About us

Journals
Leadership
Team members
Work at AAAS

Advertise

Advertising kits
Custom publishing

For subscribers

Site license info
For members

International

Chinese
Japanese

Help

Access & subscriptions
Reprints & permissions
Contact us
Accessibility

Stay Connected

© 2017 American Association for the Advancement of Science. All rights Reserved. AAAS is a partner of HINARI, AGORA OARE, PatientInform, CHORUS, CLOCKSS, CrossRef and COUNTER. *Science* ISSN 1095-9203.