



Via email — 22 May 2024

TO: Washington Fish & Wildlife Commission and Department of Fish & Wildlife (WDFW)

FROM: Adrian Treves, PhD, Carnivore Coexistence Lab, University of Wisconsin-Madison

SUBJECT: Scientific comment on FW Commission Policy on the Use of Best Available Science

I have followed the checkered history of this policy for over a year now and have had several discussions with commissioners and Washington state experts. One of my areas of expertise is research integrity and open science. Relatedly, I have published over a dozen peer-reviewed articles on the science-policy interface and scientific integrity.

Thanks for your kind attention.

My comments focus on the following:

- (A) I explain why the science informing the policy exposes a desire by WDFW to control the commissioners' access to information and reveals an unscientific bias on the part of WDFW.
- (B) I summarize our published critiques of how WDFW staff handled scientific evidence and bias for 2 past wildlife questions relating to cougars and wolves.
- (C) I raise questions about possible legal jeopardy for the commission and agency if the proposed policy were adopted.

(A) I explain why the science informing the policy exposes a desire by WDFW to control the commissioners' access to information and reveals an unscientific bias on the part of WDFW.

1. **WDFW seems to want to control commissioners access to information.** The policy places too much discretion in the hands of the agency to omit studies it deems inappropriate, unimportant, or inconvenient, rather than presenting ALL the AVAILABLE science to the Commission to make its own judgment. That patronizes the Commission. The policy seems to attempt to curtail the Commission's access to third-party science and the commission's ability to compare agency science to third-party science. In particular, one sentence sets a double standard, whereby third-party science must be "vetted and reviewed by a transparent process" but the agency's science need not be so vetted.
2. **Similarly, the policy aspires to a questionable goal.** "The Commission and the Department will seek to avoid bias in their interpretation of scientific studies by considering *all relevant sources of scientific information used by the agency* in developing recommendations". Boldface italics added here because that phrase places all authority and discretion in the hands of the agency for deciding what to put in front of the commission. The quoted phrase also highlights that the agency does not understand scientific bias or wishes to mislead the commission about the nature of bias as I explain next.
3. **Two scientific understandings of bias.** The scientific community currently views bias in research in two ways that are complementary. The first is bias associated with competing interests including worldviews. The second meaning of bias applies to measurement. I address both below. Neither meaning of bias is clearly addressed by the policy.
4. **Firstly, bias as can arise from competing interests that lead to a slanted view of the entire scientific endeavor.** The commission and agency do not have completely overlapping worldviews, which will influence what sources of uncertainty they consider worrisome and the results they find persuasive. Put simply, one can only work to minimize bias by making it transparent to those considering all of the evidence (the commission in this case).

5. **Remedies for inescapable human bias.** (a) biases arise from human viewpoints, therefore all people have a bias; (b) scientists trained specifically in research integrity (not all scientists do) who practice comprehensive thoroughgoing transparency may be able to partially overcome their worldview biases; (c) energetic, explicit methods for transparency are needed to expose bias and reduce its distorting effects, (d) the best approach to overcoming bias for decision-making and action is a diverse group of qualified independent scientists debating and challenging each others' methods and data before describing consensus and minority opinions; and (e) decisions about bias should never be based on who did the science, from what institution, or how they communicated their science but only on their methods in their broadest sense. The above five remedies (a-e) are hallmarks of open science but appear nowhere in the proposed policy.
6. **WDFW's record is imperfect.** For an example of WDFW stumbling on this issue, see an episode in which Deputy director A. Windrope and Commissioner L. Smith expose misunderstandings about bias during a WDFW commission meeting in 2023, quoted here (http://faculty.nelson.wisc.edu/treves/pubs/Treves%20editorial_pre-print.pdf). Now consider competing interests that distract an agency or a commission from unbiased science. Any agency or commissioner has competing interests associated with clients, constituents, career advancement, and political pressures acting on them. For an agency's scientific staff who might otherwise make decisions independently, these pressures can distort the science they find persuasive and promote. Allowing a few staff of a hierarchical organization such as WDFW to exercise discretion to decide which studies are important or credible will necessarily introduce bias and subjectivity because of the above inescapable competing interests. The commission would be ill-served by such filtering.
7. **Secondly, bias in measurement arises from systematic, non-random errors resulting from unreliable methods.** Unreliable methods may surface as subtle shortcomings in accuracy, precision, reproducibility or sensitivity to changing conditions. Reliability of measurements or findings MUST NEVER be judged by one's preference for the researchers, host institutions, or one's preference for the conclusions. The reliability of science can only be judged by qualified experts engaged in independent debate who are scrutinizing methods and attempting transparent replication and falsification of findings. Moreover, the commission should seek replication to validate single findings by searching the third-party literature — especially those findings cherished by WDFW or the commission itself. Since 1890, Geologist T.C. Chamberlin warned us of clinging to cherished hypotheses.
8. **The proposed policy lacks a statement about best available science being built on the best available methods.** Guidance to the agency and commission on how to judge the relative robustness or strength of inference in studies that come to different conclusions would be important in a science policy. These are lacking in the draft policy. Including guidance to the commissioners about robust research designs is important in such a policy because the Commission and agency should quickly grasp which studies have earned more credibility because they are designed more robustly.
9. **The policy should state which designs are more robust and therefore more credible than others.** Robustness should be judged by the criteria used by the international scientific community for judging strength of inference and reproducibility, e.g., randomized, controlled experiments are superior to correlations which are superior to simple, systematic observations which are superior to anecdotes. There are many additional finer gradations of robustness and strength of inference, but the preceding ranked order of study design illustrates the point that not all studies are equal. That conclusion is another hallmark of open science.
10. **The policy does not address uncertainty in science clearly.** Current understanding is that our methods of observation will never reduce uncertainty to zero. We must clearly consider uncertainty when deliberating on our actions. Scientific communication that fails to adequately describe uncertainty is by definition inaccurate or misleading. Communicating uncertainty is particularly important for the commission to hear because decisions are necessarily weighed down by value judgments about the acceptable level of uncertainty.

Value judgments about uncertainty include such considerations as historical tradition, personal preferences, precaution, and feasibility. As a remedy to agency attempts to impose their personal or agency values, the draft policy should require all assertions in WDFW communications to be accompanied by clear statements and estimates of uncertainty. That is yet another hallmark of open science.

11. **Not all peer-reviewed journals are equal.** The proposed policy should take into account the transparency of journals and the quality of the journals when considering evidence before making decisions. The policy completely ignores the importance of anonymous peer review by accredited scientific journals. Therefore, the policy also ignores the fact that some journals are stronger than others, and that scrutiny of journals is an evolving process that has already established some journals as more credible than others. The policy should acknowledge that the agency can follow and adapt to progress in science, by discarding outdated or low-quality studies and preferring higher-quality studies to lower-quality ones. Progress in science is a goal of the open science movement.
12. **Closing the loop in steps 1-11:** All public values must be the province of the Commission as the appointed representatives of the administration, which is the democratically elected representatives of the public. The many public values at play are not to be used by WDFW as a prerogative to filter scientific information before the commission hears the evidence (steps 1-6 above). Seen in this way, the WDFW should present all evidence with interpretation of what is the best based on scientific criteria only (steps 7-11 above). If they fail in this as WDFW has failed in the past (section B below), then the commission must look for all the evidence. Once aware of all of the evidence and appreciating which is the best and setting aside the rest, then and only then can the commission weigh values of the public before making its decision, not the other way around.
13. **No wildlife agency anywhere in the world is expert in open science.** My concerns above about WDFW controlling commission access to information and privileging its own preferred studies compounds with my concerns above about WDFW misunderstanding bias in science. Research integrity is a field in and of itself as seen in the growing, thriving topics of bioethics and research integrity. The Commission and WDFW will have to hire in that field if they wish to some day claim expertise in research integrity. Several of my published articles make clear the errors by WDFW in handling of cougar and wolf science in the past - see section B below.
14. **Start over with a policy led by scientists on the commission and informed by hallmarks of open science.** Instead of adopting the currently proposed policy, I recommend the Commission follow pre-existing guidance documents from the broader community of experts in scientific transparency and research integrity, e.g., the National Academies of Sciences, Engineering, and Medicine in 2017 on Fostering Research Integrity (<https://uwmadison.box.com/s/3amp7s84fnhdzfcygaw1fusx8t1nmyo>) and the 2021 scientific integrity standards imposed on federal scientists by the Biden Administration (https://www.whitehouse.gov/wp-content/uploads/2022/01/01-22-Protecting_the_Integrity_of_Government_Science.pdf). Then a primer on reliable science and false discovery can be found in work by dozens of statisticians published by Benjamin et al. (2018) <https://www.nature.com/articles/s41562-017-0189-z> and Christie et al. (2020) <https://doi.org/10.1038/s41467-020-20142-y> | www.nature.com/naturecommunications. While I understand the Washington Academy of Sciences may have useful expertise for the commission (and the proposed policy waves at that), it may not be feasible to commission studies of specific questions in every case. Therefore, the policy should provide guidance on where commissioners can look to reduce uncertainty and find second opinions, a wise strategy in any situation.

(B) I summarize our published critiques of how WDFW staff handled scientific evidence and bias for 2 past wildlife questions relating to cougars and wolves.

We scrutinized three publications involving WDFW authors: Petracca et al. (2023b and 2024) on wolves and Kertson et al. (2022) on human-cougar interactions. Make no mistake, these publications bear a strong imprint of WDFW bias and meddling in the scientific process, as our critiques meticulously document. In these WDFW-led or co-authored documents, we found deep-seated misunderstandings of bias and how to fairly evaluate scientific literature when considering policy decisions.

Critique of Kertson et al. (2022) on human-cougar interactions:

Treves A, Elbroch L, Koontz F, Papouchis CM. How should scientific review and critique support policy? PLoS One. 2022;Comment on Laundré & Papouchis. <https://journals.plos.org/plosone/article/comment?id=10.1371/annotation/5bed4c0f-9676-4b24-a598-ea3bb5bbfd80>

Critique of Petracca et al. (2023b and 2024) On wolves by Santiago-Ávila, Treves, vonHoldt (2024) at http://faculty.nelson.wisc.edu/treves/archive_BAS/concerns%20about%20Petracca%20et%20al.%20for%20WDFW_final.pdf and Treves A. Pre-publication review of "forecasting dynamics of a recolonizing wolf population under different management strategies" by Petracca et al. . Biorxiv. 2023; <https://www.biorxiv.org/content/10.1101/2023.03.23.534018v1#comments>.

Finally, I have published four one-page guest editorials on scientific objectivity, best available science, the role of academia in public science, and competing interests from 2019-2024 here <https://faculty.nelson.wisc.edu/treves/> including one in particular that addressed WDFW explicitly on the topic of competing interests (http://faculty.nelson.wisc.edu/treves/pubs/Treves%20editorial_pre-print.pdf). It quotes the WDFW and Commission debating scientific bias and puts that debate in context of other agencies and scientific communities.

(C) I raise questions about possible legal jeopardy for the commission and WDFW if the proposed policy were adopted.

Does the proposed policy deviate from other Washington state rules or statutes on best available science or rules on what is evidence? Might the proposed policy be arbitrary and capricious? I ask these questions in light of existing rules advocated by the agency for cities and counties (<https://apps.leg.wa.gov/wac/default.aspx?cite=365-195&full=true#365-195-925>). It would seem hypocritical if tWDFW held cities and counties to a higher standard of science than it holds itself, so I quote from rule 365-195-920:

“Criteria for addressing inadequate scientific information. (1) Where there is an absence of valid scientific information or incomplete scientific information ... counties and cities should use the following approach: (a) A **"precautionary or a no risk approach," in which development and land use activities are strictly limited until the uncertainty is sufficiently resolved**; and ... Management, policy, and regulatory actions are **treated as experiments that are purposefully monitored and evaluated to determine whether they are effective and, if not, how they should be improved to increase their effectiveness**. An adaptive management program is **a formal and deliberate scientific approach to taking action and obtaining information in the face of uncertainty**. ... [including]... (ii) Change course based on the results and interpretation of new information that resolves uncertainties...” (boldface added)

The phrases in bold about precaution and experiments point the way to a policy for WDFW itself. The policy would preclude risky actions in the face of scientific uncertainty, preclude a biased sorting of evidence prior to the commission seeing all evidence, and treats management actions as experiments, i.e., controlled, preferably random-assignment and subject to all of the protections against bias that good experiments include. My concerns are congruent with the precautionary note in WDFW's own rules for counties and cities above. A basic rule of the

precautionary approach is to take the action which will do the least harm if your starting information is wrong.

Also consider how the state might fare in federal court? Might federal standards set a basement or minimum below which the WDFW and its commission cannot fall? I call attention to the U.S. Supreme Court decision Daubert 1993 on the admissibility of evidence in court; also please consider the ongoing challenges to the 1984 Chevron doctrine which typically defers to agency science when statutes are ambiguous. The Chevron doctrine has been challenged in 2024 and many legal scholars predict the Supreme Court will strike down Chevron deference, which might pit agency science against third-party science. I would counsel that any 'best available science' policy considered by the Washington commissioners be robust to legal challenges, which suggests careful handling of the discretionary parts of the policy, so they are neither judged to be arbitrary nor imposing viewpoint discrimination (state-imposed silencing of certain voices in preference for other voices).

Thanks for allowing me to submit a comment and for your kind attention. Please do not hesitate to contact me for further discussion,

A handwritten signature in black ink, appearing to read 'Adrian Treves', with a stylized flourish at the end.

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