

I am writing in my capacity as a scientist and professor working for the University of Wisconsin-Madison and advising dozens of civil-society groups and foreign governments on endangered species and wildlife science. I received my PhD from Harvard University in 1997, double bachelor's from Rice University in 1990, post-doc at UW-Madison from 1997-2000, and research fellow for three non-profit conservation organizations. From 2007-present, independently and with U.S. government co-authors, I have investigated ecology, conservation, and management of wildlife in the USA and abroad. I have published >133 scientific papers on these topics. I draw here from my research on scientific integrity [1-15].

My comments relate to the completeness of the science and the scientific integrity used by several federal agencies, but focused on the U.S. Fish & Wildlife Service (USFWS, Department of Interior) decisions under the Endangered Species Act and about National Wildlife Refuges.

In 2019, I served as an official peer reviewer for the USFWS proposed rule removing Endangered Species Act (ESA) protections from gray wolves *Canis lupus* nationwide. All five peer reviewers identified shortcomings in the biological report produced by the USFWS https://www.fws.gov/endangered/esa-library/pdf/Final%20Gray%20Wolf%20Peer%20Review%20Summary%20Report_053119.pdf. Those shortcomings ranged from internally contradictory conclusions, dozens of missed scientific articles including in top journals such as *Science*, *Scientific Reports*, and *Nature*, and flawed analyses based on non-peer-reviewed data. Yet, the final rule did not substantively improve and the biological report remains largely uncorrected if at all. When I learned the USFWS and White House were proceeding with a scientifically flawed biological report in Fall 2020, I met with the Office of Management and Budget and seven officials from DOI in September 2020 to explain some of the basis for judging the final rule did not follow the best available sciences mandated by the ESA. As late as December 14, 2020, I found the assistant director of USFWS citing obsolete and inaccurate science that I had been at pains to explain to his staff since 2014 and specifically in the two communications I referenced above. Note INT? his case, the USFWS was siding with some state interests against other state interests and using bad science to do so. In December 2020, Gary Frazer Assistant Director of USFWS sent a letter to the California Fish & Game Commission to try to reassure them that California's fledgling wolf population would not be harmed by federal delisting of gray wolves. Dr. Treves responded, correcting poor science and inaccuracies in the USFWS letter. For the California FGC letter that started the discussion [click here](#), then see the [USFWS response to CA FGC](#) and [Treves reply](#).

In my opinion, the above examples reflects the USFWS choosing a predetermined outcome and trying to force the science to fit the prejudged issue. When the science flatly contradicts the USFWS, leadership ignored and cherry-picked results they liked better, even when the cherry-picked results were inaccurate, obsolete, or fabricated. A review of federal court cases on Grizzly bears, wolverines, and wolves will show that I am not alone in this opinion.

However, even more pernicious than the above specific failures to follow best science, two federal agencies with whom I have interacted have tried to damage my research team's efforts. In 2012, the USFWS regional office in my region withdrew a grant which had been offered to my lab in an email shortly before the contracts officer signed the paperwork. The basis for that withdrawal was believing a lie by a state wildlife agency staffer and a lie by a colleague with a competing financial interest to lie about me. Yet the USFWS regional office believed them. Why? Please see the public comment by David Parsons, M.S. submitted to your team for an explanation of the unhealthy and illogical affiliations between USFWS and state wildlife agencies. It seems relevant to point out that I have been sending in public comments to the USFWS since 2014, often addressed directly to leadership in their regions or centrally in D.C. (<http://faculty.nelson.wisc.edu/treves/CCC.php>). Never once in the ensuing 7 years has

the USFWS reached out for a conversation or meeting, until colleagues and I brought in the Union of Concerned Scientists in 2014. They worked with us then to improve peer review practices. Thereafter, silence reigned again – despite multiple invitations to dialogue and sharing of information. Of course no one likes to be criticized but the best available science demands that we separate our egos and preferences from results, expect to be found to be wrong, and open one's mind to results that are not favorable to our own interests. The best way to do that is to listen closely to critics and learn from the criticisms.

I do have a clear example of USFWS learning from its past errors. From 2014-2015, I led 968 colleagues to send a petition to the USFWS to fortify its use of best available science by strengthening the process of seeking independent peer review. Following the petition launch, the FWS issued a new and improved peer review policy for the agency. The new policy is a step forward in safeguarding the science that informs endangered species listing; it provides a clear and consistent, agency-wide framework that improves the separation between scientific status assessments and policy decisions, provides more clarity around agency procedures when decisions are controversial, and increases transparency ([Goldman et al. 2016](#)). While the provisions could be stronger in a few areas, the new policy takes strong steps toward more robust and transparent peer-review at the agency. Sadly, the Trump administration did not live up to that new policy. After I participated in a scientific peer review for nationwide delisting of the gray wolf in 2019, I found the process had improved by (a) preventing the USFWS from cherry-picking its external scientists to get the results it wanted politically and (b) creating a transparent document without editing or outside modification of the peer reviewers' writing in a format easily obtained by the public. However, the USFWS still ignored the science despite all 5 external peer reviewers finding shortcomings in the biological summary and the conclusions drawn from it. Four out of five found major shortcomings and few if any of the suggestions led to improving the proposed delisting. Therefore, in my opinion, the decision to delist in 2020 was politically motivated and prejudged, while the science was ignored. That pitfall is not unique to the Trump administration given the Obama administration tried to delist gray wolves in 2013 and fell afoul in a botched peer review process (<https://www.twincities.com/2013/08/13/feds-delay-review-of-plan-to-drop-wolf-protections-2/>) and then fell faced unanimous condemnation of the science of gray wolf genetics by the second peer review process in 2014 [16]. So I hypothesize the USFWS scientists face undue political pressure.

The second federal agency that I feel has breached scientific integrity as a result, is a subdivision of U.S. Department of Agriculture Animal & Plant Health Inspection Services called Wildlife Services (USDA-W). The USDA-W has a well-documented history of ignoring the best available science and instead promoting its own deeply flawed research [17, 18]. Observe how many times that agency has been sued by civil society. Then look at the briefs to see how in the course of those proceedings, the federal agency treats the work of independent scientists who dare to question their findings or publish contrary results. I was involved in one such demoralizing encounter with that agency in "Western Watersheds Project et al. v USDA-W" 2018, U.S. District Court for the District of Idaho. Such intimidation must stop and that rogue agency must be held to higher standards of scientific integrity.

The problem of federal agencies avoiding use of better science to push through minority interest group uses of our federal lands is epitomized by the recent proposed rule on National Wildlife Refuges (NWR). Please see our 6 July 2021: Petition to USFWS to retract proposed rule 50 CFR Parts 32 and 71 2021–2022 "Station-Specific Hunting and Sport Fishing Regulations" across the National Wildlife Refuge system. [Full text here](#). Here the USFWS treats all NWRs as identical, ignores the absent or outdated environmental assessments across the system, and ignores the scientific evidence showing that public hunting, trapping, hounding, and fishing can threaten species listed under the ESA with accidental take

(by-catch, non-target off-take, etc.) and illegal killing. Please see work on poaching since 2011 by colleagues and I published in peer-reviewed scientific journals ranked in the top ten worldwide and freely available here: <http://faculty.nelson.wisc.edu/treves/publications.php>. (Note we pay for open access fees in virtually all of our work to eliminate any possible obstacle for government agency staff.) Finally, in the context of hunt management and scientific integrity, I'd like your team to be aware of a recent review published in Scientific Reports that analyzed 667 hunt management plans across North America and found the vast majority lacked the hallmarks of science and so did not deserve the adjective 'science-based' alongside their plans. Therefore, federal land managers from USFWS to BLM to USDA should not rely on state management of wildlife to be science-based [10, 11]. Even the one peer-reviewed comment on the latter paper could only point to a federal waterfowl management system as science-based [19], which is a credit to USFWS in that case, but scant justification for opening NWRs to more hounding, trapping, baiting and mammal shooting ostensibly regulated by states and tribes.

Synthesis

The examples above evoke three core principles of scientific integrity. First, transparency, which is probably the single most important principle because it permits the others to occur in an authentic manner; second, independent review by scientific peers; third, reproducibility of results.

Transparency demands that a biological review or regulatory action that is legally mandated to consider all the scientific data should not omit a single peer-reviewed scientific article on the species in question. In 2019, I pointed out at least a dozen articles the USFWS had ignored. When the USFWS is non-transparent in this way, they mislead the public and disadvantage scientists who are not their favorites.

Second, the USFWS in 2019 and 2020 appears to have paid lip service or gone through the motions of an independent peer review in which I participated. Without modifying its preconceived notions of the science, nor changing its biological report in the critically important ways identified by the peer reviewers, the USFWS made a parody of independent review, which is supposed to improve science by gaining a plurality of scientific views and verifying the quality of data.

Third, the principle of reproducibility ensures that a finding can be replicated by a peer scientific team working independently by the same methods. Federal land management agencies and wildlife agencies make liberal use — even depended upon — non-peer-reviewed data (which are often not made public and therefore are probably irreproducible). Because the federal agencies rely on data collected by lower jurisdictions [20] and because lower jurisdictions are held to lower standards of science typically or ignore the higher standards they do face, federal wildlife and land management agencies may be trapped in irreproducible, non-transparent data that has not been subjected to independent peer review.

In short, all the data used by the federal science agencies should have been subjected at a minimum to transparent, complete description of methods, assumptions, or validated measurements. The elements of authentic independent review include a lack of competing interests (financial or non-financial) among reviewers [21], and complete access to all data, methods, and assumptions used for data collection or analysis. At present, serious scientists from outside the agencies cannot access much of the data used by USFWS because government bodies have claimed exclusive access to those data. My students and I have placed 7 requests for data relating to wolves and grizzly bears and been denied access by federal agencies. In the few cases we went so far as to FOIA the data, we found the USFWS had made errors in reporting on the data to the public [22] and [15] for a case where USFWS deferred to the state that denied the data and the state made the errors [23, 24]. These breaches of scientific integrity by federal

agencies engaged in wildlife and endangered species science are unfortunately common. The federal government can and should lead the way in this regard and thereby model the scientific integrity needed in states, tribes, and lower jurisdictions also.

I also have a recommendation about conflicting results in the scientific literature. When two or more scientific studies come to opposite conclusions or approaching scientific questions from different angles (e.g., does regulated hunting conserve wildlife or does regulation of hunting conserve wildlife?), the federal agency should be obligated to report on the existence of both sets of studies not cherry-pick their favored one. Moreover, the federal agency should be obligated to weigh the evidence in light of the quality of the science using internationally recognized standards of inference and the National Academies of Science (NAS) 2017 guidelines on fostering research integrity. The NAS 2017 guidelines make clear why one should prefer science with higher transparency, higher and clearer standards of review, established ethical standards backed by accountable institutions, or replicated with equal or higher standards. The last element of NAS 2017 demands that reproducibility be used as a standard on evaluating research [25-28]

A start would be to maintain a list of scientific journals that meet published, minimum criteria for editorial policies (e.g., signatory to the international Committee on Publication Ethics), avoid predatory journals which have been exposed [29], and require data publication in full with the article. A common practice by federal agencies engaged in wildlife science is not to share raw data (or claiming the states or tribes own those data even when the federal agency has paid for the research). Such excuses are simply a way to dodge legal duties to the public — a least when discussing environmental science and not national security.

My final recommendation is that the tone from the top or standard set by leadership is crucial to scientific integrity. One may not need to promulgate new policy if the directors of federal science agencies are sending the right message. An important step in that direction would be to fill the post of director of USFWS swiftly with a scientist trusted by the independent research community (and do the same for USDA-WS). Another important step would be to require federal agency staff training at all levels using the NAS 2017 guidelines. Only by strict adherence to the principles of comprehensive and thoroughgoing transparency, authentic independent review, and stringent reproducibility can federal science regain the trust of the public.

Thank you for considering my comments,

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