

We refute the “conundrum of agenda-driven science” with documentation: A comment on Peery et al. 2019

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Introduction

As independent scientists, we are motivated by our love of our public lands, and the forests, waters, and wildlife dependent upon these lands. Our research agenda is to collect and analyze quantitative data and publish studies that will inform the evidence-driven management of our public lands for the greatest good, according to the principles of conservation biology (Noss 1993). In Peery et al.’s letter (2019) in *Frontiers in Ecology and the Environment*, we were accused of “agenda-driven” science with regard to our research pertaining to spotted owls and wildland fire (e.g., Hanson et al. 2018, Lee 2018). Peery et al. (2019) criticize us for stating our view that the current scientific evidence warrants increased protection of forests, while they advocate for their own agenda promoting commercial logging on federal lands in spotted owl habitat (Jones et al. 2016; Peery et al. 2019). We receive funding from conservation-oriented foundations which aligns with our motivations, while Peery et al. receive funding from agencies that are supportive of forestry and logging, which clearly influences their interpretations. Scientists’ points of view certainly influence their interpretations of the data as well as the types of experiments that we all conduct. This isn’t a problem as long as our disagreements and differences in interpretation are worked out in the normal scientific process of peer-

reviewed publications and factually based commentary about each other’s work. What we find alarming is that Peery et al. are attempting to win this debate by slandering us. Sadly, the journal that printed the defamatory letter by Peery et al. has refused to print any defense or rebuttal by us to correct the record. (Supporting Information ‘FEE email 2019’).

We refute Peery et al.’s claims with documentation

In Peery et al.’s letter (2019), we were accused of: “(i) mixing science and litigation without disclosing potential conflicts of interest; (ii) using social media (rather than peer-reviewed journals) to conduct critical scientific reviews of studies that do not support the findings of [our] own work; (iii) pressuring scientists and graduate students with different research findings to retract their papers or not publish their thesis findings; (iv) conducting erroneous analyses using data [we] did not collect and with which [we] were unfamiliar; (v) selectively using data that support [our] agendas; and (vi) making management recommendations beyond what is reasonably supported by scientific findings.” Below, we refute all these claims with documentation supporting our statements. All documents referenced herein are available as Supporting Information.

(i) **Our expert declarations scientifically inform efforts to uphold federal environmental laws, but create no conflicts of interest.** Peery et al. (2019) criticize us for writing expert declarations for federal courts, and they imply that this creates a conflict of interest, but they do not identify any such conflict. Providing expert testimony within her field in no way diminishes a scientist's integrity. Many scientists including MZ Peery have written expert declarations for litigation (Peery 1999, 2004), or in preparation for litigation, in order to educate the courts on current science and facilitate informed judgements, without making their declarations public knowledge because declarations are merely an expert's opinion on the matter. Because federal land management agencies sometimes break federal environmental law, watchdog lawsuits are filed by civil society organizations to correct this misbehavior, and we feel it is important for scientists to stand as experts in their field for lawsuits that determine the management of our public resources. Peery et al. (2019) also inaccurately stated that one of us (Hanson) "is both a lawyer and a scientist" and refer to "[h]is legal arguments" and "Hanson's cases". Although CT Hanson has a law degree (1995), he is not a lawyer and has never practiced law.

(ii) **In 2018, we published our critique of Jones et al. (2016) in 2 peer-reviewed journals, Nature Conservation (Hanson et al. 2018) and Ecosphere (Lee 2018). Our critique was not motivated by their findings being different from ours, rather we highlighted problematic analyses.** It was an unfortunate misstep of peer review when we (Lee and Bond), as the 2 most published authors on the

topic of spotted owls and fire with specific expertise on resource selection and occupancy analyses, and intimate familiarity with the Eldorado study area, were not identified as peer reviewers for Jones et al. (2016) so that we could have helped improve their analyses before publication. Any media, including social or print, can be used inappropriately to spread falsehoods and personal attacks, but the open science movement that we embrace includes diverse avenues for post-publication peer review and commentary.

In the events Peery et al. (2019) described, two of us (Lee and Bond) pointed out what we saw as significant statistical missteps made by Jones et al. (2016) to the authors directly (Supporting Information 'email to GJones') and to the journal (Supporting Information 'Sue Silver correspondence re Jones 1' and 'Letter to FREE editors 8Sep2016'). We did this because the date of publication was our first encounter with this work, and because immediately after publication the USDA Forest Service was using this paper in planning documents as justification for extensive commercial logging ("mechanical thinning") and post-fire logging ("restoration") of spotted owl habitat, activities known to harm these imperiled owls (Meiman et al. 2003; Seamans and Gutiérrez 2007; Stephens et al. 2014; Tempel et al. 2014). Our critique of Jones et al. (2016) was rejected by the journal based on peer reviews that ignored our critical statistical points (Supporting Information 'FEE comments 14Oct2016' and 'Sue Silver correspondence 2'). Only after rejection and at our insistence, did the editor finally provide to us a response to our statistical critiques of Jones et al. (2016), and that response neither

understood our criticisms nor refuted them (Supporting Information ‘Sue Silver correspondence 2’). After we were excluded from publishing our rebuttal to Jones et al. (2016) in *Frontiers in Ecology and the Environment*, one of us (Lee) used a web page (<https://www.wildnatureinstitute.org/blog/jones-et-al-megafire-paper-is-bad-science>) and 2 post-publication peer review sites (ResearchGate and PubPeer) to publish our criticisms of Jones et al. (2016) so that managers and scientists interested in the issue of fire and owls would have access to our statistical critiques of their analyses until such time as peer-reviewed rebuttals were available (Hanson et al. 2018; Lee 2018).

(iii) **We communicated to correct significant statistical issues and improve the work of GM Jones and to encourage SA Eyes to publish. We never engaged in ‘harassment of scientists because their findings were different from ours’.** Peery et al. (2019) claim that we harassed two scientists, SA Eyes and GM Jones, regarding their research on spotted owls and fire. This is incorrect. Regarding SA Eyes: 1) her findings were not different from ours, as she found no statistically significant effect of fire severity on occupancy (Eyes 2017); and 2) we encouraged her to publish in friendly and supportive communications (Supporting Information ‘SEyes 1’ and ‘SEyes 2’). Regarding GM Jones: we tried to see the Jones (2016) paper before publication so we could include it in a literature review one of us (Bond) was writing (Bond 2016), but were refused (Supporting Information ‘GJones1’) and could only read it after it was published (Supporting Information ‘GJones2’). We immediately urged Jones to retract his paper

because our understanding was that only authors can retract articles in *Ecological Society of America* journals, the paper contained critical statistical flaws, and his problematic analyses were contributing to spotted owl habitat degradation (Supporting Information ‘email to GJones’), including a USDA Forest Service proposal for >10,000 ha of post-fire logging and clearcutting in more than three dozen occupied spotted owl sites in the Rim fire on public lands. We also politely and professionally requested publicly funded field data, gathered on public lands in the King fire, in order to independently verify assertions made in Jones et al. (2016), but our requests were denied (Supporting Information, ‘Emails between Hanson and Peery’). Further, we encouraged Jones to reanalyze his data openly and accounting for the issues we described. To clarify, neither SA Eyes nor GM Jones were our graduate students, but it is important to treat everyone who publishes their work the same. The fact that these two individuals may have been graduate students is irrelevant to how they should be treated vis-à-vis scientific discourse. To treat them differently, as Peery et al. suggest, would be patronizing and paternalistic. Once a graduate student submits their work for publication or presents their work outside of their home institution, they should be treated the same as any other scientist.

We have invited collaboration and co-authorship with the scientists named in Peery et al. In contrast to statements made by Peery et al., we actively sought collaboration and co-authorship with publicly funded researchers as part of our requests for all spotted owl survey data from all relevant national forests. RJ

Gutiérrez declined our invitation in 2010, after initially agreeing to a data-sharing agreement with us (Lee and Bond) in 2008, citing a memorandum of understanding that prohibits him from using USDA Forest Service data if research findings would be critical of the Forest Service's forest management, and J Keane declined in 2008 (Supporting Information 'RGutierrez1' and 'Keane1'). We have used Freedom of Information Act (FOIA) requests to obtain public information because that is the procedure required by the USDA Forest Service when publicly funded data are being sought (Supporting Information 'RGutierrez1'). The majority of spotted owl studies are at least partially funded by the USDA Forest Service, and are therefore publicly funded and publicly owned data.

In 2015, we requested spotted owl survey data after the Rim fire using a FOIA request because the USDA Forest Service was planning to log large portions of occupied spotted owl habitat. Forest Service spotted owl surveys are routinely done, but typically languish in filing cabinets and are often not analyzed. The Forest Service never told us the Rim fire data we requested were part of a study by J Keane. We only learned about Keane's Rim fire study after our own paper was published using those public data (Lee and Bond 2015) (Supporting Information 'Keane1'). If we are unaware that an investigator exists, we cannot be expected to offer collaboration or co-authorship. J Keane's emails make it clear this occasion was not our fault. We have not sought collaboration with others Peery et al. mentioned (A Franklin and D Lesmeister) because we have never received any data from their study sites.

(iv) **Peery et al.'s claim that our analyses are erroneous due to our unfamiliarity with spotted owl survey protocols and data was unsubstantiated.** Two of us (Lee and Bond) have worked on multiple spotted owl projects, including the long-term demography project of RJ Gutiérrez which is now run by MZ Peery, thus we are intimately familiar with their data collection protocols and interpretation. Spotted owl research on public and private lands is standardized as widely published protocols make apparent. Our FOIA requests for publicly funded data have typically been for original raw field data forms, which we then collate into spreadsheets for analyses. Raw field data forms simply record whether or not a surveyor detected one or more owls at a known location. We would be very surprised if there were 'several hundred errors' in the field data forms we used as the basis of our analyses, unless these errors are systematic throughout all spotted owl surveys using standard protocols. We invite Peery et al. or J Keane to explicitly annotate the 'several hundred errors' they claim exist in the USDA Forest Service Rim fire spotted owl survey data forms we used for our analyses, but we note here they have not described any such errors.

(v) **We do not selectively use data except to exclude data that are inappropriate to an analysis. The example Peery et al. give of us 'selectively using data' does not support their statements, rather those data were inappropriate to include in our analysis.** Peery et al. criticize Hanson et al. (2018) for excluding four spotted owl sites in the King fire that were occupied before the fire, and which had >80% high-severity fire, speculating that the inclusion of these four sites (PLA050,

PLA065, PLA067, and PLA113) would have shown “a negative effect of high-severity fire” on spotted owl occupancy, since all four of them were unoccupied in the year after the King fire. Their assertion is incorrect because all four of these sites had >5% post-fire logging—a level above which significant loss of spotted owl occupancy occurs (Hanson et al. 2018). Specifically, in these four sites an average of 22% of the area within a 1500-m radius of territory centers was subjected to post-fire logging. Any changes in occupancy in post-fire logged sites cannot be attributed to either high-severity fire or post-fire logging without unlogged sites of equivalent burn severity for comparison to tease apart whether observed effects were due to fire or the logging that followed the fire. No such data exist for territories with >80% high-severity fire and <5% post fire salvage logging to compare with the 4 named territories with >80% high-severity fire and >5% post fire salvage logging. Thus, we did not report the low owl occupancy rates in the 4 sites mentioned above because it is impossible to determine whether the cause of the observed low occupancy rates was due to fire or the subsequent logging in the absence of contrasting burned and unlogged sites. Using continuous covariates for an analysis that lacks the contrast we just described, as suggested by Peery et al., does not work statistically because the inference space would still never include the required contrast of sites that were <5% logged and >80% high-severity burned.

(vi) **Conclusions and recommendations in Lee (2018) were in line with the results.** Current recovery efforts for the spotted owl treat wildfire as one of the greatest threats to population persistence and recovery (USFWS

2011, 2012, 2017; Gutiérrez et al. 2017; USDA 2018). These planning and recovery documents, which strongly influence forest management decisions, encourage known-to-be-harmful logging before and after fire in forest stands occupied by spotted owls, claiming the harm from logging must be done to prevent potential future fire damage. The comprehensive meta-analysis in Lee (2018) puts this false choice into proper perspective and provides the best available evidence-based decision guidance based on all published studies of spotted owls and wildfire. Regarding Peery et al.’s 3 specific criticisms:

Peery et al. begin, “*First, the estimated overall (negative) effect of wildfire on spotted owl territory occupancy was nearly statistically significant at the 0.05 level ($P = 0.07$).*”

P -value = 0.07 is not statistically significant, the criteria most commonly employed in ecological decision making. More important than statistical significance is the mean fire-induced effect size, which summarized all reported effect sizes including those that were not found to be statistically significant within the individual studies. The mean fire-induced effect size on site occupancy probability reported in the meta-analysis (-0.06) was smaller than the mean annual occupancy declines in unburned forest reported in Jones et al. (2016; Figure 3f). Because the size of the mean negative effect from fire on owl occupancy is less than normal annual variation in occupancy rates, many scientists would agree with us that encouraging logging or fuels reduction, with the known logging-induced negative effects on occupancy, does not seem prudent (The Wildlife Society 2010; Dugger et

al. 2011; Raphael et al. 2013; Stephens et al. 2014; Lehmkuhl et al. 2015). The argument for logging to potentially reduce severity of fire that might happen in the future is further weakened when forest managers understand that fuels reduction logging activities have a very low probability of ever interacting with or influencing a forest fire (Rhodes and Baker 2008; Odion et al. 2014; Charnley et al. 2015). Conservation biology typically espouses conservatism and the precautionary principle when considering unnatural anthropogenic actions such as logging (Noss 1993). Therefore, we assert that because Lee (2018) showed there is not strong, widespread, and unequivocal evidence that fire is threatening spotted owl population persistence, then unnatural anthropogenic actions intended to reduce fire but that can harm owls should not be considered on public lands. Private lands that are regularly thinned and logged should provide the necessary contrast to unlogged public lands for adaptive management experiments.

Peery et al. continue, *“Second, meta-analyses that focus on summary effects when among-study variability is high are likely to lead to conclusions that are wrong...This high level of variability betrays generalization...”*

Lee (2018) reported both the preponderance of evidence and variability of effects. High variability among effects does not outweigh the reality of mean effect sizes, nor does complexity make interpretation difficult or impossible. Forest managers need evidence for decisions they are making right now, and that is what was provided in the Lee (2018) meta-analysis by emphasizing mean effect sizes and

their overall statistical significance. Based on all the existing studies and all the effects of mixed-severity fires that include large patches of high-severity burn on spotted owls, the evidence shows that: 1) fire-induced effects are mostly positive; 2) negative fire-induced effect sizes are small; and 3) post-fire logging is universally harmful.

Peery et al. conclude, *“Third, the conclusion that wildfire does not pose a threat to spotted owls does not take into account that wildfires in many forest ecosystems are predicted to become larger and more severe as the climate changes.”*

The Lee (2018) meta-analysis refuted current threat descriptions from planning documents. Negative effects were never ignored, only placed in perspective relative to natural population dynamics in unburned forests and the known risks of logging actions intended to reduce fire risk for a species seemingly adapted to mixed-severity fire including large patches of high-severity and megafire. We believe the precautionary principle should strongly limit anthropogenic manipulations such as logging when proposed in biodiversity and endangered species decisions. The numerous positive biodiversity outcomes from mixed-severity fires is a strong counter argument to forest managers who propose logging to reduce fire extent and severity in fire-adapted western forests, which have a deficit of mixed-severity fire relative to natural levels that occurred prior to fire suppression (DellaSala and Hanson 2015). In an era of rapid anthropogenic climate change due to carbon emissions from both the burning fossil fuels and logging, we assert that protecting forests from logging should be the

priority, not cutting them (Harris et al. 2016; Griscom et al. 2017; Erb et al. 2018).

Peery et al.’s personal attacks have no place in science. Like many other scientists, we believe that National Forest management should be motivated and driven by ecological science and conservation biology principles, not timber commodity production imperatives and monetary incentives. Peery et al. attack us personally and question our motives, citing our criticism and concerns regarding the USDA Forest Service’s commercial logging program on federal public lands. It is troubling to see Peery et al. personally attacking independent scientists, in the pages of an Ecological Society of America journal, for seeking public access to government-funded scientific data and for raising questions about the scientific integrity of decisions to log public lands. Such personal attacks do not belong in scientific discourse.

It could be that the Gutiérrez-Peery lab may suffer from funding bias, also known as sponsorship bias, funding outcome bias, funding publication bias, or funding effect, referring to the tendency of a scientific study to support the interests of the study’s financial sponsor (Krimsky 2006). As RJ Gutiérrez wrote when he severed our data-sharing agreement, *“We have signed a ‘neutrality agreement’ with the MOU partners associated with the Sierra Nevada Adaptive Management Project. Essentially, this means that use of Eldorado and SNAMP data in a way that could be perceived as conflicting with USFS management or antagonistic to them would be perceived as a violation of the agreement.”* (Supporting Information ‘RGutierrez1’ and ‘USFS&UWisc_contract’). Peery et al. have a

long-term financial relationship with the USDA Forest Service—an agency that sells timber from public lands to private logging corporations and retains revenue from such sales for its budget. In light of the Forest Service’s financial interest in commercial logging on public lands, and the fact that the spotted owl has been a major thorn in the side of the Forest Service’s commercial logging program, candid disclosure of conflicts of interest from spotted owl scientists employed by the Forest Service, including any conditions or constraints associated with that employment, are particularly important. We operate with no limitations, real or perceived, placed upon our science by our financial sponsors.

Conclusion. We respect the authors of Peery et al. as oftentimes excellent scientists who have published important work on the ecology of spotted owls. We hope that future debate on the issues of forest management, fire, biodiversity, logging, and endangered species can remain focused on the scientific data and the ultimate goal of recovering spotted owls and their forest habitat. We are disappointed with the Ecological Society of America journal *Frontiers in Ecology and the Environment* for publishing Peery et al.’s personal attack on us without any investigation into the veracity of their claims and without contacting us or allowing us to present the numerous documents contradicting their claims. A chief concern with publication of personal attacks in the scientific literature is that it could have the effect of intimidating some independent scientists and suppressing scientific scrutiny of government agency actions and management policies, while creating a chilling effect on

efforts to ensure open access to government-funded data.

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Supporting Information

FEE email 2019

email to GJones

Letter to FREE editors 8Sep2016

Sue Silver correspondence re Jones 1

FEE comments 14Oct2016

Sue Silver correspondence 2

SEyes 1

SEyes 2