Testimony of

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This testimony addresses the need for scientific Peer Review in implementing the Endangered Species Act, Referencing H.R. 2829 and H.R. 3705

Introduction

My name is James Anderson; I am a Research Associate Professor in the School of Aquatic and Fishery Sciences at the University of Washington. For over two decades I have conducted research on the influence of the Columbia/Snake River hydrosystem on salmon. I have also published articles on animal behavior and human decision processes. I have been involved in a number of review processes. Currently I am a member of the California Environmental Water Account (EWA) Review Panel. The EWA is a new water management tool designed to protect fish from harmful impacts of state and federal water exports from the Sacramento-San Joaquin watershed.

I wish to thank the Resource Committee for this opportunity to testify on H.R. 2829 and H.R. 3705 which would amend the Endangered Species Act to give greater weight to science. My testimony focuses on the need for peer review of Endangered Species Act (ESA) decisions.

The Problem

As enacted in 1973, the ESA requires the Secretary to make determinations solely on the basis of the best scientific and commercial data available. Although this directive is clear and powerful it has one significant omission: its determination of the best science does not follow the procedures used by the scientific community. In the science community, work is judged by peer review. However, the ESA has no formal requirement for peer review. It is true that the agencies responsible for implementing the ESA spend considerable time reviewing petitions and soliciting public opinion; however, these activities simply do not provide the disciplined analysis of independent external peer review. Because critical ESA actions and decisions are not peer reviewed, agency scientists are inadvertently susceptible to acting as if their decisions are protected by the Endangered Species Act. Recent history has proven otherwise. In three cases the courts reviewed agency decisions and found them deficient. In another case, a National Academy of Sciences review criticized the agency decision as scientifically unfounded. These after-the-fact reviews were highly controversial; regardless of their final outcomes, which are not clear at this time, they will have significant impacts on both the environment and the economy. They are compelling examples of the need to strengthen the review process in the ESA.

- In September 2001, a U.S. District Court ruled to de-list Oregon coho, stating that the National Marine Fisheries Service (NMFS) had been “arbitrary” in distinguishing between “two genetically identical” salmon “in the same stream” (NMFS 2001a, Kaiser 2001).
- In September 2001, a U.S. District Court set aside the Fish and Wildlife Service designation of pygmy-owl critical habitat. The judge noted that the habitat designated included areas not surveyed for, but in which the agency scientists thought pygmy-owls could live (ESWR 2001).
- In February 2002, the National Academy of Sciences released a report criticizing the judgment of federal fisheries biologists on the recommended water restriction to protect suckerfish in Upper Klamath Lake (Science Scope 2002).
- In March 2002, the National Marine Fisheries Service agreed to rescind critical habitat designations for 19 west coast salmon listed under the Endangered Species Act. The settlement was triggered in part by the National Association of Home Builders’ discovery of an inter-agency memo stating “when we [NMFS] make critical habitat designations we just designate everything as critical, without analysis of how much habitat an ESU needs…” (NHBA 2002, NW Fishletter 2002a).

The ESA Current Review Processes

Currently, the ESA allows agencies to make decisions without independent peer review of the major steps including: 1) decisions on petitions to add and remove species to endangered and threatened species lists, 2) decisions on jeopardy opinions, and 3) plans for recovery.

As the ESA is now implemented, public opinion is solicited on recovery planning, but not on the decision to list a species, or on jeopardy opinions. For example, in the case of the Columbia River salmon recovery plan, thirty-five parties, other than Action Agencies, commented on the NMFS Final 2000 FCRPS Biological Opinion (NMFS 2001b). Because the letters and supporting documentation represented thousands of pages, responses, typically a paragraph in length, were made to categories of comments.

Although there is no requirement to provide peer review in developing recovery plans agencies are beginning to do so. In a sampling of 43 US Fish and Wildlife Service (USFWS) Habitat Conservation Plans, 11 plans employed science advisory boards with half the members from within government and the remainder with industry, academic and environmental affiliations (Harding et al. 2001). The National Marine Fisheries Service set up a two-tier review structure in 2000. A six member Science Review Panel (NMFS 2000c) oversees the work of nine Technical Recovery Teams (NMFS 2001d) that set biological goals needed for salmon recovery in the Northwest and California. The Northwest Power Planning Council has implemented a similar process through its Independent Scientific Advisory Board and Independent Scientific Review Panel (NPPC 1997).

A Case for Additional Review

Review through solicitation of public comments (NMFS 2000) is important but is ineffective in providing substantive inputs to decisions. The importance of peer review was quantitatively illustrated in a study of 208 habitat conservation plans (Kareiva et al. 1998). In a detailed study on 43 of the plans, the 11 that included science advisory boards in the plan formation were of significantly higher quality than the plans without boards. In the lowest quality plans, biological experts were not consulted (Harding et al. 2001). From my own observations, the NMFS two-tier review process and the NPPC review process provide substantive reviews of the recovery process. However, all these review processes address actions after the species are listed. The decisions to list species and designate critical habitat are solely the responsibility of the overseeing agencies, which act without external guidance and review.

Although we can only speculate on how peer review would have altered the outcomes of the four cases noted previously, it is highly probable that through peer review the agencies would have been compelled to address the scientific weaknesses in their decisions, making them less vulnerable to challenge. Furthermore, stronger scientific foundations in agency decisions serve all parties. The ESA states that critical habitat designation will be based on the best science while also taking into consideration the economic and other relevant impacts. The recent court decisions have emphasized this important balancing of needs and impacts. Peer review will better illuminate the strengths and limitations of the science, which will facilitate a fair balance between parties with differing standpoints on the needs of the species and the needs of the economy. As the examples illustrate, non-reviewed ESA decisions can be one-sided and vulnerable to court challenges.

The Science of Peer Review

Peer review is an imperfect process that can be manipulated, or simply fail for procedural reasons. Fortunately, considerable research has gone into the peer review process and many of the pitfalls have been

identified and can be avoided. However, peer review in regards to the important task of species recovery does appear to have its own challenges and the structure of peer review in the ESA should be carefully considered. Hundreds of articles have addressed the subject. In preparing this testimony, I relied on a comprehensive and extensively documented study by Kostoff (1997a, b) that addressed peer review issues, federal agency peer review practices, and recommended peer review processes plus a thoughtful discussion of peer review issues by Ford (2000). From these works, a number of salient points on ESA peer review emerge.

- The Review Process: For an efficient peer review of ESA actions the process must be understood, developed, and standardized.
- The Agency: Success requires senior management's commitment to high-quality reviews. Rewards and incentives are required to encourage such reviews.
- The Review Manager: Functionally, a review process has a manager that guides the questions and discussion in the review. The manager generally selects the participants, and if the manager does not follow the highest standards in selecting the reviewers, the review's outcome may be substantially influenced before the review process begins.
- The Reviewers: The selected reviewers should be competent in the required subdisciplines and, together the group, should cover the topic. The group should also include generalists that that can address the overall issues and larger questions. Reviewers come to a process with a standpoint that influences their approach. For example, a conservation biologist and an agriculture economist are likely to have different perspectives in reviewing critical habitat designations.

Specifics as Related to HR 2829 and 3705

The intent of HR 2829 and 3705 is to strengthen the use of science in actions pertaining to the listing, jeopardy opinions, recovery actions and the delisting of endangered and threatened species as determined under the Endangered Species Act (ESA). Both H.R. 2829 and 3705 would introduce independent peer review into the procedural steps of the ESA. H.R. 2829 would implement review boards on: 1) the species listing process, 2) the species de-listing process, 3) determinations of jeopardy, and 4) development of recovery plans. H.R. 3705 would implement review boards on: 1) reviewing scientific information in listing petitions, 2) decisions to add and 3) remove a species from a list, and 4) decisions on jeopardy.

It is my belief that enactment of either bill would improve the implementation of the ESA. I believe it is critical that the review process involve listing, de-listing, recovery actions and jeopardy opinions. However, I believe an improved bill would draw further from studies of the peer review process and meld with existing review processes.

Issues arise about how to incorporate existing review processes into an amended ESA. In the case of the West Coast Salmon, the existing peer review process addresses questions related to recovery and jeopardy. However, the process is not standardized and its responsibilities are not fully articulated. For example, is the Science Review Panel allowed to review NMFS harvest policies (NW Fishletter 2002b), will it review the new habitat designations promised by NMFS, or the new rules needed to disentangle Oregon's wild and hatchery coho? The National Academy of Sciences review of the Klamath water policy was akin to the review structure outlined in H.R. 2829. The peer review processes for the Klamath and the Columbia basins are different, the Klamath involving a one-time National Academy of Sciences review, the Columbia involving an ongoing process closely connected with the agency. Which structure best fits into the ESA? What can be learned from each, and how can ongoing review processes be incorporated into a bill?

Scientific studies on peer review indicate that these issues need to be understood and a formal process developed and standardized.

Peer review processes, if not carefully constructed, may be either too small or too large. A brief three day panel may be sufficient to review research proposals, but is insufficient to review a complex program. On the other hand, a multi-year review by a large working group such as was conducted on the Columbia River by PATH (Marmorek 2000), can become unmanageable through its complexity and advocacy (Anderson 2000, Marmorek et al 2002). An alternative peer review process, the Science Court, mimics a legal procedure, with advocates, critics, and a jury. It is a unique and potentially powerful technique, but like any tool, can be misused if not understood and applied properly (Kostoff 1997). Kostoff noted that the Science Court probably had more debate and surfacing of crucial issues than any other concept he evaluated; however, it was time-consuming compared to a standard panel assessment.

Before peer review is incorporated into the ESA questions such as the size of panels, their tenure, the process of selection, and the extent of their responsibilities need to be resolved. Congress should not delay in this effort because the nation faces many important decisions on endangered species and these decisions will be better made with sound science founded in critical independent peer reviews.

References

Anderson, J.J. 1999. A Personal In-side Review of PATH. http://www.cbr.washington.edu/papers/jim/handout.html.

Endangered Species & Wetlands Report (ESWR). 2001. Pygmy-owl critical habitat set aside, listing upheld. 6:12.

Ford, E.D. 2000. Scientific Method for Ecological Research published by Cambridge University Press

Harding, E.K et al 2001. The scientific foundations of habitat conservation plans: a quantitative assessment. Conservation Biology, 15:2, pp 488-500.

Kaiser, J. 2001, When is a coho salmon not a coho salmon? Science 294, pp.1806-1807.

Kareiva, P., et al. 2001. Using science in habitat conservation plans. Report released by the American Institute of Biological Sciences and the National Center for Ecological Analysis and Synthesis (4 June 2001, www.nceas.ucsb.edu/projects/hcp).

Kostoff, R.N., 1997 Research Program Peer Review: Principles, Practices, Protocols http://www.dtic.mil/dtic/kostoff/Peerweb1index.html.

Kostoff, R.N. 1997. Peer Review: The Appropriate GPRA Metric for Research. Science 277, pp. 651-652.

Marmorek, D. R., et al. (34 co-authors). 1998. PATH final report for fiscal year 1998. Compiled and edited by ESSA Technologies, Vancouver, British Columbia, Canada. BPA web site: http://www.efw.bpa.gov/Environment/PATH/reports/1998Final/1998Final.pdf.

Marmorek, D. and C. Peters. 2001. Finding a PATH toward scientific collaboration: insights from the Columbia River Basin. Conservation Ecology 5(2): 8. [online] URL: http://www.consecol.org/vol5/iss2/art8.

National Home Builders Association (NHBA), 2002, Federal agency proposes settlement, agrees that salmon, steelhead habitat must be determined by sound science. http://www.nahb.com/news/salmon.asp.

NMFS. 2000. Three Additional Public Hearings Announced on Proposed Regulations to Protect Salmon and Steelhead. http://www.nwr.noaa.gov/1press/4drulephnew.htm.

NMFS. 2001a. Summary of the Alsea Valley Alliance v. Evans U.S. District Court Decision.

http://www.nwr.noaa.gov/occd/AlseaSummary.pdf .

NMFS. 2001b. Response to comments on 2000 FCRPS Biological Opinion. http://www.nwr.noaa.gov/1hydrop/hydroweb/docs/Final/respcomm.pdf.

NMFS. 2001c. Science Review Panel Appointed to Guide West Coast Salmon Recovery http://www.nwr.noaa.gov/1press/050300_1.htm

NMFS. 2001d. West Coast's First Salmon Recovery Team Appointed; Will Examine Puget Sound Chinook, Chum, Sockeye http://www.nwr.noaa.gov/1press/040400_1.htm.

NMFS. 2001c. Science Review Panel Appointed to Guide West Coast Salmon Recovery http://www.nwr.noaa.gov/1press/050300_1.htm

NMFS. 2002, Response to Salmonid Delisting Petitions Announced. http://www.nwr.noaa.gov/occd/PetitionFindingsFRN.html

Northwest Power Planning Council (NPPC). 1997. Independent Science Groups http://www.nwcouncil.org/fw/science.htm.

NW Fishletter. (2002a). NMFS says it's sorry over harvest critique. NWF 138/Feb.27.2002. http://www.newsdata.com/enernet/fishletter/#4

NW Fishletter. (2002b). NMFS caves on critical habitat. NWF 139/March.15.2002. http://www.newsdata.com/enernet/fishletter/#6.

Science Scope. 2002. Water Warning, Science 295, 945.