Legitimizing Peer Review in ESA Listing Decisions

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INTRODUCTION

The purpose of the Endangered Species Act ("ESA") is to identify species in danger of extinction,[1] protect their ecosystems,[2] and promote their recovery.[3] The agencies responsible for implementing the ESA are the Fish and Wildlife Service ("FWS") in the Department of the Interior, and the National Marine Fisheries Service ("NMFS" or "NOAA Fisheries") in the Department of Commerce. While the executive and legislative branches generally ensure accountability through the election process, administrative agencies must rely on transparency in the decision-making process to establish and maintain public confidence. Both agencies have procedures intended to ensure the objectivity and integrity in scientific information,[4] but recent controversies have exposed the potential for manipulation in agency use of science.[5] Democratic members of Congress have accused agencies of "intentional suppression and distortion of scientific data"[6] and accused the Department of the Interior in particular of engaging in "weird science."[7] Scientists working with NOAA have recently admitted witnessing "outright suppression and distortion of science within their agency."[8] Many of the complaints regarding agency use of science have involved the Section 4 listing procedure, resulting in decreased public confidence in the procedure. This paper summarizes the nature of these complaints and posits a potential solution by re-sequencing and broadening existing procedural mechanisms to improve the implementation of the ESA listing process.

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[1] 16 U.S.C. §1532(6) (2000).

[2] *Id.* §1531(b).

[3] *Id.* §1532.

[4] Endangered and Threatened Wildlife and Plants: Notice of Interagency Cooperative Policy for Peer Review in Endangered Species Act Activities, 59 Fed. Reg. 34,270, 34,270 (July 1, 1994). Although both the FWS and NMFS/NOAA assumed the general mechanisms of peer review, more information is available regarding the FWS specifically. As such, this paper will refer to both agencies when discussing the current peer review policies, but will focus on the FWS's use (or misuse) of those procedures because more documentation and analysis is available regarding the FWS listing practices.

[5] *See* Holly Doremus, *The Purposes, Effects, and Future of the Endangered Species Act's Best Available Science Mandate*, 34 ENVTL. L. 397, 426 (2004) (stating "politicians have often cloaked decisions made on other grounds in the garb of science.").

[6] J.B. Ruhl & James Salzman, *In Defense of Regulatory Peer Review*, 84 WASH. U. L. REV. 1, 29 (2006) (citing MINORITY STAFF SPECIAL INVESTIGATIONS DIV., H. COMM. ON GOV'T REFORM, POLITICS AND SCIENCE IN THE BUSH ADMINISTRATION (2003), *available at* http://oversight.house.gov/features/politics_and_science/pdfs/pdf_politics_and_science_rep.pdf).

[7] *Id.* at 29 (citing DEMOCRATIC STAFF COMM. ON RES., WEIRD SCIENCE: THE INTERIOR DEPARTMENT'S MANIPULATION OF SCIENCE FOR POLITICAL PURPOSES (2002), *available at* http://www.ourforests.org/weirdscience.pdf).

[8] *Id.* (citing *Officials, Scientists Spar Over Whether Politics Trumps Science at NMFS*, ENDANGERED SPECIES & WETLANDS REP., June 2005, at 14, *available at* http://www.eswr.com/605/june05.pdf).

In science generally, peer review supplies a fundamental check on the validity and significance of asserted conclusions.[9] The wildlife agencies currently incorporate peer review in listing proposals,[10] but the procedure has fallen short of providing that meaningful check on agency science. Improving the peer review process will increase the ESA's legitimacy in two ways. First, conducting peer review at an earlier point – thus broadening the process so that agency decisions not to propose listing are also reviewed – will improve the science underlying listing decisions generally. Second, conducting peer review of the agencies' use of science prior to the public comment period will provide for increased transparency, where the public will have the relevant scientific conclusions available and deviations from those conclusions based on policy considerations will be "checked" and open for discussion by the public.

Part I of this article explains the background principles underlying listing decisions and provides a general overview of the Section 4 listing process. Part II examines more closely the science and policy interplay in the context of the strictly science mandate, concluding that both are relevant considerations in listing decisions. Part III explores several recent controversies related to listing decisions to illustrate the need for a change in the process. Part IV details the benefits of peer review in scientific decision-making and identifies the problems with the peer review policy as it is currently used in listing decisions. Part V recommends improving the science and transparency in the process by broadening peer review to also include review of agency decisions not to propose listing a species. This can be accomplished by conducting peer review earlier in the listing process, and using the public comment period as a deterrent against reviewer bias in either the selection or review processes. The paper concludes that implementing the changes above will improve the science and increase transparency in the listing process, thereby leading to increased public confidence and legitimacy, by facilitating open and public discourse of both the scientific and political underpinnings of the protection of species and their ecosystems.

I. BACKGROUND OF THE LISTING PROCESS AND UNDERLYING PRINCIPLES

Listing can be "a time-consuming, expensive, and politically controversial process."[11] If listing a species is considered controversial, the agencies will rarely initiate the process absent external pressure.[12] Because most listings are controversial, a common way to initiate the listing process is via submission of a

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[9] *See e.g.*, J.B. Ruhl, *Reconstructing the Wall of Virtue: Maxims for the Co-Evolution of Environmental Law and Environmental Science*, 37 ENVTL. L. 1063, 1077 (2007).

[10] *See* Endangered and Threatened Wildlife and Plants: Notice of Interagency Cooperative Policy Information Standards Under the Endangered Species Act, 59 Fed. Reg. 34,271, 34,271 (July 1, 1994).

[11] Doremus, *supra* note 5, at 402.

[12] *Id.*

petition to the FWS or NMFS/NOAA, which serves as a formal request to list a species.[13] If practicable, within 90 days from the date the petition was submitted, the agencies are required to determine whether there is "substantial information" indicating that a listing may be warranted.[14] If the preliminary finding is positive, the agencies will then conduct a status review.[15] Within twelve months of receiving a petition, the agencies must make a further finding as to whether listing the species is or is not warranted.[16]

A. Underlying Considerations: The Strictly Science Mandate and Precautionary Principle

During its status review, the relevant agency must follow a "strictly science" mandate which requires the agency to make listing decisions "solely on the basis of the best scientific and commercial data available."[17] This provision has been regarded as "the strongest science mandate in federal law."[18] The best available science mandate was added in the 1982 Amendments to the ESA, and was intended to exclude non-scientific considerations from influencing listing decisions.[19] Congress made especially clear that economic considerations should be irrelevant to the determination that a species requires protection under the ESA.[20] Science must be the agencies' absolute priority when designating a species as threatened or endangered because the process for making listing decisions must remain completely free from consideration of any non-biological factors.[21]

The "precautionary principle" is the general policy underlying the ESA and its listing process, which recommends "err[ing] on the side of caution" when the available information may not provide conclusive evidence that the species

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[13] *See* U.S. FISH & WILDLIFE SERV., THE PETITION PROCESS 1 (2009), http://www.fws.gov/endangered/factsheets/petition.pdf.

[14] 16 U.S.C. §1533(b)(3)(A) (2000).

[15] *See* U.S. FISH & WILDLIFE SERV., *supra* note 13, at 1.

[16] 16 U.S.C. §1533(b)(3)(B). *See also* U.S. FISH & WILDLIFE SERV., *supra* note 13, at 1.

[17] 16 U.S.C. §1533(b)(1)(A).

[18] Holly Doremus, *Scientific and Political Integrity in Environmental Policy*, 86 TEX. L. REV. 1601, 1634 (2008).

[19] Kristin Carden, *Bridging the Divide: The Role of Science in Species Conservation Law*, 30 HARV. ENVTL. L. REV. 165, 186 (2006) (citing Holly Doremus, *Listing Decisions Under the Endangered Species Act: Why Better Science Isn't Always Better Policy*, 75 WASH. U. L.Q. 1029, 1055 (1997)). *See also* Daniel J. Rohlf, *Section 4 of the Endangered Species Act: Top Ten Issues for the Next Thirty Years*, 34 ENVTL. L. 483, 492 (2004) (stating that "no doubt exists that lawmakers intended to preclude weighing political or economic criteria as part of a decision whether to add species to – or remove species from – the protected rolls.").

[20] *See* H.R. REP. NO. 97-835, at 20 (1982) (Conf. Rep.). *See also* Carden, *supra* note 19, at 186 (citing Doremus, *supra* note 19, at 1055).

[21] Daniel J. Rohlf, *Section 4 of the Endangered Species Act: Top Ten Issues for the Next Thirty Years*, 34 ENVTL. L. 483, 493 (2004).

should or should not be listed.[22] Under this principle, listing is warranted to protect a species despite the unavailability of relevant data regarding its potential extinction[23] because the mandate requires that wildlife agencies use the best available science, not the best possible science.[24] In other words, the ESA does not affirmatively require that agencies conduct studies to obtain missing data or fill information gaps.[25] However, the agencies are strictly prohibited from ignoring data that is available at the time a listing decision is being made.[26]

The concern underlying application of the precautionary principle is that a listing decision should not be delayed pending the discovery and availability of conclusive data.[27] It essentially provides species a certain margin of safety by taking a "better safe than sorry" approach to protection.[28] If the agencies were required to wait for additional information, imperiled species would lack the necessary protection pending such data and "conservation efforts would likely come too late to have any real impact. . . ."[29] A species should be listed when the existing, although possibly incomplete, information indicates that the species requires protection because demands for additional information would "provide an incentive for affected parties to gather and reveal information that might show that the species does not in fact need protection."[30] In other words, erring

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[22] Lori J. Wolf, *Dissecting the Information Quality Act: A Look at the Act's Effect on the Florida Panther and Evidentiary Science*, 11 ALB. L. ENVTL. OUTLOOK J. 89, 93 (2006) (citing John Earl Duke, Note, *Giving Species the Benefit of the Doubt*, 83 B.U. L. REV. 209, 243 (2003)). *See also* Margreta Vellucci, *Fishing for the Truth: Achieving the "Best Available Science" By Forging a Middle Ground Between Mainstream Scientists and Fishermen*, 30 ENVIRONS ENVTL. L. & POL'Y J. 275, 284 (2007) (stating "the 'best available data' standard . . . require[s] far less than 'conclusive evidence.'").

[23] Wolf, *supra* note 22, at 93 (citing Duke, *supra* note 22, at 243).

[24] Carden, *supra* note 19, at 190 (citing Sw. Ctr. for Biological Diversity v. Norton, No. 98-934, 2002 WL 1733618, at *8 (D.D.C. July 29, 2002)).

[25] U.S. GOV'T ACCOUNTABILITY OFFICE, ENDANGERED SPECIES ACT: FISH AND WILDLIFE SERVICE USES BEST AVAILABLE SCIENCE TO MAKE LISTING DECISIONS, BUT ADDITIONAL GUIDANCE NEEDED FOR CRITICAL HABITAT DESIGNATIONS, GAO-03-803, 9 (2003) [hereinafter 2003 GAO FWS SCIENCE REPORT], *available at* http://www.gao.gov/new.items/d03803.pdf. *See also* Carden, *supra* note 19, at 191 (citing *Sw. Ctr. for Biological Diversity*, 2002 WL 1733618, at *8) (stating "the wildlife agencies need not conduct independent research to augment the existing data pool, and relatively minor flaws in scientific data do not render that data unreliable.").

[26] *See* Connor v. Burford, 848 F.2d 1441, 1453-54 (9th Cir. 1988). *See also*, 2003 GAO FWS SCIENCE REPORT, *supra* note 25, at 9.

[27] Carden, *supra* note 19, at 190-91 (citing *Sw. Ctr. for Biological Diversity*, 2002 WL 1733618, at *8).

[28] Although the focus of this paper is on the intention behind the precautionary principle, it is important to note that in practice, the precautionary principle has not been so particularized in its result. One study illustrates this by indicating that erring on the side of caution often leads to less protection: "the structure of hypothesis testing related to listing and jeopardy decisions can make it more likely for an endangered species to be denied needed protection than for a non-endangered species to be protected unnecessarily . . . ." NAT'L RESEARCH COUNCIL, SCIENCE AND THE ENDANGERED SPECIES ACT 14 (Nat'l Academy Press 1995).

[29] Vellucci, *supra* note 22, at 284.

[30] Doremus, *supra* note 5, at 425-26.

on the side of caution requires the protection of such a species while potential opponents gather information to support their dissention.

B. Agency Listing Considerations: The Taxonomic and Viability Inquiries

Consistent with the strictly science mandate and precautionary principle, Section 4 of the ESA mandates that wildlife agencies make both a taxonomic inquiry and a viability inquiry during a listing determination.[31] The taxonomic inquiry involves consideration as to whether a group of organisms constitutes a "species" for the purposes of the ESA.[32] The viability inquiry comes from the language of Section 4 of the ESA which instructs the FWS and NMFS/NOAA to identify any species as endangered if that species is "in danger of extinction throughout all or a significant portion of its range."[33] Likewise, the FWS and NMFS/NOAA must designate a species as threatened upon a determination that the species is "likely to become an endangered species within the foreseeable future."[34] The ESA provides statutory factors to advise the viability inquiry including, "(A) the present or threatened destruction, modification, or curtailment of [the species'] habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting [the species']continued existence."[35] Using those statutory factors, the agency then must determine if and when the threat is enough that it may critically reduce a species' viability and lead to extinction.[36]

These determinations necessarily involve blurring the lines between science and policy. The viability inquiry in particular requires agencies to make a discretionary determination under the "strictly science" mandate, while at the same time "it is impossible to specify a viability level . . . without looking *beyond* the realm of science."[37] Wildlife agencies generally insist that politics do not influence the viability inquiry, but "it has long been clear that political factors sometimes do affect at least the timing, if not the substantive outcome of listing decisions."[38] The agency must delineate a requisite threshold of acceptable risk to decide exactly how imperiled a species must be in order to extend protection under the ESA, and such a determination is "fundamentally

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[31] Carden, *supra* note 19, at 195 (citing Doremus, *supra* note 19, at 1087-88).

[32] *Id.*

[33] 16 U.S.C. §1532(6) (2000).

[34] *Id.* §1532(20).

[35] *Id.* §1533(a)(1)(A)-(E).

[36] Ruhl & Salzman, *supra* note 6, at 17 (citing the considerations listed in 16 U.S.C. §1533(a)(1) used for listing decisions).

[37] Carden, *supra* note 19, at 201 (citing Doremus, *supra* note 19, at 1117).

[38] *Id.*

one of *policy*, not science."[39] Due to the overlap of issues, these inquiries have recently become the basis of many challenges to agency use of science, and will be discussed in more detail in Part III.

There are three possible outcomes after conducting the viability inquiry. First, if data suggests listing is in order but other species have a higher priority at the time, the listing proposal is termed "warranted but precluded" and the agency will revisit the decision at a later time.[40] Second, if the agency determines that listing is not warranted, the process ends.[41] Finally, if the agency determines that the petition is warranted, the FWS must publish the proposed rule in the Federal Register.[42] Upon publication of a proposed listing, the public has 60 days to comment on the proposal.[43] It is during this comment period that the agency employs peer review[44] of its findings regarding the proposed listing.[45] The outcome of the process is the final decision document, which either constitutes a listing rule or notice of withdrawal.[46]

II. SCIENCE & POLICY INTERPLAY

The strength of the ESA's scientific mandate operates on the understanding that the discipline can serve as a unifying force, thereby mitigating potentially negative public reactions to difficult or controversial decisions.[47] However, the recent controversies in this realm indicate that the traditional mechanisms designed to facilitate "strictly science" decision-making are not serving their intended function. Certain information can only be obtained through scientific determination, such as key population, trend, and life history data and the related effects on relevant species.[48] Scientific experts are also especially necessary for listing decisions where available data is often incomplete or inconclusive and therefore requires informed interpretation to develop a reasoned conclusion.[49] However, to focus solely on improving the scientific aspects of listing decisions would overlook relevant policy influences where the ESA is "an assembly of

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[39] Rohlf, *supra* note 21, at 502 (citing Michael E. Soulé, *Introduction* to RICHARD BAKER ET AL., VIABLE POPULATIONS FOR CONSERVATION 5 (Michael E. Soulé ed., Cambridge Univ. Press 1987)).

[40] *See* U.S. FISH & WILDLIFE SERV., *supra* note 13, at 1.

[41] *See id.*

[42] 16 U.S.C. §1533(b)(5)(A)(i) (2000).

[43] *See* U.S. FISH & WILDLIFE SERV., *supra* note 13, at 1.

[44] The peer review process will be described in more detail *infra*, Part IV.

[45] Endangered and Threatened Wildlife and Plants: Notice of Interagency Cooperative Policy for Peer Review in Endangered Species Act Activities, 59 Fed. Reg. 34,270, 34,270 (July 1, 1994). *See also* U.S. FISH & WILDLIFE SERV., *supra* note 13, at 1.

[46] Endangered and Threatened Wildlife and Plants, 59 Fed. Reg. at 34,270.

[47] Carden, *supra* note 19, at 184.

[48] *Id.*

[49] *Id.*

provisions and programs steeped in law-science intersections."[50]

In many environmental laws, including the ESA, science and policy are incorporated in a linear process where each is intended to function independently from the influence of the other, and science and policy considerations are therefore separated by a "Wall of Virtue" where the scientists in particular are protected from being "tainted" by the political context of the decision.[51] More directly, the linear model of science means that "knowledge is created in the lab, packaged by scientific experts, and then handed off to politicians to do what they will."[52]

Despite its theoretical appeal, the linear approach in practice has been somewhat unsuccessful in achieving its aim of objectivity in scientific decision-making. Where the motivation for developing a strong science mandate may have been to increase the legitimacy of decision-making or foster public support for the legislation,[53] instead, the relevant science has been used as a justification or scapegoat for otherwise unpopular social and economic policy agendas, and has additionally enabled agency officials to advocate particular issues under the guise of "sound science."[54] Purportedly scientific decisions are also protected from exacting judicial review where agency experts are granted substantial deference.[55] The "politicization of science and the scientization of policy decision making" have become so "endemic and mutually reinforcing,"[56] the process has been termed a "science charade"[57] resulting in "an incoherent, inconsistent listing program [which] threatens to undermine support for science generally and the ESA specifically."[58]

Because the science underlying ESA decisions is often questioned in the context of the listing process, it has been suggested that "Congress either does not understand that its demands on science are unrealistic or that it feigns

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[50] Ruhl, *supra* note 9, at 1068.

[51] *Id.* at 1063.

[52] *Id.* at 1066 (citing Nathan E. Hultman, *To Arbitrate or to Advocate?*, 317 SCI. 900, 900 (2007) (quoting Nathan E. Hultman, (reviewing ROGER PIELKE, JR., THE HONEST BROKER: MAKING SENSE OF SCIENCE IN POLICY AND POLITICS (2007))).

[53] Carden, *supra* note 19, at 185 (citing Holly Doremus, *The Purposes, Effects, and Future of the Endangered Species Act's Best Available Science Mandate*, 34 ENVTL. L. 397, 418 (2004)).

[54] Ruhl, *supra* note 9, at 1063. *See also* Carden, *supra* note 19, at 185 (citing Doremus, *supra* note 19, at 418 (stating that "[b]y the same token, reliance on science would have given politicians the opportunity to shield themselves from unpopular decisions made under the [Endangered Species] Act.")).

[55] Carden, *supra* note 19, at 185 (citing Doremus, *supra* note 5, at 418).

[56] Ruhl, *supra* note 9, at 1063.

[57] Rohlf, *supra* note 21, at 505 (stating "[f]or three decades, FWS and NOAA Fisheries have employed the convenient fictions that the agencies make listing and delisting decisions solely by employing their biological expertise, and that variations between listing decisions result merely from differences between species, not from the ad hoc, political nature of the listing process itself.").

[58] Carden, *supra* note 19, at 194 (citing Doremus, *supra* note 19, at 1032).

ignorance because scientific uncertainties are viewed as a political liability."[59] Congress' demand for purely scientific decision-making is considered by some to be requiring the impossible from wildlife agencies[60] because, although scientists can estimate levels of immediate threat of extinction for a given species, the threshold of acceptable risk is drawn by policy-makers,[61] thus forcing the wildlife agencies to make otherwise "multidisciplinary decisions in the name of science."[62] It would therefore be unreasonable to expect the ESA to operate either exclusively on the scientific method model ("a strictly science process designed to reach 'is' answers, not 'ought' answers"[63]) or the precautionary principle ("purely a policy process that is all about 'ought'"[64]). Before attempting to improve either the science or policy elements, it is important to acknowledge that listing decisions are not based solely upon science[65] due to the inevitable policy considerations involved with drawing necessary viability lines.[66] The science and policy elements must be reconciled to achieve the best of both, and each used to adequately inform the decision.[67]

III. LISTING CONTROVERSIES AS EVIDENCE OF THE NEED FOR CHANGE

The strictly science mandate must be carried out with both scientific and political integrity[68] to fulfill its intended purpose and facilitate informed listing decisions. Unfortunately, this oftentimes is not the case. Several prominent scientists recently "endorsed a statement accusing the Bush Administration in general of misusing science."[69] A 2005 survey conducted by the Union of Concerned Scientists and Public Employees for Environmental Responsibility ("PEER"), indicated that sixty-four percent of the individuals working on

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[59] *Id.* at 178.

[60] *Id.* at 194. *See also* Rohlf, *supra* note 21, at 501 (noting "[u]nfortunately, for virtually the entire history of the Act, Congress has expected FWS and NOAA Fisheries to make listing decisions using impossible criteria.").

[61] Teresa Woods & Steve Morey, *Uncertainty and the Endangered Species Act*, 83 IND. L.J. 529, 531 (2008).

[62] Carden, *supra* note 19, at 194.

[63] Ruhl, *supra* note 9, at 1075.

[64] *Id.*

[65] Doremus, *supra* note 5, at 419-20.

[66] *See, e.g.*, Ruhl, *supra* note 9, at 1070 (noting, although science can provide some indication as to the status of a species, "whether a species is 'endangered' ultimately requires some judgment and thus opens the door to process violation problems.").

[67] *See* Holly Doremus, *Data Gaps in Natural Resource Management: Sniffing for Leaks Along the Information Pipeline*, 83 IND. L.J. 407, 444 (2008) (illustrating "science cannot tell society, for example, how many gray wolves, occupying how much of their historic range, are enough, or what balance should be struck between habitat preservation and development.").

[68] Doremus, *supra* note 18, at 1635.

[69] Ruhl & Salzman, *supra* note 6, at 29 (citing Union of Concerned Scientists, List of Prominent Signatories on Statement on Scientific Integrity, http://www.ucsusa.org/scientific_integrity/what_you_can_do/prominent-statement.html (last visited Oct. 16, 2009)).

endangered species findings in Florida FWS field offices acknowledged being "directed, for non-scientific reasons, to refrain from making... findings protective of species," along with forty-six percent polled in the Southwest Region.[70] Additionally, twenty-eight percent of the FWS biologists admitted being "directed to inappropriately exclude or alter technical information" used in agency-related scientific documents.[71]

A. Background of Listing Controversies

Several recent controversies have called scientific integrity into question concerning the use of science in the listing process specifically. A report by the U.S. Government Accountability Office ("GAO") identified the increase in the number of species listed and considered for listing, as well as an improved understanding of the strength of the ESA, as the reasons for the recent increase in advocacy and litigation involving the listing process.[72] The focus of most of these recent controversies has been the adequacy of the science underlying wildlife agencies' listing determinations.[73] The GAO consulted with ESA experts and determined that there was "significant scientific controversy" surrounding the listing decisions for twenty-five species,[74] finding that "the most common scientific disagreements hinge on whether enough information was available to determine (1) whether the plants or animals under consideration qualified as a 'species' as defined by the act, (2) the status of the species, or (3) the degree of threat that the species faces."[75] However, even when scientific information provides sufficient justification for a listing, the agency decision does not always reflect those findings,[76] and when the listing decision involves a controversial species, litigation is generally necessary just to complete the process.[77]

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[70] Wolf, *supra* note 22, at 116 (quoting from Pub. Employees for Envtl. Responsibility, *Fish & Wildlife Science Polluted by Florida Politics – Survey Validates Concerns Raised by Panther Whistleblower*, PEER, Feb. 10, 2005, http://www.peer.org/news/news_id.php?row_id=476).

[71] *Id.*

[72] U.S. GOV'T ACCOUNTABILITY OFFICE, ENDANGERED SPECIES ACT: SUCCESSES AND CHALLENGES IN AGENCY COLLABORATION AND THE USE OF SCIENTIFIC INFORMATION IN THE DECISION MAKING PROCESS, GAO-05-732T, 3 (May 19, 2005) [hereinafter 2005 U.S. GAO ESA REPORT], *available at* http://www.gao.gov/new.items/d05732t.pdf.

[73] *Id.*

[74] 2003 GAO FWS SCIENCE REPORT, *supra* note 25, at 58 n.1.

[75] *Id.* at 58.

[76] *See, e.g.*, N. Spotted Owl v. Hodel, 716 F. Supp. 479 (W.D. Wash. 1988).

[77] Wolf, *supra* note 22, at 92.

B. Agency Operations: The Black Box[78]

More information has recently become available involving questionable internal agency operations including the controversy surrounding Julie MacDonald who caused "an unraveling of agency decisions made under her oversight."[79] Upon receiving an anonymous complaint alleging improper influence, MacDonald resigned from her position as Deputy Assistant Secretary of the FWS, and the House Committee on Natural Resources held a hearing concerning political influence in ESA decision-making and directed the FWS to investigate decisions made under her watch.[80] While MacDonald personally reviewed over 200 ESA decisions, the FWS identified eight decisions which warranted review (seven requiring revision), due to MacDonald's inappropriate manipulation of science at the expense of species protection.[81] The GAO Report summarizing the outcomes of the MacDonald investigation additionally noted that in a May 2005 Guidance document, agency biologists were instructed to use additional information during 90-day petition findings only to refute statements made in the petition; they were not to list any information that may have supported petition statements.[82] One species affected by her tenure is a minnow-like fish called the Sacramento Splittail, where subsequent investigation revealed that Julie MacDonald owned land in areas that might be affected by the listing, but she still participated in the decision not to list the species.[83]

C. Judicial Review of Agency Science

Professor Holly Doremus has summarized the judicial outcomes upon examination of the scientific underpinnings in several listing decisions as follows:[84]

Courts have been quite willing to find that the agency did not adequately explain its evaluation of the scientific evidence,[85] or its interpretation of the legal

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[78] Carden, *supra* note 19, at 176.

[79] Ruhl, *supra* note 9, at 1080.

[80] U.S. GOV'T ACCOUNTABILITY OFFICE, U.S. FISH AND WILDLIFE SERVICE: ENDANGERED SPECIES ACT: DECISION MAKING, GAO-08-688T, 1, 9 (May 21, 2008) [hereinafter 2008 U.S. GAO REPORT], *available at* http://www.gao.gov/new.items/d08688t.pdf.

[81] *Id.* at 4.

[82] *Id.* at 12.

[83] Doremus, *supra* note 18, at 1605 (citing Mike Taugher, *Feds Verify Official's Bias in Delisting*, CONTRA COSTA TIMES, Nov. 28, 2007, at A1).

[84] Doremus, *supra* note 5, at 431-32.

[85] *See, e.g.*, Moden v. U.S. Fish & Wildlife Serv., 281 F. Supp. 2d 1193, 1205 (D. Or. 2003) (agency did not adequately explain its decision to reject a petition to delist the Lost River sucker and shortnose sucker); Fund for Animals v. Williams, 246 F. Supp. 2d 27, 37 (D.D.C. 2003) (agency failed to adequately explain decision not to list trumpeter swan population); Friends of the Wild Swan v. U.S. Fish & Wildlife Serv., 12 F. Supp. 2d 1121, 1135 (D. Or. 1997) (agency failed to explain its decisions to revise boundaries of distinct population segment and to rely on data it had previously discounted).

significance of that science,[86] did not point to support for its conclusion in the record,[87] failed to consider available evidence,[88] committed procedural errors in its treatment of scientific information,[89] or failed to correctly interpret or satisfy the Act's requirements.[90]

Recently publicized examples include the FWS decision to not place the Sage Grouse on the endangered species list, which was criticized due to the concern that politics had interfered with an otherwise scientifically justified decision to list the species.[91] Additionally, the 2001 Klamath River Basin controversy called ESA science into question regarding a Bureau of Reclamation decision to cut-off irrigation water during a regional drought to save three species of fish.[92] Similarly, in reviewing a listing decision for Pygmy Owls, the Ninth Circuit held that the FWS had arbitrarily overstated the significance of a particular

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[86] *See, e.g.*, Defenders of Wildlife v. Norton, 258 F.3d 1136, 1146 (9th Cir. 2001) (remanding decision not to list flat-tailed horned lizard because the agency did not adequately explain why large areas of historic range from which lizard had been extirpated did not constitute "significant portion of its range").

[87] *See, e.g.*, Carlton v. Babbitt, 900 F. Supp. 526, 531 (D.D.C. 1995) (refusal to reclassify grizzly bear as endangered was not warranted because claim that human-caused mortality was decreasing was not supported by the record).

[88] *See, e.g.*, San Luis & Delta-Mendota Water Auth. v. Badgley, 136 F. Supp. 2d 1136, 1151 (E.D. Cal. 2000) (listing of Sacramento splittail set aside because FWS ignored data suggesting that population was increasing and data conflicted with the apparently biased studies relied on); Friends of the Wild Swan v. U.S. Fish & Wildlife Serv., 945 F. Supp. 1388, 1398 (D. Or. 1996) (denial of petition to list bull trout was arbitrary and capricious because FWS failed to consider evidence showing that invasive species posed a threat).

[89] *See, e.g.*, Idaho Farm Bureau Fed'n v. Babbitt, 58 F.3d 1392, 1405 (9th Cir. 1995) (setting aside listing of Bruneau hotspring snail because FWS refused to provide draft report upon which listing relied to opponents); Alabama-Tombigbee Rivers Coalition v. Dep't of Interior, 26 F.3d 1103, 1106-07 (11th Cir. 1994) (setting aside listing of Alabama sturgeon because agency improperly excluded public from proceedings of expert group asked to evaluate supporting data); Endangered Species Comm. Of the Bldg. Indus. Ass'n of S. Cal. v. Babbitt, 852 F. Supp 32, 38 (D.D.C. 1994) (relying on best science mandate to hold listing of California gnatcatcher invalid because agency refused to obtain and share raw data underlying key report).

[90] *See, e.g.*, Am. Wildlands v. Norton, 193 F. Supp. 2d 244, 256 (D.D.C. 2002) (holding the agency acted arbitrarily and capriciously when it determined that hybridization was a threat to the westslope cutthroat trout but then including hybrids in the population to determine whether the fish was threatened or endangered); Alsea Valley Alliance v. Evans, 161 F. Supp. 2d 1154, 1163 (D. Or. 2001) (overturning decision to list wild coho salmon because agency determined that hatchery fish were genetically identical to wild ones but declined to consider hatchery fish in evaluating population status); Or. Natural Res. Council v. Daley, 6 F. Supp. 2d 1139, 1152 (D. Or. 1998) (holding that agency improperly relied on determination that coho salmon would not become endangered in next few years, ignoring statutory standard requiring determination of whether species was likely to become endangered in the foreseeable future); Defenders of Wildlife v. Babbitt, 958 F. Supp. 670, 681 (D.D.C. 1997) (holding that agencies improperly required "conclusive evidence" to support listing of the Canada lynx).

[91] 2005 U.S. GAO ESA REPORT, *supra* note 72, at 3.

[92] David S. Caudill, *Images of Expertise: Converging Discourses on the Use and Abuse of Science in Massachusetts v. EPA*, 18 VILL. ENVTL. L.J. 185, 194 (2007) (citing Chris Mooney, *Sucker Punch: How Conservatives are Trying to Use a Conflict over Obscure Fish to Gut the Science Behind the Endangered Species Act*, LEGAL AFFAIRS, May/June 2004, at 23-24).

population of owls to the population as a whole.[93]

1. The Misuse of Science in the Taxonomy Inquiry

Another controversial listing decision involved the taxonomic inquiry for the Sonoran Desert population of Bald Eagles. The reviewing district court noted that FWS scientists were told over a conference call that FWS headquarters and regional officials had "reached a 'policy call' to deny the 90-day petition and that 'we need to support [that call].'"[94] The statement was made by a headquarters official after the FWS was unable to find information to refute the petition and some scientists had concluded listing was warranted.[95] The court stated that the scientists appeared to have received "marching orders" to make their science support a finding that the population of eagles did not constitute a distinct population segment and therefore could not be listed.[96]

2. The Misuse of Science in the Viability Inquiry

The Slickspot Peppergrass case[97] illustrates the efficacy of peer review in validating (or invalidating) the scientific underpinnings of listing decisions. In that case, judicial review of the listing decision raised serious questions about the integrity of the science underlying the viability inquiry.[98] Based on the opinions of five peer reviewers, and after two public comment periods, FWS proposed to list the Slickspot Peppergrass with the understanding that its rate of disappearance was "the highest known of any Idaho rare plant species."[99] After the expiration of the peer review and public comment period, an Air Force challenge to the listing led the FWS to change its position and not list the plant species.[100] This decision was challenged and the Idaho District Court found that the decision was arbitrary and capricious because the scientific evidence indicated a strong likelihood that the plant would become extinct within one

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[93] *See* Nat'l Ass'n of Home Builders v. Norton, 340 F.3d 835 (9th Cir. 2003). *See also* J.B. Ruhl, *Reconstructing the Wall of Virtue: Maxims for the Co-Evolution of Environmental Law and Environmental Science*, 31 ENVTL. L. 1063, 1077 (2007) (citing *Nat'l Ass'n of Home Builders*, 340 F.3d at 847 (noting "the science was not 'bad science,' the agency simply overstated the support it lent to the policy decision" and describing this type of error as a "The Science Made Us Do It transgression" pursuant to the law-science process violations committed by agencies in ESA decision-making)).

[94] 2008 U.S. GAO REPORT, *supra* note 80, at 19 (quoting Ctr. for Biological Diversity v. Kempthorne, No. CV 07-0038, 2008 WL 659822, at *11 (D. Ariz. 2008)).

[95] *Id.*

[96] *Id.*

[97] *See generally* W. Watersheds Project v. Foss, No. CV 04-168, 2005 WL 2002473 (D. Idaho 2005).

[98] *See id.* at *15-18.

[99] Endangered and Threatened Wildlife and Plants; Listing the Plant Lepidium papilliferum (slickspot peppergrass) as Endangered, 67 Fed. Reg. 46,441, 46,441 (July 15, 2002) (to be codified at 50 C.F.R. pt. 17).

[100] *W. Watersheds Project*, 2005 WL 2002473, at *5.

hundred years, and the FWS should have erred on the side of protecting the plant in the face of any scientific uncertainty.[101]

IV. VALUE OF PEER REVIEW IN SCIENTIFIC DECISIONMAKING AND THE SHORTFALLS IN THE CURRENT USE OF PEER REVIEW IN LISTING DECISIONS

The majority of the controversies mentioned above involve decisions not to list species on taxonomic or viability bases where the scientific and political aspects collide. Because imperiled species are at risk of further decline or extinction, it is insufficient to rely exclusively on judicial review as a remedy after the agency decision has been made.[102] Peer review provides a mechanism to police such issues at an earlier stage in the listing determination process,[103] and is considered a fundamental element in the practice of science generally.[104] The scientific community relies on peer review to provide a "rigorous, independent assessment of the design and execution of scientific research"[105] leading to either positive furtherance of the weight of a hypothesis, or raising uncertainties which undermine the outcome.[106] Because of the multiple benefits peer review provides, it has been described as "the gold standard for determining publication and general acceptance" of scientific analysis and interpretation.[107]. First, it serves as a "quality control" mechanism to ensure that purported conclusions can be verified with scientific data.[108] Second, peer review allows those who oversee publication of scientific information to prioritize and rank the significance of various proposals.[109]

This type of review has also been proposed in the regulatory setting where a panel of experts could assess an agency's utilization of science in its decision-making process.[110] According to advocates of the "sound science" movement, "procedural safeguards to ensure better use of scientific data will improve agency decisions."[111] It is generally understood that establishing the scientific

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[101] *See id.* at *17.

[102] Ruhl, *supra* note 9, at 1077.

[103] *Id.*

[104] Ruhl & Salzman, *supra* note 6, at 6.

[105] Ruhl, *supra* note 9, at 1077 (citing J.B. Ruhl & James Salzman, *In Defense of Regulatory Peer Review*, 84 WASH. U. L. REV. 1, 52-53 (2006)).

[106] Vellucci, *supra* note 29, at 300.

[107] Ruhl & Salzman, *supra* note 6, at 6.

[108] *Id.* at 14.

[109] *Id.*

[110] *See, e.g.*, Ruhl, *supra* note 9, at 1077 (stating "[l]ikewise, regulatory peer review, which could be conducted by a panel of scientists and policy experts, would apply rigorous, independent assessment of an agency's use of science in reaching a policy decision.").

[111] Ruhl & Salzman, *supra* note 6, at 4 (citing David E. Adelman, *Scientific Activism and Restraint: The Interplay of Statistics, Judgment, and Procedure in Environmental Law*, 79 NOTRE DAME L. REV. 497, 498 (2004)).

method as general agency decision-making protocol will ensure better use of science.[112] In the context of the ESA, the value of utilizing peer review is "to ensure that quality science will prevail over social, economic, and political considerations"[113] by checking the agencies' preliminary findings when making listing determinations. However, for peer review to effectively serve its intended purpose, the inquiry must be limited to only the scientific aspects of the decision.[114]

A. The Current Procedure for Peer Review in Listing Decisions

In 1994 the FWS and NOAA sought to incorporate independent peer review into listing and recovery decision-making.[115] The current policy for peer review under the ESA requires the wildlife agencies to solicit independent peer review on listing proposals in order "to ensure the best biological and commercial information is being used in the decision-making process, as well as to ensure that reviews by recognized experts are incorporated into the review process of rulemakings . . . developed in accordance with the requirements of the Act."[116] Upon a determination that listing is in order, the relevant agency must "[s]olicit the expert opinions of three appropriate and independent specialists regarding pertinent scientific or commercial data and assumptions relating to the taxonomy, population models, and supportive biological and ecological information for species under consideration for listing."[117]

The field office scientists responsible for the development of listing decisions and critical habitat designations have considerable discretion in the selection of peer reviewers.[118] Agency scientists are permitted to request review of minor details of a proposed rule, or they may ask reviewers to provide more general insight regarding the rule in its entirety.[119] The prescribed statutory period may be extended to permit "special independent peer review" if there is an "unacceptable level of scientific uncertainty" underlying a listing decision.[120] Peer reviewers are instructed to summarize their opinions in the final decision document, which will either constitute a listing rule or notice of withdrawal.[121]

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[112] *Id.* at 5.

[113] 2003 GAO FWS SCIENCE REPORT, *supra* note 25, at 14.

[114] Ruhl & Salzman, *supra* note 6, at 15.

[115] *Id.* at 19 (citing Endangered and Threatened Wildlife and Plants: Notice of Interagency Cooperative Policy for Peer Review in Endangered Species Act Activities, 59 Fed. Reg. 34,270, 34,270 (July 1, 1994)).

[116] Endangered and Threatened Wildlife and Plants, 59 Fed. Reg. at 34,270.

[117] *Id.*

[118] 2003 GAO FWS SCIENCE REPORT, *supra* note 25, at 15.

[119] *Id.*

[120] Carden, *supra* note 19, at 193 (citing Endangered and Threatened Wildlife and Plants, 59 Fed. Reg. at 34,270).

[121] Endangered and Threatened Wildlife and Plants: Notice of Interagency Cooperative Policy for Peer Review in Endangered Species Act Activities, 59 Fed. Reg. 34,270, 34,270 (July 1, 1994).

Additionally, all reports, opinions, and data used by the peer reviewers must be included in the administrative record accompanying the final decision.[122]

In 2002, the Office of Management and Budget ("OMB") issued a guidance document with its recommendations for the use of peer review by federal agencies.[123] It specified that independent peer review must be conducted externally, by individuals outside the agency "to ensure the quality of data and analytic results disseminated to the public."[124] Additionally, it noted that peer reviewer selection should be based primarily on technical expertise, reviewers should disclose any source of bias (such as prior technical or policy positions and sources of personal or institutional funding), and the review should be conducted in an "open and rigorous manner."[125] The OMB issued its "Final Information Quality Bulletin for Peer Review" in 2004, which set standards for peer review of "scientific information the agency reasonably can determine will have or does have a clear and substantial impact on important public policies or private sector decisions."[126] Although the OMB recommendations have proven to be somewhat controversial in application, they provide a helpful starting point for improving the peer review process in listing activities.[127]

B. Problems with Science and Transparency in the Current Peer Review Process

1. Species Not Proposed for Listing

Under the current peer review process, agency determinations that listing is not warranted, or warranted but precluded, are not reviewed by external independent scientists. Only those species the agency proposes for listing are subject to such scrutiny.[128] Accordingly, despite the more rigorous nature of

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[122] Carden, *supra* note 19, at 193 (2006) (citing Endangered and Threatened Wildlife and Plants, 59 Fed. Reg. at 34,270).

[123] 2003 GAO FWS SCIENCE REPORT, *supra* note 25, at 14 (citing Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility and Integrity of Information Disseminated by Federal Agencies, 67 Fed. Reg. 8452, 8454-59 (Feb. 22, 2002)).

[124] *Id.*

[125] *Id.* (citing OFFICE OF MGMT. AND BUDGET, EXEC. OFFICE OF THE PRESIDENT, MEMORANDUM FOR THE PRESIDENT'S MANAGEMENT OF COUNCIL: PRESIDENTIAL REVIEW OF AGENCY RULEMAKING BY OIRA (Sept. 20, 2001), *available at* http://www.whitehouse.gov/omb/rewrite/inforeg/text/oira_review-process.html).

[126] *See* Final Information Quality Bulletin for Peer Review, 70 Fed. Reg 2664, 2667 (Jan. 14, 2005).

[127] The OMB "Final Information Quality Bulletin for Peer Review" has certain critics in the scientific community regarding the OMB's authority to oversee the peer review processes of federal agencies and regulatory delay resulting from increased procedural hurdles involved in implementing the suggestions contained therein. *See, e.g., OMB Watch Analysis on Final Peer Review Bulletin*, OMB WATCH, Jan. 10, 2005, http://www.ombwatch.org/node/2207.

[128] Endangered and Threatened Wildlife and Plants: Notice of Interagency Cooperative Policy

peer review in the scientific community, affirmation has been commonplace in listing proposals, as peer reviewers have "overwhelmingly supported" the science behind listing proposals.[129] In fact, of all the proposed listing decisions submitted for peer review between fiscal years 1999 through 2002, only three reviewers ever expressed disagreement.[130] This implies that the process of independent peer review has had little, if any, effect on agency listing decisions because the decision to propose a listing was made by the agency prior to seeking independent review. The rate of affirmation would likely decline if the agency sought peer review for decisions to *not* propose a listing. Under the current system, the outcome of peer review benefits the agency regardless of the outcome, because disagreement essentially relieves the agency of the expensive obligation to provide protection to the species,[131] and (more likely) agreement amounts to a "pat on the back" for a proposal decision that was already made.

In support of its conclusion that listing decisions were scientifically sound, the GAO Report cited evidence that "only 10 of the more than 1,200 domestic listed species have been delisted after new scientific information surfaced that indicated the original listing was not warranted."[132] However, the GAO asked the wrong question in reaching its conclusion because this purported agreement with the science of listing decisions does not address the agencies' decisions not to propose listing a species. In other words, the GAO Report did not consider whether any new information may have indicated that the decision not to propose listing a species was not "scientifically sound." The implication is that, although the process for listing a species may be "scientifically sound," the decision not to list a species is the real issue. Successful challenges to agency decisions not to list species (for both taxonomic and viability purposes) suggest that this is the case and the current peer review process excludes those decisions from consideration.

2. Timing

The timing of the current peer review process fails to provide the intended

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for Peer Review in Endangered Species Act Activities, 59 Fed. Reg. 34,270, 34,270 (July 1, 1994).

[129] 2003 GAO FWS SCIENCE REPORT, *supra* note 25, at 3 (analyzing peer review responses between fiscal years 1999 and 2002).

[130] *See id.*

[131] This is undoubtedly a costly endeavor. For example, in fiscal year 2007, FWS requested over $141 million specifically for endangered species listing programs in addition to the $1.3 billion requested by the agency that year and $808 million in permanent appropriations. For a detailed breakdown of endangered species expenditures, see LibraryIndex.com, The Endangered Species Act – Endangered Species Act Spending, http://www.libraryindex.com/pages/3033/Endangered-Species-Act-ENDANGERED-SPECIES-ACT-SPENDING.html (last visited Oct. 18, 2009).

[132] 2003 GAO FWS SCIENCE REPORT, *supra* note 25, at 3 (it is also worth noting that the same study acknowledged that only "seven domestic species have been delisted due to recovery." *Id.* at 9).

benefit of disseminating relevant scientific information to the public,[133] because the existing peer review for listing decisions occurs after a listing has been proposed and concurrently with acceptance of public comments generally. This also leads to potential agency manipulation because "by the time members of the public are able to comment on a proposed rule or action, they may be too late to influence the decision because the agency's decision may have become entrenched by its earlier investment of time and resources."[134] Thus, rather than using outside comments to highlight and incorporate relevant information, agencies are more inclined to view comments as potential lawsuits and treat dissent as a hostile objection to agency expertise.[135]

3. Peer Reviewer Selection

Selection of peer reviewers for a listing proposal is at the discretion of the relevant field office scientist.[136] Despite the OMB recommendation that selection be based primarily on technical expertise, agencies have been accused of "cherry-picking"[137] reviewers to support listing proposals rather than using the process to provide an objective check on the accuracy of the decision. Peer review has been described in its worst extremes as "a cynical exercise" where agencies "manipulate the process and rig outcomes to justify agency decisions that might not withstand legitimate peer scrutiny."[138] Also, reviewers may only be asked to examine specific aspects of a listing proposal; examination of the entire decision is only pursuant to the field scientist's discretion.[139] This is a critical issue because scientific conclusions will naturally vary in relation to the question asked, especially when the question might not concern the entirety of the scientific data underlying a listing proposal (and will never concern an agency decision not to propose a listing).

V. PROPOSALS TO IMPROVE THE PEER REVIEW PROCESS IN LISTING DECISIONS

Consistent with the understanding that "[s]cience must remain science, but

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[133] *See id.* at 14 (citing Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies, 67 Fed. Reg. 8452, 8452-58 (Feb. 22, 2002)).

[134] Stephanie Tai, *Three Asymmetries of Informed Environmental Decisionmaking*, 78 TEMP. L. REV. 659, 693 (2005).

[135] *Id. See also* Doremus, *supra* note 18, at 1652 (citing Lars Noah, *Scientific "Republicanism": Expert Peer Review and the Quest for Regulatory Deliberation*, 49 EMORY L.J. 1033, 1059-64 (2005)).

[136] 2003 GAO FWS SCIENCE REPORT, *supra* note 25, at 15.

[137] Ruhl & Salzman, *supra* note 6, at 40.

[138] *Id.*

[139] 2003 GAO FWS SCIENCE REPORT, *supra* note 25, at 15.

policy must have a seat at the table,"[140] modifying the peer review process is necessary to improve the integrity of both the relevant science and the policy underlying listing proposals and decisions not to list a species.

A. Improving the Scientific Aspects with Broadened Review

To broaden the peer review process, the agency should be required to provide reviewers with a preliminary determination as to whether listing is warranted, not warranted, or warranted but precluded. The peer review of that determination should then be conducted immediately following the in-house agency status review, but prior to a proposed listing and public comment period. In considering the agency's preliminary finding, reviewers should examine and offer insight not only for listing proposals, but also for decisions to *not* propose listing a species. Where decisions not to list a species are crucial scientific determinations which are currently not reviewed outside the agency, to do so would better serve the agencies' policy of erring on the side of species protection and better serve as a legitimate check on agency science, rather than what consistently amounts to mere affirmation of a listing proposal in the current Section 4 sequence.

B. Improving the Policy Aspects with Increased Transparency

Although the general public might not possess the requisite expertise to make the scientific or legal determinations that may be relevant for listing decisions, there is some expectation that the particulars of the science and policy interplay in agency decisions will be available for public evaluation.[141] Even where a precise conclusion may be impossible at the time, the public should be apprised of the unavailability of certain information and any assumptions used to fill gaps in incomplete data.

Where reviewer bias and bias in reviewer selection are additional problems in peer review,[142] conducting peer review prior to the public comment period would permit public disclosure of any potential bias of peer reviewers consistent with the 2002 OMB. report mentioned above by exposing any background

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[140] Ruhl, *supra* note 9, at 1079. "[T]he law of the ESA is about the science of the ESA, and the science of the ESA is about the law of the ESA. The two cannot be separated, and together they have formed a co-evolving system of law-science process . . . . The feedback between the two processes is continuous and complex, with each having a substantial role in defining the other." *Id.* at 1073.

[141] *Id.* at 1067 (citing Anne Clarke, *Seeing Clearly: Making Decisions under Conditions of Scientific Controversy and Incomplete and Uncertain Scientific Information*, 46 NAT. RESOURCES J. 571, 576-77 (2006)).

[142] *See, e.g.*, Wolf, *supra* note 22, at 115 (citing Donald T. Hornstein, *Science in the Regulatory Process: Accounting for Science: The Independence of Public Research in the New, Subterranean Administrative Law*, 66 LAW & CONTEMP. PROBS. 227, 243 n.84 (2003) (stating "[a] recent study indicated that research is 3.6 times more likely to make determinations that favor companies when the research is corporately-funded.")).

positions or sources of funding. Beyond the elimination of industry or agency bias, engaging in peer review earlier in the listing process would also allow interested parties to examine reviewers' personal or ethical bias. Reed Noss and Holly Doremus have discussed this as a potentially difficult issue to resolve in the conservation context where it is commonly assumed that biodiversity is an inherently desirable objective. In other words, "[h]uman actions that protect and restore biodiversity are good; those that destroy or degrade biodiversity are bad."[143] These personal biases can pose a more subtle threat because they are easily overlooked and rationalized as ethical upon detection.[144] Additionally, intentional reviewer bias could be avoided by the increased transparency in the listing process because scientists will not be tempted to manipulate their findings in an effort to force change due to a general mistrust of the political system.[145]

Under the current process, there is no requirement that the agency actually abide by the peer reviewers' conclusions. Incorporating the peer review findings into the record prior to public comment means that deviations from the peer reviewers' scientific recommendations, which will inevitably involve policy judgments, can be exposed and fully available to be addressed by interested public parties.[146] For instance, because peer reviewers will likely request standards from the relevant agency as to the level of risk necessary to classify a species as "endangered" or "threatened," making those standards available to the public would better allow the public to examine the policy influences relative to scientific levels of endangerment. This would also result in more complete disclosure of any deficiencies in the scientific data (including the preferences and assumptions implicitly incorporated to address those deficiencies), and provide insight for the policy considerations that are relevant to listing specific species.

C. Addressing the Concern of Paralysis by Analysis

An issue that is often raised in the context of regulatory reform, and particularly relevant here, is the potentially increased time required to make agency decisions. This is commonly known as the "paralysis by analysis" charge.[147] The argument is that agencies already have difficulty meeting

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[143] Doremus, *supra* note 18, at 1626 (quoting Reed F. Noss, *Values Are a Good Thing in Conservation Biology*, 21 CONSERVATION BIOLOGY 18, 18 (2007)).

[144] *Id.* at 1627.

[145] *Id.* at 1629 (citing Noss, *supra* note 143, at 19).

[146] Rohlf, *supra* note 21, at 515 (stating "[i]n establishing lines separating endangered, threatened, and recovered species, FWS and NOAA Fisheries . . . must develop a process for explicitly making these calls with the participation of interested parties.").

[147] Noah, *supra* note 135, at 1068.

prescribed deadlines, so additional steps only exacerbate the problem.[148] The broader issue with "paralysis by analysis" for government agencies is that it interferes with their objectives for protecting the public.[149] In the listing context specifically, the concern is that the additional time required for decision-making allows "an endangered species to move ever closer to extinction."[150]

Previous attempts to reform the listing process have been purposefully designed to slow or obstruct the process, thus fostering a justified skepticism in the scientific community of the motivations underlying proposed restructuring in this context.[151] These proposed legislative amendments[152] include The Endangered Species Conservation and Management Act ("ESCMA"),[153] The ESA Common Sense Act of 2000,[154] and the Sound Science for Endangered Species Act of 2002.[155] Although none of the bills ultimately became law, they generally indicated a preference for peer review.[156] Many scientists criticized these proposals for adding bureaucratic procedures and purposefully delaying species listings.[157] It is important to distinguish these prior attempts because the aim of re-sequencing here is not to impose an additional hurdle between an imperiled species and the protection it deserves under the ESA, but to improve the integrity of both the scientific and political aspects so that peer review can serve as a useful tool in addressing existing procedural concerns.

Although broadening the process may indeed increase the time spent on scientific aspects of listing determinations, time will likely be saved in the long term through decreased litigation. First, where the majority of science-based challenges involve decisions not to list species, subjecting those decisions to peer review would legitimize those taxonomic and viability inquiries. Second, the increased transparency realized by conducting peer review prior to public comment, thereby exposing the relevant science and policy interplay, will likewise increase public confidence in the agency's ultimate outcome.

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[148] Ruhl & Salzman, *supra* note 6, at 40.

[149] David S. Caudill, *Images of Expertise: Converging Discourses on the Use and Abuse of Science in Massachusetts v. EPA*, 18 VILL. ENVTL. L.J. 185, 196 (2007) (citing Roni A. Neff & Lynn R. Goldman, *Regulatory Parallels to Daubert: Stakeholder Influence, "Sound Science," and the Delayed Adoption of Health-Protective Standards*, 95 AM. J. PUB. HEALTH, S81 (2005)).

[150] Ruhl & Salzman, *supra* note 6, at 40.

[151] *See* CONG. RESEARCH SERV., CRS REPORT FOR CONGRESS: THE ENDANGERED SPECIES ACT AND "SOUND SCIENCE" 25, *available at* https://www.policyarchive.org/bitstream/handle/10207/2498/RL32992_20070108.pdf?sequence=2 (Jan. 8, 2007) [hereinafter CRS REPORT].

[152] J. Travener Holland, *Regulatory Daubert: A Panacea for The Endangered Species Act's "Best Available Science" Mandate*, 39 McGEORGE L. REV. 299, 317 (2008) (providing a detailed outline of the proposed legislative amendments).

[153] H.R. 2275, 104th Cong. (1995).

[154] H.R. 3160, 106th Cong. (1999).

[155] H.R. 4840, 107th Cong. (2002).

[156] Holland, *supra* note 152, at 319.

[157] *See* CRS REPORT, *supra* note 151, at 25.

CONCLUSION

Restoring public confidence in the listing process is imperative because the political usefulness of the strictly science mandate appears to be fading due to increased awareness of the manipulative practices employed in its implementation.[158] Where the aim of the ESA is to protect our species in the face of extinction, contorting evidence to support policy preferences leaves those species to bear the burden of such practices. Exposing politically motivated deviations from the scientific evidence underlying listing determinations by making a simple change in the regulatory sequence would provide the public with a necessary check on agency decisions and require agency justification for decisions causing the expenditure of imperiled species. Remedying the procedural scientific deficiencies will lead to increased legitimacy and, ultimately, better protection for the intended beneficiaries of the ESA.

[158] Doremus, *supra* note 5, at 429.