

# Square Pegs and Round Holes: Application of the “Best Scientific Data Available” Standard in the Endangered Species Act

Michael J. Brennan\*  
David E. Roth†  
Murray D. Feldman\*\*  
Andrew Robert Greene††

I.	INTRODUCTION .....	389
II.	SCIENCE IN THE ESA.....	392
	A. <i>What Is Science?</i> .....	392
	B. <i>The General Framework</i> .....	393
	C. <i>The Best Scientific Data Available Standard</i> .....	396
	1. The Listing Determination .....	396
	2. Critical Habitat Designation .....	397
	3. The Consultation Process .....	398
	4. Habitat Conservation Planning.....	399
	D. <i>Other ESA Scientific Data Standards</i> .....	400
	1. The Petition Standard.....	401
	2. The CITES Standard.....	402
	E. <i>Best Scientific Data Available Standards in Other Federal Laws</i> .....	402
III.	REGULATORY GUIDANCE REGARDING “BEST AVAILABLE SCIENTIFIC DATA” .....	404
	A. <i>The 1994 Information Standards Guidelines</i> .....	404
	B. <i>The FWS and NMFS Peer Review Policy</i> .....	406
	C. <i>The FWS Information Quality Guidance</i> .....	408

---

\* Michael J. Brennan is a partner in the Jackson Hole, Wyoming, office of Holland & Hart LLP and heads the firm’s Endangered Species Act working group.

† David E. Roth is a partner in the Birmingham, Alabama, office of Bradley Arant Rose & White LLP and practices with the firm’s Environmental & Toxic Tort Practice Group.

\*\* Murray D. Feldman is a partner in the Boise, Idaho, office of Holland & Hart LLP and heads the firm-wide environmental practice.

†† Andrew Robert Greene is a partner in the Birmingham, Alabama, office of Bradley Arant Rose & White LLP and practices with the firm’s Environmental & Toxic Tort Practice Group.

IV. COURT REVIEW OF SCIENTIFIC DATA UNDER THE ESA ..... 409

    A. *The Legal Framework*..... 409

        1. The Applicable Standard of Review..... 409

        2. Judicial Evaluation of Agency Scientific Decision Making..... 410

        3. The Inherent Limitations of Science ..... 410

        4. Challenging Best Available Scientific Data Decisions—Generally ..... 411

    B. *Best Scientific Data Available Definition*..... 411

        1. Defining “Scientific” Data ..... 411

        2. Defining “Best” Data..... 412

        3. Defining “Available” Data ..... 416

    C. *Categories of Challenges to “Best Scientific Data Available”* ..... 417

        1. Criticism from Experts ..... 417

        2. Reliance on Incomplete Studies ..... 422

        3. Self-Critical Material in the Record ..... 422

        4. Need for Further Investigation ..... 423

        5. Bias ..... 428

    D. *Challenges to ESA Modeling*..... 430

V. ATTEMPTED FEDERAL LEGISLATIVE CHANGES ..... 433

    A. *The Endangered Species Conservation and Management Act of 1995*..... 433

    B. *The ESA Common Sense Act of 2000*..... 435

    C. *The Sound Science for Endangered Species Act of 2002*..... 436

        1. Status/History ..... 436

        2. Contents..... 438

    D. *The Endangered Species Listing and Delisting Process Reform Act*..... 440

VI. CONCLUSION ..... 441

*When reviewing such technical matters within the Agency’s area of expertise, the Court “must look at the decision not as the chemist, biologist or statistician that we are qualified neither by training nor experience to be, but as a reviewing court exercising its narrowly defined duty of holding agencies to certain minimal standards of rationality.”*

---

1. *Prima v. Dep’t of the Interior*, No. CIV. A 963578, 1998 WL 87912, at \*4 (E.D. La. Feb. 19, 1998) (citations omitted).

*Scientific uncertainty may contribute to the complexity of a problem, but the existence of a scientific dispute should not insulate an agency from meaningful, but limited, judicial review.*<sup>2</sup>

## I. INTRODUCTION

In 1973, Congress enacted what is the most far-reaching and ambitious wildlife protection law in the world. Born during a time of unparalleled congressional focus on environmental issues, the Endangered Species Act of 1973 (ESA)<sup>3</sup> stands out among its contemporaries<sup>4</sup> not only for its comprehensiveness, but also for its extreme dedication to endangered and threatened species conservation,<sup>5</sup> to the exclusion of virtually every other interest, including economic considerations.<sup>6</sup> In light of the unprecedented importance the ESA accords to protecting endangered and threatened species, it is not surprising that the ESA has been a lightning rod for controversy and litigation.

The relationship between science and the law is an uneasy one.<sup>7</sup> Particularly in the case of environmental legislation, however, science

---

2. Idaho Dep't of Fish & Game v. Nat'l Marine Fisheries Serv., 850 F. Supp. 886, 898 (D. Or. 1994), *vacated as moot & remanded to* 56 F.3d 1071 (9th Cir. 1995).

3. Endangered Species Act (ESA) §§ 2-18, 16 U.S.C. §§ 1531-1544 (2000). For a generalized discussion of the ESA, see Oliver A. Houck, *The Endangered Species Act and Its Implementation by the U.S. Departments of Interior and Commerce*, 64 U. COLO. L. REV. 277 (1993).

4. A broad range of environmental legislation was enacted from 1970 to 1980. Among the environmental laws enacted during the 1970s were: Marine Mammal Protection Act of 1972, 16 U.S.C. §§ 1361-1421h (2000); Forest and Rangeland Renewable Resources Planning Act of 1974, 16 U.S.C. §§ 1600-1641 (2000); National Forest Management Act of 1976, 16 U.S.C. §§ 1600, 1611-1614 (2000); Forest and Rangeland Renewable Resources Research Act of 1978, 16 U.S.C. §§ 1641-1647 (2000); Renewable Resources Extension Act of 1978, 16 U.S.C. §§ 1671-1676 (2000); Wood Residue Utilization Act of 1980, 16 U.S.C. §§ 1681-1687 (2000); Soil and Water Resources Conservation Act of 1977, 16 U.S.C. §§ 2001-2009 (2000); Coastal Zone Management Act of 1972, 16 U.S.C. §§ 3951-3956 (2002); Surface Mining Control and Reclamation Act of 1977, 30 U.S.C. §§ 1201-1328 (2000); Federal Water Pollution Control Act of 1972, 33 U.S.C. §§ 1251-1387 (2002); Environmental Quality Improvement Act of 1970, 42 U.S.C. §§ 4371-4375 (2000); Resource Conservation and Recovery Act of 1976, 42 U.S.C. §§ 6901-6992k (2000); Clean Air Act of 1970, 42 U.S.C. § 7401-7671q (2000); Federal Land Policy and Management Act of 1976, 43 U.S.C. §§ 1701-1785. There has never been a ten-year period in this nation's history to match the 1970s in terms of volume and scope of environmental legislation.

5. ESA § 2(b), 16 U.S.C. § 1531(b).

6. See generally *Tenn. Valley Auth. v. Hill*, 437 U.S. 153 (1978).

7. Several articles have been written describing the role of science in the law. See, e.g., Carla Mattix & Kathleen Becker, *Scientific Uncertainty Under the National Environmental Policy Act*, 54 ADMIN. L. REV. 1125 (2002); Robert L. Park, *Science in the Courts*, 36 NEW ENG. L. REV. 575 (2002). In the evidentiary context, courts have long struggled with the proper use of scientific evidence. See *Daubert v. Merrell Dow Pharm.*, 509 U.S. 579 (1993).

frequently plays an integral role in pursuing legislative goals. Indeed, in certain acts (such as the National Forest Management Act and Rangeland Renewable Resources Act of 1976),<sup>8</sup> Congress has gone so far as to direct the establishment of a scientific committee to assist with the development of regulations.<sup>9</sup>

The ESA places a near-talismanic reliance on the use of the “best scientific data available” in regulatory decision making.<sup>10</sup> Congress, however, failed to provide guidance on how to determine whether particular data meets this standard. In practice, agencies evaluating scientific data under the ESA and courts forced to evaluate agency decisions based upon such data have found their efforts severely hamstrung by two factors: (1) the ESA’s lack of definitional terms and (2) the fact that species data is, by its very nature, often vague, ambiguous, frequently subjective, best-professional-judgment-based rather than objectively quantifiable, and of uncertain scientific reliability. Not surprisingly, the resulting case law that has emerged regarding the best scientific data available standard is at times equally ambiguous and lacking in consistency.

This Article discusses the role played by scientific evidence in implementing the ESA, discusses judicial efforts to apply the best scientific data available standard in ESA cases, and summarizes a number of recent legislative attempts to modify the best scientific data available standard.

To illustrate the issues that will be discussed in this Article, consider the following hypothetical:

The United States Fish and Wildlife Service (FWS) lists as “threatened” under the ESA a beach mouse found only on a few beaches of the Mississippi Gulf Coast near Biloxi. Suitable habitat for the Mississippi beach mouse includes a thin strip of land located within approximately two miles of the ordinary high tide mark. Because of its location, this land is subject to periodic inundation by high tides associated with hurricane events, resulting in wide swings in the amount

---

8. 16 U.S.C. §§ 1600-1614.

9. *Id.* § 1604(h)(1). For a discussion regarding the success of this program, see Steven Goldberg, *The Reluctant Embrace: Law and Science in America*, 75 GEO. L.J. 1341 (1987) and Charles A. Wilkinson, *A Case Study in the Intersection of Law and Science: The 1999 Report of the Committee of Scientists*, 42 ARIZ. L. REV. 307 (2000).

10. ESA § 4(b)(1)(A)-(b)(2), 16 U.S.C. § 1533(b)(1)(A)-(b)(2). On the role of science in the ESA and the background of the best scientific data available standard, see Laurence Michael Bogert, *That’s My Story and I’m Stickin’ to It: Is the “Best Available” Science Any Available Science Under the Endangered Species Act?*, 31 IDAHO L. REV. 85 (1994) and Holly Doremus, *Listing Decisions Under the Endangered Species Act: Why Better Science Isn’t Always Better Policy*, 75 WASH. U. L.Q. 1029 (1997).

of suitable mouse habitat naturally available. The Mississippi beach mouse, like most small rodents, has a short life cycle and a high reproductive rate, which may be an advantageous evolutionary feature that allows the mouse to survive population crashes associated with hurricanes and other catastrophic natural phenomena by reproducing quickly to regain typical population numbers and densities following such events. Correspondingly, the Mississippi beach mouse appears to exhibit wide swings in population numbers associated with, and perhaps driven by, the natural fluctuation in its available habitat. However, similar to most ESA-listed species, relatively little is known about the Mississippi beach mouse except its general life history pattern. There is no firm information available regarding the amount of habitat historically occupied by the mouse, or its historic, pre-development abundance.

The area within which the Mississippi beach mouse is found is a center of residential and recreational development activity, including residential and commercial development within mouse habitat. Aware of the potential for liability for unauthorized “take” proscribed by section 9 of the ESA, certain residential developers applied for and obtained from the FWS an incidental take permit (ITP) under section 10 of the Act. The permit authorizes the take of Mississippi beach mice resulting from developers’ proposed residential development, free from liability under the ESA. This ITP is based on the developers’ commitment to implement a habitat conservation plan (HCP) that, among other things, precludes development within prime mouse habitat, establishes a several-hundred-acre mouse conservation preserve adjacent to the development, establishes a fund for acquisition and conservation of mouse habitat, and requires active mouse habitat restoration and enhancement activities following hurricane-induced habitat loss or destruction.

Neighboring home and landowners, alarmed by the proposed development, file suit under the ESA, challenging the FWS’ issuance of the ITP. The plaintiffs allege that the FWS has failed to identify the number of Mississippi beach mice in existence, has failed to identify the population levels necessary for the mouse to survive and to avoid extinction, and therefore has violated the ESA by issuing a permit that would allow the mouse to be taken. In particular, the plaintiffs challenge the FWS’ determination that the proposed activity will not reduce the species’ likelihood of survival and recovery in the wild.

In support of their claims, the plaintiffs argue that the FWS should have developed a population viability model that would enable the agency to predict the population size required for the mouse to survive. In response, the FWS argues that it has used as a surrogate for mouse

population numbers its assessment of historic and current mouse populations on the amount of currently suitable habitat, the apparent carrying capacity of that suitable habitat, and historic habitat trends. This is a practice that the FWS follows routinely in deciding whether to list a species as threatened or endangered, and is also one often urged by species advocates (due to the lack of population data) seeking to persuade the agency to list a species. The FWS argues further that a current count of mouse numbers would at best be a snapshot in time of limited relevance in the case of species like the Mississippi beach mouse, which experience highly dynamic and fluctuating population levels. The FWS argues that its permitting decision is supported by the best scientific data currently available, that there would be no conservation benefit to developing the types of data and information sought by the plaintiffs (which, perhaps not coincidentally, would take several years to procure and validate), and that the ESA does not require the agency to pursue development of new information prior to making a determination on a permit application.

How does a federal district court reviewing a local group's ESA citizen-suit challenge to the issuance of an ITP and approval of the HCP review these science-based claims? After reviewing the ESA framework, regulatory guidance, judicial decisions, and legislative efforts to address the best scientific data available standard, we propose in the Conclusion a normative approach to judicial evaluation of best scientific data available claims that comports with the ESA's statutory language and underlying goals.

## II. SCIENCE IN THE ESA

### A. *What Is Science?*

While it is beyond the scope of this Article to engage in an extended discussion of epistemology and the nature of science, a brief discussion helps frame these issues as they arise in the ESA's "best scientific data available standard." Science, as conventionally understood (referred to as "normal science" by Thomas Kuhn), "means research firmly based upon one or more past scientific achievements, achievements that some particular scientific community acknowledges for a time as supplying the foundation for its further practice."<sup>11</sup> Kuhn calls these universally recognized scientific achievements paradigms and, for a time, they provide model problems and solutions to a community of practitioners.<sup>12</sup>

---

11. THOMAS KUHN, *THE STRUCTURE OF SCIENTIFIC REVOLUTIONS* 10 (3d ed. 1996).

12. *See id.* at x, 10-11.

A paradigm has in a sense an objective standing because it has the capacity to formulate ideas which command respect in their own right.<sup>13</sup> “[M]odern man has set up as the ideal of knowledge the conception of natural science as a set of statements which is ‘objective’ in the sense that its substance is entirely determined by observation, even while its presentation may be shaped by convention.”<sup>14</sup> It is the conventions of the prevailing paradigm that give science its veneer of objectivity.

Michael Polanyi regards real scientific knowledge as “an active comprehension of the things known, an action that requires skill. [This] skillful knowing and doing is performed by subordinating a set of particulars, as clues or tools, to the shaping of a skillful achievement, whether practical or theoretical.”<sup>15</sup> What appears to be objective are the tools and clues, the protocols, methods, and language of the prevailing paradigm. We do not observe them as such, they function as extensions of our bodily equipment such as our hands and eyes. But for real scientific knowledge to occur, a rational (skillful) selection of those tools and clues must also take place. This “skillful” selection of tools and clues sometimes leads to the charge of “manipulation” of scientific data, but in fact all scientific inquiry has both the objective (paradigmatic) and the subjective (rational or skillful).

One additional observation should be made about objectivity in science. A prevailing paradigm extends over time, informing and being informed by the experiments in which it is involved and by new knowledge learned. Sometimes the paradigm grows and flourishes and sometimes it is replaced by something revolutionary. But it is expected that there will be an extension through time as knowledge informs and modifies. The legal system, on the other hand, imposes brief windows of time defined by the rules of evidence applicable to a particular matter needing resolution such as a rulemaking or litigation. In this sense, scientific knowledge is like an endless movie in which one is never sure where one has entered the theater. The legal system, however, takes a single or discrete window of frames and tries to discern the entire plot.

### *B. The General Framework*

The federal agencies principally responsible for implementing the ESA are the FWS of the Department of the Interior and the National

---

13. MICHAEL POLANYI, *PERSONAL KNOWLEDGE: TOWARDS A POST-CRITICAL PHILOSOPHY* 5 (1974).

14. *Id.* at 16.

15. *Id.* at vii.

Marine Fisheries Service (NMFS) of the Department of Commerce.<sup>16</sup> Application of the ESA is triggered by the listing of a species as “endangered” (those “in danger of extinction throughout all or a significant portion of its range”)<sup>17</sup> or “threatened” (those “likely to become an endangered species within the foreseeable future”).<sup>18</sup> If either the FWS or NMFS lists a species, the listing agency generally must also designate “critical habitat” for the species.<sup>19</sup> Critical habitat includes those areas essential to the conservation of a listed species that require special management or protection.<sup>20</sup>

ESA section 7 requires federal agencies to consult with the FWS or NMFS to determine whether agency action may affect listed species or their habitat.<sup>21</sup> An “action” is defined very broadly to include “all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas,” including the “granting of licenses, contracts, leases, easements, rights-of-way, permits, or grants-in-aid.”<sup>22</sup> Section 7 prohibits federal agencies from taking any action that is likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat.<sup>23</sup> If the agency determines that its action is likely to adversely affect listed species or critical habitat, it must undertake formal consultation with the FWS or NMFS.<sup>24</sup>

The product of the formal consultation process is generally a biological opinion issued by the FWS or NMFS indicating whether the

---

16. See ESA § 3(15), 16 U.S.C. § 1532(15) (2000). In general, the FWS is responsible for terrestrial and freshwater species. The NMFS is responsible for marine species, including anadromous fish such as salmon and steelhead trout that hatch in fresh water, spend most of their adult life in the ocean, and then return to fresh water to spawn. See 50 C.F.R. §§ 17.2(b), 402.01(b) (2002). The FWS and NMFS share the same section 7 regulations, but have different regulations with regard to implementation of other sections of the ESA. For convenience, this Article generally focuses on the FWS regulations. The NMFS is now known as National Oceanic and Atmospheric Administration (NOAA) Fisheries. See, e.g., NOAA Fisheries—National Marine Fisheries Serv., at <http://www.nmfs.noaa.gov>. For ease of reference, and because many of the cases discussed in this Article refer to NMFS, we use NMFS to designate the agency now also called NOAA Fisheries. Indeed, the agency itself still carries the National Marine Fisheries Service, or NMFS, name. See *id.*; National Marine Fisheries Serv. Northwest Regional Office, at <http://www.nwr.noaa.gov>.

17. ESA § 3(6), 16 U.S.C. § 1532(6).

18. ESA § 3(20), 16 U.S.C. § 1532(20).

19. ESA § 4(b)(2), 16 U.S.C. § 1533(b)(2).

20. See ESA § 3(5), 16 U.S.C., § 1532(5).

21. ESA § 7(a)(2), 16 U.S.C., § 1536(a)(2).

22. 50 C.F.R. § 402.02 (2002).

23. See ESA § 7(a)(2), 16 U.S.C. § 1536(a)(2).

24. See 50 C.F.R. § 402.14(a).



action is likely to jeopardize the continued existence of a listed species or causing the destruction or adverse modification of critical habitat (a “jeopardy” opinion), or is not likely to result in such effects (a “no jeopardy” opinion).<sup>25</sup> A “jeopardy” opinion must include reasonable and prudent alternatives, if any, that would alter the action to avoid the likelihood of jeopardizing a listed species or resulting in the destruction or adverse modification of critical habitat.<sup>26</sup>

Section 9 of the ESA broadly prohibits the taking of any listed species of fish or wildlife by “any person.”<sup>27</sup> Both federal and nonfederal (i.e., private and state) actions are within the statutory prohibition.<sup>28</sup> The ESA broadly defines “take” as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.”<sup>29</sup> The United States Supreme Court upheld the FWS’ regulatory interpretation which construed the “harm” component of the take prohibition to apply to significant habitat modification or destruction that causes actual death or injury to the species on federal or nonfederal land.<sup>30</sup>

The section 9 protections for listed plants are distinct and incorporate state plant protection law requirements. Section 9 makes it unlawful for any person to “remove and reduce to possession” any listed plant from federal land areas, or to “maliciously damage or destroy any such species on any such area.”<sup>31</sup> That section also prohibits any person to “remove, cut, dig up, or damage or destroy any [listed plant] species on any other area in knowing violation of any law or regulation of any State or in the course of any violation of a State criminal trespass law.”<sup>32</sup>

The FWS may issue a permit under ESA section 10(a) to authorize the “incidental take” of protected fish or wildlife species.<sup>33</sup> An incidental taking is one that is “incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.”<sup>34</sup> Similarly, for activities subject to

---

25. *Id.* § 402.14(h)(3).

26. *Id.* §§ 402.14(h)(3).

27. ESA § 9(a)(1), 16 U.S.C. § 1538(a)(1). The statutory prohibition applies only to endangered species, *id.*, but has been extended by the FWS to threatened species by regulation. See 50 C.F.R. § 17.31(a).

28. See ESA § 9, 16 U.S.C. § 1538.

29. ESA § 3(19), 16 U.S.C. § 1532(19).

30. See *Babbitt v. Sweet Home Chapter of Cmty. for a Great Or.*, 515 U.S. 687, 707-08 (1995).

31. ESA § 9(a)(2)(B), 16 U.S.C. § 1538(a)(2)(B).

32. *Id.*

33. ESA § 10(a), 16 U.S.C. § 1539(a). Incidental take authorization does not apply to listed plant species.

34. ESA § 10(a)(1)(B), 16 U.S.C. § 1539(a)(1)(B).

the federal agency formal consultation requirement of section 7, the biological opinion may include an incidental take statement authorizing such incidental take where it will not jeopardize the species' continued existence.<sup>35</sup> The statement must include reasonable and prudent measures that the FWS deems necessary or appropriate to minimize the impact of any incidental take on the species.<sup>36</sup>

### *C. The Best Scientific Data Available Standard*

#### 1. The Listing Determination

The section 4 listing process is the mechanism by which the other provisions of the ESA come into play. Section 4 establishes the standards, procedures, and deadlines for listing a species as "endangered" or "threatened."<sup>37</sup> The ESA requires the agency to identify a species as endangered or threatened if the species meets the appropriate statutory definition based upon any of the five following factors:

- A. [T]he present or threatened destruction, modification, or curtailment of its habitat or range;
- B. [O]verutilization for commercial, recreational, scientific, or educational purposes;
- C. [D]isease or predation;
- D. [T]he inadequacy of existing regulatory mechanisms; [and]
- E. [O]ther natural or manmade factors affecting its continued existence.<sup>38</sup>

The agency must make the listing decision "solely on the basis of the best scientific and commercial data available."<sup>39</sup>

---

35. See 50 C.F.R. § 402.14(i)(2002).

36. See *id.*

37. See ESA § 4, 16 U.S.C. § 1533.

38. ESA §§ (4)(a)(1)(A)-(E), 16 U.S.C. § 1533(a)(1)(A)-(E); see also *Carlton v. Babbitt*, 900 F. Supp. 526, 530-34 (D.D.C. 1995) (determining the FWS failed to adequately consider statutory factors in not reclassifying the Selkirk ecosystem grizzly bear population from threatened to endangered status); 50 C.F.R. § 424.11.

39. ESA § 4(b)(1)(A), 16 U.S.C. § 1533(b)(1)(A). Congress amended the ESA's listing procedures in 1982. The legislative history to this amendment reflects the attitude that economic information and considerations had no part in the listing process under section 4:

The Committee strongly believes that economic considerations have no relevance to determinations regarding the status of species. . . . The only alternatives involved in the listing of species are whether the species should be listed as endangered or threatened or not listed at all. Applying economic criteria to the analysis of these alternatives and to any phase of the species listing process is applying economics to the determinations made under Section 4 of the Act and is specifically rejected by the inclusion of the word "solely" in this legislation.

H.R. REP. NO. 567, pt. 1, 97th Cong., 2d Sess. 20 (1982), *reprinted in* 1982 U.S.C.C.A.N. 2807, 2820; see also H.R. CONF. REP. NO. 835, 97th Cong., 2d Sess. 20 (1982), *reprinted in* 1982

## 2. Critical Habitat Designation

The ESA requires the agency, “to the maximum extent prudent and determinable,” to designate critical habitat for a species at the time the species is listed as endangered or threatened.<sup>40</sup> Although the FWS has stated that “attention to and protection of [critical] habitat is paramount to successful conservation actions,”<sup>41</sup> it has also conceded that designation of critical habitat “is of little additional value for most listed species.”<sup>42</sup> Moreover, the critical habitat designation process “consumes large amounts of conservation resources.”<sup>43</sup>

The ESA defines “critical habitat” as “the specific areas within the geographical area occupied by the species, at the time it is listed . . . on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection[s].”<sup>44</sup> Critical habitat may include “specific areas outside the geographical area occupied by the species at the time it is listed” only “upon a determination by the Secretary that such areas are essential for the conservation of the species.”<sup>45</sup> Similarly, except where specifically determined otherwise by the FWS, “critical habitat shall not include the entire geographical area which can be occupied by the threatened or endangered species.”<sup>46</sup> The ESA requires that critical habitat designations be made pursuant to notice and comment rulemaking.<sup>47</sup> A critical habitat rulemaking must be based on the FWS’ determination that the geographical areas designated possess the features essential for the conservation of the species.<sup>48</sup>

Critical habitat designations must be made

on the basis of the best scientific data available and after taking into consideration the economic impact, and any other relevant impact, of specifying any particular area as critical habitat. The Secretary may exclude any area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific and

---

U.S.C.C.A.N. 2860. For a more detailed discussion of the background to this congressional action, see MICHAEL J. BEAN, *THE EVOLUTION OF NATIONAL WILDLIFE LAW* 336-37, n.77 (1983).

40. ESA § 4(a)(3), 16 U.S.C. § 1533(a)(3).

41. 64 Fed. Reg. 31,871, 31,872 (1999).

42. *Id.*

43. *Id.*

44. ESA § 3(5)(A)(i), 16 U.S.C. § 1532(5)(A)(i).

45. ESA § 3(5)(A)(ii), 16 U.S.C. § 1532(5)(A)(ii).

46. ESA § 3(5)(C), 16 U.S.C. § 1532(5)(C).

47. *See* ESA § 4(a)(3), (b)(5), 16 U.S.C. § 1533(a)(3), (b)(5).

48. ESA § 4(a)(3), (b)(6)(C), 16 U.S.C. § 1533(a)(3), (b)(6)(C); 50 C.F.R. § 424.12(b).

commercial data available, that the failure to designate such area as critical habitat will result in the extinction of the species concerned.<sup>49</sup>

### 3. The Consultation Process

For federal actions, the principal regulatory effect of the listing process or the designation of critical habitat comes from the section 7 interagency consultation process.<sup>50</sup> The “unambiguous and absolute” mandate of section 7(a)(2)<sup>51</sup> is that where “any action [is] authorized, funded, or carried out” by an agency, that agency must undertake a consultation with the FWS to ensure that the proposed action “is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [critical] habitat of such species.”<sup>52</sup> This determination—referred to as the “jeopardy/no jeopardy” determination—is to be made using the “best scientific and commercial data available.”<sup>53</sup>

In March 1998 the FWS and NMFS jointly published the *Consultation Handbook* (the Handbook). The stated purpose of the Handbook was “to provide information and guidance on the various consultation processes outlined in the regulations.”<sup>54</sup> Although the Handbook contains a seven-part definition of “best available scientific and commercial data,” the definition is primarily process-oriented. As described in the Handbook, data is gathered, evaluated, reviewed, and retained.<sup>55</sup> During the gathering phase, the agency gathers all biological, ecological, and other scientific data. The Handbook specifically emphasizes the importance of information “disputing official positions, decisions, and actions proposed or taken by the Services,”<sup>56</sup> and “primary and original sources of information.”<sup>57</sup> Once such information is gathered, the agency must “impartially evaluate” the data to “ensure . . . [it] is reliable, credible, and represents the best scientific and commercial data available.”<sup>58</sup> To the extent that agency biologists develop or draft documents, the Handbook recommends that such decisions be reviewed

49. ESA § 4(b)(2), 16 U.S.C. § 1533(b)(2).

50. ESA § 7, 16 U.S.C. § 1536; *see also* Houck, *supra* note 3, at 316-17 (discussing the strength of the provision).

51. Houck, *supra* note 3, at 316.

52. ESA § 7(a)(2), 16 U.S.C. § 1536(a)(2).

53. 50 C.F.R. § 402.14(g)(8) (2002).

54. U.S. FISH & WILDLIFE SERV., NAT’L MARINE FISHERIES SERV., FINAL ESA SECTION 7 CONSULTATION HANDBOOK, at xx (1998) [hereinafter HANDBOOK]

55. *Id.* at xi.

56. *Id.*

57. *Id.*

58. *Id.*

at “management-level” to “verify and assure the quality of the science used” to reach that decision.<sup>59</sup> In addition, with regard to the status and habitat requirements for a species, the agency must document its evaluation of “comprehensive” and “technical” range-wide data.<sup>60</sup> When the review is completed, the agency must retain the data reviewed as part of the formal administrative record supporting the agency’s decision.<sup>61</sup>

The section 7 formal consultation process ends with the issuance of a biological opinion. The purpose of the biological opinion is to assess “whether the action is likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designed critical habitat.”<sup>62</sup> The FWS regulations require that the biological opinion be prepared based upon the best scientific data available.<sup>63</sup> Where there are gaps in the data necessary for the agency to reach a conclusion in the biological opinion, the Handbook offers the agency two options: “(1) if the action agency concurs, extend the due date of the biological opinion until sufficient information is developed for a more complete analysis; or (2) develop the biological opinion with the available information giving the benefit of the doubt to the species.”<sup>64</sup> Note, however, that the Handbook is a nonbinding guidance document, and the agency is free to follow or disregard it.<sup>65</sup>

#### 4. Habitat Conservation Planning

HCPs are at the forefront of the federal government’s implementation of the ESA on private, state, and local government lands. HCPs are driven by the ESA section 9 “take” prohibition<sup>66</sup> and the ESA section 10 ITP provisions.<sup>67</sup>

---

59. *Id.*

60. *Id.*

61. *Id.*

62. 50 C.F.R. § 402.14(h)(3) (2002).

63. *See id.* § 402.14(g)(8).

64. HANDBOOK, *supra* note 54, at 1-6. The FWS policy of “giving the benefit of the doubt to the species” where there are gaps in the available data can result in significant pressure on the action agency to develop such data or face a biological opinion that may be overly restrictive.

65. *See, e.g.,* *Ariz. Cattle Growers’ Ass’n v. United States Fish & Wildlife Serv.*, 273 F.3d 1229, 1242 (9th Cir. 2001) (determining FWS Handbook provision contrary to the ESA is invalid); *W. Radio Servs. Co. v. Espy*, 79 F.3d 896, 901-02 (9th Cir. 1996) (stating Forest Service Manual and Handbook are guidance documents and not binding on the agency); *McGrail & Rowley, Inc. v. Babbitt*, 986 F. Supp. 1386, 1393 (S.D. Fla. 1997) (deciding FWS Refuge Manual is a nonbinding guidance).

66. ESA § 9, 16 U.S.C. § 1538 (2000).

67. ESA § 10, 16 U.S.C. § 1539.

Section 10 of the ESA, which was added by Congress in 1982, authorizes the FWS or NMFS to permit the “incidental take” of protected species. An incidental taking is a taking that is “incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.”<sup>68</sup> To obtain an ITP, the applicant must submit an HCP that identifies the likely impact on the species, the steps that will be used to minimize and mitigate those impacts, the funding that will be available to implement those steps, an alternatives analysis, and other information.<sup>69</sup> Essentially, HCPs operate by allowing a landowner to “take” a listed endangered or threatened species (through direct take, habitat alteration, or otherwise) in exchange for a landowner’s agreement to minimize and mitigate the impacts of such takings. In the crude calculus of ESA implementation, ITPs allow for individual members of listed species to be lost while providing overall benefits for the species.

Although HCPs are not specifically required to address the recovery of a listed species, the HCP must be evaluated under the “no jeopardy” standard imposed on all “agency action” under section 7 of the ESA.<sup>70</sup> Because section 7(a)(2) jeopardy determinations are made based upon the “best scientific and commercial data available,” that standard is incorporated into the HCP review process.

While the HCP process is technically subject to the best scientific data available standard, a number of commentators have raised concerns regarding not only the science used in HCPs, but also regarding the ultimate success of HCPs within the broader framework of the ESA itself.<sup>71</sup>

#### *D. Other ESA Scientific Data Standards*

Although this Article focuses on the ESA’s best scientific data available standard, that standard is not the only scientific standard in the ESA. The two primary alternate scientific standards in the ESA—the “substantial scientific or commercial information” and “the best

---

68. ESA § 10(a)(1)(B), 16 U.S.C. § 1539(a)(1)(B).

69. ESA § 10(a)(2)(A), 16 U.S.C. § 1539(a)(2)(A).

70. ESA § 7(a)(2), 16 U.S.C. § 1536(a)(2).

71. See NAT’L RES. COUNCIL, SCIENCE AND THE ENDANGERED SPECIES ACT, COMMITTEE ON SCIENTIFIC ISSUES IN THE ENDANGERED SPECIES ACT ET AL. (1995); Albert C. Lin, *Participants’ Experiences with Habitat Conservation Plans and Suggestions for Streamlining the Process*, 23 *ECOLOGICAL L.Q.* 369 (1996); Gregory A. Thomas, *Where Property Rights and Biodiversity Converge—Part II: The Role of Science*, *ENDANGERED SPECIES UPDATE* 6, 18, at 1 (2001); Gregory A. Thomas, *When Property Rights and Biodiversity Converge—Part III: Incorporating Adaptive Management and the Precautionary Principle into HCP Design*, *ENDANGERED SPECIES UPDATE* 32, 18, at 2 (2001).

available biological information derived from professionally accepted wildlife management practice”—are discussed briefly below.

### 1. The Petition Standard

The ESA allows interested parties to petition either the FWS or NMFS to list, delist, or reclassify species, or to revise a listed species’ critical habitat.<sup>72</sup> Generally, these section 4(b)(3) petitions fall into three basic categories: (i) petitions to list species, (ii) petitions to reclassify or delist species, and (iii) petitions to revise critical habitat.<sup>73</sup> While petitions may also be filed under other provisions of the ESA or under the federal Administrative Procedures Act (APA), only section 4(b)(3) petitions are addressed herein.

With regard to section 4(b)(3) category (i) and (ii) petitions, the agency must “[t]o the maximum extent practicable, within 90 days after receiving the petition . . . [specifically] make a finding as to whether the petition presents *substantial scientific* or *commercial information* indicating that the petitioned action may be warranted.”<sup>74</sup> If the agency decides that such information exists, it must proceed to a second determination, which is due within twelve months of the filing of the initial petition.<sup>75</sup> The agency’s twelve-month finding may take one of three forms: (1) a conclusion that the action is not warranted; (2) a conclusion that the action is warranted (in which case a proposed rule must also be published); or (3) a conclusion that the action is warranted but “precluded by other pending proposals falling in the same class (i.e., listing or delisting), and expeditious progress is being made on the listing or delisting of species.”<sup>76</sup>

Section 4(b)(3) category (iii) petitions are handled much the same way by the agency. Within ninety days of receipt of a petition to revise a species’ critical habitat, the agency must “[t]o the maximum extent practicable . . . make a finding as to whether the petition presents substantial scientific information indicating that the revision may be warranted.”<sup>77</sup> If the agency determines that the petitioner has met its

---

72. ESA § 4(b)(3)(A), (D), 16 U.S.C. § 1533(b)(3)(A), (D).

73. UNITED STATES FISH & WILDLIFE SERV. & NAT’L MARINE FISHERIES SERV., ENDANGERED SPECIES PETITION MANAGEMENT GUIDANCE (1996) [hereinafter PETITION MANAGEMENT GUIDANCE].

74. ESA § 4(b)(3)(A), 16 U.S.C. § 1533(b)(3)(A) (emphasis added). The standard of review is “that amount of information that would lead a reasonable person to believe that the measure proposed in the petition may be warranted.” 50 C.F.R. § 424.14(b) (2002).

75. ESA § 4(b)(3)(B), 16 U.S.C. § 1533(b)(3)(B).

76. PETITION MANAGEMENT GUIDANCE, *supra* note 73, at 10.

77. ESA § 4(b)(3)(D)(i), 16 U.S.C. § 1533(b)(3)(D)(i).

statutory burden, the agency must move forward with the preparation of a twelve-month finding similar to the category (i) and (ii) twelve-month finding.<sup>78</sup>

## 2. The CITES Standard

The ESA also functions to implement the Convention on International Trade in Endangered Species of Wild Fauna and Flora, signed on March 3, 1973 (CITES). Under CITES, article IV determinations are made by the FWS on the basis of “best available biological information derived from professionally accepted wildlife management practices.”<sup>79</sup>

### *E. Best Scientific Data Available Standards in Other Federal Laws*

Standards similar to the best scientific data available standard have been utilized in a number of statutes other than the ESA.<sup>80</sup> Indeed, the concept of best scientific data available (with some permutations) recurs throughout the United States Code. Standards similar to the best scientific data available standard are found in several federal acts,<sup>81</sup>

78. ESA § 4(b)(3)(D)(ii), 16 U.S.C. § 1533(b)(3)(D)(ii).

79. ESA § 8A(c)(2), 16 U.S.C. § 1537a(c)(2); *see also* *Prima v. Dep’t of the Interior*, No. CIV.A 963578, 1998 WL 87912, at \*4 (E.D. La. Feb. 19, 1998) (interpreting the CITES ESA standard). The court noted that “[i]t is not for this Court to determine whose science represents the best ‘available biological information derived from professionally acceptable wildlife management practices.’ Such a review would be out of the domain of judicial review.” *Id.*

80. *See generally* Doremus, *supra* note 10.

81. Toxic Substances Control Act, 15 U.S.C. §§ 2601-2692(d)(7) (2000) (requiring EPA information regarding asbestos-containing materials to be based on “best scientific evidence”); Federal Aid in Wildlife Restoration Act, 16 U.S.C. § 669(d)(1)(D) (2000) (indicating the use of the best available and appropriate scientific information and data); Forest and Rangeland Renewable Resources Research Act of 1974, 16 U.S.C. §§ 1641-1650, 1645(d)(1) (2000) (using best available scientific skills); 16 U.S.C. § 3311(c)(3) (establishing the Salmon and Steelhead Advisory Commission and using best scientific information available); 16 U.S.C. § 3638(a) (regulating Pacific Salmon fishing through best scientific information available); 16 U.S.C. § 839b(h)(6)(B) (creating the Pacific Northwest Electric Power and Conservation Planning Council and using best scientific information available); 16 U.S.C. § 4711(a)(2)(D), (b)(2)(H), (c)(2)(I), (e)(1)(D) (requiring implementation of guidelines for aquatic nuisances in the Great Lakes using best scientific information available); 16 U.S.C. § 4722(e)(1) (creating Aquatic Nuisance Task Force through best scientific information available); Wild Bird Conservation Act of 1992, 16 U.S.C. §§ 4901-4916, 4095(a)(3)(A) (2000) (using best scientific information available); Atlantic Coastal Fisheries Cooperative Management Act, 16 U.S.C. §§ 5101-5108, 5104 (a)(2)(A) (2000) (utilizing best scientific information available); 20 U.S.C. § 80g (2000) (creating the National Museum of the America Indian); 33 U.S.C. § 2102 (2000) (creating standards for artificial reefs based on best available scientific documentation). For examples of state acts which include best scientific data available standards, *see* ARIZ. REV. STAT. ANN. § 3-905B (West 2002) (using best scientific data available); CAL. FISH & GAME CODE § 2074.6 (Deering 1989) (using best scientific information available); *id.* § 2077(a); *id.* § 2081(c) (Deering



including the Marine Mammal Protection Act,<sup>82</sup> the Safe Drinking Water Act,<sup>83</sup> and the Magnuson-Stevens Act.<sup>84</sup>

---

Supp. 2003) (requiring best scientific and other information that is reasonably available); *id.* § 2110 (using best scientific evidence available); *id.* § 7072(b) (utilizing best scientific information that is available); CAL. HEALTH & SAFETY CODE § 40718 (c) (Deering Supp. 2003) (requiring best scientific judgment); COLO. REV. STAT. §§ 25-7-109.4(8)(a)(i) (1997) (using best scientific evidence available); *id.* § 25-7-109.4(9)(a) (same); CONN. GEN. STAT. § 26-310 (1997) (utilizing best scientific data available); FLA. STAT. ANN. § 581.185(5)(c) (West Supp. 2003) (requiring best scientific and commercial data available); HAW. REV. STAT. ANN. § 195D-21(c) (Michie 2001) (using best scientific and other reliable data); *id.* § 195D-22(b) (utilizing best scientific and other reliable data); IDAHO CODE § 36-2401(1) (Michie 2002) (“[W]here this chapter requires the use of the best scientific and commercial data available, the state, when evaluating comparable data, shall give greater weight to scientific or commercial data that is empirical or has been field tested or peer reviewed.”); *id.* § 36-2401(9) (requiring best scientific and commercial data available); KAN. STAT. ANN. § 32-960(b)(1) (1993) (using best scientific, commercial, and other data available); LA. REV. STAT. ANN. § 56:638.4 (West Supp. 2002) (utilizing best scientific information available); *id.* § 56:638.5 (requiring the use of best scientific, economic, biological, anthropological, and sociological information available); *id.* § 56:639.4 (West 1987) (using best scientific information available); *id.* § 1904C (utilizing best scientific, commercial, and other data available); *id.* § 56:2023 (West 1987) (requiring best scientific information available); ME. REV. STAT. ANN. tit. 12, § 7035(19)(B) (West Supp. 2002-2003) (using best scientific judgment); *id.* § 7753(20(A) (requiring best scientific, commercial, and other data available); MD. CODE ANN., Nat. Res. § 4-2A-04(c) (2000) (using best scientific, commercial, and other data); *id.* § 10-2A-04(c); MISS. CODE ANN. § 49-15-2(a) (1999) (requiring best scientific information available); N.H. REV. STAT. ANN. § 212-A:6III (2001) (utilizing best scientific, commercial, and other data available); *id.* § 217-A:5II (same); N.J. REV. STAT. § 18A:65-86c(5) (West Supp. 2002) (requiring best scientific data available); *id.* § 23:2B-3(f) (West 1997) (using best scientific information available); N.D. CENT. CODE § 23-20.3-04 (2002) (requiring best scientific and engineering judgment); OR. REV. STAT. § 564.110(4) (1999) (utilizing best scientific and other data available); S.C. CODE ANN. § 48-39-280(A)(1) (Law Cop Supp. 1997) (using best scientific and historical data); S.C. CODE ANN. § 48-39-280(A)(2) (same); S.D. CODIFIED LAWS ANN. § 34A-8-3 (Michie 1999) (requiring best scientific, commercial, and other data available); TEX. PARKS & WILD. CODE ANN. § 76.301(b)(2) (Vernon 2002) (utilizing best scientific information available); *id.* § 76.302(a)(7) (same); *id.* § 77.004(a)(7) (same); *id.* § 77.007(b)(2) (same); *id.* § 78.006(b)(2) (same); *id.* § 78.104(b)(2) (same); *id.* § 89.023(6) (same); VT. STAT. ANN. tit. 10, § 5402(e)(1) (1997) (using best scientific, commercial, and other data available); VA. CODE ANN. § 28.2-203(2) (Michie 2001) (requiring best scientific, economic, biological, and sociological information available); WASH. REV. CODE ANN. § 76.09.350(2) (West Supp. 2003) (utilizing best scientific data available); *id.* § 77.85.150(2)(e) (West 2001) (using best scientific information available); and WIS. STAT. ANN. § 29.604(3) (West Supp. 2002) (requiring best scientific and commercial data).

82. 16 U.S.C. §§ 1361-1421(h) (2000); *id.* § 1362(19)(B) (using best available scientific information); *id.* § 1362(27)(A) (same); *id.* § 1371(a)(3)(A) (requiring best scientific evidence available); *id.* § 1371(a)(4)(C) (same); *id.* § 1373(a) (same); *id.* § 1374(c)(5)(C)(ii) (same); *id.* § 1378(a)(2)(B) (same); *id.* § 1383a(e)(2)(A) (utilizing “best scientific information available”); *id.* § 1383b(a)(2) (same); *id.* § 1386(a) (same); *id.* § 1386(b)(3); (same); *id.* § 1413(c)(1) (same); *see also* *Brower v. Evans*, 257 F.3d 1058, 1070-71 (9th Cir. 2001) (applying the best available evidence standard).

83. 42 U.S.C. § 300g-1(b)(3)(A)(i) (2000) (indicating the standard is “best available, peer-reviewed science and supporting studies conducted in accordance with sound and objective scientific practices”).

Perhaps the most interesting example from other federal acts for our current discussion is the Safe Drinking Water Act (SDWA). Section 300g-1 of the SDWA establishes the framework for national drinking water regulations, which form a water quality baseline.<sup>85</sup> A critical part of the water quality baseline is the establishment of National Primary Drinking Water Regulations and National Secondary Drinking Water Regulations.<sup>86</sup> Because both sets of regulations are keyed to human health, the process of developing the regulations involves an analysis of potential health risks.<sup>87</sup> While the SDWA requires that the science employed by the United States Environmental Protection Agency (EPA) be “the best available,” the Act goes on to further require that the science be “peer reviewed” and “in accordance with sound and objective scientific practices.”<sup>88</sup> Accordingly, unlike the stand-alone best scientific data available standard in the ESA, the SDWA standard attempts to impose objective criteria on utilized science.

### III. REGULATORY GUIDANCE REGARDING “BEST AVAILABLE SCIENTIFIC DATA”

Despite the fact that the best scientific data available standard plays a key role in several ESA sections, it is not a statutorily defined term, nor is it discussed at length in the ESA’s legislative history.<sup>89</sup> Furthermore, despite the promulgation of numerous regulations implementing the ESA, the FWS has never provided a regulatory definition of “best scientific data available” (or any of the component parts thereof). As discussed below, a number of policy attempts have been made to fill this gap.

#### A. *The 1994 Information Standards Guidelines*

In June 1994, the FWS and NMFS jointly published an interagency policy (the 1994 Information Policy) designed to “provide criteria, establish procedures, and provide guidance to ensure that [ESA] decisions made by the Services . . . represent the best scientific and

---

84. 16 U.S.C. §§ 1801-1883 (2000); *id.* § 1801(c)(3) (using the best scientific information available standard); *id.* § 1851(a)(2); *id.* § 1881d(d); *see also* Massachusetts *ex rel.* Div. of Marine Fisheries v. Daley, 170 F.3d 23 (1st Cir. 1999).

85. 42 U.S.C. § 300g-1 (2000).

86. *See id.*

87. *Id.* § 300g-1(b)(3)(C).

88. *Id.* § (b)(3)(A).

89. *See* ESA § 3, 16 U.S.C. § 1532 (2000); S. REP. NO. 93-307 (1973), *reprinted in* 1973 U.S.C.C.A.N. 2989; CONF. REP. NO. 93-740 (1973), *reprinted in* 1973 U.S.C.C.A.N. 3001 (1973).

commercial data available.”<sup>90</sup> Although the 1994 Information Policy is relatively brief, it does provide a certain amount of insight into the type of data agencies would consider and evaluate as part of the best scientific data available.

The background section of the 1994 Information Policy makes clear that the FWS and NMFS consider a surprisingly broad range of information in administering the ESA:

The Services receive and use information on the biology, ecology, distribution, abundance, status, and trends of species from a wide variety of sources as part of their responsibility to implement the [ESA]. Some of this information is anecdotal, some of it is oral, and some of it is found in written documents. These documents include status surveys, biological assessments, and other unpublished material (that is, “gray literature”) from State natural resource agencies and natural heritage programs, Tribal governments, other Federal agencies, consulting firms, contractors, and individuals associated with professional organizations and higher educational institutions. The Services also use published articles from juried professional journals. The reliability of the information contained in these sources can be as variable as the sources themselves.<sup>91</sup>

In light of the breadth of the information which the FWS and NMFS will consider—including oral and anecdotal information—the importance of providing some form of substantive and rigorous scientific review is clear.

The qualitative review of scientific data, which forms the core of the 1994 Information Policy, can be succinctly summarized in the following general principles:

1. Biologists must evaluate all scientific and other information to ensure that it is “reliable, credible, and represents the best scientific and commercial data available.”<sup>92</sup>
2. The biologist must “gather and impartially evaluate biological, ecological, and other information that disputes official positions,

---

90. Endangered and Threatened Wildlife and Plants, 59 Fed. Reg. 34,271, 34,271 (July 1, 1994).

91. *Id.*

92. *Id.* The 1994 Information Policy provides that this standard of review applies to information

that will be used to (a) determine the status of candidate species; (b) support listing actions; (c) develop or implement recovery plans; (d) monitor species that have been removed from the list of threatened and endangered species; (e) to prepare biological opinions, incidental take statements, and biological assessments; and (f) issue scientific and incidental take permits.

*Id.*

decisions, and actions proposed or taken by the Services during their implementation of the [ESA].”<sup>93</sup>

3. The biologist must document its evaluation “of information that supports or does not support” the agency’s position. The biologist’s evaluation must “rely on the best available comprehensive . . . [and] technical information.”<sup>94</sup>
4. Primary and original sources of information are the preferred sources of information.<sup>95</sup>
5. Documents developed by Service biologists are subject to a “management-level review” for purposes of verifying and assuring “the quality of the science used.”<sup>96</sup>

While the 1994 Information Policy provides some guidance for the FWS and NMFS biologists and decision makers, it does not include a definition of “best available scientific data,” nor does it provide a standard for review of such data.<sup>97</sup> Perhaps most importantly, it does not apparently require the decision maker to assess or document an assessment of the quality of information considered or whether it constitutes the “best available scientific data.”<sup>98</sup>

#### *B. The FWS and NMFS Peer Review Policy*

Contemporaneously with the 1994 Information Policy, the FWS and NMFS published an inter-agency policy statement (the Review Policy) regarding a cooperative policy for peer review in ESA activities.<sup>99</sup> The Review Policy states:

In the following endangered species activities, it is the policy of the Services to incorporate independent peer review in listing and recovery activities, during the public comment period, in the following manner:

1. Listing
  - a. Solicit 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;

---

93. *Id.*

94. *Id.*

95. *Id.*

96. *Id.*

97. *See id.*

98. *See id.*

99. Endangered and Threatened Wildlife and Plants, 59 Fed. Reg. 34,270, 34,270 (July 1, 1994).

- b. Summarize in the final decision document (rule or notice of withdrawal) the opinions of all independent peer reviewers received on the species under consideration and include all such reports, opinions, and other data in the administrative record of the final decision.
2. Recovery
    - a. Utilize the expertise of and actively solicit independent peer review to obtain all available scientific and commercial information from appropriate local, State and Federal agencies; Tribal governments; academic and scientific groups and individuals; and any other party that may possess pertinent information during the development of draft recovery plans for listed animal and plant species.
    - b. Document and use, where appropriate, independent peer review to review pertinent scientific data relating to the selection or implementation of specialized recovery tasks or similar topics in draft or approved recovery plans for listed species.
    - c. Summarize in the final recovery plan the opinions of all independent peer reviewers asked to respond on an issue and include the reports and opinions in the administrative record of that plan.

Independent peer reviewers should be selected from the academic and scientific community, Tribal and other native American groups, Federal and State agencies, and the private sector; those selected have demonstrated expertise and specialized knowledge related to the scientific area under consideration.<sup>100</sup>

The Review Policy has not been modified since its adoption.

The FWS recently explained its application of the Review Policy in connection with the listing proposal of the mountain plover.<sup>101</sup> The FWS “solicited the expert opinions of three independent specialists” regarding the plover scientific data.<sup>102</sup> The FWS reviewed the expert opinions in developing the proposal and then submitted the proposal to Sustainable Ecosystems Institute of Portland, Oregon, for independent peer review.<sup>103</sup>

---

100. *Id.* The Review Policy also provides additional guidance for “special circumstances” (such as where there is “scientific disagreement to the extent that leads the Service to make a 6-month extension of the statutory rulemaking period”). *Id.* In such cases, the Service should consider whether a special independent peer review process would “reduce or resolve the unacceptable level of scientific uncertainty.” *Id.* If such a process is undertaken, the results of such process must be (1) written, (2) made part of the administrative record regarding the decision, and (3) made available for public review and comment. *Id.*

101. *See* 67 Fed. Reg. 72,396, 72,400 (2002).

102. *Id.*

103. *Id.*

The FWS indicated that it would consider the results of this peer review in reaching a final determination on the plover.<sup>104</sup>

### C. *The FWS Information Quality Guidance*

In 2001, as part of the Treasury and General Governmental Appropriations Act of 2001,<sup>105</sup> Congress required Federal agencies to publish their own guidelines for ensuring and maximizing the quality, objectivity, utility, and integrity of the information that they disseminate to the public.<sup>106</sup> Since its enactment, a number of agencies, including the FWS, have published Information Quality Guidelines (IQGs).<sup>107</sup>

In the FWS IQGs, the FWS states its commitment to ensuring and maximizing the quality of disseminated information.<sup>108</sup> To accomplish this goal, the FWS uses “policies and procedures appropriate to the information product. These include senior management oversight and controls, peer review, communications, product review, surnaming, and error correction.”<sup>109</sup> The FWS IQGs state that specific scientific information will be held to a higher standard: “Higher levels of scrutiny are applied to influential scientific, financial or statistical information, which must adhere to a higher standard of quality.”<sup>110</sup>

---

104. *Id.*

105. P.L. 106-554, § 1-2, 114 Stat. 2763, 2763-64 (2000).

106. *See* 44 U.S.C. § 3501 (2000).

107. FWS, INFORMATION QUALITY GUIDELINES (2002), available at <http://irm.fws.gov/infoguidelines/> [hereinafter FWS IQGs]; The Department of Labor, 67 Fed. Reg. 61,669 (2002); NOAA, at <http://www.noaanews.noaa.gov/stories/iq.htm> (last visited Apr. 17, 2003); National Science Foundation, at <http://www.nsf.gov/home/pubinfo/infoqual.htm> (last visited Apr. 17, 2003); Office of Inspector General Department of Justice, at <http://www.usdoj.gov/oig/guidelines.htm> (last visited Apr. 17, 2003); United States Department of Labor, Mine Safety and Health Administration, at <http://www.msha.gov/infoquality/mshainfoquality.htm> (last visited Apr. 17, 2003).

108. FWS IQGs, *supra* note 107, at 4, § III-1.

109. *Id.*

110. *Id.* Although the FWS IQGs provide a definition of “influential data,” the precise application of the definition is subject to debate. Specifically, the FWS IQGs define “influential data” as “scientific, financial or statistical information with a clear and substantial impact on important public policies or important private sector decisions.” *Id.* at 4, § III-2. Clearly “influential data” is broader than merely scientific data and can include the financial or statistical evidence reviewed by the FWS. What is somewhat less clear, however, is how the FWS will determine when particular information has a “clear and substantial” impact and what makes a particular public policy or private sector decision “important.” The FWS IQGs offer the following examples of “influential decisions”: “information disseminated in support of the Director’s decisions or actions (e.g., rules, substantive notices, policy documents, studies, guidance), and issues that are highly controversial or have cross-agency interest or affect cross-agency policies.” *Id.* Accordingly, it seems likely that future disputes may arise as to whether particular data qualifies as “influential data” and thus should be subject to the heightened scrutiny described in the FWS IQGs.

The impact of the FWS IQGs on the agency’s application of the best scientific data available standard is unclear. Because the FWS IQGs only apply to “information disseminated by the agency to the public,”<sup>111</sup> the FWS is under no obligation to follow that policy when it internally evaluates scientific evidence as part of the ESA decision-making process. To the extent that the agency incorporates scientific evidence into public documents, however, it seems likely that the FWS IQGs will have some impact on the agency’s use of scientific data.

#### IV. COURT REVIEW OF SCIENTIFIC DATA UNDER THE ESA

##### A. *The Legal Framework*

##### 1. The Applicable Standard of Review

The NMFS and FWS ESA decisions are reviewed under the APA.<sup>112</sup> The court may set aside an agency’s decision if it is “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.”<sup>113</sup> The Supreme Court has held that a decision is arbitrary and capricious

if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.<sup>114</sup>

An agency action is also arbitrary and capricious if the agency fails to “articulate a satisfactory explanation for its action including a ‘rational connection between the facts found and the choice made.’”<sup>115</sup> While a reviewing court may not substitute its judgment for the agency, the court must undertake a “thorough, probing, in-depth review” of the agency’s decision.<sup>116</sup> The court interprets the statutory provisions of the ESA *de novo*.<sup>117</sup>

---

111. *Id.* at II-4.

112. 5 U.S.C. §§ 551-559 (2000); *Friends of the Wild Swan, Inc. v. United States Fish & Wildlife Serv.*, 945 F. Supp. 1388, 1394 (D. Or. 1996).

113. 5 U.S.C. § 706(2)(A); *Biodiversity Legal Found. v. Babbitt*, 146 F.3d 1249, 1252 (10th Cir. 1998).

114. *Motor Vehicles Mfrs. Ass’n v. State Farm Mut. Auto Ins. Co.*, 463 U.S. 29, 43 (1983); *see also O’Keeffe’s, Inc. v. United States Consumer Prod. Safety Comm’n*, 92 F.3d 940, 942 (9th Cir. 1996) (applying the same standard of review).

115. *State Farm*, 463 U.S. at 43 (quoting *Burlington Truck Lines, Inc. v. United States*, 371 U.S. 156, 168 (1962)).

116. *Citizens to Preserve Overton Park, Inc. v. Volpe*, 401 U.S. 402, 415-16 (1971).

117. *Idaho Farm Bureau v. Babbitt*, 58 F.3d 1392, 1399 (9th Cir. 1995).

## 2. Judicial Evaluation of Agency Scientific Decision Making

In their application of the *Overton Park* “arbitrary and capricious” standard, courts generally acknowledge that it is the role of the agency and not the court to evaluate which scientific evidence it deems credible, and that such decision should be entitled to significant deference.<sup>118</sup> Such deference should not, however, be misconstrued to overwhelm the “hard look” nature of the standard of review mandated by the APA and *Overton Park*. While courts may be understandably reluctant to function as a judicial peer review body, this should not prevent them from exercising the same level of oversight used on other agency decisions.

## 3. The Inherent Limitations of Science

By relying on the best scientific data available rubric, Congress was implicitly attempting to align the ESA with an objective, rational, and scientific standard. Unfortunately, as a practical matter, not only is scientific data often unclear, but the interpretation of raw “data” can itself be a highly subjective process allowing differing scientists to draw dramatically different conclusions from the same data set. As one author has commented:

[S]cience will rarely be able to answer all questions put to it. Pressing environmental concerns—such as when a species becomes endangered with extinction or what concentration of fine particulates may cause the elderly to experience life-threatening symptoms—evade definitive scientific answers. . . . In fact, “battles of the experts” that are so commonplace in environmental policymaking are typically not disagreements over the methods or data in the debated scientific studies, but instead concern differences in whether or how to extrapolate the results of these studies to larger policy questions. Values inform decisions about how to extrapolate study results, yet little effort is made to make these value choices explicit.<sup>119</sup>

---

118. See *Water Keeper Alliance v. United States Dep’t of Def.*, 271 F.3d 21, 33 (1st Cir. 2001) (stating the agencies were entitled to disregard two available studies); *Save Our Springs Alliance v. Cooke*, No. A-01-CA-855-SS, 2002 WL 31757473, at \*3 (W.D. Tex. Nov. 12, 2002) (“The Court gives even more discretion to an agency’s factual determinations when they are based on the agency’s scientific or technical expertise.”); *Blue Water Fisherman’s Ass’n v. Nat’l Marine Fisheries Serv.*, 226 F. Supp. 2d 330, 338 (D. Mass. 2002) (“Nor should this Court pretend to have an expertise in scientific matters greater than the challenged agency’s.”); *Am. Fisheries Soc’y v. Verity*, No. CIV88-0174 RAR-JFM, 1989 WL 644255, at \*5 (E.D. Cal. Feb. 24, 1989) (“Congress has given expertise to federal agencies and they are expected to possess and exercise this considerable expertise. Courts do not possess, nor should they try to exercise, expert judgment on these matters of technical expertise. Deferral is the general rule.”).

119. Wendy E. Wagner, *Congress, Science and Environmental Policy*, 181 U. ILL. L. REV. 181, 188-89 (1999) (footnotes omitted).



Accordingly, when agencies make scientific decisions, they also must make subjective decisions, rather than purely objective determinations.

#### 4. Challenging Best Available Scientific Data Decisions—Generally

Plaintiffs seeking to challenge agency decisions based on the best scientific data available requirement are thus left with two basic options. First, plaintiffs can attack science used by the agency directly—e.g., by claiming that the science selected by the agency is simply not the best scientific data available. The primary drawbacks of such a tactic are that: (1) making a case based primarily on scientific evidence can be extremely expensive (e.g., hiring experts who will contradict the agency’s scientists and, in some cases, even conducting new tests); and (2) the deferential standard imposed on scientific decision making leaves the court with an extremely convenient way of rejecting plaintiffs’ contentions and accepting the government’s position. Nevertheless, as discussed below, a number of plaintiffs have elected such a direct attack—some of which have proven successful.

A more common approach is to realign a “substantive” dispute into one that is, at least on the surface, primarily “procedural.” These arguments are “procedural” only in the sense that they attack the underlying science indirectly—by pointing to more easily explained errors such as a failure to consider relevant aspects of the problem, failure to rely upon complete studies, bias, and others described below. The advantage of a procedural attack is that it allows the plaintiff to attack the agency’s scientific conclusions, but it realigns the arguments so that the court can uphold the plaintiff’s argument in a manner which is arguably more consistent with the applicable standard of review.

#### *B. Best Scientific Data Available Definition*

##### 1. Defining “Scientific” Data

One intriguing question that has been the subject of virtually no discussion in ESA case law is what constitutes “scientific” data. In the words of one court: “data can come in many forms: it can be a scientific report; it can be the graphs and tabulations . . . ; or it can be the actual samples themselves.”<sup>120</sup> It is unclear, however, at what point information becomes so speculative, or so subjective, as to no longer qualify as scientific data.

---

120. *Endangered Species Comm. of the Bldg. Indus. Ass’n of S. Cal. v. Babbitt*, 852 F. Supp. 32, 37 (D.D.C. 1994).

As more fully discussed below, many courts applying the best scientific data available standard under the ESA have imposed an affirmative obligation on the agency to explain why, when faced with two contradictory scientific conclusions, it chooses one over the other. Indeed, such a justification is a requisite part of the APA decision-making process.

## 2. Defining “Best” Data

Although few courts have ventured a comprehensive definition of best scientific data available, several have stated that in drafting the ESA, Congress recognized that scientific data regarding species is often imperfect and unclear.<sup>121</sup> Accordingly, the best scientific data available standard does not require that such data be beyond reproach or attack. As the United States Court of Appeals for the District of Columbia Circuit has noted, “the [FWS] must utilize the ‘best scientific . . . data *available*,’ not the best scientific data *possible*.”<sup>122</sup> Many courts have held that mere data flaws or peer review criticism is generally insufficient to support a best scientific data available challenge.<sup>123</sup> This is particularly

---

121. See, e.g., *Greenpeace Action v. Franklin*, 14 F.3d 1324 (9th Cir. 1993); *Blue Water Fisherman’s Ass’n v. Nat’l Marine Fisheries Serv.*, 226 F. Supp. 2d 330 (D. Mass. 2002); *Southwest Ctr. for Biological Diversity*, No. Civ. A. 98-934 (RMU/JMF), 2002 WL 1733618 (D.D.C. July 29, 2002).

122. *Bldg. Indus. Ass’n of Superior Cal. v. Norton*, 247 F.3d 1241, 1246 (D.C. Cir. 2001); see also *Am. Wildlands v. Norton*, 193 F. Supp. 2d 244, 251 (D.D.C. 2002), *appeal dismissed*, 2002 WL 1925878 (D.C. Cir. 2002) (acknowledging that the ESA standard is “not a standard of absolute certainty”); *Nat’l Wildlife Fed’n v. Babbitt*, 128 F. Supp. 2d 1274, 1300 (E.D. Cal. 2000) (holding that the “most reasonable” reading of the best scientific data available standard is that it “permits the [FWS] to take action based on imperfect data, so long as the data is the best available”).

123. See *Greenpeace Action v. Franklin*, 14 F.3d at 1336 (9th Cir. 1993) (“When an agency relies on the analysis and opinion of experts and employs the best evidence available, the fact that the evidence is ‘weak,’ and thus not dispositive, does not render the agency’s determination ‘arbitrary and capricious.’” (quoting *Stop H-3 Ass’n v. Dale*, 740 F.2d 1442, 1459 (9th Cir. 1984))); *Southwest Ctr. for Biological Diversity v. Norton*, No. Civ. A. 98-934 (RMU/JMF), 2002 WL 1733618, at \*8 (D.D.C. July 29, 2002) (stating that the best scientific data available standard “does not mean that relatively minor flaws in scientific data render that information unreliable”); *Blue Water Fisherman’s Ass’n v. Nat’l Marine Fisheries Serv.*, 226 F. Supp. 2d 330, 338 (D. Mass. 2002) (“[I]mperfections in the available data do not doom any agency conclusion. . . . The agency’s conclusion need not be airtight and indisputable.”); cf. *ACE Lobster Co. v. Evans*, 165 F. Supp. 2d 148, 176-77 (D. R.I. 2001) (holding that the Magnuson-Stevens Act imposes a “best scientific information available” standard, not a requirement that such information be exact or totally complete); *Nat’l Wildlife Fed’n v. Babbitt*, 128 F. Supp. 2d 1274, 1300 (E.D. Cal. 2000) (holding that the FWS’ “finding is not rendered arbitrary and capricious by the data gaps identified by plaintiffs”); *Parravano v. Babbitt*, 837 F. Supp. 1034, 1041 (N.D. Cal. 1993), *aff’d*, 70 F.3d 539 (9th Cir. 1995) (discussing the limited nature of judicial review under the arbitrary and capricious standard); *Bays’ Legal Fund v. Browner*, 828 F. Supp. 102, 106 n.7 (D. Mass. 1993) (rejecting a challenge to the EPA’s use of scientific evidence on the grounds that plaintiffs

true where the agency recognizes the limitations of and weaknesses in the scientific data at the outset and addresses those problems in the administrative record.<sup>124</sup> The three cases summarized below provide examples of how courts have addressed the issue of whether particular scientific data is, in fact, the “best” available.

In *Greenpeace Action v. Franklin*, the United States Court of Appeals for the Ninth Circuit considered a challenge brought by Greenpeace Action (Greenpeace) against the total allowable catch established by the NMFS.<sup>125</sup> The total allowable catch included a specific limit for pollock, a ground fish that was a significant source of food for the endangered Stellar sea lion.<sup>126</sup> Because of the potential impact on the Stellar sea lion, the NMFS initiated an inter-agency section 7 consultation with the Secretary of Commerce to insure that the total allowable catch would “not likely jeopardize the continued existence of the Stellar sea lion.”<sup>127</sup> Greenpeace objected to the “no jeopardy” outcome of the section 7 consultation, asserting that because the NMFS acted “despite uncertainty about the effects” of the total allowable catch on the Stellar sea lion, the NMFS “violated its section 7 obligations.”<sup>128</sup> On appeal, the Ninth Circuit rejected Greenpeace’s arguments, concluding that the existence of scientific uncertainty was insufficient to make the NMFS’ decision an “error of judgment”:

[W]hile the Service has repeatedly conceded that it was uncertain about the effectiveness of its management measures, it premised these measures on a reasonable evaluation of available data, not on pure speculation.

The biological opinions indicate that the Service, an expert agency, consulted with other teams of experts to consider all relevant factors pertaining to the effects of the Gulf fishery on the Stellar sea lion. And they indicate that the Service did not ignore data, as Greenpeace suggests. The Service’s decision to go ahead with the 1991 fishery under the proposed restrictions, despite some uncertainty about the effects of commercial pollock fishing on the Stellar sea lion, was not a clear error of judgment.<sup>129</sup>

---

“never produce[d] any evidence that the data on which the EPA relied . . . was inferior in any way”).

124. See *Friends of Endangered Species, Inc. v. Jantzen*, 760 F.2d 976, 985 (9th Cir. 1985) (noting that “the [FWS] was aware of all relevant limitations [of the scientific data] . . . and [FWS] addressed those limitations in its Permit Findings”).

125. See 14 F.3d at 1327.

126. *Id.*

127. *Id.* at 1328; see ESA § 7(a)(2), 16 U.S.C. § 1536(a)(2) (2000).

128. *Greenpeace Action*, 14 F.3d at 1337.

129. *Id.*

As more fully discussed below, the Ninth Circuit's upholding of the Service's section 7 consultation also supports the premise that the ESA does not require agencies to undertake additional testing where scientific uncertainty exists.<sup>130</sup>

Plaintiffs' contentions in *Blue Water Fishermen's Ass'n v. National Marine Fisheries Service* also focused on a section 7 consultation—this time an internal consultation undertaken by the NMFS and the Office of Sustainable Fisheries in connection with the preparation of the Fisheries Management Plan for Atlantic tunas, swordfish, and sharks.<sup>131</sup> In particular, plaintiffs pointed to a comprehensive Service Report and a biological opinion prepared by the NMFS arguing that the NMFS “manipulated and ignored data.”<sup>132</sup> To support their claim, plaintiffs cited criticisms of the draft-NMFS report made by three peer reviewers.<sup>133</sup> The court rejected plaintiffs' argument, noting that the agency properly considered and discounted the peer review criticism: “[I]n reviewing and rejecting Dr. Wang's position, the NMFS did not ignore the best available data. Rather, it considered and disagreed with Dr. Wang's interpretation of the data.”<sup>134</sup> The NMFS' action in *Blue Water* represents how the agency can respond to peer review criticisms: the NMFS considered the criticism, incorporated it into the revisions made to the study, then reached a conclusion. Nothing in the best scientific data available standard precludes an agency from rejecting scientific data if the agency properly evaluates it and is able to document that the data it ultimately relied upon is actually the best scientific data available.

Finally, in *Southwest Center for Biological Diversity v. Norton*, the court rejected a number of claims that the FWS failed to use the best scientific data available.<sup>135</sup> Unlike the section 7 cases above, *Southwest Center* involved the FWS' consideration of a section 4 petition to list the Queen Charlotte goshawk as an endangered or threatened species.<sup>136</sup> As part of its evaluation of the listing petition, the FWS convened a panel of experts which reviewed the available scientific data and voted on whether the goshawk should be considered endangered or threatened.<sup>137</sup> The panel voted overwhelmingly that the goshawk was neither endangered

---

130. See *supra* Part IV.C.4.

131. See 226 F. Supp. 2d 330, 334 (D. Mass. 2002).

132. *Id.* at 338.

133. See *id.* at 339.

134. *Id.*

135. See No. Civ. A. 98-934 (RMU/JMF), 2002 WL 1733618 (D.D.C. July 29, 2002).

136. See *id.* at \*5.

137. *Id.* at \*11.

nor threatened.<sup>138</sup> In their challenge to the listing decision, plaintiffs argued that the data available was “inconclusive.”<sup>139</sup> The court acknowledged the uncertainty in the scientific data, but still concluded that the FWS had not erred in its evaluation of that data:

FWS may not insist upon conclusive scientific evidence in order to list a species. At the same time, this does not mean that whenever evidence is less than fully conclusive, a listing is automatically warranted. Evidence can be inconclusive and yet lean in favor of an endangered status. Conversely, evidence might strongly suggest that a species is not endangered or threatened, yet still be considered inconclusive or uncertain from a scientist’s perspective. The underlying scientific evidence regarding goshawk ecology and population numbers is by all accounts riddled with uncertainty. And yet a panel of scientists, in the face of this uncertainty, nevertheless was able to make very certain conclusions that the goshawk is neither threatened nor endangered in southeast Alaska.<sup>140</sup>

A second argument made by plaintiffs was that the FWS made a variety of substantive mistakes in reaching the decision not to list the goshawk. For example, the plaintiffs asserted that certain assumptions made by the FWS were “overly simplistic,” that certain existing data contradicted the FWS’ assumptions, and that the FWS predictions were “inadequate.”<sup>141</sup> Although the court went to some length to specifically reject the plaintiffs’ individual assertions, it also offered a general rejection of plaintiffs’ approach:

At bottom, plaintiffs’ argument is based entirely on a disagreement over the science, namely the soundness of the protection-persistence assumption. They point to no material information that FWS failed to consider. They identify no independent biologist who flatly disagrees with the expert panels’ conclusions. For me to agree with plaintiffs’ arguments would be to accept their interpretation of the data on this highly technical matter over the unanimous opinion of five goshawk experts. This would be flatly inconsistent with the instruction in *Marsh v. Oregon Natural Resource Council*, 490 U.S. at 378, to show deference to the agency on technical and scientific conclusions.<sup>142</sup>

Taken together, *Greenpeace Action*, *Blue Water*, and *Southwest Center*, offer a lesson regarding agency handling of scientific data in ESA decision making. The drafters of the ESA recognized (at least implicitly) that species and habitat data is often inconclusive and unclear.

---

138. *Id.*

139. *Id.* at \*9.

140. *Id.* (citation omitted).

141. *Id.* at \*12.

142. *Id.* at \*13.

Accordingly, the agency is not required to demonstrate that the scientific data it relies upon in making decisions is perfect, or even conclusive. The agency must, however, establish that its scientific data is “better” than other scientific data which is currently available. Rather than ignoring other data which may support a conclusion contrary to the agency’s conclusion, the agency should specifically evaluate that data as part of the decision-making process and, in the administrative record, clearly enunciate why it decided that such science was not the best scientific data available. Failure to properly consider and discount scientific data which is available during the decision-making process can make the agency’s decision vulnerable to challenge.

### 3. Defining “Available” Data

Perhaps the most common failure of parties attacking ESA scientific data is failure to properly account for the integrated nature of the best scientific data available standard. While it is often easy to pick apart scientific evidence, merely showing weakness in the agency’s data—indeed even showing that such evidence is deeply flawed—does not, by itself, show a violation of the best scientific data available standard. The ESA does not require that scientific data meet an *objective* standard. In other words, a court should not reject an agency’s use of scientific data merely because that data is not “good”—it can only do so if other data exists which is “better.” As succinctly stated by the United States District Court of Oregon, where a party challenges a best scientific data available determination, “[a]bsent a showing that [the agency] failed to consider relevant, available, scientific data, plaintiffs are unlikely to prevail.”<sup>143</sup>

The seminal case on the “availability” requirement is *City of Las Vegas v. Lujan*,<sup>144</sup> wherein the court held that, with regard to the ESA listing provision:<sup>145</sup>

[T]his provision merely prohibits the Secretary from disregarding available scientific evidence that is in some way better than the evidence he relies on. Even if the available scientific and commercial data were quite inconclusive, he may—indeed must—still rely on it at that stage. . . . Since

143. *Kandra v. United States*, 145 F. Supp. 2d 1192, 1210 (D. Or. 2001).

144. *See* 891 F.2d 927 (D.C. Cir. 1989). *Lujan* involved several challenges to the FWS’ emergency listing of the Mojave Desert population of the desert tortoise as an endangered species. Plaintiffs challenged the FWS’ decision alleging, *inter alia*, that the FWS relied upon flawed data in making its listing decision. Plaintiffs sought preliminary injunctive relief against the FWS, which the district court denied. On appeal, the court of appeals affirmed the district court’s denial of injunctive relief. *Id.*

145. ESA § 4(b)(1)(A), 16 U.S.C. § 1533(b)(1)(A) (2000).

there is no allegation that the Secretary *disregarded* scientifically superior evidence that was available to him at the time he published, he satisfied his duties under . . . 16 U.S.C. § 1533(b)(7).<sup>146</sup>

If a party simply attacks the validity of the science relied upon by the agency, without offering some form of alternate, coherent scientific conclusions, a court may be tempted to simply defer to the agency, even if the agency’s scientific data is flawed.<sup>147</sup> Accordingly, for both the agency and potential litigants, the critical time for laying the groundwork for their position is at the time the record is being prepared, *not* when the case is subsequently being litigated before the court.

A good example of a failed best scientific data available standard argument is *Friends of Endangered Species, Inc. v. Jantzen*.<sup>148</sup> In *Jantzen*, the FWS relied upon a variety of information to issue an ITP.<sup>149</sup> Plaintiff challenged the issuance of the ITP, arguing that the scientific data utilized by the FWS contained major mistakes.<sup>150</sup> As the Ninth Circuit noted, however, the plaintiff did not “direct the [FWS] to any better available data.”<sup>151</sup> Accordingly, the court held that the plaintiff had failed to carry its burden of demonstrating that flaws in the administrative record established that the FWS acted unreasonably or capriciously.<sup>152</sup>

### C. Categories of Challenges to “Best Scientific Data Available”

#### 1. Criticism from Experts

Faced with a best scientific data available determination, agency opponents often introduce contradictory scientific evidence—particularly scientific evidence which specifically refutes the agency’s evidence. The difficulty in such an approach is that it places the court in the position of having to choose between two bodies of scientific

---

146. *Lujan*, 891 F.2d at 933.

147. *See* *Bldg. Indus. Ass’n of Superior Cal. v. Norton*, 247 F.3d 1241, 1247 (D.C. Cir. 2001) (“[A]bsent superior data . . . occasional imperfections do not violate § 1533(b)(1)(A).”); *Pyramid Lake Paiute Tribe of Indians v. United States Dep’t of the Navy*, 898 F.2d 1410, 1415 (9th Cir. 1990) (“[E]ven when the FWS’s opinion is based on ‘admittedly weak’ information, another agency’s reliance on that opinion will satisfy its obligations under the Act if a challenging party can point to no ‘new’ information—*i.e.*, information the Service did not take into account—which challenges the opinion’s conclusions.”); *Defenders of Wildlife v. Babbitt*, No. 97-CV-2330 TW (LSP), 1999 WL 33537981, at \*4 (S.D. Cal. July 14, 1999) (“Even assuming [scientific data] methodology is inherently flawed, both parties acknowledge that the [scientific data] was and continues to be the best scientific evidence available.”).

148. 760 F.2d 976 (9th Cir. 1985).

149. *See id.* at 980-81.

150. *See id.* at 985.

151. *Id.*

152. *Id.*

evidence and decision making. However, most courts are neither prepared, nor willing, to function as a de facto peer review body.

Accordingly, courts asked to choose between two bodies of scientific data generally have allowed the agency the discretion to select the evidence it chooses to rely upon.<sup>153</sup> As one court succinctly explained its limited review of scientific evidence:

[t]he Court's review of the scientific data included in the administrative record is limited to an inquiry as to whether the record supports the

---

153. See *Save Our Springs Alliance v. Cooke*, No. A-01-CA-855-SS, 2002 WL 31757473, at \*5 (W.D. Tex. Nov. 12, 2002) (rejecting the argument that the agency improperly chose to rely on certain data while discounting other data, and holding that "this Court's role in APA cases is not to evaluate alleged improper choices among data made by an agency well-practiced in making such decisions"); *Cook Inlet Beluga Whale v. Daley*, 156 F. Supp. 2d 16, 20 (D. D.C. 2001); *Greenpeace v. Nat'l Marine Fisheries Serv.*, 55 F. Supp. 2d 1248, 1261 (W.D. Wash. 1999); *Wyo. Farming Bureau Fed'n v. Babbitt*, 987 F. Supp. 1349, 1369 (D. Wyo. 1997) (acknowledging the ability of "the FWS [to] exercise[] its discretion in choosing from admittedly conflicting opinions and results"); see also *Loggerhead Turtle v. County Council of Volusia County*, 120 F. Supp. 2d 1005, 1022-23 (M.D. Fla. 2000) (discussing agencies' discretion to rely on their own experts); *N.M. Cattle Growers Ass'n v. United States Fish & Wildlife Serv.*, 81 F. Supp. 2d 1141, 1160 (D. N.M. 1999), *rev'd*, 248 F.3d 1277 (10th Cir. 2001) (finding that a FWS determination was based on the agency's expertise); *Ocean Mammal Inst. v. Cohen*, No. 98-CV-160, 1998 WL 2017631, at \*4 (D. Haw. Mar. 9, 1998), *aff'd*, 164 F.3d 631 (9th Cir. 1998) ("Courts must defer to the informed discretion of the agency in relying on the reasonable opinions of [the agency's] own qualified experts, even if, as an original matter, a court might find contrary views more persuasive.") (citations and quotations omitted); *Fund for Animals v. Babbitt*, 903 F. Supp. 96, 110 (D.D.C. 1995), *opinion amended*, 967 F. Supp. 6 (D. D.C. 1997) (noting that disagreement between scientists does not lead to arbitrariness); *Am. Rivers v. Nat'l Marine Fisheries Serv.*, No. 94-940-MA, 1995 WL 46544, at \*4 (D. Or. Apr. 14, 1995) (applying court applied deferential standard of review to consider "conflicting evidence and testimony from fisheries biologists"); but *cf.* *Hells Canyon Pres. Council v. Jacoby*, 9 F. Supp. 2d 1216, 1240 (D. Or. 1998) ("These opinions present a clear example of specialists expressing conflicting views. In such cases, an agency must have discretion to rely on the reasonable opinions of its own qualified experts. . . . The court is not empowered to decide that the views of the plaintiffs' experts have more merit than the agency's experts."); *Ariz. Cattle Growers' Ass'n v. Cartwright*, 29 F. Supp. 2d 1100, 1120 (D. Ariz. 1998) (supporting the agency's decision "to adopt one study over another" in NEPA context). But see *Idaho Dep't of Fish & Game v. Nat'l Marine Fisheries Serv.*, 850 F. Supp. 886, 898 (D. Or. 1994) ("Scientific uncertainty may contribute to the complexity of a problem, but the existence of a scientific dispute should not insulate an agency from meaningful, but limited, judicial review."); but *cf.* *Idaho Conservancy League v. Thomas*, 917 F. Supp. 1458, 1464 (D. Idaho 1995), *aff'd*, 91 F.3d 1345 (9th Cir. 1996) ("Thus, notwithstanding substantial interagency disagreement, the Forest Service was entitled to rely on the opinions and analysis of its own experts.") (citation omitted); *Trawler Diane Marie, Inc. v. Brown*, 918 F. Supp. 921, 930 (E.D.N.C. 1995), *aff'd*, 91 F.3d 134 (4th Cir. 1996) ("The fact that the Secretary opted for a conservative approach in light of the information available to him, whereas others might draw different conclusions from the same evidence, does not render the Secretary's decision arbitrary and capricious."); *Pac. Northwest Generating Coop. v. Brown*, 822 F. Supp. 1479, 1505 (D. Or. 1993), *aff'd*, 38 F.3d 1058 (9th Cir. 1994) ("It is because these specialists have sharply conflicting views that the agencies then have the discretion to rely upon whichever reasonable opinions they choose. Even if I found the contrary views more persuasive, I could not substitute my judgment for that of the agencies.").



agency’s findings and whether the agency’s actions were based on the “best scientific . . . data available” to it. This Court is not in a position to make policy judgments based on conflicting or uncertain scientific data.<sup>154</sup>

*Trawler Diane Marie, Inc. v. Brown*, is a good illustration of the discretion given to agencies in making scientific decisions based upon uncertain or incomplete data.<sup>155</sup> In pertinent part, *Trawler Diane Marie* revolved around the decision of the Secretary of Commerce (the Secretary) to temporarily close a scallop fishery off the coast of Alaska.<sup>156</sup> The Secretary’s decision was motivated by over-fishing concerns evidenced by excessive fishing in the area and fishing data “indicating that, in recent years, smaller and younger scallops were comprising a greater proportion of the harvest.”<sup>157</sup> While the court acknowledged that the evidence relied upon by the Secretary was inconclusive and could support various conclusions, the court held that the court would not second-guess the agency’s decisions:

Based on the above information, as limited as it may be, the Secretary could reasonably conclude that continued unregulated fishing . . . could lead to overfishing and localized depletion of the scallop stocks. . . . The fact that the Secretary opted for a conservative approach in light of the information available to him, whereas others might draw different conclusions from the same evidence, does not render the Secretary’s decision arbitrary and capricious.<sup>158</sup>

The United States District Court for the District of Columbia reached a similar decision in *Cook Inlet Beluga Whale v. Daley*.<sup>159</sup> This case involved the decision by the NMFS to list the Cook Inlet Beluga Whale as “depleted” under the Marine Mammal Protection Act, but not as “endangered” or “threatened” under the ESA.<sup>160</sup> It was undisputed that “Native American harvesting has been the most significant factor in the declining whale population,” and that if a moratorium on harvesting failed to control such harvesting in the future, “ESA listing will be warranted.”<sup>161</sup> The crux of the dispute before the court was whether a properly-enforced moratorium would succeed in sustaining the current

---

154. *Am. Wildlands v. Norton*, 193 F. Supp. 2d 244, 252 (D.D.C.), *appeal dismissed*, 2002 WL 1925878 (D.C. Cir. Aug 12, 2002).

155. *See* 918 F. Supp. 921, 930 (E.D.N.C. 1995), *aff’d*, 91 F.3d 134 (4th Cir. 1996). The case was brought under the Magnuson Fishery Conservation and Recovery Act, 16 U.S.C. §§ 1801-1883(d) (2000) and the APA, 5 U.S.C. §§ 551-559 (2000), not the ESA.

156. *See* 918 F. Supp. at 920.

157. *Id.* at 930.

158. *Id.*

159. *See* 156 F. Supp. 2d 16 (D.D.C. 2001).

160. *Id.* at 18.

161. *Id.* at 20.

whale population.<sup>162</sup> In support of its decision, the NMFS relied upon a scientific study (the Breiwick and DeMaster study) which supported the agency's position.<sup>163</sup> In rebuttal, the plaintiffs cited a different scientist, Dr. Lande, who called into question whether the NMFS study was based upon adequate data.<sup>164</sup> Although the court ultimately rejected the plaintiffs' scientific evidence, it made clear that it would have discounted the evidence even if had been presented in a timely manner:

Plaintiffs disagree with Breiwick and DeMaster and cite to Dr. Lande (whose declaration was stricken as extra-record material) for the proposition that NMFS did not have the necessary data to model stochastic events. Even if Dr. Lande's opinions had been before the agency, however, "[w]hen specialists express conflicting views, an agency must have discretion to rely on the reasonable opinions of its own qualified experts even if, as an original matter, a court might find contrary views more persuasive."<sup>165</sup>

A court might have overturned the NMFS' decision if the agency had been presented with Dr. Lande's opinions during the decision-making process and the agency did not explain, in the administrative record, why it chose to discount Dr. Lande's opinions.<sup>166</sup>

The source of the criticism of the agency's scientific data, however, may have an impact on a court's consideration of the data. In *San Luis & Delta-Mendota Water Authority v. Badgley*, the FWS did not respond to concerns raised by the State of California Department of Fish and Game.<sup>167</sup> The court was not only concerned by what it perceived to be the FWS' "efforts to ignore the . . . data and opinion," but also by the fact that the data came "not from a partisan, but another public agency vested with identical environmental protection duties to further the public interest."<sup>168</sup> Similarly, another court rejected an agency finding when, inter alia, the author of the study relied upon by the FWS expressly rejected the conclusions that the FWS drew from it.<sup>169</sup>

A number of courts have invoked the underlying purposes of the ESA to choose between opposing sets of scientific data. *Greenpeace v. National Marine Fisheries Service* involved a challenge to two NMFS biological opinions prepared in connection with certain Fishery

---

162. *Id.*

163. *Id.*

164. *Id.*

165. *Id.* (quoting *Marsh v. Or. Nat'l Res. Council*, 490 U.S. 360, 378 (1989)).

166. See *supra* notes 131-134 and accompanying text.

167. See 136 F. Supp. 2d 1136 (E.D. Cal. 2000).

168. *Id.* at 1148.

169. See *Carlton v. Babbitt*, 26 F. Supp. 2d 102, 111 (D.D.C. 1998).

Management Plans developed by the North Pacific Fishery Management Council.<sup>170</sup> In making their respective cases to the court, the parties presented contradictory evidence, all of which the judge found credible.<sup>171</sup> By accepting all of the evidence, the judge effectively concluded that neither set of evidence was “better” than the other. Because the case was before the court on a request for injunctive relief, in light of other concerns raised by plaintiffs’ claims, and in light of the “‘institutional caution’ mandated by section 7,” the court tipped the scales in favor of the plaintiffs and granted their request for injunctive relief.<sup>172</sup>

Another potential problem arises where the agency refuses to release raw scientific data for review. The decision by the FWS not to release certain raw data which had been used by the FWS to reach a listing decision for the coastal California gnatcatcher formed the basis of the challenge to the agency’s decision in *Endangered Species Committee of the Building Industry Ass’n of Southern California v. Babbitt*.<sup>173</sup> Because the FWS was aware that two scientists had reached contradictory conclusions from the same raw data, the court held that the FWS erred by not releasing that data to the public.<sup>174</sup>

In light of the standard applied by courts to scientific evidence, and particularly in light of the nature of the best scientific data available standard, it is little surprise that where a court is asked to consider a “battle of the scientific experts” where each side presents its own scientific evidence, the agency will generally prevail. Challenges to agency decision making, however, may still effectively use scientific evidence to demonstrate that the agency failed to consider the relevant factors or that the scientific evidence in the record simply does not support the conclusions reached by the agency. In addition, those challenging agency decision making may focus on other, less purely scientific issues, such as bias, inconsistency, or dissension within the agency itself. As the discussion below indicates, these various approaches have produced mixed results.

---

170. 106 F. Supp. 2d 1066, 1069 (W.D. Wash. 2002).

171. *Id.* at 1080.

172. *Id.*; see also *Conner v. Burford*, 848 F.2d 1441, 1454 (9th Cir. 1988); *Greenpeace v. Nat’l Marine Fisheries Serv.*, 55 F. Supp. 2d 1248, 1261 (W.D. Wash. 1999) (noting that Congress intended to “give the benefit of the doubt to the species”) (citation omitted).

173. See 852 F. Supp. 32, 36-37 (D.D.C. 1994); see also *Sierra Club v. Babbitt*, 69 F. Supp. 2d 1202, 1223 (E.D. Cal. 1999) (holding that by failing to release “hard data,” the agency violated NEPA regulations).

174. *Endangered Species Comm. of the Bldg. Indus. Ass’n of S. Cal.*, 852 F. Supp. at 37; see also *Idaho Farm Bureau Fed’n v. Babbitt*, 58 F.3d 1392, 1403-05 (9th Cir. 1995) (noting that “[f]ailure to provide the public with an opportunity to review the USGS report constitutes a significant procedural error on the Secretary’s part”).

## 2. Reliance on Incomplete Studies

Many ecological studies involve long-term impact evaluations. In attempting to fulfill its ESA obligations, the FWS often finds itself making decisions based upon incomplete studies. While the fact that a relied-upon study is incomplete may offer a plaintiff an avenue of challenge, as a general rule, courts have held that, at times, the agency can (and, indeed, must) rely upon inconclusive or incomplete scientific evidence.<sup>175</sup> Courts have reached similar conclusions under the Magnuson-Stevens Act.<sup>176</sup>

## 3. Self-Critical Material in the Record

While parties challenging the FWS' use of scientific data may provide their own scientific evidence, creating such a scientific disagreement—or the appearance of one—generally will not persuade a court. A more effective tactic at times for challengers is identifying unresolved disagreement within the agency's administrative record. Courts have shown a willingness to overturn an agency's decision where the administrative record reflects uncertainty or disagreement within the agency itself.<sup>177</sup> Nevertheless, as discussed above, an agency can provide

---

175. See *Water Keeper Alliance v. United States Dep't of Def.*, 271 F.3d 21, 33 (1st Cir. 2001) (holding that the Navy had relied on the best scientific and commercial data available, even though it had not yet completed many of the studies that would be incorporated in a future biological assessment for the long-term use of the island); *Southwest Ctr. for Biological Diversity v. Babbitt*, 215 F.3d 58, 60 (D.C. Cir. 2000) (noting the need to rely on inconclusive data); *City of Las Vegas v. Lujan*, 891 F. 2d 927, 932-33 (D.C. Cir. 1989) (recognizing that the FWS must sometimes act based upon inconclusive data); *Southwest Ctr. for Biological Diversity v. Norton*, No. Civ. A. 98-934 (RMU/JMF), 2002 WL 1733618, at \*9 (D.D.C. July 29, 2002) (“Another implication of ‘best scientific data available’ requirement is that FWS must rely on even inconclusive or uncertain information if that is the best available at the time of the listing decision.”).

176. 16 U.S.C. §§ 1801-1883d (2000); see also *Trawler Diane Marie, Inc. v. Brown*, 918 F. Supp. 921, 929 (E.D.N.C. 1995), *aff'd*, 91 F.3d 134 (4th Cir. 1996) (“While it is true that the scientific information about the weathervane scallop is inconclusive, that fact does not preclude the Secretary from acting based upon the information that is available to him.”); *Nat'l Fisheries Inst., Inc. v. Mosbacher*, 732 F. Supp. 210, 220 (D.D.C. 1990) (construing the Magnuson Act).

177. See, e.g., *Carlton v. Babbitt*, 26 F. Supp. 2d 102, 110 (D.D.C. 1998) (noting that a FWS report acknowledged problems with data relied upon); *Friends of the Wild Swan, Inc. v. United States Fish & Wildlife Serv.*, 12 F. Supp. 2d 1121 (D. Or. 1997); *cf. Res. Ltd., Inc. v. Robertson*, 35 F.3d 1300, 1305 (9th Cir. 1994), *aff'd in part and rev'd in part*, 35 F.3d 1300 (9th Cir. 1993) (noting that the agency's own studies raised questions regarding impact on species); *Southwest Ctr. for Biological Diversity v. United States Bureau of Reclamation*, 6 F. Supp. 2d 1119, 1134 (D. Ariz. 1997) (acknowledging that plaintiff cited to differences in draft biological opinion and final biological opinion and to “exchanges between the agencies in connection with the revision of the final [biological opinion]”); *Southwest Ctr. for Biological Diversity v. Babbitt*, 926 F. Supp. 920, 927 (D. Ariz. 1996) (noting that the FWS followed a draft policy while ignoring more recent, contradictory data). *But see Blue Water Fisherman's Ass'n v. Nat'l Marine Fisheries*

itself a significant amount of protection from such a challenge if it expressly addresses evidence which may not support the agency’s decision and explains why it has chosen to discount such evidence.

A related tactic is to point out inconsistencies in how an agency interprets the same data in different cases. The advantage of such an argument is that it implicates the accepted principle of administrative law that an agency must follow its own rules.<sup>178</sup> In *Carlton v. Babbitt*, for example, the court was clearly troubled by the FWS’ taking of inconsistent positions on the viability of small population sets.<sup>179</sup> Such inconsistencies often constitute a more serious challenge to an agency because it can appear to a court that the agency has engaged in exactly the type of result-driven scientific analysis that is inconsistent with the purportedly objective best scientific data available analysis.

#### 4. Need for Further Investigation

Although the best scientific data available standard focuses on the *available* data,<sup>180</sup> one creative approach taken by plaintiffs is to argue that the standard implicitly requires the FWS to conduct further study if the current data is incomplete or inadequate. Although this Article generally treats the different uses of the best scientific data available standard in the ESA as congruous, consideration by the courts of the need to undertake additional investigation may vary depending upon which provision of the ESA is in question.

With regard to all sections of the ESA which apply the best scientific data available standard, there is no provision that affirmatively requires additional investigation. As the United States District Court for the District of Columbia held in a listing case, the best scientific data available “does not obligate the [FWS] to conduct new, independent studies.”<sup>181</sup> At least one appellate court has expressly rejected a district

---

Serv., 226 F. Supp. 2d 330, 339 (D. Mass. 2002) (“It is noteworthy that the comments of the peer reviewers were generally complimentary and that they had no argument with the body of data that the [agency] reviewed.”).

178. See *Andershock’s Fruitland, Inc. v. United States Dep’t of Agric.*, 151 F.3d 735, 736 (7th Cir. 1998) (“[A]n agency must follow its own rules and doctrines until it changes them explicitly.”); see also *Wade v. Brown*, 22 F.3d 516, 522 (2d Cir. 1994) (noting that agencies must take care to follow their own rules).

179. See 26 F. Supp. 2d 102, 111 (D.D.C. 1998).

180. See *supra* Part IV.B.3.

181. *Am. Wildlands v. Norton*, 193 F. Supp. 2d 244, 251 (D.D.C.), *appeal dismissed*, 2002 WL 1925878 (D.C. Cir. Aug. 12, 2002).

court's attempt to mandate further investigation to determine whether a particular species should be listed as threatened or endangered.<sup>182</sup>

The FWS regulations are neither entirely clear nor entirely consistent with respect to whether additional information, or additional studies, may be required of an action agency undergoing consultation. The consultation regulations note that when an action agency or its designated nonfederal representative is preparing a biological assessment for the purpose of consultation, the FWS

may recommend discretionary studies or surveys that may provide a better information base for the preparation of an assessment. Any recommendation for studies or surveys is not to be construed as the Service's opinion that the Federal agency has failed to satisfy the information standard of section 7(a)(2) of the Act.<sup>183</sup>

This provision, standing alone, flags the discretionary nature of the FWS' recommendations concerning additional studies. However, the agency's regulations concerning formal consultation are significantly more coercive in nature—or at best unclear—with regard to their treatment of the action agency's "responsibility" to provide the best scientific and commercial data available for the purpose of consultation:

The Federal agency requesting formal consultation shall provide the Service with the best scientific and commercial data available or *which can be obtained during the consultation* for an adequate review of the effects that an action may have upon listed species or critical habitat. This information may include the results of studies or surveys conducted by the Federal agency or the designated non-Federal representative.<sup>184</sup>

On its face, this language appears to direct an action agency to obtain data not "available" at the time consultation is requested, so long as it can be generated (or obtained) during the formal consultation process. The regulations further provide:

When the Service determines that additional data would provide a better information base from which to formulate a biological opinion, the Director may request an extension of formal consultation and request that the Federal agency obtain additional data to determine how or to what extent the action may affect listed species or critical habitat. If formal consultation is extended by mutual agreement according to Section 402.14(e), the Federal agency shall obtain, to the extent practicable, that

---

182. *Southwest Ctr. for Biological Diversity v. Babbitt*, 215 F.3d 58, 60 (D.C. Cir. 2000) ("The 'best available data' requirement makes it clear that the [FWS] has no obligation to conduct independent studies.").

183. *See* 50 C.F.R. § 402.12(d)(2) (2002).

184. *Id.* § 402.14(d) (emphasis added).

data which can be developed within the scope of the extension. The responsibility for conducting and funding any studies belongs to the Federal agency and the applicant, not the Service. The Service’s request for additional data is not to be construed as the Service’s opinion that the Federal agency has failed to satisfy the information standard of section 7(a)(2) of the Act. If no extension of formal consultation is agreed to, the Director will issue a biological opinion using the best scientific and commercial data available.<sup>185</sup>

Although these provisions acknowledge the notion that a FWS request for additional studies or further information does not constitute “the Service’s opinion that the Federal agency has failed to satisfy the information standard of section 7(a)(2),” that proviso is cold comfort to a litigant against whom the fact that such a FWS “request” was made is asserted as supporting that the consultation was not based on the “best scientific data available.” As a practical matter, given the FWS’ policy of resolving perceived or real data gaps by providing the “benefit of the doubt to the species concerned with respect to such gaps in the information base,”<sup>186</sup> an action agency or project proponent whose proposed activity is undergoing consultation with the FWS can hardly avoid feeling some coercive action from a FWS “request” for more data.

While the various best scientific data available standards in the ESA are essentially identical, some courts have interpreted the best scientific data available standard in section 7 of the ESA as placing a higher burden on agencies. In *North Slope Borough v. Andrus*, the United States District Court for the District of Columbia interpreted the consultation requirement this way:

[I]nadequate information does not provide a foundation for reckless abandon. . . . [T]he duty to consult is not fulfilled until a biological opinion based on adequate information exists. . . . If inadequate information exists for a comprehensive biological opinion, then the action agency must (1) continue research and consultation so that a comprehensive biological opinion may be issued, and (2) obtain § 7(b) biological opinions, based on adequate information for the intermediate activities as the activities become ripe for analysis.<sup>187</sup>

---

185. *Id.* § 402.14(f).

186. HANDBOOK, *supra* note 54, at 1-6. For a critique of the Services’ “benefit of the doubt” standard, see John Earl Duke, Note, *Giving the Species the Benefit of the Doubt*, B.U. L. REV. 109 (2003). In his Note, Duke argues that the “benefit of the doubt” standard is incorrect, and that the “courts should interpret the best available data standard to give landowners and developers, rather than species, the benefit of the doubt when the data are inconclusive.” *Id.* at 211.

187. *N. Slope Borough v. Andrus*, 486 F. Supp. 332, 352-53 (D.D.C. 1980), *order vacated in part sub. nom.* Nat’l Wildlife Fed’n v. Andrus, 14 ERC 1846, 15 ERC 1601 (D.C. Cir. 1980),

In 1982, in *Roosevelt Campobello International Park Commission v. United States Environmental Protection Agency*, the United States Court of Appeals for the First Circuit adopted an extreme reading of the section 7(b) best scientific data available standard.<sup>188</sup> *Roosevelt Campobello* involved a section 7 consultation undertaken by the EPA in connection with the issuance of a National Pollutant Discharge Elimination System Permit for an oil refinery and deep water terminal.<sup>189</sup> As part of the consultation process, the EPA consulted the NMFS regarding the potential impact of the project on the endangered humpback whale.<sup>190</sup> The NMFS initially concluded that “there were [sic] insufficient data to conclude that the project was not likely to jeopardize the continued existence of the endangered whales,”<sup>191</sup> and it ultimately determined that it was unable to “insure that [the project] is not likely to jeopardize the continued existence of” the endangered whales.<sup>192</sup>

On appeal, the petitioners argued that the EPA’s and Coast Guard’s failure to conduct further risk studies was inconsistent with the requirement that the EPA’s and Coast Guard’s consultation process use the best available scientific data.<sup>193</sup> The First Circuit accepted the petitioners’ contentions and reasoned that the section 7(a)(2) best scientific data standard effectively imposed an affirmative obligation upon agencies.<sup>194</sup> Specifically, the First Circuit stated that compliance with the best scientific data available standard requires a “first class effort” on the part of the agency, including the performance of “any . . . tests and studies which are suggested by the best available science and technology.”<sup>195</sup> Thus, the court held that failure to do additional available testing violated the section 7(a)(2) best scientific data available standard.

---

*aff’d in part and rev’d in part sub. nom.* N. Slope Borough v. Andrus, 642 F.2d 589 (D.C. Cir. 1980).

188. See 684 F.2d 1041 (1st Cir. 1982).

189. *Id.* at 1044.

190. *Id.* at 1045.

191. *Id.*

192. *Id.*

193. *Id.* at 1051.

194. *Id.* at 1052 n.9 (“We read the requirement that the agency, here [the] EPA, use such quality of data in the consultation process, as applying not only to such matters as the presence, vulnerability, and criticality of the endangered species, but also to the likelihood of an occurrence that might jeopardize it. We see no basis for requiring a first class effort on the former and not on the latter. Where a more limited use of such ‘best scientific and commercial data’ is intended, the statute speaks [quite] clearly; e.g., 16 U.S.C. § 1536(c)(1) . . . Cf. 16 U.S.C. § 1536(h)(2)(B).” (quotations omitted)).

195. *Id.* at 1052 n.9, 1055; see also *Conservation Law Found. v. Watt*, 560 F. Supp. 561, 571-72 (D. Mass. 1983), *aff’d sub. nom.* Massachusetts v. Watt, 716 F.2d 946 (1st Cir. 1983).



[T]he issue [here] is a harder one: whether, after using the best data available, it is established that the risk of significant oil spills from the proposed tanker traffic is so small as to insure that there is no likelihood of jeopardizing the two endangered species. All witnesses have agreed that real time simulation studies would contribute a more precise appreciation of risks of collision and grounding. We think the same could be said of a hydrographic survey of the depth of the channel, and perhaps of trial runs by VLCCs [very large crude carriers] in ballast. If so, such methodologies obviously represent as yet untapped sources of “best scientific and commercial data.”<sup>196</sup>

The aggressive readings of section 7 applied in *North Slope Borough* and *Roosevelt Campobello* remain an aberrant interpretation of section 7 that few courts have shown interest in following. These courts provided little compelling reasoning as to why the section 7 best scientific data available standard should be applied any differently than the ESA standards.

Other courts have, however, read the section 7 best scientific data available standard more narrowly—in a manner consistent with most judicial applications of the other best scientific data available standards in the ESA. In *National Wildlife Federation v. Babbitt*, for example, the court stated that section 7 did not require additional testing or study:

Where the “available data” is imperfect, the Service is not obligated to supplement it or defer issuance of its biological opinion until better information is available. Rather, “the Service must develop its biological opinion based upon the best scientific and commercial data available regardless of the ‘sufficiency’ of that data.”<sup>197</sup>

A commonly litigated issue in the context of biological opinions is whether an action agency satisfies the best scientific data available standard if it simply relies upon a biological opinion previously produced by another agency (generally the FWS). Courts faced with this situation have generally held that “another agency’s reliance on that [biological] opinion will satisfy its obligations under the Act if a challenging party can point to no ‘new’ information—i.e., information the Service did not take into account—which challenges the opinion’s conclusions.”<sup>198</sup> In

---

196. *Roosevelt Campobello*, 684 F.2d at 1055.

197. 128 F. Supp. 2d 1274, 1286-87 (E.D. Cal. 2000) (quoting 51 Fed. Reg. 19,926, 19,951 (final rulemaking with respect to 50 C.F.R. § 402)).

198. *Pyramid Lake Paiute Tribe of Indians v. United States Dep’t of Navy*, 898 F.2d 1410, 1415 (9th Cir. 1990); *see also Res. Ltd., Inc. v. Robertson*, 789 F. Supp. 1529 (D. Mont. 1991), *rev’d*, 35 F.3d 1300 (9th Cir. 1994), *aff’d in part and rev’d in part*, 35 F.3d 1300 (9th Cir. 1993). The *Resources Limited* case is a good example of how an agency can lose the benefit of the *Pyramid Lake* standard. On appeal, the *Resources Limited* plaintiffs successfully argued that the

other words, provided that the original biological opinion relies upon the “best” scientific data available, an agency is entitled to accept it as such.

## 5. Bias

Although the scientific model seeks objective conclusions, as a practical matter, the way scientific studies are shaped, and the way raw data is interpreted, perhaps invariably allows for a certain amount of subjectivity. Accordingly, it is entirely possible for science, as with most matters calling for the use of judgment and interpretation in application, to be molded and contoured in order to reach a predetermined result. As one court noted: “[a]t a certain point an agency might so liberally manipulate and interpret data as to ‘fudge’ conclusions utterly unsupportable by any reasonable application of the scientific method.”<sup>199</sup> While a direct attack on the scientific rationale for selecting one data set over another might well cause the judge to defer to the agency, recasting the decision making as indicative of underlying bias may sometimes be more persuasive to a judge.<sup>200</sup>

A good example of potential scientific bias is where the scientist reviewing a specific report previously provided editorial advice on that report.<sup>201</sup> In order to avoid such potential conflicts of interest, an agency is well advised to institute and enforce a rigorous conflicts of interest policy.

Bias can also manifest itself as a perceived bias on the part of the agency to use science to reach a particular, desired result. Courts have held that the best scientific data available standard “prevents FWS from manipulating its analysis by unreasonably relying on certain sources to

---

Forest Service could not rely on the FWS biological opinion because that opinion was based on selective information provided to the FWS by the Forest Service. *Res. Ltd., Inc.*, 35 F.3d at 1304. Not surprisingly, the court drew a distinction between “weak” information and “selective” information. *Id.* It should be noted that because the court believed that the Forest Service intentionally limited the information that it provided the FWS, the *Resources Limited* case represents a highly unusual case where the court’s decision is based, at least in part, on a perception of agency malfeasance or mismanagement.

199. *Blue Water Fisherman’s Ass’n v. Nat’l Marine Fisheries Serv.*, 226 F. Supp. 330, 340 (D. Mass. 2002).

200. *See, e.g., San Luis & Delta-Mendota Water Auth. v. Badgley*, 136 F. Supp. 2d 1136, 1151 (E.D. Cal. 2000) (criticizing the FWS for making no attempt “to acquire a broader range of unbiased data or address critiques of the studies they used, which appear biased”).

201. *See Endangered Species Comm. of the Bldg. Indus. Ass’n of S. Cal. v. Babbitt*, 852 F. Supp. 32, 37 (D.D.C. 1994); *cf. Ala.-Tombigbee Rivers Coalition v. Norton*, No. CIV.A.CV-01-S-0194-S, 2002 WL 227032, at \*3 (N.D. Ala. Jan. 29, 2002) (accusing the FWS of improperly contacting a genetic scientist to “influence[] and direct[] his findings”).

the exclusion of others.”<sup>202</sup> The mere involvement of the FWS headquarters or regional office in a matter, even when that involvement results in further study after the preparation by the field office of a biological opinion and even when the conclusions in the final biological opinion differ from those in the draft biological opinion, is not necessarily evidence of bias.<sup>203</sup> At any agency level, it is not surprising that the headquarters or state FWS offices must sometimes become involved in local FWS office decisions to preserve a uniform national policy. Such involvement may, indeed, be essential to ensure that scientific data within the agency is being interpreted in a consistent manner.

In drafting the ESA, Congress expressly prohibited regulators from making ESA-related decisions based upon political concerns: “individuals charged with the administration of the [ESA] do not have the legal authority to weigh the political importance of an endangered species.”<sup>204</sup> While that prohibition is extremely broad, it does not change the underlying fact that many ESA decisions necessarily and inevitably have political repercussions. Accordingly, mere discussion in the administrative record that political concerns exist in connection with a particular decision should not “taint” the agency’s decision.<sup>205</sup> Indeed, at least one court has reasoned that political considerations may, in certain circumstances, be taken into account in ESA decision making: “[t]he ESA does not explicitly limit the [FWS’] analysis to apolitical

---

202. *Southwest Ctr. for Biological Diversity v. Norton*, No. Civ. A. 98-934 (RMU/JMF), 2002 WL 1733618, at \*8 (D.D.C. July 29, 2002); *see also* *City of Las Vegas v. Lujan*, 891 F.2d 927 (D.C. Cir. 1989) (noting that the requirement prohibits the Secretary from disregarding available scientific evidence that may be better than that on which he relies).

203. *See* *Save Our Springs Alliance v. Cooke*, No. A-01-CA-855-SS, 2002 WL 31757473, at \*7 (W.D. Tex. Nov. 12, 2002); *cf.* *Natural Res. Def. Council v. Evans*, 2003 U.S. Dist. LEXIS 4906, at \*22 (S.D.N.Y. Mar. 31, 2003) (rejecting, in a Magnuson Act case, the argument that it was inappropriate for the NOAA and NMFS to change conclusion in the Fishery Management Plan for tilefish based upon further research; specifically, the court noted that “[i]t is often appropriate to change positions in resolving an issue, especially in response to public comments”).

204. H.R. REP. NO. 95-1625 (1978), *reprinted in* 1978 U.S.C.C.A.N. 9453, 9463; *see also* *Save Our Springs v. Babbitt*, 27 F. Supp. 2d 739, 747 (W.D. Tex. 1997).

205. *Southwest Ctr. for Biological Diversity v. Babbitt*, No. 96-56719, 1998 WL 141321, at \*1 (9th Cir. Mar. 25, 1998) (“In a memorandum to the Secretary prepared by Jim Bartel, the Division Chief for Listing and Recovery of the Fish and Wildlife Service, Bartel alludes to political concerns associated with the wren’s listing decision. However, Bartel’s supervisor edited the memorandum and directed the Secretary not to consider political consequences. Further, there is insufficient evidence from which jurors could reasonably find that the memorandum was the basis for the Secretary’s decision and, as such, summary judgment was proper.”); *see also* *Southwest Ctr. for Biological Diversity v. Babbitt*, 6 F. Supp. 2d 1119, 1134 (D. Ariz. 1997) (rejecting plaintiff’s argument of improper reliance on political concerns).

considerations. If two proposed [reasonable and prudent alternatives] would avoid jeopardy to the [species], the [FWS] must be permitted to choose the one that best suits all of its interests, including political or business interests.”<sup>206</sup>

A claim of impermissible political bias in the ESA decision-making process was recently rejected by the United States District Court for the District of Columbia.<sup>207</sup> The court’s discussion attempts to strike a pragmatic balance between the inevitable interjection of a certain element of politics in all decision making and truly impermissible political bias:

Plaintiffs’ allegation that the listing decision was impermissibly affected by political considerations is not supported by the record. The record does contain an agency memorandum reciting that the whales “presently meet some or all of the qualifications for listing under both the ESA and MMPA [Marine Mammal Protection Act]”, and stating that one of the advantages of an MMPA listing is that “interest among the Alaska congressional delegation is high, which opposes an ESA listing.” And, one of the agency’s own experts stated that the evidence “towards a listing . . . are compelling” and that “most knowledgeable scientists would support a listing decision in the absence of politics.” These bits of evidence show that the agency’s decision was a difficult one and that political considerations may have been lurking in the corridors. They do not establish that, but for “politics,” the whale would have been listed under the ESA or that political considerations became part of the decision making process.<sup>208</sup>

#### *D. Challenges to ESA Modeling*

Agency use of and reliance upon modeling in environmental regulation, including in ESA matters, has been the subject of frequent challenges. Accordingly, a significant body of law regarding the efficacy and appropriateness of modeling has developed. As summarized below,

---

206. *Southwest Ctr. for Biological Diversity v. United States Bureau of Reclamation*, 143 F.3d 515, 523 n.5 (9th Cir. 1998); *cf. Fund for Animals v. Babbitt*, 903 F. Supp. 96, 110 n.4 (D.D.C. 1995), *opinion amended*, 967 F. Supp. 6 (D.D.C. 1997) (“[H]uman factors that have biological consequences for the bear are relevant considerations. In this limited manner, therefore, social consequences that might increase human-caused mortality are relevant, and consideration of such factors is not impermissible.”).

207. *See Cook Inlet Beluga Whale v. Daley*, 156 F. Supp. 2d 16 (2001).

208. *Id.* at 22 (citations omitted).

some courts have evaluated models under a standard which is more stringent than the best scientific data available standard.<sup>209</sup>

When an agency uses a model in its decision-making process, it must “explain the assumptions and methodology used in preparing the model and, if the methodology is challenged, must provide a complete analytic defense.”<sup>210</sup> This is because, as a general principal of APA review, “judicial review can occur only when agencies explain their decisions with precision, for it will not do for a court to be compelled to guess at the theory underlying the agency’s action.”<sup>211</sup> Furthermore, a court will find that an agency’s use of a model is arbitrary if it has no rational relationship to the reality it purports to represent.<sup>212</sup>

Often, an agency will apply several different models internally and then select particular models to use in its analysis. In *Idaho Department of Fish & Game v. National Marine Fisheries Service*, the court held that while agency scientific decisions were entitled to significant deference, that deference should not constitute judicial abdication.<sup>213</sup> Rather than criticizing the models (an approach which would have been a specific challenge to scientific data and reasoning), the court instead focused its attention on the agency’s decision to choose among models.<sup>214</sup> The court’s consideration of the agency’s decision to choose among specific results (favorable versus unfavorable), as opposed to between different models, is entirely consistent with the *Overton Park* standard of review.<sup>215</sup> Because the agency selected only the most favorable models, and provided no explanation of its decision making, the court held that the agency’s actions were arbitrary and capricious.<sup>216</sup>

Merely because a plaintiff believes that another type of modeling might lead to more accurate conclusions should not, without additional evidence, lead a court to reject an agency’s decisions regarding use of a particular modeling approach. In *Strahan v. Linnon*, for example, the

---

209. *But see* Aluminum Co. v. Adm’r, Bonneville Power Admin., 175 F.3d 1156, 1162 (9th Cir. 1999) (applying a standard similar to the best scientific data available standard to a modeling challenge).

210. United States Air Tour Ass’n v. Fed. Aviation Admin., 298 F.3d 997, 1008 (D.C. Cir. 2002) (quoting Small Refiner Lead PhaseDown Task Force v. EPA, 705 F.2d 506, 535 (D.C. Cir. 1983)).

211. Appalachian Power Co. v. EPA, 249 F.3d 1032, 1055 (D.C. Cir. 2001) (internal quotations omitted).

212. *See* Columbia Falls Aluminum Co. v. EPA, 139 F.3d 914, 923 (D.C. Cir. 1998); Am. Iron & Steel Inst. v. EPA, 115 F.3d 979, 1004 (D.C. Cir. 1997); Cook Inlet Beluga Whale v. Daley, 156 F. Supp. 2d 16, 20-21 (D.D.C. 2001).

213. 850 F. Supp. 886, 898 (D. Or. 1994).

214. *See id.* at 897.

215. *Id.* at 899 (“[T]his is not a purely scientific dispute.”).

216. *Id.*

plaintiff asserted that the agency erred by not undertaking population viability analysis or certain risk modeling.<sup>217</sup> Because the plaintiff failed to provide evidence why the alternate testing was qualitatively or quantitatively better than the testing utilized by the agency, the court rejected the claim.<sup>218</sup>

A particular modeling question that the agency sometimes faces is whether to utilize a habitat-based model or one based upon population numbers. A habitat-based model addresses impact to a species based upon habitat loss as an indicator of species viability. Population-based models, on the other hand, involve some form of species census and an evaluation of the direct impact upon the actual species count. Both forms of models have their supporters and detractors. A court should conclude that the agency is entitled to choose whichever of the models it believes, under the circumstances, constitutes best scientific data available.<sup>219</sup>

Related to the question of what model should be used is the question of how broad the actual scope of the agency's review should be—i.e., the scope of the area to be studied. Although the selection of a biological opinion's parameters may appear to be a purely scientific decision, because the ESA regulations define an "action area,"<sup>220</sup> some courts have shown a willingness to reject a biological opinion on *legal* grounds if the court concludes that the parameters are too narrow. In *Conner v. Burford*, for example, the court held that an agency's failure to evaluate a truly comprehensive biological opinion constituted a failure to consider the best scientific data available.<sup>221</sup> At least one subsequent district court decision has challenged the conclusions in *Conner* and attempted to narrow its application.<sup>222</sup>

---

217. See 967 F. Supp. 581, 593 (D. Mass. 1997), *aff'd*, 187 F.3d 623 (1st Cir. 1998).

218. See *id.* at 594 ("In this case . . . there is no evidence indicating that modeling and population viability analyses would 'contribute a more precise appreciation of risks.' . . . [A] conclusory assertion does not constitute adequate evidence.")

219. Pac. Coast Fed'n of Fishermen's Ass'n v. Nat'l Marine Fisheries Serv., No. 97-CV-775, 1998 WL 1988556 (W.D. Wash. May 29, 1998). The plaintiffs in *Pacific Coast* were further hampered by the fact that they did not offer the court any evidence suggesting that the population-based analysis they sought could even be carried out. *Id.* at \*7.

220. 50 C.F.R. 402.02 (2002).

221. See also 848 F.2d 1411 (9th Cir. 1988); *Greenpeace v. Nat'l Marine Fisheries Serv.*, 80 F. Supp. 2d 1137, 1150 (W.D. Wash. 2000) (rejecting a proposed biological opinion because "the ESA requires a comprehensive biological opinion that addresses the full scope of the agency action," and the proposed biological opinion did not).

222. See *Swan View Coalition, Inc. v. Turner*, 824 F. Supp. 923, 935 (D. Mont. 1992) ("The court does not agree that either the ESA or the holding in *Conner* requires an analysis of the resource production objectives in this case. Section 7 of the ESA requires FWS to base its opinion on the best scientific and commercial data available to insure that protected species are

## V. ATTEMPTED FEDERAL LEGISLATIVE CHANGES

A. *The Endangered Species Conservation and Management Act of 1995*

One of the most significant attempts to amend the ESA came in 1995, in the Endangered Species Conservation and Management Act of 1995 (ESCMA), also known as the “Young-Pombo Bill.”<sup>223</sup> The ESCMA, which was never enacted, included a new Title III entitled “Improving Scientific Integrity of Listing Decisions and Procedures” (Title III).<sup>224</sup> Title III would have changed, in three fundamental ways, how scientific data was evaluated and utilized by the FWS.

First, the ESCMA would have amended section 4 of the ESA to provide a statutory bias in favor of specific empirical data over modeling:

The Secretary shall make determinations required by subsection (a)(1) solely on the basis of the best scientific and commercial data available to the Secretary after conducting a review of the status of the species and after soliciting and fully considering the best scientific and commercial data available concerning the status of a species from any affected State or any interested non-Federal person, and taking into account those efforts being made by any State, any political subdivision of a State, or any non-Federal person or conservation organization, to protect such species, whether by predator control, protection of habitat and food supply, or other conservation practices, within any area under its jurisdiction, or on the high seas, *and shall accord greater weight, consideration, and preference to empirical data rather than projections or other extrapolations developed through modeling.*<sup>225</sup>

The ESCMA would also have broadened the scope of information the agency could consider in making listing decisions.

Perhaps most significantly, the ESCMA would have provided a definition of best scientific data available: “factual information, including but not limited to peer reviewed scientific information and genetic data, obtainable from any source, including governmental and nongovernmental sources, which has been to the maximum extent

---

not jeopardized. 16 U.S.C. § 1536(a)(2). Therefore, analysis of information is required only where such information represents the best scientific . . . data available and only when such analysis is necessary to identify potential conflicts between development and the protection of threatened and endangered species.”).

223. H.R. 2275, 104th Cong. (1995). For a general discussion of the ESCMA, see Tanya L. Godfrey, Student Work, *The Reauthorization of the Endangered Species Act: A Hotly Contested Debate*, 98 W. VA. L. REV. 979 (1996).

224. H.R. 2275, Title III.

225. H.R. REP. NO. 104-778, § 301(a)(1)(A) (emphasis added).

feasible verified by field testing.”<sup>226</sup> The modified best scientific data available definition followed through sections 4 and 7 of the ESA.

Finally, the ESCMA would have created a statutory peer review process for all listing determinations, which included data verification through field testing.<sup>227</sup> In pertinent part, the ESCMA peer review provision required that:

Before any action shall become final, the Secretary shall appoint . . . not more than 2 qualified individuals who shall review, and report to the Secretary on, the scientific information and analyses on which the proposed action is based. The Governor of each State in which the species is located that is the subject of the proposal, may appoint up to 2 qualified individuals to conduct peer review of the action. If any individual declines the appointment, the Secretary or the Governor shall appoint another individual to conduct the peer review.<sup>228</sup>

Peer reviewers would have been selected from a list maintained by the agency.<sup>229</sup> The peer reviewers would have been required to review the scientific data<sup>230</sup> and provide the FWS with “his or her opinion with regard to any technical or scientific deficiencies in the proposal, whether the methodology and analysis supporting the petition conform to the standards of the academic and scientific community, and whether the proposal is supported by sufficient credible evidence.”<sup>231</sup>

The ESCMA requires the publication of the peer review report but does not require the FWS to defer to the findings in that report.<sup>232</sup> In light of the best scientific data available standard, however, it would be difficult for the FWS to ignore a negative peer review report. Although neither the ESCMA nor Title III became law, the scientific data provisions contained in it have resurfaced in Congress in 2000 and 2002.

---

226. *Id.* § 301(b)(1).

227. *See id.* § 301(e)(2) (“Each regulation proposed by the Secretary to implement a determination referred to in subsection (a)(1) shall be based only upon peer-reviewed scientific information obtainable from any source, including governmental and nongovernmental sources, which has been to the maximum extent feasible verified by field testing.”).

228. *Id.* § 302(i)(3).

229. *See id.* § 302(i)(2) (“In order to provide a substantial list of individuals who on a voluntary basis are available to participate in peer review actions, the Secretary shall, through the Federal Register, through scientific and commercial journals, and through the National Academy of Sciences and other such institutions, seek nominations of persons who agree to peer review action upon appointment by the Secretary.”). The ESCMA provided further, specific criteria on eligibility requirements for peer reviewers. *Id.* § 302(i)(1)(B)(i)-(v).

230. *See id.* § 302(i)(4).

231. *Id.* § 302(i)(5).

232. *Id.* § 302(i)(6).



*B. The ESA Common Sense Act of 2000*

In 2000, the House Resources Committee favorably reported H.R. 3160, which reauthorized and amended the ESA (Common Sense Act).<sup>233</sup> The provisions of the Common Sense Act addressing scientific evidence were virtually identical to those in the ESCMA. As with the ESCMA, the Common Sense Act was never enacted.

The Common Sense Act incorporated in section 4 of the ESA a determination standard similar to the ESCMA standard. A comparison of the two applicable sections is illustrative:

ESCMA	COMMON SENSE ACT
<p>The Secretary shall make determinations required by subsection (a)(1) solely on the basis of the best scientific and commercial data available to the Secretary after conducting a review of the status of the species and after soliciting and fully considering the best scientific and commercial data available concerning the status of a species from any affected State or any interested non-Federal person, and taking into account those efforts being made by any State, any political subdivision of a State, or any non-Federal person or conservation organization, to protect such species, whether by predator control, protection of habitat and food supply, or other conservation practices, within any area under its jurisdiction, or on the high seas, and shall accord greater weight, consideration, and preference to empirical data rather than projections or other extrapolations developed through modeling.<sup>234</sup></p>	<p>The Secretary shall make determinations required by subsection (a)(1) solely on the basis of the best scientific and commercial data available to him after conducting a review of the status of the species and often taking into account those efforts, if any, being made by any State or foreign nation, to protect such species, whether by predator control, protection of habitat and food supply, or other conservation practices, within any area under its jurisdiction, or on the high seas.<sup>235</sup></p>

233. See H.R. 3160, 106th Cong. (2000).

234. H.R. REP. NO. 104-778, § 301(a)(1)(A) (1986).

235. H.R. REP. NO. 106-1013, § 4(b)(1)(A) (2000).

The Common Sense Act also provided a definition of best scientific data available identical to the definition provided in the ESCMA:

ESCMA	COMMON SENSE ACT
factual information, including but not limited to peer reviewed scientific information and genetic data, obtainable from any source, including governmental and nongovernmental sources, which has been to the maximum extent feasible verified by field testing. <sup>236</sup>	factual information, including but not limited to peer reviewed scientific information and genetic data, obtainable from any source, including governmental and nongovernmental sources, which has been to the maximum extent feasible verified by field testing. <sup>237</sup>

As with the ESCMA, the Common Sense Act definition of best scientific data available impacted both sections 4 and 7 of the ESA.

Finally, the Common Sense Act included the same peer review framework that the ESCMA included.<sup>238</sup> The peer review functions of the Common Sense Act also served to mediate situations where the FWS and a state government reached different conclusions based upon the same data.<sup>239</sup>

### C. *The Sound Science for Endangered Species Act of 2002*

#### 1. Status/History

The most recent attempt to amend the ESA to address, inter alia, problems related to the best scientific data available standard, came when the Committee on Resources favorably reported<sup>240</sup> (by a vote of 22-18) on the “Sound Science for Endangered Species Act Planning Act of 2002” (Sound Science Act).<sup>241</sup>

236. H.R. REP. NO. 104-778, § 301(a)(1)(A).

237. H.R. REP. NO. 106-1013, § 3(22).

238. *See id.* § 4(f).

239. *See id.* § 4(b)(3)(A)(iii)(II) (“If the Secretary’s determination that the petitioned action is warranted is in direct conflict with the information submitted by the Governor or tribe, the finding shall not be final until the Secretary submits the finding to peer review as provided in subsection (f). The peer reviewers shall have not more than 30 days to submit their findings and comments to the Secretary. If the peer reviewers and the Secretary find that the petition is warranted, the Secretary shall prepare a record of decision and shall submit the record to the Governor or tribe.”).

240. H.R. REP. NO. 107-751 (2002).

241. H.R. 4840, 107th Cong. (2002). A similar Senate bill was referred to the Senate Committee on Environment and Public Works, but no further action has since been taken on it. *See S. 1912*, 107th Cong. (2002). Several similar bills remain in Committee. *See H.R. 3705*, 107th Cong. (2002) (the “Sound Science Saves Species Act of 2002”); *H.R. 2829*, 107th Cong. (2001) (the “Sound Science for Endangered Species Act of 2001”).

In public testimony before the Committee, Craig Manson, Assistant Secretary for the FWS, made clear that the agency supported the Sound Science Act<sup>242</sup> and indicated that clarification of the best scientific data available standard was a high priority for the FWS.<sup>243</sup> He also explained how the FWS envisioned the Sound Science Act would be integrated into existing FWS policy.

The FWS described the form of peer review contained in the Sound Science Act as flexible, robust, and devoid of politics.<sup>244</sup> Through the open and objective scientific dialogue created by the Sound Science Act, the FWS would be able to assess information from a variety of sources and involve interested stakeholders in the scientific review process.<sup>245</sup> In particular, the FWS praised the use of the National Academy of Science standards as a baseline for independent scientific review.<sup>246</sup>

While the FWS generally supported the Sound Science Act, that support was not unqualified. In particular, the agency expressed concerns regarding the additional costs which the Sound Science Act

---

242. Testimony of Craig Manson Before the House Resources Committee, *available at* <http://laws.fws.gov/testimon/2002/science.html> (last visited Apr. 17, 2003) (“[T]he Administration supports H.R. 4840 with modifications to address our concerns. We believe that, if implemented, this legislation will broaden opportunities for scientific input and assure additional public involvement in Endangered Species Act implementation. We also believe it will also improve the U.S. Fish and Wildlife Service’s (Service) decision-making process and result in increased public confidence in the Service’s decisions.”).

243. *Id.* (“As I noted several weeks ago when I appeared before you to discuss two related Endangered Species Act sound science bills, H.R. 2829 and H.R. 3705, it is important that the species conservation decisions we make are based on the best available science because our resource management decisions can have a great impact on species, communities, and individuals. One of Secretary Norton’s highest priorities is improving the Department’s science, and I am working with Steve Williams, the Service’s Director; Chip Groat, Director of the U.S. Geological Survey; and Jim Tate, Science Advisor to Secretary Norton, to ensure that this priority becomes a reality.”).

244. *Id.* (“It is also important to note that the independent review process will not be a political process, but one which is solely meant to ensure that the science behind our decisions is, in all cases, the best available to our decision-makers.”).

245. *Id.* (“The Department believes that a framework for review should allow the Service to take advantage of the expertise of outside groups, such as state fish and wildlife agencies. It should also provide the opportunity for Department scientists and other stakeholders to air differences in interpretation of the science behind the Service’s decisions, and it should provide the flexibility to allow a more robust independent review process for significant resource protection decisions.”).

246. *Id.* (“Before I discuss the specific provisions of the bill, I want to acknowledge that addressing these issues in any context is not an easy task, and I would like to commend the Committee for its efforts in this regard. . . . In this respect, H.R. 4840 requires that an independent review of science be carried out by ‘qualified individuals,’ as determined by National Academy of Science (NAS) standards. The Department has had significant experience with the NAS review process, and is comfortable that this provision will help ensure a truly independent scientific review process.”).

would impose upon the agency.<sup>247</sup> Despite the cost concern, and other minor issues raised by the FWS, the agency was generally supportive of the Sound Science Act.

Despite the favorable recommendation of the Committee on Resources, the Sound Science Act has fared no better than its predecessors. The Act was not without its detractors—a number of environmental organizations commenced a rigorous campaign against it.<sup>248</sup> It is impossible to predict whether the recent capture by the Republican Party of the House and Senate may now finally pave the way for substantive amendment of the ESA (either through the reintroduction of the Sound Science Act or in the form of more comprehensive legislation). If past history is any guide, however, it seems likely that even a Republican Party “trifecta” (House, Senate, and Presidency) is no guarantee that any amendment of the ESA will ultimately be enacted.

## 2. Contents

Unlike the ESCMA and the Common Sense Act, the legislative history of the Sound Science Act clearly reflected congressional dissatisfaction with the FWS’ use of scientific data. In its report on the Sound Science Act, the Committee on Resources recognized the vacuum in the ESA regarding the standards which scientific evidence would be held:

Implementing [the best scientific and commercial data available] mandate has been problematic, however, primarily because there are no definitions in either the ESA or the accompanying regulations as to what constitutes

---

247. *See id.* (“We still have concerns with increased workloads, costs, and timing requirements.”).

248. The Sound Science Act has already provoked a significant amount of public comment and discussion. Among those voicing their opposition to the Sound Science Act are the Defenders of the Wildlife, at <http://www.defenders.org/wildlife/esa/4840.html> (last visited Apr. 17, 2003) (“Despite its misleading name—‘Sound Science for Endangered Species Act Planning Act of 2002’—H.R. 4840 is, in fact, the antithesis of sound science and would making [sic] it exceedingly more difficult, if not impossible in some cases, to protect endangered and threatened species under the ESA.”); the Endangered Species Coalition, at <http://www.stopextinction.org/Team/Team.cfm?ID=409&c=2> (opposing the Sound Science Act in a draft form letter and describing it as “one of the most serious threats to the Endangered Species Act in a number of years”); the New York City Audubon Society, at <http://www.nycas.org/issues/armchair/september/> (“HR 4840 overturns the widely-accepted scientific standard for using the ‘best scientific data available,’ and replaces it with an impossible new standard of ‘clear and convincing evidence.’ By raising the bar beyond the reaches of available science, H.R. 4840 could effectively put an end to listing species under the ESA and gut the essential protections the law provides to species headed toward extinction, including many of the species listed on Audubon’s nationwide WatchList.”); and EarthJustice, at <http://www.earthjustice.org/program/wildlife/documents/Sound%20Science%20brief.pdf>.

the ‘best’ or ‘available’ information. The responsible agencies have complete discretion over these terms and have defined and used them to their advantage.<sup>249</sup>

In order to revitalize the concept of “best” science, the Sound Science Act would have amended the ESA to create a more objective scientific standard:

The scientific community would generally agree that, in terms of the ESA, the “best” science would be comprised of data that had been collected by established standards or protocols, properly analyzed, and then peer-reviewed before published or released to the public. Such information is assumed to be reliable and the conclusions drawn usually can be duplicated to test the accuracy of the information. Unfortunately, the ESA currently has no such standards in either the provisions of law or in the accompanying regulations.

H.R. 4840 seeks to remedy this problem by integrating a better and more defined method of using reliable and valid science in the decision-making process and by initiating a system of peer review of many of the federal agency decisions.<sup>250</sup>

The measures proposed in the Sound Science Act were consistent with, but go beyond, those proposed in the ESCMA and the Common Sense Act.

The Sound Science Act proposed three major changes to the best scientific data available standard:

1. Create a statutory preference for “empirical, field-tested or peer reviewed” data;<sup>251</sup>
2. Require the FWS to promulgate regulations within a year of enactment that “establish criteria that must be met for scientific and commercial data, studies, and other information to be used as the basis” for listing determinations;<sup>252</sup> and
3. Prohibit the agency from designating a species as “threatened” or “endangered” unless “data collected in the field on the species concerned supports the determination.”<sup>253</sup>

The requirement that the FWS promulgate interpretive regulations was not included in either the ESCMA or the Common Sense Act.

---

249. H.R. REP. NO. 107-751, at 6 (2002).

250. *Id.*

251. H.R. 4840, 107th Cong. § 2(b) (2002). In the dissenting views section of the report, a number of congressmen assailed the Sound Science Act as, in fact, accomplishing the opposite of what it purported to “fix.” Specifically, the dissenters argued that the Sound Science Act politicized the best scientific data available standard and impermissibly prejudged certain categories of scientific data as “better” than others. *Id.* at 21-22.

252. *Id.* § 2(d)(10).

253. *Id.* § 2(d)(11)(A).

While the Sound Science Act, like the ESCMA and the Common Sense Act, implements a formalized review process, the Sound Science Act differed from the process in those other acts. Under the Sound Science Act, the FWS would have been required to first develop a formalized “protocol for the conduct of scientific independent review.”<sup>254</sup> Every “covered action” would have been referred to a five-member independent review board (IRB),<sup>255</sup> and the IRB would have had ninety days to provide an opinion concerning the covered action.<sup>256</sup> Once the FWS received the IRB’s report, the FWS would have had ninety additional days to consider and evaluate the IRB’s conclusions.<sup>257</sup> As with the ESCMA and the Common Sense Act, the IRB’s report was made part of the final rulemaking report.<sup>258</sup>

#### *D. The Endangered Species Listing and Delisting Process Reform Act*

Attempts to achieve a legislative “fix” to the application of scientific data in the ESA continued in the 108th Congress with the introduction by Senators Craig Thomas, Larry Craig, and Chuck Hagel, on February 12, 2003, of the Endangered Species Listing and Delisting Process Reform Act of 2003 (Listing Reform Act).<sup>259</sup> Unlike the bills described above, the Listing Reform Act is primarily aimed at listing decisions. Most significantly, the Listing Reform Act imposes specific information and data that the party seeking the listing must provide in

---

254. *Id.* § 3(j)(4)(B). The protocol must “(I) include[] review of the adequacy of any scientific methodology used to support an action and the validity of any conclusions drawn from data used to support an action”; and (II) be “modeled after applicable National Academy of Sciences policies and guidelines for report reviews;” and (III) “provide to each independent review board established . . . clear guidelines as to the conduct of its review consistent with that protocol.” *Id.*

255. *Id.* § 3(j)(3)(B).

256. *Id.* § 3(j)(4)(A). The ninety-day requirement prompted significant criticism from the American Society of Civil Engineers, which commented that “[a] proper review can take weeks, months, or, in some cases, years.” *The Sound Science for Endangered Species Act Planning Act of 2002: Before the House Comm. on Resources*, 107th Cong. (2002) (statement for the record of the American Society of Civil Engineers), at [http://www.asce.org/pdf/asce\\_statement\\_hr4840.pdf](http://www.asce.org/pdf/asce_statement_hr4840.pdf).

257. H.R. 4840, 107th Cong., § 5.

258. *Id.* §§ j(5)-(6).

259. S. 369, 108th Cong. (2003). Congressman Tom Tancredo has also submitted a bill that amends the ESA solely with regard to the Preble’s meadow jumping mouse (jumping mouse). H.R. 1253, 108th Cong. (2003). The so-called common Sense Preble’s Conservation Act is similar to the broader legislative efforts described above. It places an increased emphasis on field data and requires that proposed decisions regarding the jumping mouse be submitted to a panel of independent scientific reviewers. *Id.* While the agency may adopt an action over the objections of the panel, the agency must provide “an explanation as to why the recommendation was not followed.” *Id.* § 2(a).

order for the petition to be granted.<sup>260</sup> In addition, the Listing Reform Act: (1) requires state notification of the proposed listing,<sup>261</sup> (2) adds additional public hearings to the listing process,<sup>262</sup> (3) raises the threshold for emergency listings,<sup>263</sup> (4) clarifies the availability of listing data,<sup>264</sup> (5) requires the FWS to promulgate implementing regulations,<sup>265</sup> (6) requires the use of field data in listing decisions,<sup>266</sup> and (7) imposes specific requirements on recovery plans and delisting decisions.<sup>267</sup> While the introduction of the Listing Reform Act further emphasizes the ongoing debate and controversy surrounding the use of scientific data in the ESA, it is unclear whether any substantial legislative amendment of the ESA could, in light of the acrimony often generated by the application of the ESA, successfully emerge from Congress.

## VI. CONCLUSION

A survey of the case law involving the use of “best scientific data available” in ESA decision making suggests no consistent thread or logic. In some instances, cases reviewing agency decisions challenged on the grounds that the agency failed to use, or rely on, the best scientific data available appear little different in analysis or result than judicial review under the APA’s traditional “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law” standard. Without considering whether the decision is based on the “best scientific data available,” these cases focus more generally on whether the agency has considered the relevant and permissible factors identified by Congress, and has articulated a reasoned explanation and rationale for its decision, for which there is support in the administrative record. This is perhaps to be expected, as the courts are generally in agreement that judicial review of agency ESA decisions should be based on a review of the administrative record under APA section 706.

Some cases appear to apply the *Overton Park/State Farm* standard of review so literally as to cause them altogether to overlook or not

---

260. S.369 § 2(c). Significantly, the Listing Reform Act requires the petitioner to provide “a description of at least 1 credible expert opinion, from a person not affiliated with the petitioner, to support the action requested in the petition.” *Id.* § 2(c)(E)(vi).

261. *Id.* § 2(c)(F).

262. *Id.* § 2(d).

263. *Id.* § 2(e). The threshold would be increased from “a significant risk to the well-being” to “an imminent threat to the continued existence.”

264. *Id.* § 2(f)(9).

265. *Id.* § 2(f)(10).

266. *Id.* § 2(f)(11).

267. *Id.* §§ 3-4.

examine the agencies' choice or use of data in deference to the agencies' expertise. Other cases in fact consider the FWS' assessment (assuming it is evident from the record) of the quality of the information upon which the agency relied. Still other decisions reflect the court's inclination to evaluate independently the quality of the data upon which the agency relied, while in yet a few other cases the courts have directed the agency to develop information the court felt necessary to inform judicial review of the matter at hand.

Most of the patterns described above are flawed, either because they disregard Congress's literal direction that ESA decision making be based on the best scientific data available, or because the court intrudes too far into the sphere properly reserved to the agency in substituting its lay judgment for the FWS' expert determination—which still must consider the relevant factors and be supported by the administrative record—that the information relied upon by the agency rises to the level required by the best scientific data available standard. If a court simply looks for scientific information in the administrative record that supports the agency's decision, employing a basic approach to judicial review of agency decision making under the environmental statutes, the court may not give effect to the congressional mandate that the agency use the best scientific data available. If, on the other hand, the court makes its own evaluation whether the information relied upon by the agency is the "best" data, then it runs afoul of the mandate that courts are not to substitute their judgment for that of the agency on technical or scientific matters entrusted to the agency's expertise. And if the court directs the agency to develop new or additional information and to reevaluate that decision based on that new information, then the court overlooks Congress's direction that the agency rely upon the best scientific data available as well as the constitutional mandate that courts not impose judicially-crafted procedures on agencies implementing their duties under environmental statutes. Such an approach also ignores a court's limitations as a scientific lay body in assessing the types of scientific information relevant or necessary to the decision in question.

Where does that leave us? We propose a possible path forward that reviewing courts can employ to ensure that the FWS and other agencies meet their obligation to identify, evaluate, and rely upon the best scientific data available, without overstepping the bounds of judicial review of agency ESA decisions. Where faced with a challenge to an agency decision under the ESA alleging agency failure to use the best available scientific information, the court should take the "hard look" mandated by *Overton Park* to determine whether the agency's decision



making considered the scientific information available to it, identified the information upon which it has relied in making its decision, and clearly made and explained the determination that the information upon which the FWS relied is the “best scientific data available” in light of all the information to which it has access.

In light of the foregoing, how should our hypothetical federal district court handle the Mississippi beach mouse case outlined in the Introduction to this Article? Based on the stated facts, the court’s application of *Overton Park*’s “hard look” doctrine should consider whether the FWS has adequately considered the information available at the time the agency was considering the permit application, has identified and discussed any discrepancies in that information with respect to the effect permit issuance (and the presumed “take” of beach mice authorized by that permit) would have upon the species, and in the event such discrepancies exist, has affirmatively indicated the agency’s conclusions with respect to what information constitutes the “best available scientific data” and why.

The court should look to see whether the FWS has provided its rationale for rejecting any data contained within the administrative record which was inconsistent with the agency’s decision to issue the permit. If FWS has done so, the court should refuse to second-guess the agency’s reasoned determination concerning which information meets the “best available scientific data” standard. With respect to the agency’s decision to use mouse habitat as a surrogate for species population data, the court should uphold that decision if it is adequately addressed and discussed by the agency in its permitting decision, and ought to refrain both from dictating the use of a particular scientific methodology (population viability analysis) and from requiring the FWS to develop new, rather than use the best available, data. This would be particularly appropriate where, as here, plaintiffs can point to no information in the record that population viability data are available to the agency. The court might, if it so chose, point out that parties seeking to compel agency action (e.g., species listing or issuance of a particular permit) generally find support for that action in the agency’s record, while parties opposing such action frequently find fault with the information available to and considered by the agency, and seek to compel the performance by the agency of new, time-consuming studies or analyses prior to making the decision in question.

By employing this approach, the courts could remain faithful to both the ESA statutory language and the fundamental constraints upon judicial review of agency decision making. Such an approach would also

encourage that for their part, the agencies administering the ESA likewise honor the Act's command that their decisions be based on the best scientific data available.