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Note

Critical Habitat in the Balance: Science, Economics, and Other Relevant Factors

Ronny Millen* & Christopher L. Burdett**

I. INTRODUCTION

A. WHY REFORM OF THE CRITICAL HABITAT PROGRAM IS URGENT

Since 1992, Congress has remained deadlocked over reauthorization of the Endangered Species Act (ESA). There have been many bills proposed to amend the ESA, including piecemeal efforts targeted at specific provisions of the Act. This paper focuses on one of the programs most in need of reform: critical habitat. A recent GAO Report stated that the Fish and Wildlife Service (FWS) critical habitat program faces a serious crisis because of extensive litigation that consumes vital resources needed for conserving listed species.¹

Testifying before the House Resources Committee, Assistant Secretary of the Interior Craig Manson described the current crisis in starker terms, stating simply that “the present system for designating critical habitat is broken.”² He further

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1. See U.S. Gen. Accounting Office, No. GAO-03-803, *Endangered Species: Fish and Wildlife Service Uses Best Available Science to Make Listing Decisions, but Additional Guidance Needed for Critical Habitat Designations* 36 (2003).

emphasized that “the designation process provides little real conservation benefit, consumes enormous agency resources, and imposes social and economic costs. Rational public policy demands serious attention to this issue in order to allow our focus to return to true conservation efforts.”³

While there is general agreement that FWS’s critical habitat program needs reform, no consensus exists—in fact, there is sharp disagreement—on how to fix it. On July 21, 2004, the House Resources Committee reported on H.R. 2933, the Critical Habitat Reform Act of 2003, a bill to amend the critical habitat provisions of the ESA.⁴ The amendments would give the Secretary of the Interior virtually unlimited discretion in the decisionmaking process for designating critical habitat.⁵ However, the amendments would also actually tie the Secretary’s hands. For example, the Secretary would be prohibited from designating critical habitat in areas where a section 10 habitat conservation plan (HCP) or a state or federal land management program provides substantially equivalent protection.⁶

One theme recurring throughout this article can be summed up by the phrase espoused by official policymakers at FWS: “cooperative conservation.” In some respects, cooperative conservation raises issues of federalism: should the federal government or the states have lead authority in protecting the habitat of endangered species? The Endangered Species Act of 1973 gave the role to two federal agencies, the Fish and

2. *The Critical Habitat Reform Act of 2003: Hearing on H.R. 2933 Before the H. Comm. on Resources*, 108th Cong. 9 (April 28, 2004) [hereinafter *Hearings on Critical Habitat Reform Act*] (statement of Craig Manson, Asst. Sec. for Fish, Wildlife & Parks, Dept. of Int.).

3. *Id.*

4. A similar bill, H.R. 1299, the Critical Habitat Enhancement Act of 2005, was introduced in the 109th Congress by Rep. Dennis Cardoza on March 15, 2005.

5. H.R. 2933, 108th Cong. § 2 (2003). The amendment would give the Secretary authority to designate critical habitat “to the maximum extent practicable, economically feasible, and determinable.” Currently the qualifying phrase reads: “to the maximum extent prudent and determinable.” 16 U.S.C. § 1533(a)(3) (2000). However, courts have recently closed the loophole provided by the vague word “prudent.” *See, e.g.*, *South Appalachian Biodiversity Project v. U.S. Fish & Wildlife Serv.*, 181 F. Supp. 2d 883 (E.D. Tenn. 2001); *Butte Env’tl. Council v. White*, 145 F. Supp. 2d 1180 (E.D. Cal. 2001).

6. H.R. 2933 § 2 (amending 16 U.S.C. § 1533(a)(3)(B) (2000)).

Wildlife Service and the National Marine Fisheries Service.⁷ Adopting cooperative conservation principles would lead to a more decentralized decisionmaking process for protecting habitat.

A conservation biologist may interpret this theme less from a political perspective and more from the perspective of one interested in effective ways of conserving species. Many biologists believe that voluntary conservation partnerships between FWS and a variety of entities—Indian tribes, private landowners, businesses—actually do a better job than mandatory methods at protecting the habitat of listed species, and at less cost to the federal government. Accordingly, provisions of the House bill would require the Secretary to solicit information from local governments and to consider the economic impacts on landowners before designating any particular area as critical habitat.⁸ One can clearly see the policy direction in which proponents of this legislation would take the current critical habitat program—it would be scaled back considerably while permitting greater freedom for private individuals, Indian tribes, states, and other federal agencies to design and implement their own plans for habitat conservation.

Not surprisingly, many see the basic thrust of this policy as a prescription for more species extinction. Jamie Rappaport Clark, former head of the FWS, testifying at the same House Resources Committee hearing, said of the proposed legislation:

Any proposed changes to the Endangered Species Act or its implementation, whether legislative or administrative, must be measured against that same standard: will it improve and ensure the conservation of habitat? When measured against this standard, H.R. 2933, the “Critical Habitat Reform Act of 2003,” fails miserably . . . [It] not only fails to improve the conservation of habitat under the Endangered Species Act, it would actually make the situation worse by effectively eliminating any protection for much if not most of the habitat endangered and threatened species need to recover.⁹

7. Decisionmaking authority was actually entrusted to the Secretary of the Interior and the Secretary of Commerce. 16 U.S.C. § 1533(a)(i)-(ii) (2000). The two implementing agencies for the ESA are the U.S. Fish and Wildlife Service in the Department of the Interior, which oversees protection of endangered and threatened wildlife and most freshwater fishes, and the National Marine Fisheries Service (recently renamed NOAA Fisheries) within the Department of Commerce which oversees protection of listed marine species and many anadromous fishes.

8. H.R. 2933 § 3.

9. *Hearings on Critical Habitat Reform Act*, *supra* note 2, at 73-74 (statement of Jamie Rappaport Clark, Executive Vice President, Defenders of

Clark was not arguing that FWS's critical habitat program should not be reformed. Indeed, she identified a number of elements that any meaningful reauthorization of the critical habitat provision should encompass: (1) a transparent and scientifically rigorous process for identifying, both geographically and ecologically, a species' recovery habitat, (2) a plan for making designation of critical habitat concurrent with the development of a recovery plan, *provided that the recovery planning process has an enforceable deadline*, (3) a commitment to making species recovery the primary focus and goal of protecting critical habitat, and using economic considerations to decide how best to protect habitat and species recovery, not to foreclose the opportunity for recovery, and (4) development of incentives to encourage private landowners to conserve habitat important to species recovery.¹⁰ Here, one can clearly see a rather different policy direction for the critical habitat program—a focus on more effective ways to achieve species recovery goals. What both proponents and opponents of the recent critical habitat bill share is the sense that reform is urgent.

B. CRITICAL HABITAT DESIGNATION PROCESS

Section 4(b)(2) of the ESA states that “[t]he Secretary shall designate critical habitat, and make revisions thereto . . . 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.”¹¹ There are three statutory elements in the decisionmaking process: (1) the best available scientific information, (2) analysis of economic impacts, and (3) consideration of “other relevant impacts.”¹² The last catch-all phrase is interpreted by FWS primarily to refer to such things as effects on conservation partnerships with Indian tribes, private landowners, and state natural resource agencies, as well as impacts of a particular critical designation on Department of Defense activities such as training operations on military bases.¹³ Consideration of “other relevant impacts”

Wildlife).

10. *See id.*

11. 16 U.S.C. § 1533(b)(2) (2000 & Supp. III 2004).

12. *Id.*

13. For example, section 4(b)(2) analyses were used to justify exclusions on tribal lands, military lands, and lands managed by Habitat Conservation

essentially constitutes a kind of “balancing test” familiar in other areas of administrative decisionmaking. All three statutory elements are explored from various perspectives in Part III below.

The roundtable discussion of Part III analyzes from a variety of perspectives the question: how can the critical habitat designation process outlined in section 4(b)(2) be improved to promote more effective conservation of listed species? Specifically, how can the best available science—which is the first and foremost consideration—be brought to bear most effectively on the Secretary’s decision? How should the economic analysis of costs and benefits be used in re-drawing the lines on the map? And how should other relevant impacts enter into the final stages of the decisionmaking process, after the scientists and the economists have weighed in?

C. CASE-STUDY METHOD OF THE PAPER

Two animal species, the Canada lynx and the bull trout, are introduced in this paper in order to make the examination of scientific, economic, and legal issues more biologically concrete. Both are high-profile species, listed as threatened under the ESA. Critical habitat has recently been designated for the bull trout¹⁴ and proposed for the lynx.¹⁵ Both species have similar ecological roles in the ecosystems they inhabit; each could be called indicator species or habitat specialists whose sensitivity to modification of their surroundings serves as an indicator that in some way ecosystem health has been compromised.

In addition to their role in the paper as case studies from a biological standpoint, they provide good case studies for examining how the critical habitat designation process under the ESA should be reformed. Perhaps most would agree that the process of critical habitat designation for the bull trout has resulted in something of a train wreck. Whether or not the proposed designation of critical habitat for the Canada lynx will

Plans, or various state management plans in the recent bull trout critical habitat designation. *See* Designation of Critical Habitat for the Bull Trout, 70 Fed. Reg. 56,212, 56,242-55 (Sept. 26, 2005) (to be codified at 50 C.F.R. pt. 17).

14. *See id.*

15. *See* Proposed Designation of Critical Habitat for the Contiguous United States Distinct Population Segment of the Canada Lynx, 70 Fed. Reg. 68,294 (Nov. 9, 2005) (to be codified at 50 C.F.R. pt. 17).

lead to a similar result is still to be seen. The goal of this paper is to suggest ways in which the designation process could be made to work better.

II. BACKGROUND

A. A BRIEF LOOK AT THE HISTORY OF THE CRITICAL HABITAT DESIGNATION PROCESS

When the Endangered Species Act was enacted in 1973,¹⁶ the meaning of the term “critical habitat” and its potential to introduce the heavy hand of federal regulation were not an issue. Indeed, “critical habitat” was not even defined in the Act. The words appeared only in connection with the process for interagency cooperation set up in section 7, which required federal agencies to consult with FWS or the National Marine Fisheries Service on projects potentially harmful to listed species in order to ensure that agency activities did not result in the “destruction or adverse modification of the habitat of such species which is determined by the Secretary . . . to be critical.”¹⁷ Likely most lawmakers who voted for the ESA thought that the federal government would conserve the habitat of listed species primarily by using its authority under section 5 of the Act to acquire land.¹⁸

Everyone’s perceptions of the importance of critical habitat under the ESA changed in 1978, when the little-known concept was used to protect a little-known fish. The Tennessee Valley Authority (TVA) had almost completed construction of the Tellico Dam on the Little Tennessee River when work was abruptly halted because impoundment of water behind the dam would have destroyed the habitat of a small, three-inch perch commonly known as the snail darter.¹⁹ The fish had no commercial or recreational uses, yet there were those who loved it, at least well enough to sue on its behalf to enjoin the Tennessee Valley Authority from completing work on the dam. In probably the most famous case under the Endangered Species Act, *Tennessee Valley Authority v. Hill*,²⁰ the Supreme

16. Endangered Species Act of 1973, Pub. L. No. 93-205, 87 Stat. 884 (codified as amended at 16 U.S.C. §§ 1531-1599 (2000)).

17. 16 U.S.C. § 1536(b)(2) (2000).

18. See Endangered Species Act of 1973 § 5(a)-(b).

19. See *Tennessee Valley Authority v. Hill*, 437 U.S. 153, 153-54 (1978).

20. 437 U.S. 153 (1978).

Court agreed with the friends of the snail darter. TVA argued, in part, that the dam was vital to the economic health of the region.²¹ However, the Supreme Court dismissed such utilitarian calculations in words that underscored the absolutist nature of the ESA: “The plain intent of Congress in enacting this statute was to halt and reverse the trend toward species extinction, *whatever the cost*.”²² At this point, Congress began to realize that its legislative handiwork of 1973, which had sailed through without a whisper of opposition,²³ had some flaws.

In the 1978 amendments, Congress introduced a definition of “critical habitat” into the ESA. In the current version of the law, “critical habitat” is defined as:

- (i) the specific areas within the geographic 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; and
- (ii) specific areas outside the geographical areas occupied by the species at the time it is listed . . . upon a determination by the Secretary that such areas are essential for the conservation of the species.²⁴

Recently, the meaning of the phrase “which may require special management considerations or protection” has become the focus of intense controversy. FWS claims that if a habitat is protected by other conservation agreements—whether tribal, state, or individual habitat conservation plans—there is no need for *additional* federal protection by designating critical habitat.²⁵ Predictably, environmentalists read things differently. They argue that the existence of other plans shows that such areas *do* require special management considerations,

21. *Id.* at 157.

22. *Id.* at 184 (emphasis added).

23. In the Senate, the conference committee bill was passed unanimously by a vote of 92-0, and in the House by a vote of 391-12. CONG. RESEARCH SERV. OF THE LIBRARY OF CONG. FOR THE COMM. ON ENV'T & PUBLIC WORKS, U.S. SENATE, A LEGISLATIVE HISTORY OF THE ENDANGERED SPECIES ACT OF 1973, AS AMENDED IN 1976, 1977, 1978, 1979, AND 1980 205, 409 (1982). In the consideration of the earlier bill in the House, Representative Dingell remarked that in the month after the committee report was available, he did not “hear a whisper of opposition to its passage at the earliest opportunity.” See STANFORD ENVTL. LAW SOC'Y, THE ENDANGERED SPECIES ACT, 21 (2001).

24. 16 U.S.C. § 3(5)(A)(i)-(ii) (2000).

25. See, e.g., *Center for Biological Diversity v. Norton*, 240 F. Supp. 2d 1090 (D. Ariz. 2003).

and that designation provides an additional necessary layer of protection for listed species.²⁶ The only federal court to rule on the issue so far has sided with the environmentalists,²⁷ but the legal question of the phrase's meaning is far from settled.

The 1978 amendments also set up a decisionmaking procedure for determination of critical habitat in section 4(b)(2).²⁸ Just as important as the terms outlining the decisionmaking process, however, is the location of the procedure in section 4, which previously had been devoted entirely to the listing process.²⁹ The processes of listing and of designating critical habitat were now statutorily linked. Moreover, there was a temporal aspect to the linkage; Congress required the Secretary to designate critical habitat concurrently with listing.³⁰

The linkage caused some confusion for several years after the 1978 amendments. As noted above, Congress had simultaneously introduced a balancing test into the ESA in connection with critical habitat designation. Unlike the listing determination, which is based solely on scientific grounds,³¹ the procedure for designating critical habitat allows the Secretary to weigh the economic impacts and other relevant impacts of designating a particular area as critical habitat.³² Initially, linkage of listing with the process of critical habitat designation raised questions whether Congress intended economic balancing to apply to listing as well. As a result, the 1978 amendments created something of a listing roadblock.³³ In 1982, Congress acted to lift the roadblock by inserting the word "solely" in the phrase describing the basis for listing determinations: "The Secretary shall make [listing] determinations *solely* on the basis of the best scientific and commercial data available."³⁴ So, by law at least, the Secretary

26. *See id.*

27. *See, e.g., id.*

28. *See* Endangered Species Act Amendments of 1978, Pub. L. No. 95-632, § 2, 92 Stat. 3751 (1978) (codified as amended at 16 U.S.C. §§ 1531-99 (2000)).

29. *See* Endangered Species Act of 1973, Pub. L. No. 93-205, § 4, 87 Stat. 884 (1973).

30. *See* § 2, 92 Stat. 3751.

31. *See* 16 U.S.C. § 1533(b)(1)(A) (2000).

32. *See* 16 U.S.C. § 1533(b)(2) (2000 & Supp. III 2004).

33. *See* STANFORD ENVTL. LAW SOC'Y, *supra* note 23, at 23 (noting that approximately 2,000 species proposed for listing were withdrawn from consideration in 1978).

34. 16 U.S.C. § 1533(b)(1)(A) (2000) (emphasis added).

must consult solely with scientists when it comes to the decision to list a species, but she must balance several factors, including economic and social ones, when it comes to designating critical habitat for the species.

B. COURTS SHAKE UP THE CRITICAL HABITAT DESIGNATION PROCESS

The ESA qualifies the Secretary's obligation to designate critical habitat concurrently with listing. She shall designate critical habitat "to the maximum extent prudent and determinable."³⁵ If a "not determinable" finding is made, primarily due to insufficient information, she may extend the period for designation by up to twelve months.³⁶ However, a finding of "not prudent" can be repeated indefinitely, thus providing the Secretary a legal loophole to avoid designation. In its implementing regulations,³⁷ FWS set up a two-part standard for reaching a not-prudent finding. A designation is not prudent if either: (1) "the species is threatened by taking or other human activity, and identification of critical habitat can be expected to increase the degree of such threat to the species," or (2) "such designation . . . would not be beneficial to the species."³⁸

There are clear indications in the legislative history of the 1978 amendments that Congress intended the not-prudent language to be construed narrowly. Congress noted that "[i]t is only in rare circumstances where the specification of the critical habitat concurrently with the listing would not be beneficial to the species."³⁹ However, during the Reagan years, FWS increased its use of the not-prudent loophole, primarily on the grounds that designation would not be beneficial to the species.⁴⁰ FWS steadfastly adheres to the position that all of the conservation benefits to the species come from listing, and that critical habitat designation adds no further protections. Listing provides protection from the activities of private individuals under the section 9 take provision,⁴¹ while section 7

35. 16 U.S.C. § 1533(a)(3).

36. *See id.* § 1533(b)(6)(C)(ii).

37. *See* 50 C.F.R. §§ 424.01-.19 (2004).

38. *Id.* § 424.12(a)(1)(i)-(ii).

39. H.R. Rep. No. 95-1625, at 17 (1978), *reprinted in* 1978 U.S.C.C.A.N. 9453, 9467.

40. *See* STANFORD ENVTL. LAW SOC'Y, *supra* note 23, at 64-65.

41. *See* 16 U.S.C. § 1538(a) (2000).

consultation provides protection from the activities of federal agencies or private activities that have a federal nexus.⁴² When an agency planning a project consults with FWS about potential impacts to listed species in the area, FWS issues a biological opinion about whether or not the project would jeopardize the continued existence of the species.⁴³ Any harm to the species resulting from adverse modifications to its habitat can be, and routinely is, subsumed under the jeopardy standard.⁴⁴ There is no need to conduct a separate adverse modification analysis; the jeopardy analysis is sufficient.

In 1997, the tide turned in favor of environmentalists long frustrated by FWS's use of the prudential loophole to avoid designating critical habitat. In *Natural Resources Defense Council v. Department of the Interior*,⁴⁵ the Ninth Circuit Court of Appeals effectively closed the loophole. The case involved the failure of FWS to designate critical habitat for the coastal California gnatcatcher.⁴⁶ The FWS reasoned that designation was not prudent because it provided no benefit to the species, but the court was not persuaded by the argument. In narrowing the Secretary's discretion to employ the prudential loophole, the court cited to the legislative history which left "little room for doubt regarding the intent of Congress: The designation of critical habitat is to coincide with the final listing decision absent *extraordinary* circumstances."⁴⁷ This ruling allowed courts to drive FWS's critical habitat program. Increasingly, environmentalists won lawsuits against the agency for failing to designate critical habitat concurrently with listing, and FWS found itself working under court-imposed designation deadlines.⁴⁸ In the publications of final rules in the Federal Register, FWS routinely tells the world of its frustrations.⁴⁹

42. See *id.* § 1536(a)(2).

43. See *id.* § 1536(b)(3)(A) (2000); 50 C.F.R. § 402.01 (2004).

44. See 50 C.F.R. § 402.01.

45. 113 F.3d 1121 (9th Cir. 1997).

46. *Id.* at 1123.

47. *Id.* at 1126 (quoting *Northern Spotted Owl v. Lujan*, 758 F. Supp. 621, 626 (W.D. Wash. 1991)).

48. See, e.g., *Center for Biological Diversity v. Norton*, 240 F. Supp. 2d. 1090, 1109 (D. Ariz. 2003).

49. Many if not most of the current batch of final rules designating critical habitat contain, inserted at the beginning of the preamble, a form disclaimer that the following designation essentially does no good for the species. *E.g.*, Designation of Critical Habitat for the Klamath River and Columbia River

The next serious judicial blow to FWS's critical habitat program came in 2001, when the Fifth Circuit struck down the regulatory definition of "destruction or adverse modification" of critical habitat.⁵⁰ FWS defined the terms "jeopardize the continued existence of" a species' critical habitat and "destruction or adverse modification" of a species' critical habitat so that the two definitions were virtually synonymous. Jeopardy consists of actions that "reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species."⁵¹ Adverse modification results from "a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species."⁵² To qualify as "destruction or adverse modification" of habitat, an activity must threaten *both* the recovery of the species as well as its very survival. Habitat alterations that would merely threaten a species' chances of recovery but not its existence would not be described as "destruction or adverse modification."

Yet according to the *Sierra Club* court, such actions are at the very heart of the ESA's adverse modification standard.⁵³ FWS's definitions had essentially read the section 7 adverse modification standard out of the ESA. The *Sierra Club* court emphasized that the adverse modification standard should be pegged to the concept of "conservation" which is much broader than mere survival.⁵⁴ FWS has indicated that it is currently revising its definition of "destruction or adverse modification" to bring it into line with the Fifth Circuit ruling,⁵⁵ but no revised version has appeared. As Assistant Secretary of the Interior Manson put it, the situation with regard to the

Populations of Bull Trout, 69 Fed. Reg. 59,996, 59,996 (Oct. 6, 2004) (to be codified at 50 C.F.R. pt. 17) ("In 30 years of implementing the Act (16 U.S.C. 1531 et seq.), we have found that the designation of statutory critical habitat provides little additional protection to most listed species, while consuming significant amounts of available conservation resources.").

50. *Sierra Club v. U.S. Fish & Wildlife Serv.*, 245 F.3d 434 (5th Cir. 2001).

51. 50 C.F.R. § 402.02 (2004).

52. *Id.*

53. *Sierra Club*, 245 F.3d at 441-42.

54. *Id.* at 441 ("The ESA defines 'critical habitat' as areas which are 'essential to the conservation' of listed species. 'Conservation' is a much broader concept than mere survival.") (footnotes omitted).

55. *See Endangered Species Act: Critical Habitat Issues, Hearings Before the S. Comm. on Environment and Public Works*, 108th Cong. 13 (Apr. 10, 2003).

definition is “in a little bit of flux right now.”⁵⁶

FWS’s method for conducting economic impact analyses has also not fared well in federal courts recently. A ruling by the Tenth Circuit in *New Mexico Cattle Growers Association v. U.S. Fish & Wildlife Service*⁵⁷ required FWS to throw out the “baseline” approach which the agency had been using to justify its claim that there were no significant economic impacts associated with critical habitat designations.⁵⁸ A group from the New Mexico agricultural industry viewed economic impacts differently and claimed that FWS was hiding most of the real costs below the so-called “regulatory baseline” in the analyses.⁵⁹ The regulatory baseline includes all of the costs that would have existed anyway, apart from the costs attributable to designation.⁶⁰ These regulatory baseline costs included the costs associated with listing, which FWS claimed was the source of most of the costs imposed by section 7 consultations.⁶¹ Because FWS failed to differentiate jeopardy from adverse modification, most activities requiring consultations were evaluated under the higher jeopardy standard pegged to listing.

The *New Mexico Cattle Growers* court noted that the real source of the problem was FWS’s adverse modification definition which did not permit a meaningful analysis of the costs associated strictly with designation of critical habitat apart from listing.⁶² However, the question of the validity of the definition was not before the court; the challenge was to the particular method used in economic impact analyses. The court ruled that as long as FWS persisted in defining adverse modification as it did, *all* costs—including the costs of listing

56. *Id.*

57. 248 F.3d 1277 (10th Cir. 2001).

58. *Id.* at 1285 (“[T]he baseline approach to economic analysis pursuant to 16 U.S.C. § 1533(b)(2) is expressly rejected.”).

59. *See id.* at 1280.

60. *See id.*

61. *See id.*

62. *Id.* at 1283. The court stated:

The root of the problem lies in the FWS's long held policy position that CHDs are unhelpful, duplicative, and unnecessary. . . . In turn, the policy position of the FWS finds its root in the regulations promulgated by the FWS in 1986 defining the meaning of both the "jeopardy standard" (applied in the context of listing) and the "adverse modification standard" (applied in the context of designated critical habitat).

248 F.3d at 1283 (citations and footnotes omitted).

co-extensive with the costs of designation—had to be counted.⁶³ The several-page analyses consisting of back-of-the-envelope calculations that FWS routinely used to find no significant economic impacts due to critical habitat designations could no longer be used, at least in the Tenth Circuit. To receive full credit before the bench, FWS's economic analyses would have to show all the detailed calculations used to arrive at the final aggregated figures.

The ruling in the Tenth Circuit does not, of course, bind other circuits. However, FWS has made it a policy to conduct fully quantified cost-benefit analyses everywhere (occasionally omitting the benefits as they did with the recent bull trout and Topeka shiner analyses).⁶⁴ When it comes to critical habitat designations, FWS has joined the rest of the cost-benefit world.

The 2003 case, *Center for Biological Diversity v. Norton*,⁶⁵ may have FWS more concerned than any other case.⁶⁶ In the 2000 proposed critical habitat rule for the Mexican spotted owl, biologists included an area encompassing 13.2 million acres in Arizona, Colorado, New Mexico, and Utah.⁶⁷ However, in the

63. *Id.*

64. See Amy Sinden, *The Economics of Endangered Species: Why Less Is More in the Economic Analysis of Critical Habitat Designations*, 28 HARV. ENVTL. L. REV. 129, 174-175 (2004) ("Perhaps the most significant change in FWS's economic analyses in the wake of *Cattle Growers* has been the embrace of quantification. All of the new economic analyses have generated cost estimates . . . and some have even begun to introduce quantification into the analysis of benefits as well.") The bull trout case is a good example of the recent trend.

65. 240 F. Supp. 2d 1090 (D. Ariz. 2003).

66. Of this case Assistant Secretary of the Interior Craig Manson said: There is a case decided in the district court in Arizona [*Center for Biological Diversity v. Norton*] that addresses the issue of being in need of special management considerations or protection that has clouded the definition and has made it difficult for us to definitionally decide what is in and what is out, in terms of critical habitat. If that case becomes precedent by an appellate court decision, which it might, then it would become all the more important for Congress to address what is meant by special management considerations and which lands are in fact in need of special management considerations and protections.

Endangered Species Act: Critical Habitat Issues: Hearing Before the S. Comm. on Environment and Public Works, 108th Cong. 14 (Apr. 10, 2003) (statement of Craig Manson, Asst. Sec. of the Int.)

67. Proposed Designation of Critical Habitat for the Mexican Spotted Owl, 65 Fed. Reg. 45,336 (July 21, 2000) (to be codified at 50 CFR pt. 17). FWS had published a final rule designating critical habitat for the Mexican spotted owl in June 1995. However, it revoked the rule in March 1998 when a group of Arizona and New Mexico counties succeeded in gaining an injunction against

final rule, the Secretary whittled the designation down to 4.6 million acres, excluding nearly all federal and tribal lands in Arizona and New Mexico.⁶⁸ FWS's reason for chopping away so much of the owl's habitat was that adequate management plans already existed on the excluded areas.⁶⁹

The court found that the final rule violated the ESA.⁷⁰ It noted that "FWS have been repeatedly told by federal courts that the existence of other habitat protections does not relieve [FWS] from designating critical habitat."⁷¹ The court reviewed the rulings of three other courts, including the Ninth Circuit decision in *Natural Resources Defense Council*. FWS's argument that they should be allowed to use other conservation plans in lieu of critical habitat protections had failed three times before, and the court noted that "it fails yet here again."⁷² FWS had long held the policy position that critical habitat designations were unhelpful, duplicative, and unnecessary. The court suggested that "[p]erhaps it is time for FWS to reassess its long held policy position."⁷³

C. BULL TROUT CRITICAL HABITAT DESIGNATION: HISTORY OF A TRAIN WRECK

The story of the bull trout critical habitat designation is as good an example as one can find to illustrate how the decisionmaking process is broken. The biologists who worked heroically to decide where to draw the lines on critical habitat maps bear none of the blame and deserve much of the credit for attempting to do an almost impossible job.⁷⁴ All of their work was done under the pressure of court-ordered deadlines. Like

enforcing the critical habitat designation until FWS complied with its NEPA obligations to do an environmental impact statement. When the agency failed to take any steps to comply with NEPA, it was sued by the Southwest Center for Biological Diversity (now the Center for Biological Diversity) for failure to timely designate critical habitat for the owl, which led to an order by the court to have a final rule published by January 2001. *See* Center for Biological Diversity, 240 F. Supp. 2d at 1092.

68. Center for Biological Diversity, 240 F. Supp. 2d at 1092.

69. *Id.*

70. *See id.* at 1109.

71. *Id.* at 1100.

72. *Id.* at 1103.

73. *Id.* at 1103.

74. Telephone Interview with John Young, Bull Trout Coordinator, U.S. Fish & Wildlife Serv., and Wade Fredenberg, Biologist, U.S. Fish & Wildlife Serv. (Oct. 15, 2004). These two were responsible for putting together the proposed rule.

the snail darter, the bull trout has powerful friends, in particular two organizations which fought to have it listed and who were now committed to seeing designation through. Alliance for the Wild Rockies and Friends of the Wild Swan filed a suit in the District Court of Oregon in January 2001 against FWS for failure to designate critical habitat.⁷⁵ In January 2002, FWS and the two environmental organizations entered into a settlement agreement stipulating that critical habitat proposals for the Klamath and Columbia River populations of bull trout would be published in the Federal Register by November 12, 2002 with a final rule by October 1, 2003.⁷⁶ Before looking at the series of events leading up to the final rule, it may be worthwhile to review briefly how the scientific work on preparing the designations proceeded.

1. Recovery Planning and Critical Habitat

Bull trout, for a long time considered the same species as the Dolly Varden, are really a char (family Salmonidae) native to rivers, lakes, and streams of the Pacific Northwest (see Figure 1).⁷⁷ Bull trout exhibit a variety of life-history strategies; some spend their entire life cycles in the tributary streams where they spawn, while others migrate to either a larger river or lake where they spend the majority of their lives before returning to the tributary streams to spawn.⁷⁸ Some populations in coastal and Puget Sound streams are believed to be anadromous, migrating to salt water to mature before returning to their native streams to spawn.⁷⁹ Bull trout have more specific habitat requirements than other salmonids. Some of the primary constituent elements (PCEs), the physical and biological features essential to the conservation of the species which biologists look for in determining what waters would be good bull trout habitat, are:

- Water temperatures between 36° and 59° Fahrenheit;

75. U.S. Fish & Wildlife Service, A Chronology of Bull Trout Events, http://www.fws.gov/pacific/bulltrout/jcs/documents/CPS_BT_chronology.pdf [hereinafter Chronology of Bull Trout Events] (last visited Nov. 13, 2005).

76. *Id.*

77. Proposed Designation of Critical Habitat for the Klamath River and Columbia River Distinct Population Segments of Bull Trout, 67 Fed. Reg. 71,236, 71,236 (Nov. 29, 2002) (to be codified at 50 C.F.R. pt. 17).

78. *See id.*

79. *See id.* at 71,236-37.

- Complex stream channels, with woody debris, side channels, and pools to provide a variety of depths, velocities and in-stream structures;
- Substrates of sufficient amount, size, and composition to ensure success of egg and embryo overwinter survival, fry emergence, and juvenile survival;
- Migratory corridors with minimal physical, biological, or water quality impediments between spawning, rearing, overwintering, and foraging habitats;
- Permanent water of sufficient quantity and quality that normal reproduction, growth, and survival are not inhibited.⁸⁰

From this list, one can see some indication of why bull trout are such sensitive habitat specialists, particularly susceptible to habitat degradation by land management practices, such as logging and road building, which have the potential for introducing sediments into streams and reducing the amount of shade needed to keep water temperatures very cold.

To designate critical habitat for the Klamath River and Columbia River populations of bull trout, FWS biologists began by reviewing the overall approaches to the conservation of the species.⁸¹ Recovery teams made up of a diverse group of federal, state, tribal, and private biologists had been working in the recovery planning process under the ESA since the species was listed in 1998.⁸² The entire range of the species was subdivided into twenty-five recovery units, and recovery planning focused on the specific needs of the fish in each of the distinct habitats.⁸³ Biologists working on critical habitat designation were able to draw upon this information generated during recovery planning.⁸⁴ Some of the key pieces of data consisted of information regarding the habitat essential to maintaining the migratory life history forms of the bull trout.⁸⁵ Migratory corridors were especially important for allowing

80. *Id.* at 71,237.

81. *See id.* at 71,242.

82. *See id.*

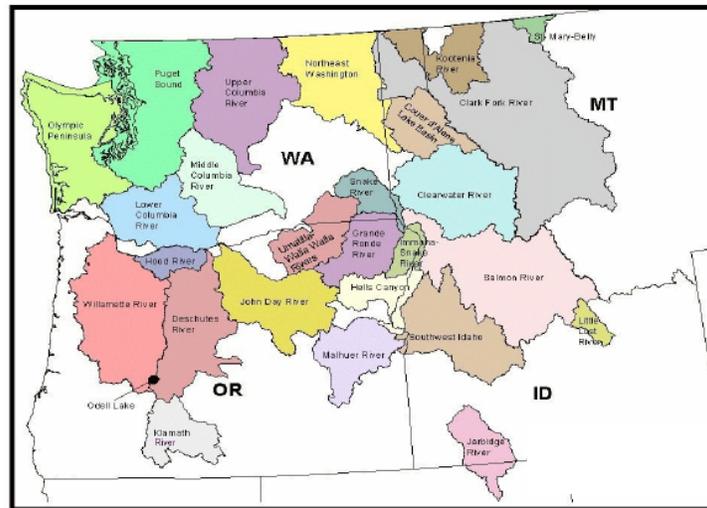
83. *See* Proposed Designation for the Klamath River and Columbia River Distinct Population Segments of Bull Trout, 67 Fed. Reg. at 71,248.

84. *See id.* at 71,242.

85. *See id.*

genetic exchange between local populations. These corridors could also support eventual recolonization of unoccupied areas and assist in the maintenance of genetic diversity and metapopulation viability.⁸⁶

FIGURE 1. DISTRIBUTION OF BULL TROUT MANAGEMENT UNITS IN THE COTERMINOUS UNITED STATES.⁸⁷



2. Bull Trout Critical Habitat Dries Up

Based on the field work by biologists, a proposed rule was published in the Federal Register in November 2002.⁸⁸ A total of approximately 18,500 stream miles and more than 530,000 acres of lakes and marshes in the Klamath River and Columbia River basins were included in the proposed critical habitat designation.⁸⁹ The total area extended across Oregon, Washington, Idaho, and Montana. In May 2003, work on bull

86. *See id.*

87. U.S. Fish & Wildlife Serv., Bull Trout Draft Recovery Plan, <http://www.fws.gov/pacific/bulltrout/colkla/recovery/> (last visited Nov. 30, 2005). Although this figure represents management units, it adequately represents the general distribution of the species.

88. Proposed Designation of Critical Habitat for the Klamath River and Columbia River Distinct Population Segments of Bull Trout, 67 Fed. Reg. at 71,242.

89. *Id.*

trout critical habit was suspended indefinitely due to lack of funds.⁹⁰ It was rescheduled later in the year, and as part of a settlement agreement, FWS agreed to finalize critical habitat for the Klamath and Columbia River populations by September 21, 2004.⁹¹

Five months before the rule was scheduled to appear, there were signs of trouble to come. When FWS released the draft economic impact analysis to the public, it was missing the section on the economic benefits of designation. Immediately environmentalists were suspicious, and the war of words was on. FWS attempted to defend its actions by claiming that under the ESA, the section 4(b)(2) procedure for consideration of economic impacts of designation requires only costs and not benefits to be included in the analysis of economic impacts.⁹² When the final rule appeared on October 6,⁹³ environmentalists' fears were realized, although perhaps not in the manner envisioned. The final rule eliminated ninety percent of the proposed critical habitat.⁹⁴ However, the principal ground for exclusion was not primarily economic in nature, although cost-benefit considerations did lead to the elimination of all the lakes impounded behind dams. The reason for eliminating most of the critical habitat was that the

90. Chronology of Bull Trout Events, *supra* note 75.

91. *Id.*

92. See e.g., Sherry Devlin, *Benefits of Bull Trout Ignored, Groups Say*, MISSOULIAN.COM, (Apr. 4, 2004), available at <http://www.missoulian.com/articles/2004/04/07/news/local/znews02.txt> (quoting Wade Fredenberg, the federal government's lead fisheries biologist for bull trout recovery in Montana, who explained that "[t]he Endangered Species Act asks only for an analysis of the costs, not the benefits, of designating critical habitat for an at-risk species"). Alliance for the Wild Rockies was skeptical of FWS's justification. See Natalie M. Henry, *Bull Trout Recovery Cost Estimates Questioned by Enviro.*, GREENWIRE, Oct. 7, 2004, available at http://www.wildrockiesalliance.org/issues/bulltrout/04_costbenefits_greenwire.html. (quoting Michael Garrity, executive director of Alliance for the Wild Rockies and a former economics instructor at the University of Utah, who noted: "When I taught intro to economics, if someone had turned in an economic impact analysis that only considered the costs, I would've flunked them.").

93. See Designation of Critical Habitat for the Klamath River and Columbia River Populations of Bull Trout, 69 Fed. Reg. 59,996, 59,996 (Oct. 6, 2004) (to be codified at 50 C.F.R. pt. 17).

94. See Nicholas K. Geranios, *Environmental Groups Plan to Sue over Bull Trout*, ASSOC. PRESS, Oct. 6, 2004, at B4, available at http://www.wildrockiesalliance.org/issues/bulltrout/criticalhabitat/10_06_04_groupstosue.html.

proposed areas did not meet the ESA's definitional requirement of needing special management or protection and could be excluded using the Secretary's discretionary authority under section 4(b)(2).⁹⁵ The "cooperative conservation" theme, mentioned earlier, was the key factor in the Secretary's judgment that the benefits of excluding certain areas outweighed the benefits of including them.

It is difficult to believe that FWS did not anticipate that Alliance for the Wild Rockies would not stand for such heavy-handed pruning of the critical habitat maps for the bull trout, a fish featured on the organization's website logo.⁹⁶ In the exclusion process, *all of the streams and lakes in Montana* were removed from the critical habitat designation.⁹⁷ Could FWS really have failed to notice that the group that had hounded them for over a decade in connection with the bull trout listing and critical habitat designation was based in Missoula?

On October 6, 2004, Alliance for the Wild Rockies filed a 60-day notice of intent to sue as required under the ESA procedure for citizen suits.⁹⁸ "We cannot allow this to stand," said Michael Garrity, executive director of Alliance for the Wild Rockies.⁹⁹ For its part, FWS was not fazed by the suit. Mitch Snow, spokesman for FWS, said: "We've been sued so many times in so many ways that suit notices are the same as occupant mail."¹⁰⁰

In December 2004, Alliance for the Wild Rockies and another Montana environmental group, Friends of the Wild Swan, filed a suit challenging the designation.¹⁰¹ In response, FWS petitioned the court for a voluntary remand of the final rule pledging to seek comment on the exclusions.¹⁰² Its petition

95. See Designation of Critical Habitat for the Klamath River and Columbia River Populations of Bull Trout, 69 Fed. Reg. at 60,021.

96. See Alliance for the Wild Rockies, <http://www.wildrockiesalliance.org> (last visited Nov. 14, 2005).

97. See Geranios, *supra* note 94.

98. See *generally* 16 U.S.C. § 1540(g)(2)(C) (2000) (requiring a sixty-day notice for citizen suits against the Secretary for failure to perform a non-discretionary duty under the ESA).

99. See Geranios, *supra* note 94.

100. *Id.*

101. Press Release, Alliance for the Wild Rockies, Groups Sue Government for Illegally Cutting Bull Trout Habitat (Dec. 15, 2004), http://www.wildrockiesalliance.org/news/2004/12_15_bulltroutlawsuit.html.

102. Opening of the Comment Period for the Proposed and Final Designation of Critical Habitat for the Klamath River and Columbia River

granted,¹⁰³ FWS published a revised final rule on September 26, 2005 designating critical habitat for all bull trout populations in the coterminous United States.¹⁰⁴ The revised designation contained some areas excluded in the 2004 critical habitat rule, including over a thousand miles of streams and almost thirty-two thousand acres of lakes and reservoirs in Montana.¹⁰⁵ According to an FWS spokesman, the Montana habitat was restored because it was judged not to be protected by some other conservation plan.¹⁰⁶ Yet it may not be enough to satisfy environmentalists, who emphasized that conservation plans and agreements between the federal government and state or private entities do not afford the same protection as critical habitat designation.¹⁰⁷ On October 27, 2005, Friends of the Wild Rockies filed a sixty-day notice of intent challenging the revised rule,¹⁰⁸ and the dispute appears to be headed back to court. One might well ask: is this how the ESA's critical habitat designation procedure is supposed to work? Perhaps all may agree on one point: the process really is broken.

D. DESIGNATION OF CRITICAL HABITAT FOR THE CANADA LYNX

Before the roundtable discussion in Part III, we will briefly examine the biology of the Canada lynx, a species for which critical habitat was proposed in November 2005.¹⁰⁹ We will present a more detailed look at the biology of this species, as its unique life history presents considerable challenges for critical

Populations of Bull Trout (*Salvelinus confluentus*); Clarification, 70 Fed. Reg. 32,732 (June 6, 2005).

103. See Alliance for the Wild Rockies and Friends of the Wild Swan v. David Allen and the United States Fish and Wildlife Service (CV 04-1812).

104. Designation of Critical Habitat for the Bull Trout, 70 Fed. Reg. 56,212, 56,242-55 (Sept. 26, 2005) (to be codified at 50 C.F.R. pt. 17).

105. U.S. Fish & Wildlife Service, Fact Sheet and Questions and Answers About Bull Trout, <http://www.fws.gov/pacific/bulltrout/> (last visited Nov. 22, 2005).

106. See Greg Lemon, *Bitterroot River Named Critical Trout Habitat*, Ravalli Republic, Sept. 26, 2005, http://www.wildrockiesalliance.org/issues/bulltrout/05_mt-crithab-designation.html (statement of Wade Fredenburg, native fish coordinator, FWS).

107. *Id.* (statement of Arlene Montgomery, spokeswoman, Friends of the Wild Swan).

108. Telephone Interview with Mike Bader, Consultant, Friends of the Wild Rockies (Nov. 23, 2005).

109. See Proposed Designation of Critical Habitat for the Contiguous United States Distinct Population Segment of the Canada Lynx, 70 Fed. Reg. 68,294 (Nov. 9, 2005) (to be codified at 50 C.F.R. pt. 17).

habitat designation. Like the bull trout designation, the proposed critical habitat designation for lynx encompasses a large geographic area. The mere scope of the bull trout and lynx designations ensures scrutiny by a diverse group of stakeholders and provides a significant test of the critical habitat concept.

1. Biology of the Canada Lynx

a. Distribution

The Canada lynx is a medium-sized cat that inhabits the boreal forests of North America, with its primary range in Canada and Alaska where populations are relatively large and secure.¹¹⁰ The coterminous U.S. lynx range consists of the Rocky Mountains and Cascades in the west, the north-central states of Minnesota, Wisconsin, and Michigan, and the northeastern states of Maine, Vermont, and New Hampshire (see Figure 2). FWS believes that lynx were historically present in New Hampshire, Vermont, New York, Michigan, Wisconsin, Minnesota, Montana, Wyoming, Idaho, Washington, Oregon, Utah, and Colorado.¹¹¹ Montana, Washington, Minnesota, and New Hampshire have had the largest historical lynx populations outside of Alaska,¹¹² and the historical lynx populations in Maine are also believed to have been considerable.¹¹³ Recent radiotelemetry studies in Montana, Minnesota, Maine, and Colorado have all documented resident breeding lynx populations.¹¹⁴ Although the Colorado study is a product of a reintroduction effort begun there in 1999,¹¹⁵ the

110. See BILL RUEDIGER ET AL., USDA FOREST SERVICE, USDI FISH & WILDLIFE SERVICE, USDI BUREAU OF LAND MGMT. & USDI NATIONAL PARK SERVICE, CANADA LYNX CONSERVATION ASSESSMENT AND STRATEGY 5, 36 (2000).

111. *Id.* at 5.

112. See Kevin S. McKelvey, *History and Distribution of Lynx in the Contiguous United States*, in *ECOLOGY AND CONSERVATION OF LYNX IN THE UNITED STATES* 207, 253 (Leonard F. Ruggiero et al. eds., 2000).

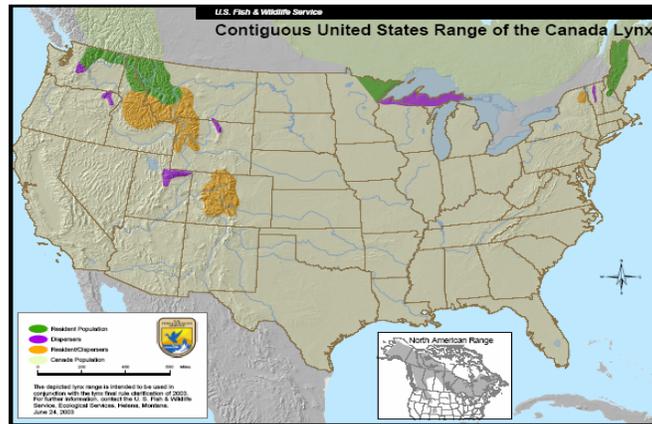
113. See C.L. Hoving, *Historical Occurrence and Habitat Ecology of Canada Lynx (*Lynx canadensis*) in Eastern North America* (2000) (unpublished M.S. thesis, University of Maine) (on file with author).

114. See, e.g., Proposed Designation of Critical Habitat for the Contiguous United States Distinct Population Segments of the Canada Lynx, 70 Fed. Reg. at 68,294.

115. Keith Kloor, *Lynx and Biologists Try to Recover After Disastrous Start*, 285 SCIENCE 320, 321 (1999).

three other telemetry studies are investigating the ecology of natural populations. Lynx present in the other states within the historical lynx range are more likely to be nomadic or dispersing animals rather than resident populations (see Figure 2).

FIGURE 2. THE DISTRIBUTION OF THE CANADA LYNX IN THE COTERMINOUS UNITED STATES.¹¹⁶



b. Natural History and Ecology

The ecology of the lynx is intricately linked with the ecology of its primary prey, the snowshoe hare. Approximately 76-94% of the Canada lynx's diet consists of snowshoe hares.¹¹⁷ The dietary specialization of the lynx contributes to the dramatic population oscillations that occur in both lynx and hares approximately every ten years.¹¹⁸ This population cycle

116. U.S. Fish & Wildlife Serv., Contiguous United States Range of the Canada Lynx, http://mountain-prairie.fws.gov/species/mammals/lynx/lynxmapfinal_color.pdf (last visited Nov. 14, 2005). Distinctions are made between resident populations and dispersing individuals.

117. See Carl H. Nellis, Stephen P. Wetmore & Lloyd B. Keith, *Lynx-Prey Interactions in Central Alberta*, 36 J. WILDLIFE MGMT. 320, 323 (1972); see also Christopher J. Brand, Lloyd B. Keith & Charles A. Fischer, *Lynx Responses to Changing Snowshoe Hare Densities in Central Alberta*, 40 J. WILDLIFE MGMT. 416, 424 (1976); Mark O'Donoghue et al., *Functional Responses of Coyotes and Lynx to the Snowshoe Hare Cycle*, 79 ECOLOGY 1193, 1194 (1998).

118. See Brand, Keith & Fischer, *supra* note 117, at 416.

has fascinated ecologists since it was first widely published in the scientific literature.¹¹⁹ The lynx-hare cycle has been the subject of a considerable amount of research by theoretical ecologists.¹²⁰ Currently, a widely accepted theory is that the lynx-hare cycle is generated by a three-level tropic interaction between the vegetation consumed by hares, hare populations, and populations of hare predators.¹²¹

The cyclic population dynamics of the Canada lynx makes it difficult to obtain estimates of population size. Likewise, the persistence of the species (such as the presence of a continuous lynx population throughout a population low) is uncertain in many areas within its conterminous U.S. range, including many of the states that currently support resident lynx populations. The uncertain status of lynx in states currently supporting resident populations greatly complicates the promulgation of conservation and management strategies.¹²²

c. Habitat Requirements

Given their relationship as predator and prey, the habitat preferences of the lynx are similar to the habitat preferences of the snowshoe hare. Snowshoe hares are often most abundant in densely stocked patches of successional vegetation.¹²³ Young coniferous stands are particularly important to hares during population lows because they serve as refugia from

119. See, e.g., Charles Elton & Mary Nicholson, *The Ten-Year Cycle in Numbers of the Lynx in Canada*, 11 J. ANIMAL ECOLOGY 215 (1942).

120. See, e.g., H.R. Akçakaya, *Population Cycles of Mammals: Evidence for a Ratio-Dependent Predation Hypothesis*, 62 ECOLOGICAL MONOGRAPHS 119 (1992); see also A.A. King & W.M. Schaffer, *The Geometry of a Population Cycle: A Mechanistic Model of Snowshoe Hare Demography*, 82 ECOLOGY 814 (2001); Esa Ranta et al., *Solar Activity and Hare Dynamics: A Cross Continental Comparison*, 149 AM. NATURALIST 765 (1997).

121. See Charles J. Krebs et al., *Impact of Food and Predation on the Snowshoe Hare Cycle*, 269 SCIENCE 1112, 1114 (1995); see also ECOSYSTEM DYNAMICS IN THE BOREAL FOREST: THE KLUANE PROJECT (Charles J. Krebs, Stan Boutin & Rudy Boonstra eds., 2001).

122. See Determination of Threatened Status for the Contiguous U.S. Distinct Population Segment of the Canada Lynx and Related Rule, 65 Fed. Reg. 16,052, 16,052 (Mar. 24, 2000) (to be codified at 50 C.F.R. pt. 17).

123. See John A. Litvaitis, James A. Sherburne & John A. Bissonette, *Influence of Understory Characteristics on Snowshoe Hare Habitat Use and Density*, 49 J. WILDLIFE MGMT. 866, 866 (1985); Thomas F. Paragi et al., *Selection of Post-Fire Seres by Lynx and Snowshoe Hares in the Alaskan Taiga*, 78 NW. NATURALIST 77, 78 (1997); see also Karen E. Hodges, *Ecology of Snowshoe Hares in Southern Boreal and Montane Forests*, in ECOLOGY AND CONSERVATION OF LYNX IN THE UNITED STATES, *supra* note 112, at 163, 189.

predation.¹²⁴ The successional stands often used by snowshoe hares may be created by timber harvest or natural disturbance.¹²⁵

Despite considerable attention from theoretical ecologists and some long-term research in Canada, little published information is available from the few studies that have been conducted on Canada lynx populations in the United States.¹²⁶ Washington is the only coterminous state in which habitat selection of the lynx has been studied in detail.¹²⁷ Kevin McKelvey and others subsequently re-analyzed this data using modern habitat selection technology and analysis techniques.¹²⁸ In Washington, hares were most abundant in twenty-year-old pine forests, leading to an association between lynx and lodgepole pine stands.¹²⁹ These results are similar to those obtained from studies conducted in Canada, where lynx also exhibited a preference for regenerating conifer forests.¹³⁰

Although lynx often forage in regenerating conifer forest, they may also require other forest types for other behaviors. Lynx often establish natal and maternal dens in mature stands with abundant downed timber.¹³¹ In southern lynx

124. See Jerry O. Wolff, *The Role of Habitat Patchiness in the Population Dynamics of Snowshoe Hares*, 50 *ECOLOGICAL MONOGRAPHS* 111, 113 (1980).

125. See J. RANDAL HICKENBOTTOM ET AL., *BIOLOGICAL ASSESSMENT OF THE EFFECTS OF NATIONAL FOREST LAND AND RESOURCE MANAGEMENT PLANS AND BUREAU OF LAND MANAGEMENT LAND USE PLANS ON CANADA LYNX* 11, 129 (1999).

126. See Gary M. Koehler, *Population and Habitat Characteristics of Lynx and Snowshoe Hares in North Central Washington*, 68 *CAN. J. ZOOLOGY* 845, 845 (1990); L.D. Mech, *Age, Sex, Reproduction, and Spatial Organization of Lynxes Colonizing Northeastern Minnesota*, 61 *J. MAMMALOGY* 261, 261 (1980); John R. Squires & Tom Laurion, *Lynx Home Range and Movements in Montana and Wyoming: Preliminary Insights*, in *ECOLOGY AND CONSERVATION OF LYNX IN THE UNITED STATES*, *supra* note 112, at 337, 338.

127. See, e.g., Kevin S. McKelvey et al., *Canada Lynx Habitat and Topographic Use Patterns in North Central Washington: A Reanalysis*, in *ECOLOGY AND CONSERVATION OF LYNX IN THE UNITED STATES*, *supra* note 112, at 307; Koehler, *supra* note 126, at 845.

128. See McKelvey et al., *supra* note 127, at 307.

129. See Koehler, *supra* note 126, at 847-48; McKelvey et al., *supra* note 127, at 307.

130. See Garth Mowat & Brian Slough, *Habitat Preference of Canada Lynx Through a Cycle in Snowshoe Hare Abundance*, 81 *CAN. J. ZOOLOGY* 1736, 1736 (2003); Kim G. Poole, Leslie A. Wakelyn & Paul N. Nicklen, *Habitat Selection by Lynx in the Northwest Territories*, 74 *CAN. J. ZOOLOGY* 845, 847 (1996).

131. See Brian G. Slough, *Characteristics of Canada Lynx, Lynx canadensis, Maternal Dens and Denning Habitat*, 113 *CAN. FIELD-*

populations, older forests may provide a more temporally stable source of hare habitat than successional habitats.¹³² Moreover, due to the availability of a cone crop, mature conifer stands also support a greater abundance of the red squirrel, an important alternative prey species during periods of hare scarcity.¹³³ Consumption of alternative prey may be more common in the southern portion of lynx range where hare availability or cyclic dynamics are reduced due to fragmentation of hare habitat.¹³⁴

Unfortunately, our current understanding of lynx habitat requirements in the United States is limited. The current studies in Montana, Maine, Minnesota, and Colorado will provide much needed information on lynx habitat requirements across the United States. Until these studies have completed their habitat analyses, the designation of critical habitat for lynx must be based mainly on research conducted in Canada. Due to the considerable differences in landscapes, topographic relief, vegetation, and prey abundance that occur between broad geographic areas, extrapolation of results across regions may result in misleading management recommendations.¹³⁵ Thus, the opportunity for wildlife science to improve our understanding of lynx habitat selection and inform the process of designating critical habitat under the ESA depends upon the results of the ongoing research efforts in the United States.

2. Listing History of the Canada Lynx

The Canada lynx was first petitioned for listing under the ESA in 1992.¹³⁶ After the typical period of continuous litigation, the proposed listing rule was published in 1998,¹³⁷

NATURALIST 605, 606–07 (1999).

132. See Steven W. Buskirk et al., *Comparative Ecology of Lynx in North America*, in *ECOLOGY AND CONSERVATION OF LYNX IN THE UNITED STATES*, *supra* note 112, at 397, 410.

133. See Garth Mowat, Kim G. Poole & Mark O'Donoghue, *Ecology of Lynx in Northern Canada and Alaska*, in *ECOLOGY AND CONSERVATION OF LYNX IN THE UNITED STATES*, *supra* note 112, at 268.

134. See Keith B. Aubry, Gary M. Koehler & John R. Squires, *Ecology of Canada Lynx in Southern Boreal Forests*, in *ECOLOGY AND CONSERVATION OF LYNX IN THE UNITED STATES*, *supra* note 112, at 373, 394; Lloyd B. Keith, Sara E.M. Bloomer & Tomas Willebrand, *Dynamics of Snowshoe Hare Population in Fragmented Habitat*, 71 *CAN. J. ZOOLOGY* 1385, 1391 (1993).

135. See Buskirk et al., *supra* note 132, at 410.

136. Proposal to List the Contiguous United States Distinct Population Segment of the Canada Lynx as a Threatened Species, 63 *Fed. Reg.* 36,994, 37,000 (July 8, 1998) (to be codified at 50 C.F.R. pt. 17).

137. *Id.* at 37,001.

with the final listing rule published in 2000.¹³⁸ In the proposed rule, the FWS concluded that critical habitat designation was imprudent at the time of listing.¹³⁹ However, in the final listing rule, the FWS revoked the imprudent determination and deemed critical habitat designation for the lynx prudent but deferred due to limited resources.¹⁴⁰ The change was validated by the acknowledgement that there were instances involving current and future unoccupied habitat where section 7 consultations would not be triggered.¹⁴¹

About the time the 1998 proposed listing rule was published, the United States Forest Service (USFS) and the Bureau of Land Management (BLM) convened a team of international experts to create a synopsis of our current knowledge about lynx ecology.¹⁴² This synopsis, referred to as the “science report,” was eventually published as *Ecology and Conservation of Lynx in the United States*.¹⁴³ The “science report” served as the template for the development of conservation measures that would be used to guide management on federal lands in the United States. These conservation measures were published as the *Lynx Conservation Assessment and Strategy (LCAS)*.¹⁴⁴

With guidance for lynx conservation measures in place, the USFS and BLM prepared a Biological Assessment of fifty-seven land management plans for federal units in the U.S. lynx range.¹⁴⁵ The key finding of the assessment was that the existing forest plans could have a negative impact on lynx because they lacked specific provisions for the management of lynx and snowshoe hares.¹⁴⁶ A considerable portion of the U.S. lynx range occupies federal landholdings in Washington,

138. Determination of Threatened Status for the Contiguous U.S. Distinct Population Segment of the Canada Lynx and Related Rule, 65 Fed. Reg. 16,052 (Mar. 24, 2000) (to be codified at 50 C.F.R. pt. 17).

139. Proposal to List the Contiguous United States Distinct Population Segment of the Canada Lynx as a Threatened Species, 63 Fed. Reg. at 37,009.

140. Determination of Threatened Status for the Contiguous U.S. Distinct Population Segment of the Canada Lynx and Related Rule, 65 Fed. Reg. at 16,083.

141. *Id.*

142. See ECOLOGY AND CONSERVATION OF LYNX IN THE UNITED STATES, *supra* note 112, at 1.

143. *Id.*

144. See RUEDIGER ET AL., *supra* note 110.

145. See HICKENBOTTOM ET AL., *supra* note 125, at 11.

146. *Id.* at 97.

Montana, Colorado, and Minnesota; with the majority of the U.S. lynx population on government lands, an inadequate management direction was not tolerable.¹⁴⁷ The situation was further addressed in 2000 when both the USFS and BLM signed a Lynx Conservation Agreement that mandated that lynx and their habitat would be conserved on federal land units in the U.S. lynx range.¹⁴⁸

In the final rule listing the lynx, FWS again echoed the concerns that management plans on federal land units lacked specific direction for lynx conservation measures: “We conclude that the single factor threatening the contiguous U.S. distinct population segment of lynx is the lack of guidance for conservation of lynx and snowshoe hare habitat in National Forest Land and Resource Plans and BLM Land Use Plans.”¹⁴⁹ With this statement, the FWS placed considerable responsibility for lynx conservation in the hands of the USFS and BLM. It should be noted that this responsibility was not predicated on the designation of critical habitat, determined to be “prudent but deferred” in the final listing rule.¹⁵⁰ Rather than designate the critical habitat that it loathes to do, the FWS positioned itself to claim that large amounts of U.S. lynx range will not meet the special management requirements of designation since alternative management plans are in place.

Indeed, when the lynx critical habitat designation appeared in November 2005, considerable portions of U.S. lynx range were removed from designation because of updates and amendments made to USFS and BLM land management plans.¹⁵¹ Two large areas of the U.S. lynx range were eliminated from designation. The existence of the Northern Rockies Lynx Amendment,¹⁵² a strategy to amend management

147. See Determination of Threatened Status for the Contiguous U.S. Distinct Population Segment of the Canada Lynx and Related Rule, 65 Fed. Reg. 16,052, 16,069 (Mar. 24, 2000) (to be codified at 50 C.F.R. pt. 17).

148. *Id.* at 16,083.

149. *Id.* at 16,076.

150. *Id.* at 16,083.

151. Telephone Interview with Lori Nordstrom, Biologist, U.S. Fish & Wildlife Serv. (Nov. 23, 2004).

152. Northern Rockies Lynx Amendment, 66 Fed. Reg. 47,160 (Sept. 11, 2001). The *Draft Environmental Impact Statement for the Northern Rockies Lynx Amendment* was published in 2004. FOREST SERV., U.S. DEP'T OF AGRIC. & BUREAU OF LAND MGMT., U.S. DEP'T OF INTERIOR, DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE NORTHERN ROCKIES LYNX AMENDMENT (2004), available at <http://www.fs.fed.us/r1/planning/lynx/reports/DEIS.htm>.

plans on eighteen National Forest and four BLM administrative units in Idaho, Montana, Utah, and Wyoming, was used to eliminate these large federal landholdings from critical habitat designation. Although federal land management plans have yet to be revised for compatibility with the LCAS in the western United States, in Minnesota, the Superior National Forest forest plan revision has been completed and contains specific management direction for lynx conservation.¹⁵³ The implications of critical habitat designation for the lynx and the feasibility of relying on preexisting management plans to guide lynx conservation efforts will be discussed further in Part III.

III. CRITICAL HABITAT POLICY ROUNDTABLE

This part is intended as a policy roundtable discussion to examine the critical habitat decisionmaking process from a variety of scientific, economic, and legal perspectives. The structure of the following discussion reflects the structure of the decisionmaking process as outlined in section 4(b)(2) of the ESA. The Secretary is required to designate critical habitat 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.¹⁵⁴ There are three elements in the overall balancing scheme: (1) biological data about the species and its habitat, (2) an analysis of the economic impacts of the designation, and (3) consideration of other relevant impacts.

The following sections reflect the statutory order. The critical habitat designation process is primarily science-based decisionmaking. The first section contains the views of the bull trout and lynx field biologists as well as opinions from the scientific “academy” on how the current ways of using science in the process could be improved. In the second section, the discussion shifts to a debate over how best to analyze economic impacts. Should FWS continue down the path on which it currently seems to be headed toward more quantified cost-benefit analyses or would some kind of qualitative approach be

153. FOREST SERV., U.S. DEP’T OF AGRIC., LAND AND RESOURCE MANAGEMENT PLAN, SUPERIOR NATIONAL FOREST app. at E-1 (2004), *available at* http://www.fs.fed.us/r9/forests/superior/projects/forest_plan/forest_plan.php.

154. 16. U.S.C. § 1533(b)(2) (2000 & Supp. III 2004).

more appropriate? Finally, the third section looks at the balancing test set up by consideration of other relevant impacts. Just what impacts *are* relevant to consider within the context of critical habitat designations?

A. BETTER SCIENCE FOR BETTER CRITICAL HABITAT DECISIONMAKING

1. Bull Trout and Critical Habitat Policy

In October of 2004, critical habitat was designated for the bull trout on the Klamath and Columbia Rivers.¹⁵⁵ Secretarial discretion was widely used in this designation, resulting in a ninety percent reduction of the area originally proposed as critical habitat in 2002.¹⁵⁶

In this section, we consider whether the critical habitat designation for the Columbia River and Klamath River populations of bull trout will contribute to the conservation of the species in these watersheds. The two key issues resulting from the critical habitat designation process are: (1) the lack of protection for unoccupied habitat, and (2) whether preexisting habitat conservation plans (HCP) used to define areas exempt from designation can effectively protect bull trout populations. Hopefully an analysis of this decision and the resulting controversy will provide useful insights that can be used to improve the process of designating critical habitat.

a. Criteria in the Proposed Rule

In the process of identifying the critical habitat for the bull trout, FWS used a draft Recovery Plan to identify the specific recovery needs of the bull trout and determine the areas that warranted critical habitat designation.¹⁵⁷ FWS maintained that science was the primary basis used to designate critical habitat for the bull trout and focused their strategy on the maintenance of existing local populations by: (1) protecting sufficient amounts of spawning and rearing habitat, (2)

155. See Designation of Critical Habitat for the Klamath River and Columbia River Populations of Bull Trout, 69 Fed. Reg. 59,996, 60,039 (Oct. 6, 2004) (to be codified at 50 C.F.R. pt. 17).

156. See Proposed Designation of Critical Habitat for the Klamath River and Columbia River Distinct Population Segments of Bull Trout, 67 Fed. Reg. 71,236, 71,236 (Nov. 29, 2002) (to be codified at 50 C.F.R. pt. 17).

157. See Designation of Critical Habitat for the Klamath River and Columbia River Populations of Bull Trout, 69 Fed. Reg. at 59,997.

providing suitable habitat in downstream rivers and lakes to provide foraging and wintering habitat for migratory fish, and (3) maintaining or re-establishing movement corridors to maintain migratory routes and the potential for gene flow between populations.¹⁵⁸ All of these actions are justified and necessary to sustain current populations.

b. Deletion of Unoccupied Habitat

One of the most contentious aspects of the designation was the removal of unoccupied habitats. The Secretary has the discretion to include unoccupied habitat if these areas are deemed “essential” to the conservation of the species.¹⁵⁹ Due to poor historical distribution records, their rarity, and variability in life history strategies, it is inherently difficult to confirm that any unoccupied areas are essential. The FWS maintained that this task was impossible.¹⁶⁰

However, the failure to include unoccupied areas is extremely problematic for two main reasons. First, unoccupied habitat is essential to conservation efforts because bull trout and other salmonids may exist as metapopulations.¹⁶¹ A metapopulation is a network of patchily distributed local populations that occasionally go extinct despite being linked by density-dependent dispersal.¹⁶² Although bull trout often occupy naturally fragmented stream habitats, in many areas streams have been further fragmented by human disturbances, producing increasingly isolated trout populations.¹⁶³ The metapopulation is primarily a theoretical concept, but can be a useful tool to help understand how the spatial distribution of preferred habitat types affects species such as bull trout that

158. See *id.* at 60,024.

159. See *id.* at 60,039.

160. See *id.* at 60,004.

161. See Andrew B. Cooper & Marc Mangel, *The Dangers of Ignoring Metapopulation Structure for the Conservation of Salmonids*, 97 FISHERIES BULL. 213, 213 (1999); J.B. Dunham & B.E. Rieman, *Metapopulation Structure of Bull Trout: Influences of Physical, Biotic, and Geometrical Landscape Characteristics*, 9 ECOLOGICAL APPLICATIONS 642, 643 (1999).

162. See ILKKA HANSKI, *METAPOPULATION ECOLOGY* 3 (1999).

163. See BRUCE E. RIEMAN & JOHN D. MCINTYRE, U.S. DEP'T OF AGRIC., *DEMOGRAPHIC AND HABITAT REQUIREMENTS FOR CONSERVATION OF BULL TROUT* 7 (1993) [hereinafter RIEMAN & MCINTYRE, *DEMOGRAPHIC*]; Bruce E. Rieman & John D. McIntyre, *Occurrence of Bull Trout in Naturally Fragmented Habitat Patches of Varied Size*, 124 TRANSACTIONS AM. FISHERIES SOC'Y 285, 285 (1995) [hereinafter Rieman & McIntyre, *Occurrence*].

inhabit isolated habitat patches. Metapopulation theory should not be rigidly applied in management scenarios for bull trout, but is valid for aiding conceptual development of how to provide connectivity among spatially disparate populations.¹⁶⁴

A second problem with not considering unoccupied habitat to be essential for bull trout conservation is biases in historical and current surveys used to document the presence of the species. Bull trout are not easily detected in standardized survey protocols due to varying life history attributes, low population densities, and nocturnal habits.¹⁶⁵ Although an effective survey protocol for juvenile and resident bull trout has recently been developed, a survey method for adult migratory bull trout has not yet been developed.¹⁶⁶ The difficulty in confirming bull trout presence with existing survey techniques means that areas thought to lack bull trout may actually support breeding populations. Additionally, in the past, bull trout were frequently lumped into a general category, such as "other trout," and not properly identified in sampling and survey efforts.¹⁶⁷ This has resulted in considerable biases in the historical records of bull trout distribution. Lastly, many historical surveys that did count bull trout were performed in degraded areas that now constitute quality bull trout habitat.¹⁶⁸ Due to these factors, information about the historic distribution of bull trout is lacking in some areas. The deletion of these areas by the FWS may have been motivated by its position that critical habitat provides little, if any, additional protection to the species, rather than the lack of clear information that bull trout once occupied these areas.¹⁶⁹ Given the lack of accurate data about the bull trout historical range, it makes more sense to be conservative and designate all areas that meet the criteria for designation as critical habitat.

c. Role of State-Sponsored Habitat Conservation Activities

As discussed previously, the ESA's definition of critical

164. See Designation of Critical Habitat for the Klamath River and Columbia River Populations of Bull Trout, 69 Fed. Reg. 59,996, 59,999 (Oct. 6, 2004) (to be codified at 50 C.F.R. pt. 17).

165. See *id.* at 60,022.

166. See *id.*

167. See *id.* at 60,024.

168. See Rieman & McIntyre, *Occurrence*, *supra* note 163, at 285.

169. See Designation of Critical Habitat for the Klamath River and Columbia River Populations of Bull Trout, 69 Fed. Reg. at 59,996.

habitat defines occupied habitat as “the specific areas within the geographical area occupied by the species . . . 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.”¹⁷⁰ The FWS has used this vague language to exclude lands from critical habitat designations that are protected by other regulatory mechanisms. In the October 2004 bull trout critical habitat designation, Montana’s entire proposed critical habitat was eliminated based on FWS interpretation of this rule. The Service argued that Montana had a conservation plan to recover bull trout using cooperative partnerships and recognized the intention to carry out positive measures for bull trout consistent with the Bull Trout Restoration Plan developed in 2000.¹⁷¹ The FWS justification for this decision is that occupied habitat already protected by other agreements—such as habitat conservation plans, natural resource management plans, parks, or other restricted-use areas—did not meet the definition of “critical habitat” because those lands did not require any “special management considerations or protections.”¹⁷² This is a fundamental misunderstanding of the statute because the very fact that a particular area is protected through a habitat conservation plan or as a park argues for its status as critical habitat. Areas such as these should automatically qualify as critical habitat because other agencies have already identified them as being important for the species. The FWS’s interpretation ignores its own scientists, who initially, after careful considerations based on sound science, determined that these areas should be included in the critical habitat for the bull trout.¹⁷³ Consequently, bull trout are facing the same threats now as when they were listed. However, the FWS chose political expedience rather than good science in designating the bull trout critical habitat. As much as we agree that these habitat conservation plans provide some protection, these management plans may not be as stringent as critical habitat designation. Such areas should only be

170. 16 U.S.C. § 1532 (5)(A)(i) (2000).

171. *See* Designation of Critical Habitat for the Klamath River and Columbia River Populations of Bull Trout, 69 Fed. Reg. at 60,032.

172. *Id.*

173. *See* Proposed Designation of Critical Habitat for the Klamath River and Columbia River Distinct Population Segments of Bull Trout, 67 Fed. Reg. 71,236, 71,236 (Nov. 29, 2002) (to be codified at 50 C.F.R. pt. 17).

excluded from designation if they are covered by plans that offer protection, regulations, and penalties comparable to critical habitat designation. Such conservation strategies have been in place in some areas, but the bull trout is still imperiled.

d. Final Comments

Bull trout biologists consider critical habitat designation essential for the survival, recovery, and subsequent delisting of the species.¹⁷⁴ There is a need for a greater prioritization of conservation issues that influence critical habitat designation. For example, designating critical habitat may be insufficient if efforts are not made to improve habitat conditions for bull trout. Greater emphasis should be placed on the need for quality habitat to support the migratory life form of bull trout.

There is a critical need for more direction in the critical habitat designation and recovery planning processes from upper-level management. There must be clear representation of what the desired result in the designation and recovery processes should contain so that personnel can focus their efforts in the most effective direction. The ninety percent reduction in the proposed area of critical habitat for the bull trout has created disillusionment in biologists who devoted significant time and resources developing the Draft Recovery Plan and the proposed critical habitat designation. The critical habitat situation in bull trout was and still is a major distraction to normal functioning of other activities, such as finishing the recovery plans, and has had the unintended consequence of totally derailing the orderly progression of the recovery planning process toward conclusion.¹⁷⁵ The situation has neither benefited the fish, the Service's reputation and working relationship with its partners, nor the individual biologists involved. Unfortunately, this means that recovery time for the species is lost between now and whenever the recovery planning process is continued. Due to the effects of a multi-year delay, the process may involve starting all over again in some recovery units, with reduced credibility and little to show for the years of wasted effort.

174. Designation of Critical Habitat for the Klamath River and Columbia River Populations of Bull Trout, 69 Fed. Reg. at 60,040.

175. Telephone Interview with Wade Fredenberg, Biologist, U.S. Fish & Wildlife Serv. (Nov. 23, 2004).

2. Canada Lynx and Critical Habitat Policy

Designating critical habitat for the lynx is a challenging endeavor due to a poor knowledge of lynx ecology in the United States, uncertain population status in many portions of the lynx range, and the inherent cyclic population dynamics of the species. This section analyzes the scientific validity of the positions taken by the FWS regarding critical habitat for lynx and whether, as was done in the bull trout designation, preexisting management plans can provide sufficient direction for effective lynx conservation.

a. FWS Position on Critical Habitat Designation for the Lynx

The 1998 proposed rule to list the lynx determined that critical habitat designation was imprudent based on: (1) increased likelihood of poaching with designation, (2) ephemeral nature of lynx habitat through time and space, (3) patchy nature of lynx habitat would include many unsuitable patches as critical habitat, and (4) no additional benefit would be obtained beyond that afforded by the jeopardy and adverse modification provisions mandated in section 7 consultations.¹⁷⁶ Because the frequent FWS claim of redundancy between section 7 and critical habitat designation is not specific to lynx and is discussed in detail elsewhere in the paper, this issue will not be examined further in this section. In the 2000 final listing rule, the FWS revoked the imprudent determination and concluded that critical habitat designation for the lynx was now prudent but deferred due to limited resources.¹⁷⁷ The change was validated by the acknowledgement that there were instances involving current and future unoccupied habitat where section 7 consultations would not be triggered.¹⁷⁸

It is conjectured that critical habitat designation would increase the illegal harvest of lynx. Critical habitat designation is often controversial, but the relative compatibility of the lynx with certain types of forest management likely reduces the controversy compared to old growth species such as the spotted owl. The possibility of an increased likelihood of

176. Proposal to List the Contiguous United States Distinct Population Segment of the Canada Lynx as a Threatened Species, 63 Fed. Reg. 36,994, 37,013 (July 8, 1998) (to be codified at 50 C.F.R. pt. 17).

177. See Determination of Threatened Status for the Contiguous U.S. Distinct Population Segment of the Canada Lynx and Related Rule, 65 Fed. Reg. 16,052, 16,083 (Mar. 24, 2000) (to be codified at 50 C.F.R. pt. 17).

178. *Id.*

illegal harvest coincident with critical habitat designation is possible, but perhaps overstated.

The successional conifer forest in which lynx concentrate foraging efforts is a dynamic resource created by natural (such as fire or wind throw) or anthropogenic (such as timber harvest) disturbances.¹⁷⁹ Although the lack of published research precludes a more complete understanding of the relationship between lynx and forest structure, lynx are known to forage for snowshoe hares in successional conifer forests throughout their range. Based on the current science, the FWS position that lynx foraging habitats are a temporally dynamic resource is strongly supported by the available data.¹⁸⁰

The fragmentation of high quality hare habitat may contribute to the attenuation of the snowshoe hare cycle in southern lynx populations.¹⁸¹ For example, it has been suggested that the snowshoe hare cycle has disappeared in Wisconsin due to the fragmentation of quality hare habitat.¹⁸² The patchy nature of high-density hare habitats in the United States may mean that southern hare populations may persist as metapopulations and are naturally less abundant and less cyclic than northern populations.¹⁸³ Based on this information, the FWS conclusion that critical habitat designation would over-represent the area actually used by lynx is supported in principle. A key caveat is that the matrix habitat between dense hare patches must not be of a nature that would have a negative impact on lynx survival. The area should remain forested and extensive or permanent human development should be avoided. Extensive modification of natural habitats could have a negative effect on the lynx even if a quality habitat was present.

179. See John F. Fox, *Forest Fires and the Snowshoe Hare-Canada Lynx Cycle*, 31 *OECOLOGIA* 349, 350 (1978); Gary M. Koehler & J. David Brittell, *Managing Spruce-Fir Habitat for Lynx and Snowshoe Hares*, 88 *J. FORESTRY* 10, 11–13 (1990); G.R. Parker, *Use of Spruce Plantations by Snowshoe Hare in New Brunswick*, 60 *FORESTRY CHRONICLE* 162, 164–66 (1984).

180. See Proposal to List the Contiguous United States Distinct Population Segment of the Canada Lynx as a Threatened Species, 63 *Fed. Reg.* at 16,082.

181. Hodges, *supra* note 123, at 163, 195.

182. See David A. Buehler & Lloyd B. Keith, *Snowshoe Hare Distribution and Habitat Use in Wisconsin*, 96 *CAN. FIELD NATURALIST* 19, 26–28 (1982); Keith, Bloomer & Willebrand, *supra* note 134, at 1391.

183. See Aaron J. Wirsing, Todd D. Steury & Dennis L. Murray, *A Demographic Analysis of a Southern Snowshoe Hare Population in a Fragmented Habitat: Evaluating the Refugium Model*, 80 *CAN. J. ZOOLOGY* 169, 174 (2002).

The ephemeral nature of successional habitat is the factor that led the FWS to rescind their imprudent determination in the 1998 proposed listing rule.¹⁸⁴ Given the ephemeral nature of the habitat occupied by lynx, it is imperative that current and future unoccupied areas are considered when developing management plans for lynx populations. The FWS has seemingly predicated at least a portion of the designation rationale for lynx on the need to adequately protect unoccupied habitat.

In conclusion, with the possible exception of increased illegal take, all of the reasons provided by the FWS in the proposed and final listing rules are supported by the biology of lynx in the United States. Due to the issues associated with unoccupied habitat, the “warranted but deferred” classification is preferred to the imprudent claim the FWS initially advanced in 1998.

b. Critical Habitat Proposal for the Canada Lynx

The proposed designation of critical habitat for the Canada lynx was published in November 2005.¹⁸⁵ Similar to the bull trout, the designation covered a large geographic area and several portions within the proposed designation boundary were excluded from designation due to preexisting management plans. Unlike the bull trout, the majority of the areas excluded from the lynx designation were federal lands where lynx conservation strategies developed in the LCAS were incorporated or will be incorporated into amendments to the Land and Resource Management Plans (LRMP) for National Forest System and BLM holdings. The proposed designation for lynx reflects the trend toward cooperative conservation that is central to current critical habitat controversies. Obviously, deferring management planning to preexisting management plans played a large role in the bull trout designation and resulting controversy. However, lynx presence on federal land permits conservation planning for the lynx to proceed under the LCAS, a detailed plan developed for federal lands from the best available scientific information on lynx ecology. Conversely,

184. See Determination of Threatened Status for the Contiguous U.S. Distinct Population Segment of the Canada Lynx and Related Rule, 65 Fed. Reg. 16,052, 16,083 (Mar. 24, 2000) (to be codified at 50 C.F.R. pt. 17).

185. Proposed Designation of Critical Habitat for the Contiguous United States Distinct Population Segment of the Canada Lynx, 70 Fed. Reg. 68,294 (Nov. 9, 2005) (to be codified at 50 C.F.R. pt. 17).

areas excluded from the bull trout critical habitat designation were composed of habitat conservation plans and other agreements between the FWS and tribal, state, and local governments. The presence of the overriding federal nexus and the LCAS, essentially an interim recovery plan, differentiate the lynx critical habitat designation from the more loosely connected multiple agency framework that characterized the controversial bull trout designation.

c. Preexisting Management Plans

i. The Role of Forest Plans in Guiding Lynx Conservation Activities

A considerable portion of the lynx range in the states of Washington, Montana, Colorado, and Minnesota is federally owned.¹⁸⁶ Maine is the only state currently supporting a breeding lynx population that does not have significant federal ownership.¹⁸⁷ As discussed above, updates or amendments will be made to incorporate direction for lynx conservation on the forest plans of USFS and BLM landholdings throughout the Northern Rockies and Minnesota. If management plans are to be substituted for critical habitat designation, it is imperative that suitable protections are in place to provide for a current and future supply of lynx and hare habitat.

The National Forest Management Act requires that national forests revise their forest plans at least every fifteen years.¹⁸⁸ Forest plans are designed to provide direction for all natural resources management activities on the national forest during the time that the plans are active. Management direction in the USFS is administered through a hierarchical framework. A forest plan provides guidance at the Forest-Wide, Landscape Ecosystem, and Management Area levels.¹⁸⁹ National and Regional Management consists of laws, regulations, and official USFS policy and is outside the scope of the forest plan. Although site-specific projects are evaluated to

186. See Proposed Designation of Critical Habitat for the Contiguous United States Distinct Population Segment of the Canada Lynx, 70 Fed. Reg. at 16,064.

187. See Proposal to List the Contiguous United States Distinct Population Segment of the Canada Lynx as a Threatened Species, 63 Fed. Reg. 36,994, 36,996 (July 8, 1998) (to be codified at 50 C.F.R. pt. 17).

188. See 36 C.F.R. § 219.10 (2005).

189. See *id.* § 219.2.

ensure compatibility with the direction of the forest plan, site-specific projects occur at a lower level than the forest. Consequently, guidance for specific projects is not provided in the forest plan.

Since the lynx does not have a recovery plan, the LCAS provides the direction for lynx conservation on federal lands in the contiguous United States. The guiding principles for the LCAS include: (1) use of the best available scientific information about lynx, (2) retention of future options in the face of uncertain knowledge of lynx ecology, (3) consideration of natural processes and patterns at multi-spatial scales, (4) consideration of the habitat needs of other species, particularly other forest carnivores, and (5) development of a proactive planning process to conserve lynx on federal lands.¹⁹⁰ Based on these scientifically sound principles, the specific conservation measures are implemented across two scales of decisionmaking. The larger scale consists of *programmatic plans* that provide broad direction for management goals and actions. Programmatic plans are implemented through lower-level *project plans* that design the specific activities that will affect on-the-ground habitat conservation efforts.¹⁹¹ The analysis units for project planning are Lynx Analysis Units (LAUs), an area typically based on previously delineated ecological units that approximates the size of a home range of an individual lynx.¹⁹² LAUs will likely contain patches of both high quality lynx habitat and non-lynx habitat; restrictions are placed to the extent that individual projects can modify the habitat within LAUs.¹⁹³

Because of its extensive ownership of forests in the lynx range, the USFS has recognized the crucial role it has in the conservation and recovery of lynx populations. As discussed above, the USFS has consistently tried to take a proactive approach to the listing of the lynx through the application of the best available science and cooperative interagency agreements. This is not an easy task given the dearth of peer-reviewed information, uncertain long-term population status in states currently supporting populations, and the cyclic nature of lynx abundance. Through its actions, the USFS has clearly

190. RUEDIGER ET AL., *supra* note 110, at 3.

191. *Id.* at 77.

192. *Id.*

193. *Id.*

demonstrated a commitment to the conservation of snowshoe hares, lynx, and their habitats on USFS ownerships. Unlike the bull trout where preexisting management direction used to exclude areas from critical habitat designation spanned multiple agencies, the lynx exists primarily on federal lands and can be managed through the LCAS. In this role, the LCAS functions similar to a recovery plan and management direction for lynx is centralized and supported by the best available science.

ii. Issues with the Use of Forest Plans to Conserve Canada Lynx

Despite the benefits of the LCAS, the hierarchical nature of USFS management direction could create situations where the conservation of lynx and their habitat is not afforded sufficient protection. For example, National and Regional Management Direction maintains hierarchical authority over the LRMP used to guide management direction on federal lands. The creation of laws or regulations with a negative impact on lynx and their habitat could override the programmatic planning that provides for lynx management in forest plans and the LCAS. One such law, the Healthy Forests Restoration Act (HFRA),¹⁹⁴ has the potential to negatively impact lynx.

In response to catastrophic wildfires in the western United States in 2000, President Clinton directed the Departments of the Interior and Agriculture to outline a plan to manage large fires and restore fire-dependent ecosystems.¹⁹⁵ The subsequent report became known as the National Fire Plan (NFP).¹⁹⁶ After another severe fire season in 2001, President Bush announced the Healthy Forests Initiative, which Congress enacted as the HFRA.¹⁹⁷ One of the goals of the HFRA is to increase the use of mechanical fuels treatments (for example, thinning of dense

194. Healthy Forests Restoration Act of 2003, Pub. L. No. 108-148, 117 Stat. 1887 (2003) (codified as amended at 16 U.S.C. §§6501-91).

195. Eric Huber, *Emerging Trends in Environmental Law: Celebrating the 25th Anniversary of Vermont Law School's Environmental Law Center: Article: Environmental Litigation and the Healthy Forest Initiative*, 29 VT. L. REV. 797, 797 (2005).

196. *Id.*

197. Joint Counterpart Endangered Species Act Section 7 Consultation Regulations, 68 Fed. Reg. 68,254, 68,254-55 (Dec. 8, 2003) (to be codified at 40 C.F.R. pt. 402).

understory vegetation) to reduce the risk of large wildfires in forests that have become overly fire-prone due to decades of fire suppression.¹⁹⁸ Given the relationship between lynx and hares and dense vegetation, this legislation may conflict with lynx conservation efforts. Precommercial thinning is one of the key risk factors that may affect lynx productivity on federal lands.¹⁹⁹

A primary concern associated with the HFRA for ESA-listed species is the adoption of alternative counterpart regulations that are intended to streamline section 7 consultations and facilitate forest restoration projects that carry out the goals of the NFP. The counterpart regulations eliminate informal consultation and the need to obtain written concurrence that a NFP action is “not likely to adversely affect” listed species or critical habitat.²⁰⁰ The counterpart regulations are available to five agencies—USFS, BLM, FWS, Bureau of Indian Affairs, and National Park Service—that constitute the action agencies charged with making “not likely to adversely affect” determinations.²⁰¹ The HFRA is a clear example of a situation where National Management Direction can potentially subvert the intentions of a forest plan and negatively impact lynx habitat.

3. Views on Critical Habitat from the Scientific Academy

Conservation science has always played a key role in guiding the implementation of the ESA, a role that has been generally supported by Congress.²⁰² The fundamental purpose of the ESA is “to provide a means whereby the ecosystems on which threatened and endangered species depend may be conserved.”²⁰³ This phrase clearly demonstrates that Congress viewed habitat conservation as the primary mechanism to protect imperiled species. This section summarizes the scientific community’s opinion of the critical habitat

198. *Id.*

199. RUEDIGER ET AL., *supra* note 110, at 20.

200. Joint Counterpart Endangered Species Act Section 7 Consultation Regulations, 68 Fed. Reg. at 68,258.

201. *Id.* at 68,624.

202. NATIONAL RESEARCH COUNCIL, SCIENCE AND THE ENDANGERED SPECIES ACT 11-12 (1995); Holly Doremus, *Listing Decisions Under the Endangered Species Act: Why Better Science Isn't Always Better Policy*, 75 WASH. UNIV. LAW REV. 1029, 1040 (1995).

203. 16 U.S.C. § 1531(b) (2000).

designation process.

a. History of the Habitat Concept

Habitat is a central concept in ecology. Prior to the 1950s and 1960s, ecology was mainly a descriptive science focused on species distribution and natural history. During this period, habitat was typically defined qualitatively and often focused on ways to increase the abundance of game species.²⁰⁴ However, during the late 1950s and 1960s, mathematics was increasingly incorporated into ecological research. Significant advances in the quantitative description of species-habitat relationships during this era of ecology included the development of species-area curves and the theory of island biogeography.²⁰⁵ The conceptual description of habitat as an n -dimensional niche is an additional example of how mathematics dramatically affected scientists' view of how organisms perceive and use their environment.²⁰⁶ Today, habitat analyses use demographic parameters, advanced statistical models, remote sensing, and GIS technology to describe the relationship between species and their habitats.²⁰⁷

The theoretical background of species-area curves has particular relevance to species conservation and the ESA.²⁰⁸ A simple and generalized pattern emerges from an analysis of species diversity and amount of available habitat: species diversity is positively related to habitat area.²⁰⁹ Consequently, species diversity will decline when habitat area is reduced and habitat loss will lead to species extinction.²¹⁰ Not only is the explicit terminology in the ESA that equates species protection

204. See generally ALDO LEOPOLD, *GAME MANAGEMENT* (1933); HERBERT STODDARD, *THE BOBWHITE QUAIL: ITS HABITS, PRESERVATION, AND INCREASE* (1931).

205. See generally ROBERT MACARTHUR & EDWARD WILSON, *THE THEORY OF ISLAND BIOGEOGRAPHY* (1967); C.B. WILLIAMS, *PATTERNS IN THE BALANCE OF NATURE* (1964).

206. See, e.g., G.E. Hutchinson, *Concluding Remarks*, 22 *COLD SPRING HARBOR SYMPOSIUM ON QUANTITATIVE BIOLOGY* 415 (1957).

207. David Garshelis, *Delusions in Habitat Evaluation: Measuring Use, Selection, and Importance*, in *RESEARCH TECHNIQUES IN ANIMAL ECOLOGY: CONTROVERSIES AND CONSEQUENCES* 111, 111 (Luigi Boitani & Todd Fuller eds., 2000); B.F. Manly et al., *RESOURCE SELECTION BY ANIMALS: STATISTICAL DESIGN AND ANALYSIS FOR FIELD STUDIES* (2002).

208. NATIONAL RESEARCH COUNCIL, *supra* note 202, at 72.

209. *Id.*; MACARTHUR & WILSON, *supra* note 205; M. ROSENZWEIG, *SPECIES DIVERSITY IN SPACE AND TIME* (1995).

210. NATIONAL RESEARCH COUNCIL, *supra* note 202, at 72.

with habitat protection scientifically justified and appropriate, it is rooted in some of the most fundamental concepts in the science of ecology. There is little disagreement that habitat conservation is the key component of effective species conservation.²¹¹

b. Critical Habitat Designation

Scientific organizations reviewing the role of science in the ESA have endorsed critical habitat designation as a valid and important component of species conservation.²¹² However, there is also general agreement within the scientific community that improvements to the current critical habitat designation process are needed. Numerous authors have suggested delaying the timing of critical habitat designation until the creation of a recovery plan.²¹³ As most endangered species are rare and research on their habitat requirements is lacking, the current requirement to designate critical habitat concurrently with listing creates an impractical deadline for the FWS.²¹⁴ At the same time, a serious flaw with deferment of critical habitat designation until recovery planning is the lack of an ability to provide for the immediate, emergency listing of species facing extinction. Scientific organizations view the potential for administrative delay in habitat protection as a critical gap in ESA policy.²¹⁵

The National Research Council (NRC) recommended that delays in habitat protection for listed species be avoided by designating *survival habitat* at the time of listing.²¹⁶ Survival habitat is defined as the habitat “necessary to support either current populations of a species or populations that are necessary to ensure short-term ([twenty-five to fifty] years)

211. *Id.*; Ronald Carroll et al., *Strengthening the Use of Science in Achieving the Goals of the Endangered Species Act: An Assessment by the Ecological Society of America*, 6 *ECOLOGICAL APPLICATIONS* 1, 7 (1996).

212. NATIONAL RESEARCH COUNCIL, *supra* note 202, at 73; Carroll et al., *supra* note 211, at 7.

213. *See e.g.*, NATIONAL RESEARCH COUNCIL, *supra* note 202, at 76; Carroll, et al., *supra* note 211, at 9; Jonathan Hoekstra et al., *A Critical Role for Critical Habitat in the Recovery Planning Process? Not Yet*, 12 *ECOLOGICAL APPLICATIONS* 701, 706 (2002); J.M. Patlis, *Paying Tribute to Joseph Heller with the Endangered Species Act: When Critical Habitat Isn't*, 20 *STAN. ENVTL. L.J.* 133, 206 (2001).

214. Patlis, *supra* note 213, at 206.

215. NATIONAL RESEARCH COUNCIL, *supra* note 202, at 76.

216. *Id.*

survival, whichever is larger".²¹⁷ Survival habitat designation would be concurrent with listing, but would be revoked upon the adoption of a recovery plan and designation of critical habitat.²¹⁸ Economic concerns would remain one of the factors considered in the designation of critical habitat; however, unlike critical habitat designation, the NRC believes economic concerns would not be considered when designating survival habitat.

Although often controversial in the political arena in which policy is created, the need to protect currently unoccupied habitat is also an important aspect of critical habitat designation.²¹⁹ Often the cause of endangerment for many species is a reduction in the historic range occupied by the species. Alternatively, dispersal may be negatively impacted in areas with extensive human development. Because the advent of landscape ecology has focused attention on the spatial dynamics of population structure, protection of unoccupied habitat is critical to the conservation of most endangered species.²²⁰

Spatially explicit population concepts such as metapopulations,²²¹ source-sink population dynamics,²²² and core-satellite population structure²²³ provide theoretical justification for the protection of unoccupied habitat.²²⁴ Essentially variations on a similar theme, these three concepts demonstrate that the demographic response of a species can vary based on the spatial distribution or temporal variability in resource availability in a habitat patch. Spatial distribution concerns focus on the area and isolation of a habitat patch. Patches that are too small or distributed too widely given the dispersal capability of the focal species can negatively affect population persistence. Likewise, temporal variability in

217. *Id.*

218. *Id.*

219. Carroll et al., *supra* note 211, at 7.

220. NATIONAL RESEARCH COUNCIL, *supra* note 202, at 100-01.

221. *See generally* HANSKI, *supra* note 162; Richard Levins, *Extinction*, 2 LECTURE NOTES MATH. 75 (1970).

222. *See generally* H. Ronald Pulliam & Brent Danielson, *Sources, Sinks, and Habitat Selection: A Landscape Perspective on Population Dynamics*, 137 AM. NATURALIST 50 (1991).

223. *See generally* Ilkka Hanski, *Dynamics of Regional Distribution: The Core and Satellite Species Hypothesis*, 38 OIKOS 210 (1981).

224. *See* Carroll et al., *supra* note 211, at 6-7; *see also* NATIONAL RESEARCH COUNCIL, *supra* note 202, at 98-102.

resource quality occurs because patches of vegetation are dynamic and continually changing to a different stage in their successional development. Many imperiled species are adapted to very specific vegetation associations that must be continually renewed through natural or anthropogenic disturbances. Because the demographic response of a population frequently depends on the spatial distribution and temporal variability of habitat patches, adequate planning and protection for current and future unoccupied habitat are crucial aspects of habitat conservation.

The Ecological Society of America suggests the use of a population viability analysis (PVA) to address quantitative issues involved with the designation of critical habitat.²²⁵ The goal of a PVA is to develop a predictive measure of the relationship between the size of a population and its probability of extinction over a specified period of time.²²⁶ Although criteria for determining how much of the population should persist through time should be species-specific, a minimum viable population is generically defined as a population that has a ninety percent probability of surviving for 200 years.²²⁷ Incorporating the spatially explicit population concepts discussed above into a PVA creates more accurate predictions of population trajectories.²²⁸

c. Methods to Improve Habitat Selection Analysis

Obviously, a detailed understanding of the habitat needs of a listed species assists critical habitat designation. Unfortunately, the rarity of listed species often precludes intensive studies of habitat selection. Surveys of species presence often must substitute for a complete habitat selection analysis. If possible, research designed to delineate the habitat requirements of an endangered species should be conducted. However, because the results will carry considerable weight in the critical habitat designation process, it is imperative that habitat selection studies conducted on the listed species are performed and analyzed properly. Two critical components to an effective analysis of habitat selection are: (1) an

225. Carroll et al., *supra* note 211, at 6.

226. *Id.*; Gary White, *Population Viability Analysis: Data Requirements and Essential Analyses*, in RESEARCH TECHNIQUES IN ANIMAL ECOLOGY, *supra* note 207, at 288.

227. Carroll et al., *supra* note 211, at 6.

228. *Id.*; see also NATIONAL RESEARCH COUNCIL, *supra* note 202, at 103-05.

understanding of how spatial scale affects the results and (2) that some measure of species fitness, such as behavior or demographic response, is included in analyses of habitat selection.

A consideration of spatial scale is crucial to effective habitat selection analyses. It has been suggested that scale is the fundamental conceptual problem in ecology, perhaps even in all science.²²⁹ A hierarchical methodology is needed because the criteria for selection of distinct habitat elements by an organism may be unique to the spatial scale of analysis.²³⁰ Douglas Johnson defined four orders of habitat selection based upon distinct spatial scales that can be used to delineate habitat selection in territorial species.²³¹ First-order selection occurs on the largest scale and represents the geographic range selected by a species.²³² Second-order selection represents the selection of a defended territory from the range of habitats available on a regional scale.²³³ Third-order selection is the selection of specific patches within the territory.²³⁴ Finally, fourth-order selection occurs on the finest scale and represents the selection of an individual prey or food item.²³⁵ Numerous studies have used either this format²³⁶ or a similar multi-scale approach to characterize habitat selection in vertebrates.²³⁷ Explicitly defining the spatial scale of analysis and investigating habitat relationships across multiple scales lead to more accurate habitat analyses that are better able to inform management planning.

Without a thorough understanding of the behavioral decisions or demographic responses that produce the preference

229. See Simon Levin, *The Problem of Pattern and Scale in Ecology*, 73 *ECOLOGY* 1943, 1943 (1992).

230. See Douglas H. Johnson, *The Comparison of Usage and Availability Measurements for Evaluating Resource Preference*, 61 *ECOLOGY* 65, 65 (1980); Gordon Orians & James Wittenberger, *Spatial and Temporal Scales in Habitat Selection*, 137 *AM. NATURALIST* 29, 30 (1991).

231. Johnson, *supra* note 230, at 69.

232. *Id.*

233. *Id.*

234. *Id.*

235. *Id.*

236. *Id.*

237. *E.g.*, McKelvey et al., *supra* note 127, at 307; Dale Miquelle et al., *Hierarchical Spatial Analysis of Amur Tiger Relationships to Habitat and Prey*, in *RIDING THE TIGER: TIGER CONSERVATION IN HUMAN-DOMINATED LANDSCAPES* 71 (John Seidensticker et al. eds., 1999).

for a specific vegetation association, it may be difficult to know which habitats are essential for survival and persistence. The relative abundance of a species in a certain habitat type does not necessarily correlate with habitat quality.²³⁸ For example, although their demographic trend is negative, sink habitats often contain a higher density of individuals than source habitats with positive demographic trends.²³⁹ Recent reviews have criticized habitat analyses that simply correlate vegetation types with animal locations.²⁴⁰ The theme of both reviews is the need to incorporate the fitness of the species, either through demographic parameters or an investigation of the critical resources or mechanisms that impact fitness, into analyses of habitat selection.²⁴¹ Specific behaviors, such as the acquisition of food items, can serve as an indicator of fitness. Habitat studies that directly relate the fitness of the species to the choice of habitat facilitate a much greater understanding of the biological processes that affect the abundance and distribution of a species.

B. ANALYZING ECONOMIC IMPACTS

Section 4(b)(2) of the ESA requires the Secretary to take into consideration the economic impacts of specifying any particular area as critical habitat. Given FWS's policy that designation has no significant impact beyond those attributable to listing, it is not surprising that until recently economic analyses involved no more than back-of-the-envelope calculations of costs.²⁴² Most regulatory costs, including those associated with listing, fell below the baseline and could be ignored. However, the *New Mexico Cattle Growers* decision sparked a trend toward increasing quantification and monetization of costs, and occasionally of benefits.²⁴³

238. B. Van Horne, *Population Density as a Misleading Indicator of Habitat Quality*, 47 J. WILDLIFE MGMT. 893, 893 (1983).

239. Pulliam & Danielson, *supra* note 222, at 50; see NATIONAL RESEARCH COUNCIL, *supra* note 202, at 98-99.

240. See, e.g., Garshelis, *supra* note 207, at 111-64; Michael Morrison, *A Proposed Research Emphasis to Overcome the Limits of Wildlife-Habitat Relationship Studies*, 65 J. WILDLIFE MGMT. 613, 613 (2001).

241. See, e.g., Garshelis, *supra* note 207, at 139-43; Morrison, *supra* note 240, at 613.

242. See Sinden, *supra* note 64.

243. See *id.* at 175; see also PETER UIMONEN & JOHN KOSTYACK, NAT'L WILDLIFE FED'N, UNSOUND ECONOMICS: THE BUSH ADMINISTRATION'S NEW STRATEGY FOR UNDERMINING THE ENDANGERED SPECIES ACT 10, fig.2 (2004).

This section looks at two viewpoints regarding the recent trend: the first urging FWS to resist it and take guidance from what Congress originally intended when it introduced economic impact analysis into the ESA critical habitat decisionmaking process in 1978, and the second acknowledging that the need for monetary cost-benefit analysis may already have become an article of faith in the twenty-first century regulatory world, and that a fairer balancing of *all* the economic impacts of preserving species' habitats can only be achieved through development of short-cut methods for monetizing the benefits. There are good arguments for both perspectives; either approach would be preferable to requiring fully monetized cost-benefit analyses in critical habitat designations.

1. Qualitative Balancing of Costs and Benefits

The case against attempting to monetize costs and benefits in economic impact analyses is based on two claims: (1) Congress in the 1970s was generally skeptical about attempts to monetize the costs and benefits of environmental regulations, and (2) monetizing is still a bad idea today for several (essentially timeless) reasons. Amy Sinden has recently used the historical argument to break out of what she calls the current "dichotomized pattern of thought" that treats formal cost-benefit analysis as the only alternative to an absolutist approach to conserving endangered species and their habitats.²⁴⁴ She argues that Congress routinely used "short-cut" environmental standards for regulating pollution in lieu of formal economic cost-benefit analyses.²⁴⁵ For example, feasibility standards ignored the benefit side of cost-benefit analysis and simply pegged emissions to the lowest level technologically and economically feasible, assuming that whatever health benefits resulted would be worth the cost.²⁴⁶ National uniform emission standards, such as the National Ambient Air Quality Standards in the Clean Air Act Amendments of 1970,²⁴⁷ were another example of a short-cut standard. Despite the economic inefficiencies due to local and regional variations in air quality, Congress opted for national uniform standards because they were easier to administer than

244. Sinden, *supra* note 64, at 184.

245. *Id.* at 184-85.

246. *Id.* at 186.

247. Clean Air Act Amendments of 1970, Pub. L. No. 91-604, 84 Stat. 1676, 1676-1713 (1970).

a more tailored set of regulations.

Sinden argues that the legislative history of the 1978 amendments to the ESA, which introduced economic balancing into critical habitat designation, is consistent with Congress's general skepticism toward cost-benefit analysis.²⁴⁸ First, Congress viewed the value of species preservation as unquantifiable.²⁴⁹ Congress's skepticism about our ability to quantify the value of endangered species went beyond the view that we simply lacked the knowledge to quantify the value. Sinden argues that Congress's view ultimately was based on a belief that there would always remain certain aspects of value—such as aesthetic or spiritual values—that were incommensurable with economic values.²⁵⁰ The second important point revealed by the legislative history is that by introducing economic balancing into the critical habitat designation process, Congress primarily intended to give some flexibility to the ESA. The primary goal was to set up a discretionary procedure for exemption from section 7 consultation requirements as an alternative to the formal procedure involving the Endangered Species Committee (the so-called “God Squad”) established under the 1978 amendments as a result of the Tellico Dam controversy.²⁵¹

The second part of Sinden's argument is that Congress in 1978 got it right. She suggests three grounds for rejecting cost-benefit analysis within the context of critical habitat designation: (1) the value of species preservation is incommensurable with economic values, (2) attempts at monetizing the benefits of a particular critical habitat designation yield estimates characterized by so much uncertainty that any meaningful comparison of costs and benefits is precluded, and (3) cost-benefit analysis corrupts the democratic process by shifting the focus from a debate about values, in which everyone may participate, to a technical calculus understood only by experts.²⁵² A few words about each of these points are in order.

248. Sinden, *supra* note 64, at 192.

249. H.R. REP. NO. 95-1625 (1978) (Conf. Rep.), *reprinted in* A LEGISLATIVE HISTORY OF THE ENDANGERED SPECIES ACT OF 1973, AS AMENDED 1976, 1977, 1978, 1979, AND 1980, at 1211 (1982).

250. Sinden, *supra* note 64, at 192.

251. See 16 U.S.C. § 1536(e)-(p) (2000).

252. Sinden, *supra* note 64, at 200-08.

a. Incommensurability

Cass Sunstein proposes the following definition of incommensurability within the legal context: "Incommensurability occurs when the relevant goods cannot be aligned along a single metric without doing violence to our considered judgments about how these goods are best characterized."²⁵³ Even though Sunstein generally advocates the use of formal cost-benefit analysis in regulatory decisionmaking, he makes an exception for endangered species.²⁵⁴ Cost-benefit analyses are inappropriate where society is concerned about preventing an irretrievable loss, as occurs with the extinction of species.²⁵⁵ How, for instance, can one place a monetary value on the existence of the lynx or the bull trout? Calling a species priceless is not to say, as the Supreme Court seemed to in *Tennessee Valley Authority*,²⁵⁶ that the monetary value of its existence exceeds all the social costs of preserving it. Rather, calling the existence of a species priceless indicates that we value its existence *in a different way* than we value, say, the land where the species lives.²⁵⁷ We may measure the value of the land in terms of opportunity costs. However, to try to impose this metric on a species does violence to our considered judgments about how the value of the lynx or the bull trout is best characterized. We feel that it is an inappropriate way of looking at the world, in part because viewing the world in those terms could lead us to places where ultimately we would prefer not to go.

It is important to note one thing about the incommensurability claim. Saying that the value of a species is incommensurable with the value of economic goods does not imply that the two kinds of goods cannot be compared. Incommensurability does not mean incomparability. In our

253. Cass R. Sunstein, *Incommensurability and Valuation in Law*, 92 MICH. L. REV. 779, 796 (1994).

254. See CASS R. SUNSTEIN, *THE COST-BENEFIT STATE* 68 (2002). Not everyone makes such an exception for endangered species. See, e.g., Barton H. Thompson, *People or Prairie Chickens: The Uncertain Search for Optimal Biodiversity*, 51 STAN. L. REV. 1127 (1999).

255. SUNSTEIN, *supra* note 254, at 37.

256. 437 U.S. 153, 184 (1978) ("The plain intent of Congress in enacting this statute was to halt and reverse the trend toward species extinction, whatever the cost.").

257. See, e.g., ELIZABETH ANDERSON, *VALUE IN ETHICS AND ECONOMICS* (1993); Frank Ackerman & Lisa Heinzerling, *Pricing the Priceless: Cost-Benefit Analysis of Environmental Protection*, 150 U. PA. L. REV. 1553 (2002).

daily lives, we routinely make such apples-to-oranges comparisons. Rational choices can be made between incommensurable goods even though they cannot be aligned along a single metric. Although the values associated with two courses of action may be incommensurable, the choice of one option over the other may be rationally motivated by certain expressive considerations.²⁵⁸ For example, a person choosing between two radically different career paths may perceive that one option makes more narrative sense of her life.²⁵⁹ Radical incommensurability would rule out the possibility of rational choice between incommensurable goods because there is no rational decisionmaking process by which one could choose between them. Much of the rhetoric one hears in current controversies over endangered species suggests that what is at stake is a choice between such radically incommensurable goods. Society must choose, for example, between preserving a species and its habitat or developing the land and sacrificing the species. However, most of the time in our daily lives such radical incommensurability is not present.²⁶⁰ Both individuals and societies make rational choices between incommensurable goods, for example, between preserving a habitat and developing it. How we make the choice in each case reveals how we view the connection between a particular choice and what makes a good life or a good society. Critical habitat designations frequently offer opportunities for such kinds of rational choice between incommensurable goods.

b. Indeterminacy

Even if it were desirable to treat species conservation and economic goods on a single metric, there would still be the objection that monetization presents intractable technical problems. These problems are particularly great when it comes to estimating the benefits of critical habitat. Some of the main sources of indeterminacy are considered below.

i. Estimating Costs

Estimating costs in economic analyses essentially involves

258. ANDERSON, *supra* note 257, at 17-43.

259. Sunstein, *supra* note 253, at 809. Elizabeth Anderson developed this idea on a philosophical level in her expressive theory of rational action. See ANDERSON, *supra* note 257, at 17-43. Sunstein explores the applications of Anderson's expressive theory within the field of law.

260. See Sunstein, *supra* note 253, at 811.

predicting the future economic activity, usually ten years in advance.²⁶¹ Each step along the way requires using default assumptions that may embody important value choices that do not appear in the calculations. It has long been recognized that there is danger in taking the numbers produced by the calculations at face value. The standard responses are to acknowledge the underlying values and also to incorporate a range of values in numerical estimates of costs.²⁶² Neither is satisfying.

Hedging numbers with qualifying phrases does little to diminish the impression that the number cranked out by the technical calculus reflects an accurate, objective estimate. Moreover, numbers have a way of escaping the context of careful qualification and taking on a life of their own. FWS's practice of comparing quantitative estimates of the costs of designating critical habitat with qualitative estimates of habitat benefits ignores this inherent mismatch. Furthermore, it does not help to incorporate a range of values in the default assumptions, which results in a range of cost estimates. To make sense of the numbers one needs to dig beneath them to find the associated underlying values. At that point the numbers become secondary, and disputes over the specific costs of a critical habitat designation should yield to a more open, democratic debate about the real values at stake.²⁶³

ii. Estimating Benefits

There is uncertainty enough in estimating costs, for which a relative abundance of market data exists. When it comes to monetizing benefits, the economic analyst must wade into a sea

261. The Office of Management and Budget (OMB) Circular A-4, which gives guidance to federal agencies in developing regulatory analyses, advises that the timeframe should cover all the important benefits and costs likely to result from the rule. U.S. OFFICE OF MGMT. & BUDGET, CIRCULAR A-4 (September 17, 2003) [hereinafter OMB CIRCULAR A-4]. Ten years was the timeframe used in the bull trout economic analysis. Although obviously the choice of ten years is arbitrary, the bull trout analysis justified the choice of ten years on the grounds that "it is difficult to predict not only the number of projects, but the cost impacts associated with those projects, beyond a ten-year window. Consequently, any attempt to extend the economic analysis beyond the ten-year time window would be speculative." BIOECONOMICS, INC., FINAL ECONOMIC ANALYSIS OF CRITICAL HABITAT DESIGNATION FOR THE BULL TROUT 1-15 (Sept. 2004).

262. See Lisa Heinzerling, *Regulatory Costs of Mythic Proportions*, 107 YALE L.J. 1981, 2064-68 (1998).

263. *Id.* at 2068.

of indeterminacy.²⁶⁴ In general, a portion of the total economic value of an environmental good comes from its *use value*, the value derived from consumption of the good.²⁶⁵ Often, market data can be used to estimate these use values. For example, in the case of the bull trout, data from the sport fishing industry was used to estimate the direct use benefits of the bull trout, with estimates ranging from about two to six million dollars annually.²⁶⁶ However, the larger portion of the total economic value of most environmental goods comes from their *nonuse value*, which is a much more controversial aspect of value.²⁶⁷ Nonuse value is the value individuals associate with a particular good, even though they have no plans to consume or use it, presently or in the future.²⁶⁸ One common type of nonuse value is *existence value*, the value one places on knowing something exists; for example, knowing that the bull trout swim in the streams of the Pacific Northwest, even though one has no plans to travel there to fish for them.

The difficulty with estimating existence values is that the class of methods used, called *stated preference methods*, relies entirely on hypothetical data obtained from surveys designed to elicit respondents' willingness-to-pay for a particular good. One type of survey, the *contingent valuation* (CV) study, is widely used for valuation of environmental goods in cost-benefit analyses.²⁶⁹ However, good CV surveys are difficult and expensive to design and implement,²⁷⁰ and the method is highly controversial.²⁷¹ In the bull trout analysis, the results from thirteen CV studies were used to estimate an average one-time

264. See Thomas O. McGarity, *Regulatory Analysis and Regulatory Reform*, 65 TEX. L. REV. 1243, 1279, 1290 (1987) (noting that "the analytical difficulties that plague cost and economic impact assessments pale by comparison to the problems of objectively analyzing the benefits of many regulations. . . . Inadequate data, inaccurate models, and the infirmities of quantitative analysis leave regulatory analysts awash in a sea of uncertainties.").

265. See CHARLES D. KOLSTAD, ENVIRONMENTAL ECONOMICS, 295 (2000). *Consumption* is intended in a general sense of appropriating for one's own use and enjoyment, as in fishing for the bull trout.

266. See UIMONEN & KOSTYACK, *supra* note 243, at 30.

267. KOLSTAD, *supra* note 265, at 296.

268. OMB CIRCULAR A-4, *supra* note 261, at 22.

269. KOLSTAD, *supra* note 265, at 356.

270. OMB Circular A-4 contains a long list of principles governing the design, implementation, and evaluation of a stated-preference study. See OMB CIRCULAR A-4, *supra* note 261, at 23; KOLSTAD, *supra* note 265, at 363-64 (discussing some of the problems with contingent valuation).

271. KOLSTAD, *supra* note 265, at 364.

willingness-to-pay for the conservation of various threatened or endangered fish species of twenty to forty-three dollars per person.²⁷² The uncertainty reflected in the range of existence values could render the estimate of total benefits of bull trout conservation meaningless if the cost estimates fell somewhere within that range.

In addition to the uncertainties associated with estimation of existence values, another source of uncertainty comes from estimation of the ancillary benefits of critical habitat protection, in particular from valuation of ecosystem services.²⁷³ There are several challenges to incorporating the benefits of ecosystem services into regulatory decisionmaking.²⁷⁴ On a basic level, ecologists lack sufficient scientific knowledge to identify these services on a local scale. Lack of reliable models makes it difficult to predict how changes in activity in the vicinity of a proposed critical habitat would affect its ecosystem services.²⁷⁵ Moreover, even if our scientific understanding were more adequate, monetizing these services with current non-market valuation techniques remains problematic. Finally, even if ecologists understood what was happening in local ecosystems and ecological economists were able to place a dollar amount on current ecosystem services, an adequate cost-benefit analysis would also require monetizing the future stream of these services.²⁷⁶ Each of these problems makes the attempt to place a dollar figure on the benefits associated with a particular habitat designation susceptible to numerous pitfalls. All of this uncertainty adds up to a lot of fuzzy math when it comes to monetizing the benefits of protecting critical habitat. Even if the valuation methods yielded reliable numbers, there would still be good reason not to use cost-benefit analysis in the critical habitat designation process: it could have insidious effects on democratic processes of decisionmaking.

272. No attempt was made to extrapolate the result to the bull trout through a controversial technique called *benefit transfer*.

273. The seminal work on ecosystem services is NATURE'S SERVICES: SOCIETAL DEPENDENCE ON NATURAL ECOSYSTEMS (Gretchen Daily ed., 1997). See also James Salzman, *Valuing Ecosystem Services*, 24 *ECOLOGY L.Q.* 887 (1997) (discussing the significance of *Nature's Services* for environmental law and policy).

274. See Salzman, *supra* note 273, at 894-98.

275. *Id.* at 894-95.

276. *Id.* at 896-97.

c. Corruption of Democratic Decisionmaking

The trend toward greater use of fully quantified cost-benefit analyses could prompt courts to take a harder look at how particular exclusions of proposed habitat are justified on economic grounds. Fearing that courts might remand the final rules, FWS would have incentives to engage in an “economics charade,” somewhat similar to the “science charade” that Wendy Wagner identified in toxic risk regulation.²⁷⁷ The losing side in a battle over a particular critical habitat designation would likely believe that a “more accurate” economic balancing would have tilted the results in its favor. Clever economists who could persuade courts that FWS’s decision was economically flawed would find their services in demand. To some extent, the critical habitat decisionmaking process could become a contest to see who could hire more or better experts. The result could be that ordinary citizens, who might otherwise feel themselves qualified to participate in a debate over a particular critical habitat designation if it were cast in ordinary terms of qualitative values, would feel left out of the process.

For all of the reasons above—incommensurability, indeterminacy, and the corrupting effect of technocratic discourse on the democratic process—many have argued that it would make more sense for FWS to eschew formalized cost-benefit analysis in critical habitat designation. Instead of playing the numbers game, perhaps the agency should take a short-cut approach to the economic analysis and, as Sinden suggests, simply describe the costs and benefits of a particular designation in qualitative terms. The question is: how practical is such advice in the early twenty-first century? Cass Sunstein has declared a general victory for the bean counters in the first round debate over the desirability of cost-benefit analysis.²⁷⁸ In the second round, the battle has shifted to the question of how, not whether, to engage in cost-benefit analysis. If it is true that we live in a cost-benefit world, those concerned for the conservation of species and their habitat might be well-advised to come up with ways of estimating the benefits of conservation in monetary terms.

277. See Wendy E. Wagner, *The Science Charade in Toxic Risk Regulation*, 95 COLUM. L. REV. 1613 (1995).

278. Cass R. Sunstein, *Cost-Benefit Default Principles*, 88 MICH. L. REV. 1651 (2001). For Sunstein, an indicator of victory for the proponents of cost-benefit analysis was President Clinton’s endorsement of cost-benefit balancing via Executive Order.

2. Monetizing Benefits and Costs

Methods for generating benefits estimates at relatively low cost have long been available in the economics literature. The so-called “benefits transfer” methods—colloquially described as “numbers on the cheap”—may offer a middle course between the path down which FWS may be trending and the minimalist approach advocated by Sinden. The Conservation Economics Program at Defenders of Wildlife (Defenders) has recently developed a model for analyzing the economic impacts of critical habitat designations using the Canada lynx designation as a case study.²⁷⁹ Because the lynx study required a wide range of valuation methods, Defenders views it as a methodological template that could be applied in analyzing the economic impacts of future designations for other listed species.²⁸⁰ They argue that FWS’s current practice of monetizing costs while describing benefits qualitatively is flawed, and that the lynx study provides a conceptually sound and feasible model for monetizing both costs and benefits. The following subsections look briefly at Defender’s method for estimating the benefits of the lynx critical habitat designation and their suggestions for reforming the way FWS analyzes economic impacts.

a. Numbers on the Cheap

In Defenders’s model, analysis of economic impacts begins with identifying the “base case scenario” for the proposed critical habitat area that describes the state of the world that would exist without designation.²⁸¹ Impacts are defined as all the changes in the base case scenario attributable to the designation. These include not just the effects experienced by

279. See DEFENDERS OF WILDLIFE, ECONOMIC IMPACT ASSESSMENT OF DESIGNATING CRITICAL HABITAT FOR THE LYNX (*LYNX CANADENSIS*) (June 21, 2004) [hereinafter ECONOMIC IMPACT ASSESSMENT], available at http://www.biodiversitypartners.org/econ/pub/LYNX%20STUDY_Feb_2005.pdf.

280. Defenders notes that the lynx also represents a special case because of the number of revised federal land management plans based on the Lynx Conservation Assessment Strategy which attempt to minimize the negative impacts on the species. Because the baseline level of protection afforded the lynx on federal lands is higher than for other listed species awaiting designation, the incremental costs and benefits attributable to critical habitat designation tend to be smaller for the lynx than for these other species. *Id.* at 6.

281. *Id.* at 12.

the regulated community, but the total effects experienced by society at large. Typically FWS has chosen a ten-year timeframe for the analysis. Such short timeframes may tend to inflate costs relative to benefits in critical habitat designations, because the time profiles of costs and benefits may differ. Defenders notes that many of the costs tend to be concentrated in the period shortly after designation and decrease over time as the economy adjusts to the immediate impacts, whereas designation may produce benefits far into the future.²⁸²

To generate quantitative estimates of the economic impacts of critical habitat designation, it is necessary to distinguish them from the impacts due to listing of the species. The marginal impact of designation is the difference between the base case scenario (which includes the impacts of listing) and the “with designation” scenario which includes only impacts that would not exist but for designation.²⁸³ The difference is reflected in the two substantive standards which afford protection to listed species under section 7 of the ESA: (1) the jeopardy standard which seeks to prevent activities that would jeopardize the continued existence of the species, and (2) the destruction or adverse modification standard which aims at the recovery and conservation of the species by protecting its habitat.²⁸⁴ Defenders notes that the latter standard would require consultation in at least two cases where the jeopardy standard would not apply. First, federal activities and activities with a federal nexus would be regulated in habitat not currently occupied by the species but potentially beneficial to its recovery.²⁸⁵ Such protections are particularly important in the case of migratory or wandering species such as the lynx and the bull trout. Second, in areas currently occupied by the species, the destruction or adverse modification standard provides a basis for reviewing activities that do not endanger the survival of a species but that do impair its chances of recovery.²⁸⁶ By focusing on recovery, the adverse modification standard would carry a lower burden of proof than the jeopardy standard.

Defenders views critical habitat designation for the lynx as having two main incremental benefits: (1) improved chances for

282. *Id.* at 13.

283. *Id.* at 14.

284. *Id.*

285. ECONOMIC IMPACT ASSESSMENT, *supra* note 279, at 16.

286. *Id.*

lynx recovery, and (2) increased amount of land preserved in an undeveloped or less developed state.²⁸⁷ Many of the specific benefits would be described as “nonuse” values, as distinct from the economic uses of the species.²⁸⁸ Generally, the preferred method for quantifying nonuse values is contingent valuation (CV), which is a type of constructed market.²⁸⁹ Contingent valuation approaches may be implemented through surveys designed to elicit how much people would be willing to pay for some environmental good, such as increase in the lynx population. From the survey responses, a willingness-to-pay function can be estimated.

One significant practical problem with CV surveys is the expense of generating the data.²⁹⁰ Defenders found that no willingness-to-pay estimate existed for the lynx or any other felid species.²⁹¹ Because obtaining primary data for generating quantitative estimates of willingness-to-pay for the benefits of lynx critical habitat designation through CV surveys would be too costly, the only way to produce estimates is through the economic method of benefits transfer. In general, the benefits transfer approach attempts to adapt existing value estimates generated from primary data in previous studies at other sites to the policy site where an estimate is desired but no primary data exist.²⁹² Obtaining valid estimates from the method requires careful attention to several conditions, such as the similarity of characteristics in the sites and the quality of the data from the previous studies.²⁹³

Defenders used two approaches to benefits transfer in arriving at willingness-to-pay estimates for each of two lynx critical habitat sites, in Montana and in Maine.²⁹⁴ These two

287. *Id.* at 19.

288. *See* KOLSTAD, *supra* note 265, at 295-96 (discussing the distinction between use and nonuse values).

289. *Id.* at 297-98.

290. *See* KOLSTAD, *supra* note 265, at 363-64 (discussing some of the theoretical problems with contingent valuation).

291. *See* ECONOMIC IMPACT ASSESSMENT, *supra* note 279, at 22.

292. *Id.*

293. The Office of Management and Budget guidance to federal agencies on the development of regulatory analysis notes that while benefits transfer methods provide a quick, low-cost approach for obtaining monetary values, the methods are often associated with potential biases and uncertainty. As a result, the technique should be a last-resort option and not used without justification. *See* OMB CIRCULAR A-4, *supra* note 261, at 24-26.

294. ECONOMIC IMPACT ASSESSMENT, *supra* note 279, at 270.

sites represented the extremes of federal and non-federal land ownership patterns in lynx critical habitat areas, with more than eighty percent of the land in the Montana site being federally owned contrasted with only one percent in Maine.²⁹⁵ To deal with uncertainties, Defenders developed for each site a low-impact and a high-impact scenario to capture the range of possible impacts.²⁹⁶ Also, two spatial scales were used, one examining impacts of the designation on the counties in the immediate area, the other considering all impacts across the United States.²⁹⁷ The results of the analysis showed that in seven of the eight scenarios (combining different spatial boundaries of analysis) and low- and high-impact scenarios, benefits of designation are expected to exceed the costs, in some cases by a wide margin.²⁹⁸ According to Defenders, the results showed that defensible benefits estimation for critical habitat designation is possible using standard economic methods, and that the expense and reliability of benefits estimates is comparable to that of cost estimates.²⁹⁹

b. Better Balanced Economic Analyses of Critical Habitat Designations

In the conclusion to its lynx study, Defenders noted that “[o]ne would be hard-pressed to imagine a time of higher urgency for balanced economic analysis than the one we find ourselves in today.”³⁰⁰ It suggested that the recent increase in unbalanced economic analyses focusing on costs has in part motivated recent congressional efforts to amend the critical habitat provisions of the ESA to make the obligation to designate essentially discretionary. From the Defenders’s perspective, the two main problems with FWS’s economic impact analyses are: (1) the use of definitions of “jeopardy” and “adverse modification” that are virtually synonymous, and (2) the omission of monetary estimates of benefits from critical habitat designations.³⁰¹

Defenders argued that “it is simply not possible to

295. *Id.* at 4, 270.

296. *Id.* at 270.

297. *Id.*

298. *Id.* Only the scenario involving a potentially high-impact to counties containing critical habitat areas in Maine entailed a net cost to designation.

299. *Id.*

300. ECONOMIC IMPACT ASSESSMENT, *supra* note 279, at 269.

301. *Id.* at 6-7.

meaningfully evaluate the impacts of designating critical habitat before first determining [the] potential regulatory impact of designation, which of course is currently impossible in the absence of a definition of ‘adverse modification.’”³⁰² It criticized FWS for ignoring the *Sierra Club* court’s decision invalidating the agency’s “adverse modification” definition. Without a revised “adverse modification” definition that clearly distinguishes it from the definition of “jeopardy,” it is impossible, as the *Cattle Growers* court ruled, to estimate the incremental costs of designation beyond the costs associated with listing. Defenders criticized FWS for seizing upon the *Cattle Growers* decision as an excuse to emphasize the estimated costs of critical habitat designation inflated by the costs of listing.³⁰³ From an economist’s perspective, it would be better to change the definition so as to permit a meaningful estimation of the true incremental costs of designation, which could then clearly be seen as modest.

The lynx study also undermined FWS’s claim that benefits estimations for critical habitat designations are not feasible given the agency’s budgetary constraints or that such estimates are plagued with too much uncertainty to be reliable. Defenders noted that “[o]ur analysis demonstrates that conceptually complete economic analyses are feasible if one accepts uncertainties in the benefits estimation comparable to those commonly accepted in the costs estimates of the FWS’s analyses of designation.”³⁰⁴ It is important that an economic impact analysis include monetary estimates of both benefits as well as costs. Providing information on costs without corresponding information of benefits does not promote informed public policy decisionmaking. To judge whether or not designating an area as critical habitat for the lynx is economically justifiable, costs must be subtracted from benefits.

It is important to note that Defenders is not arguing that cost-benefit analysis is the preferable approach to decisionmaking. The conclusion of the lynx study emphasized that economics is just one of the analytical tools that can be used to evaluate particular aspects of policy decisions.³⁰⁵ The reason is that economic methods are not value-free. They are

302. *Id.* at 8.

303. *Id.*

304. *Id.* at 4-5.

305. *Id.* at 271.

based on the premise that the best policy is the one that corresponds most closely to the economic definition of efficiency. Basing a policy decision solely on economic grounds would be to endorse efficiency as the primary goal of society. “In a democratic and just society, however, there exist a multitude of other, often competing, goals, and conflicts between these can only be resolved in a legitimate way through the political process.”³⁰⁶

C. OTHER RELEVANT IMPACTS

In addition to the economic impact of designating a particular area as critical habitat, section 4(b)(2) of the ESA authorizes the Secretary to consider “any other relevant impact.”³⁰⁷ FWS interprets the phrase as a delegation of extremely broad discretion.³⁰⁸ Ultimately the assertion of virtually unlimited discretion to exclude areas from critical habitat designations supports FWS’s policy objective of encouraging voluntary conservation partnerships, which the agency claims is thwarted by their prospective partners’ fears of increased federal regulation following designation. Recent critical habitat rules have attempted to buttress the agency’s assertion of discretionary authority with legal arguments. The following subsections look at FWS’s legal arguments and its effort to articulate a vision of where the ESA is headed in the future under the policy of cooperative conservation

1. FWS’s Broad Construction of “Other Relevant Impacts”

FWS argues that in crafting the ESA, Congress provided guidance for the Secretary’s exercise of discretion in making critical habitat decisions.³⁰⁹ The definition of critical habitat refers to specific areas within the area occupied by the species “which may require special management considerations or

306. *Id.*

307. 16 U.S.C. § 1533(b)(2) (2000 & Supp. III 2004).

308. *See, e.g.*, Designation of Critical Habitat for the Klamath River and Columbia River Populations of Bull Trout, 69 Fed. Reg. 59,996, 60,021 (Oct. 6, 2004) (to be codified at 50 C.F.R. pt. 17) (“In addition, the discretion that Congress anticipated would be exercised in section 4(b)(2) of the Act is extremely broad.”).

309. *See* Designation of Critical Habitat for the Klamath River and Columbia River Populations of Bull Trout, 69 Fed. Reg. 59,996, 60,020 (Oct. 6, 2004) (to be codified at 50 C.F.R. pt. 17).

protection.”³¹⁰ Areas outside of the area occupied by the species at the time of listing may be included in critical habitat designations upon a determination by the Secretary that they are essential for the conservation of the species.³¹¹ Critical habitat could not encompass the entire geographical area which can be occupied by the listed species “[e]xcept in those circumstances determined by the Secretary.”³¹² According to FWS, these provisions authorize the Secretary’s exercise of discretion in determining: (1) whether special management protections may be required, (2) whether unoccupied habitat is essential for conservation of the species, and (3) the extent to which the entire area that can be occupied by the species should be included in critical habitat.³¹³ These sources of discretionary authority, combined with section 4(b)(2) of the Act, which allows the Secretary to exclude any area because of economic and other relevant impacts, give the Secretary plenary powers to exclude any and all areas from a critical habitat designation.

FWS attempts to buttress its claim with a section 4 analysis of the requirements for listing determinations. The agency claimed to be mindful of congressional intent with respect to listing as it designated critical habitat. Among the factors listed in section 4(a)(1) for making listing determinations is “the inadequacy of existing regulatory mechanisms.”³¹⁴ Further, section 4(b)(1) required the Secretary to consider efforts made by any state or its political subdivisions to protect species and their habitat when making listing determinations. FWS argued that sections 4(a)(1) and 4(b)(1), read together, required the agency to consider the conservation efforts of states, federal agencies, tribal governments, businesses, organizations, or individuals that positively affect the species’ status.³¹⁵ FWS stressed that while its section 4 analysis was relevant to the exercise of discretion in critical habitat designation, it in no way limited the

310. 16 U.S.C. § 1532(5)(A)(i) (2000).

311. 16 U.S.C. § 1532(5)(A)(ii).

312. 16 U.S.C. § 1532(5)(C).

313. Designation of Critical Habitat for the Klamath River and Columbia River Populations of Bull Trout, 69 Fed. Reg. at 60,021.

314. 16 U.S.C. § 1533(a)(1)(D) (2000).

315. Designation of Critical Habitat for the Klamath River and Columbia River Populations of Bull Trout, 69 Fed. Reg. at 60,021.

Secretary's discretion.³¹⁶

2. FWS's Vision of Cooperative Conservation

One of the clearest accounts of FWS's position on critical habitat can be found in a recent address to the Duke University Law School by Assistant Secretary of the Interior Craig Manson.³¹⁷ Manson used the occasion to reflect on the last thirty years of the Endangered Species Act, its successes and failures, and where it could be improved. Manson did not foresee any significant legislative changes to the ESA in the near future.³¹⁸ Instead, he emphasized that the focus of efforts to reform the Act should be on recovery and the conservation of habitat.³¹⁹ Recovery represents a measure of how many species one makes well; conservation of habitat is important because that is how one prevents a species from getting sick in the first place.³²⁰ The issue was how to achieve both goals.³²¹

A vocal critic of the critical habitat provisions of the ESA, Manson rejected the suggestion that he or the Bush Administration did not recognize the important role that habitat plays in the conservation of species: "We certainly recognize Conservation Biology 101—that you need to conserve species and to recover species."³²² In the remainder of the address, he set forth his basic objections to the critical habitat provisions and what needed to be done to achieve the recovery goals of the ESA.

First, he pointed out that FWS has had a longstanding objection to critical habitat because designation provides minimal conservation benefit beyond what is afforded by listing of the species.³²³ Listing benefits a species primarily through section 9's prohibitions on take and section 7's consultation requirements for projects with a federal nexus.³²⁴ Such projects had to be accomplished in a way that avoided jeopardizing the

316. *Id.*

317. Craig Manson, *The Collaborative Future of the Endangered Species Act: An Address to the Duke University School of Law*, 14 DUKE ENVTL. L. & POL'Y F. 291 (2004).

318. *Id.* at 292.

319. *Id.* at 292-93.

320. *Id.* at 293.

321. *Id.*

322. *Id.*

323. Manson, *supra* note 317, at 293.

324. *Id.*

continued existence of the species or adversely modifying its critical habitat.³²⁵ When one added critical habitat's consultation benefits "on top" of these other protections, there was not much more to be gained.³²⁶ Indeed, designation hindered FWS because the process of preparing the maps required significant agency resources.³²⁷

Another negative effect of designating critical habitat was that it created a certain social and economic "dislocation."³²⁸ Lost in the disputes over the costs of a particular designation was the point that the *perception* of these costs generated a lot of social controversy that might be avoided—and should be avoided if the marginal conservation benefits of designation were so small.³²⁹ Manson compared the critical habitat provisions of the ESA to eating a chicken wing; there was just not much meat to either.³³⁰ In contrast, private habitat conservation plans under section 10 offered a more effective way to conserve habitat and aid the recovery of species.³³¹

One issue that Manson believed ought to be addressed was the timing of designations.³³² FWS biologists commonly said that at the time of listing, they simply did not know enough about the needs of the species to say what habitat is critical.³³³ When biologists were forced by courts to produce proposed critical habitat rules before the scientific knowledge is adequate, the resulting designations were often overbroad or underinclusive. Manson endorsed the 1999 Senate bill³³⁴ to move the critical habitat provisions to the recovery phase of the ESA.³³⁵ Such a move would assist in generating the data needed for recovery. Manson believed that it was important to distinguish between the legal and administrative effects of designation and the real conservation benefits derived from instruments such as habitat conservation plans.³³⁶

325. *Id.*

326. *Id.*

327. *Id.*

328. *Id.* at 294.

329. Manson, *supra* note 317, at 294.

330. *Id.*

331. *Id.*

332. *Id.*

333. *Id.*

334. S. 1100, 106th Cong. (1999).

335. Manson, *supra* note 317, at 294. Manson stated "[t]here was a proposal to that effect in Congress a few years ago, but it got nowhere." *Id.*

336. *Id.* at 294-95.

The pervading theme in Manson's address was what he called the need for greater "cooperative conservation" between agencies and landowners.³³⁷ Developing such conservation partnerships was particularly important because the majority of endangered species exist on private land.³³⁸ Their habitats would not be reached by section 7 consultations unless the activities of the landowner had a federal nexus. One of the great issues of the ESA in Manson's view was how to get private landowners to participate in efforts to conserve, restore, and enhance habitat so that species never get pushed to the point where they become endangered.³³⁹ Landowners should have an incentive to preserve species because if they permitted the species to reach that point, listing would trigger the ESA's section 7 and section 9 sanctions.³⁴⁰ In reality, however, fear of these regulatory burdens commonly lead landowners to try to get rid of the species and its habitat.³⁴¹ Manson noted that it was a challenge to discourage such practices counterproductive to conservation.³⁴² The solution was to find ways to give private landowners the means and reasons to participate in habitat conservation, restoration, and enhancement.³⁴³

The Department of the Interior has a number of programs designed to achieve these goals. Landowner incentives provide direct grants to private landowners to create, restore, enhance, and protect habitat on their lands.³⁴⁴ Just as important from Manson's perspective was building what he called an "ethos of cooperative conservation" between agencies and landowners.³⁴⁵ In one program called "Walk a Mile in My Shoes," biologists and ranchers swap jobs for a day.³⁴⁶ Manson noted:

You would be surprised by the difference it makes when someone sees something from someone else's point of view. Not that either is going to abandon their core beliefs or change their job permanently, but they come away with a better understanding of the constraints that

337. *Id.* at 296.

338. *Id.* at 295.

339. *Id.*

340. *Id.*

341. Manson noted that there were empirical studies documenting the negative effects of fears of ESA regulations. Manson, *supra* note 317, at 295.

342. *Id.*

343. *Id.*

344. *Id.* at 296.

345. *Id.*

346. *Id.*

each has to work with and work within.³⁴⁷

The important point of the exercise is that it helps to build respect and reinforces the notion that when it comes to conservation, we are all in the business together.

Manson confronted the criticism, frequently voiced by environmentalists, that programs such as “cooperative conservation” amount to “giving away the store” because no one will enforce the law and make people do what they are supposed to do.³⁴⁸ He rejected such arguments, noting that the law will always be there, and it will always be enforced.³⁴⁹ The more important issue was how to achieve the *goals* of the law: “How do you engage the people whose support of the law is essential to accomplish the goals that the law is there to support? That is really the issue when it comes to cooperative conservation.”³⁵⁰ The problem with section 7 consultations, in Manson’s opinion, was that the federal agencies planning some kind of project often came to view FWS more as a regulator than as a consultant.³⁵¹ The point of designing reasonable and prudent alternatives to the planned activity was to allow projects to go forward while avoiding jeopardy to the species.³⁵² For its part, FWS often came to view the agencies that were planning projects as recalcitrant, unreconstructed Neanderthals bent on destructive practices.³⁵³

To deal with the problem, agencies were creating so-called “counterpart regulations” which permitted the agency planning the project to play a more active role in the section 7 consultation process.³⁵⁴ Indeed in certain circumstances, the planning agencies were allowed to make the initial findings—under guidelines developed by FWS—so that collaboration could continue.³⁵⁵ Innovations such as these underscored the point that FWS wanted to engage in cooperative conservation not just with individuals, but with fellow federal agencies as well.³⁵⁶

347. Manson, *supra* note 317, at 296.

348. *Id.* at 297.

349. *Id.*

350. *Id.*

351. *Id.*

352. *Id.*

353. Manson, *supra* note 317, at 297.

354. *Id.*

355. *Id.*

356. *Id.*

Such was the direction in which Assistant Secretary Manson saw the ESA headed in the next thirty years. He emphasized that the vision was not just his own or the Bush Administration's, but one endorsed by many environmental advocates, conservationists, other government agencies, and by academics.³⁵⁷ Indeed, much academic research was devoted to finding ways of collaborating and developing creative approaches to collaborative conservation methods.³⁵⁸ Manson concluded his remarks to the Duke University Law School audience with these words:

Like technology, public policy evolves as well, and it gets better and better and improves itself constantly. That is what is happening with the ESA today, and I believe that at some point in the future, we will look back and say we cannot believe we did it any other way, and we will be very pleased with the result.³⁵⁹

IV. CRITICAL HABITAT IN THE BALANCE

At some point in the future, we may look back and say that almost thirty years into its existence the ESA critical habitat program had reached a point where it needed to be reformed if it was to achieve its original purpose of aiding the recovery of endangered and threatened species. And we hope that we can say that, having considered the views of all concerned about the future of the program, we made wise decisions about what needed to be done, and that we are very pleased with the result.

There is no doubt that the critical habitat program hangs in the balance. Our paper is filled with unfinished stories, and perhaps with some that have not yet started. After a false start, the bull trout critical habitat designation appears to be entering litigation, and the rulings that might be handed down could shape the way that all critical habitat is designated in the future. And the lynx critical habitat proposal, just published, may grow a tale of its own. Congress, too, will have its say. A recent bill passed in the House of Representatives³⁶⁰ would cure the ills of the critical habitat program essentially by killing the patient—repealing the critical habitat provisions of the ESA altogether. The program's fate is now in the hands of

357. *Id.* at 298.

358. *Id.*

359. Manson, *supra* note 317, at 297.

360. *See* Threatened and Endangered Species Recovery Act of 2005, H.R. 3824, 109th Cong. § 5 (2005).

the Senate.

The Senate's immediate response follows along the lines of what Part III of this paper suggested needs to be done first if the critical habitat program is to be fixed. At the request of the Senate, the Keystone Center for Science and Public Policy has convened an ESA Working Group on Critical Habitat to consider how the ESA can be improved to better conserve habitat and help species recover.³⁶¹ The participants at the meetings to be held in November and December 2005 will include individuals from environmental groups, regulated industry, and academic organizations who will give their personal perspectives regarding specific changes upon which it might be possible to achieve consensus. The idea for the roundtable discussion in Part III of this paper came from a similar belief that any thoughtful reform of the critical habitat program could only emerge through a dialogue involving a variety of perspectives.

In this part, we offer our own specific suggestions about what needs to be done. As in Part III, the organization of this part reflects the statutory requirement that the Secretary make critical habitat decisions on the basis of the best scientific data available, after taking into consideration the economic impact and any other relevant impact of specifying any particular area as critical habitat. In making our specific recommendations, we have tried to focus on the most important changes in critical habitat law and policy that have a reasonable chance of achieving a consensus.

A. USING THE BEST AVAILABLE SCIENCE

There are two crucial reforms, one legislative and the other regulatory, necessary to ensure that the best available science informs critical habitat decisionmaking. Congress should amend the current statutory requirement that critical habitat be designated concurrently with listing to allow the recovery planning process to provide a solid scientific foundation for critical habitat proposals. And, as the courts have said many times, FWS should redefine what it means by "destruction or adverse modification" of critical habitat to distinguish it clearly

361. For the agenda and composition of the ESA Working Group, see The Keystone Center for Science & Public Policy, ESA Working Group, http://www.keystone.org/html/esa_working_group.html (last visited November 26, 2005).

from the definition of “jeopardy.” The following subsections provide some details for each recommendation.

1. Changing the Timing of Designation

Requiring designation of critical habitat at the time a species is listed forces agency biologists to make important decisions about the habitat needs of the species before they have adequate information to make such a determination. In the case of the bull trout designation, for example, much of the information used in the critical habitat designation was developed during the recovery planning process initiated when the trout was listed.³⁶² An amendment to section 4(a)(3) of the statute to require designation simultaneously with publication of a recovery plan would give biologists the needed time to provide decisionmakers with the best available science.

However, one other provision of the statute would also have to be amended for the suggested reform to have its effect; and without the additional change our proposed reform of the timing could actually make things worse. Section 4(f) of the statute dealing with recovery plans sets no time limit for the development and implementation of a recovery plan. This section would have to be amended to require FWS to publish the plan within a reasonable period of time after listing. Agency recovery planning guidelines specify that recovery plans should be completed in 2.5 years.³⁶³ We consider three years to be a reasonable timeframe to complete a linked recovery planning and critical habitat designation process. However, agency guidelines do not have regulatory force. Whatever the precise time period chosen, it would be important to fix the limit in the statute so that the critical habitat designation process would have a date-certain conclusion.

Our suggestion for reform of the timing of designations is not new. In 1999, a bill was introduced into the Senate to amend the ESA to provide that designation of critical habitat

362. See Designation of Critical Habitat for the Klamath River and Columbia River Populations of Bull Trout, 69 Fed. Reg. 59,996, 60,022 (Oct. 6, 2004) (to be codified at 50 C.F.R. pt. 17) (noting that the agency biologists responsible for determining critical habitat “relied heavily on information developed by the Bull Trout Recovery Unit Teams”).

363. Notice of Interagency Cooperative Policy on Recovery Plan Participation and Implementation Under the Endangered Species Act, 59 Fed. Reg. 34,272, 34,273 (July 1, 1994).

be part of the recovery planning process.³⁶⁴ The hearings on the bill suggest that such a measure to coordinate critical habitat planning with recovery planning would have broad bipartisan support.³⁶⁵ We recommend that Congress try again.

2. Revising the Definition of “Adverse Modification”

There seems to be some sign that FWS is finally getting the message that it needs to revise its definition of “adverse modification” of critical habitat. In December 2004, the Director of FWS sent a memorandum to regional directors instructing them to no longer cite to the Service’s regulatory definition of “destruction or adverse modification” of critical habitat in biological opinions issued as a result of section 7 consultations.³⁶⁶ The memo was sparked by a recent ruling against the Service in *Gifford Pinchot Task Force v. U.S. Fish & Wildlife Service*³⁶⁷ finding that the agency’s current definition was contrary to law. Although FWS had been told the same thing by the *Sierra Club* court in 2001, the memo alludes to the “strategic importance” of the Ninth Circuit ruling and its potential effects on recent and prospective biological opinions as the reason for issuing an interim guidance memo on how to conduct section 7 consultations.³⁶⁸ Biologists were instructed to follow the guidance while the agency proceeded with a proposed rulemaking early in 2005 that would address the decision. At the end of 2005 the proposed rule has yet to appear, but at last one can almost hear the sounds of papers rustling at FWS. It is difficult to overstate the importance of a revised definition of “adverse modification.” It is the linchpin for many of the other reforms suggested here.

364. S. 1100, 106th Cong. (1999).

365. See, e.g. Daniel J. Rohlf, *Section 4 of the Endangered Species Act: Top Ten Issues for the Next Thirty Years*, 34 ENVTL. L. 483, 530 (2004) (“Such rare approval from all quarters suggests that this change [coordinating critical habitat and recovery planning] may be the most likely to pass of all the potential legislative tinkering with section 4.”).

366. See U.S. Fish & Wildlife Serv., Application of the “Destruction or Adverse Modification” Standard Under Section 7(a)(2) of the Endangered Species Act (Dec. 9, 2004) [hereinafter Application of the “Destruction or Adverse Modification” Standard], available at http://training.fws.gov/EC/Resources/HCP/Guidance_and_Directors_Memo/Director%27s_Adverse_Mod_Guidance_12-9-04.pdf.

367. 378 F.3d 1059 (2004).

368. Application of the “Destruction or Adverse Modification” Standard, *supra* note 366.

A revised definition would permit a meaningful review of two types of activities that currently are not considered in most section 7 consultations because they do not reach the level of the jeopardy standard. First, activities that might degrade the quality of unoccupied habitat would be subject to a separate analysis. Including unoccupied habitat in critical habitat designations is essential to the conservation of wandering species such as the bull trout and the Canada lynx. In the proposed designations for both the bull trout and the lynx, agency biologists included unoccupied habitat based on their judgment of the importance of the habitat in fostering the recovery of the species. And in the case of the bull trout, as is the case with almost all critical habitat designations, the opinions of its own biologists were overridden by FWS's policy of categorically excluding unoccupied habitat from final designations.

Second, a revised definition of "adverse modification" would provide the basis for a more stringent review of activities that degrade occupied habitat but do not degrade it so severely as to jeopardize the existence of the species. The biological needs of the species would have greater weight than they do currently as they are balanced against the benefits of permitting development of areas that could contribute to the species' recovery. There would still be a balancing test as required under section 4(b)(2); however, a revised definition of "adverse modification" could allow the opinions of biologists to have a greater influence on critical habitat decisionmaking.

B. ANALYZING ECONOMIC IMPACTS

It is important to separate the effects of listing from those of designation to get a clearer picture of the magnitude of the economic impacts due solely to designation. FWS will need to revise its definition of "destruction or adverse modification" of critical habitat as a condition for conducting a rational economic analysis. If FWS did have a meaningful adverse modification standard for section 7 consultations, the 2001 *Cattle Growers* court's decision throwing out the agency's method of economic analysis would lose much of its legal force. Courts would likely permit FWS to treat costs associated with listing as part of the regulatory baseline and not as part of the costs of critical habitat designation. A return to this method of economic analysis, which FWS had used prior to *Cattle Growers*, would restore the conditions for a meaningful

evaluation of the true costs of designation. These costs of designation will be seen as marginal compared to the costs of listing, which may help to defuse the criticism of the critical habitat program based on the misperception that designation imposes onerous economic burdens.

There remains the question at the focus of the economic debate in Part III of our paper: should the analysis of economic impacts be done qualitatively or quantitatively? In developing the economic model for analyzing the benefits of lynx critical habitat designation, Defenders argued that if a cost-benefit analysis is done, it should be done in a balanced manner, with monetization of benefits as well as costs. FWS's frequent practice in its economic analyses of critical habitat designations of monetizing the costs and describing the benefits qualitatively is indefensible. Such analyses appear one-sided not only from an economist's perspective but from the perspective of a citizen concerned that numbers may seem to be more "objective" than verbal descriptions, thereby having a disproportionately large impact on the critical habitat decisionmaking process.

That still leaves the question whether it would be better to try to monetize both the costs and benefits or simply describe them. Defenders did not address the philosophic arguments based on incommensurability raised by Sinden and others against the use of cost-benefit analysis in critical habitat designations. Monetizing does impose a common metric upon the goods in question. The question is, to use Sunstein's terms, does monetizing do violence to our considered judgments about how these goods are best characterized? Does monetizing how much people value lynx recovery, for example, do violence to our considered opinions about how best to characterize this particular good?

Certainly there is a danger that it could if decisions about lynx recovery came to be made solely, or even primarily, on the basis of cost-benefit calculations. However, if cost-benefit analysis done correctly were seen merely as one analytical tool—and not the primary one—for evaluating critical habitat decisions, we can probably trust ourselves always to use it wisely. One way to ensure that we do use the tool wisely is to turn it on itself. We said above that the economic costs and benefits of designation are marginal compared to those of listing. In most cases, it will not be worth spending large amounts of FWS's endangered species budget to obtain monetary estimates of marginal quantities. Where the data

upon which to base the estimates can be obtained relatively cheaply, it may serve a purpose to use cost-benefit analysis in critical habitat decisionmaking. Otherwise, qualitative descriptions should be used. The initial decision regarding the feasibility of cost-benefit analyses would have to rest with FWS's economists, although some mechanism for reviewing the decision would probably be needed to ensure consistency in the use of such analyses in comparable classes of designations.

C. BALANCING OTHER RELEVANT IMPACTS

The balancing test set up in section 4(b)(2) to allow the Secretary to exclude particular areas from proposed critical habitat designations was intended to head off conflicts such as the controversy over the snail darter. In practice, exclusions under this provision and under the definition of critical habitat have become a source of conflict, as the history of the bull trout designation illustrates. The seeds of the conflict lie in the vague terms "other relevant impacts" which did not come with any guidance from Congress for their use. Despite FWS's arguments to the contrary, Congress could not have intended them to convey unlimited discretionary powers upon the Secretary in making final critical habitat decisions. The question is, where should the limits reasonably lie?

Lack of a clear definition of the limits of the Secretary's discretion also creates tension between the law and the policy of critical habitat designation. FWS has long viewed critical habitat designation as a disincentive that discourages the formation of voluntary conservation partnerships, which the agency believes are the most effective means of conserving listed species. Programs such as "cooperative conservation" discussed by Assistant Secretary Manson in Part III are designed to implement FWS's policy of reaching out to potential conservation partners more as a consultant than a regulator. However, the legal authority for the policy of excluding areas from critical habitat because they already have adequate management plans is questionable.³⁶⁹ FWS may seek to support its policy on the grounds that the chilling effect critical habitat designation has on establishing working relationships with conservation partners falls within the category of "other relevant impacts" that the Secretary may consider in excluding

³⁶⁹. See *Center for Biological Diversity v. Norton*, 240 F. Supp. 2d 1090 (D. Ariz. 2003).

areas from designations.³⁷⁰ Again, the vague statutory terms “other relevant impacts” make it difficult to say where the limits of the Secretary’s discretionary powers reasonably lie.

FWS should take it upon itself to clarify those limits. In 1999, the agency published a notice in the Federal Register stating that it intended to develop policy or guidance, and possibly to revise regulations, to clarify the role of habitat in endangered species conservation.³⁷¹ It requested comments from the public regarding the benefits of critical habitat designation beyond the benefits that result from listing. It also sought comments on how the process of designating critical habitat could be streamlined to make it more cost effective. Unfortunately, FWS’s good intentions never led to concrete results.

If the critical habitat program is to be retained—and we believe that it should be—it is time to try again. A revised definition of “destruction or adverse modification” of critical habitat would be a key element in that renewed effort. But a new definition needs to be part of a larger conceptual framework articulating the benefits of critical habitat designation for listed species and the obligations of the Secretary to ensure that those benefits are given appropriate weight in the section 4(b)(2) balancing test. In each case, this will mean careful balancing of not just the conservation benefits but also the socioeconomic benefits of a particular designation against the socioeconomic “dislocations.” Economic analyses, whether expressed in qualitative or quantitative terms, can provide important information regarding both. Public meetings soliciting opinions on the proposed designation are another important source of information.

In the end, the Secretary must justify the final decision in light of all of the information gathered and the agency’s conceptual framework for evaluating critical habitat proposals. The Secretary’s final decision should involve more than merely responding to comments received, often with pro forma

370. In the preamble to the recent designation for bull trout, the general discussion of definitional exclusions under section 3(5)(A) and discretionary exclusions under the section 4(b)(2) balancing test are included in the same section. See *Designation of Critical Habitat for the Bull Trout*, 70 Fed. Reg. 56,212, 56,238-39 (Sept. 26, 2005) (to be codified at 50 C.F.R. pt. 17).

371. See Fish & Wildlife Serv., *Notice of Intent to Clarify the Role of Habitat in Endangered Species Conservation*, 64 Fed. Reg. 31,871 (June 14, 1999).

responses, as is the current practice in critical habitat final rules. It should describe the range of relevant impacts considered and how the principles of the agency's conceptual framework were applied in the present set of circumstances. Courts would likely defer to the Secretary's balancing of relevant impacts in a particular case if the test itself were properly balanced.

Finding an equitable balance between the interests of all parties affected by critical habitat decisions will require circumspection and a search for consensus. We believe that if the reforms suggested above were implemented, the process of designating critical habitat for listed species would be better informed, simpler, and probably much less contentious than it is today. The quantities in the balance—the costs and benefits—may be marginal, but how we weigh them will say much about our values and our determination to preserve the quality of the habitat for all of the species concerned. Let us hope that thirty years from now our children will look back and say that they cannot believe that we did it any other way.