

Recovery, Conservation, and Survival under the Endangered Species Act: Recovering Species, Conserving Resources, and Saving the Law

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RECOVERY, CONSERVATION, AND SURVIVAL UNDER THE ENDANGERED SPECIES ACT: RECOVERING SPE- CIES, CONSERVING RESOURCES, AND SAVING THE LAW

Jason M. Patlis*

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I. INTRODUCTION

Protecting and recovering endangered and threatened species is bad business. It is a short-term, high-risk, and high-cost proposition—not exactly a formula for success. It is also an unpopular business. Resource users cringe at the prospect of the burdensome regulations and widespread litigation that often ensue with attempts to protect and recover endangered and threatened species; environmentalists consider the initial determination that a species is threatened or endangered as a failure to adequately protect them in the first place; administrators brace themselves for the mine field of political controversy that comes from difficult biological, financial and regulatory decisions. However, protecting and recovering endangered and threatened species is, quite literally, a “do or die” exercise, and in this sense, it is a necessary business.

The Endangered Species Act of 1973 (ESA or Act)¹ seeks not only to arrest the decline of those species on the brink of extinction, but to bring about their recovery so that they can assume their natural role in the ecosystem. Consider that the ESA is to wildlife what Chapter 11 of the Bankruptcy Act is to corporations. Just as Chapter 11 protects debtor corporations on the verge of liquidation and gives the debtor a chance to reorganize and rehabilitate, so too does the ESA protect species on the verge of extinction and give them a chance to recover. Upon filing for bankruptcy, the debtor is extended certain protections while the trustee oversees the debtor’s property, the distribution of proceeds, and the discharge of liability; upon listing as endangered or threatened, the species is extended certain protections while the federal government, serving as trustee, oversees the status of the species, its habitat or property, and the adverse impacts upon, or liabilities against, the species. Chapter 11 allows the debtor to take strong medicine that may entail restructuring, downsizing and other cost-cutting measures—often affecting individuals and other businesses—in order to allow creditors an opportunity to recover their loans and thereby protect the overall health of the economy. Similarly, the ESA provides strong medicine that may entail prohibitions or restrictions on certain activities in order to allow species to recover and thereby protect the overall health of the environment. The analogy is complete: the fundamental purpose of both statutes relies on painful short-term antidotes to achieve long-term health.

1. 16 U.S.C. §§ 1531-1544 (1994).

Recovery is thus the heart and soul of the Act. It is not, however, the muscle. The muscle lies in the section 9 prohibition against the taking of an endangered species² and the section 7 prohibition of federal actions that are likely to jeopardize the continued existence of threatened or endangered species³—requirements that seek to prevent the species from declining further rather than seeking to recover the species. Consider that while 41% of the 909 species listed by the Fish and Wildlife Service are stabilized or improving, only 8% are actually improving, while 33% are stabilized.⁴ The Act is thus tremendously effective in doing what it explicitly sets out to do: ensuring the survival of species. In comparison, the requirement to recover the species, and thereby make the expensive, burdensome prohibitions unnecessary, is not well emphasized in the statute itself, and where it exists, it has been interpreted and applied minimally.⁵ While recovery planning has been improved through successive amendments to the Act, the requirements for recovery and conservation by federal agencies and non-federal entities remain vague and poorly defined. Indeed, it is no coincidence that the greatest success stories of the Act involve species that were endangered or threatened as a result of takings that were prohibited by section 9; species that have declined as a result of diffuse impacts have been much slower to recover.

For example, the Pacific salmonid stocks that are endangered and threatened pose extremely vexing problems for recovery planning because of the extraordinary range of impacts affecting each stage of the life-cycle of the species. The National Marine Fisheries Service recently published a Proposed Recovery Plan for threatened and endangered Snake River salmon.⁶ This recovery plan is fairly controversial in the substance of its recommendations, but it is also fairly unique in its structure, biological standards, management considerations, and relationship to other provisions of the statute. The plan first addresses the institutional elements of recovery implementation and creates a system to allow for adaptive management based on new scientific information. It then identifies and prioritizes specific recovery tasks for all entities that affect the listed salmon. Lastly,

2. 16 U.S.C. § 1538(a)(1).

3. 16 U.S.C. § 1536(a)(2).

4. U.S. FISH AND WILDLIFE SERV., U.S. DEP'T OF INTERIOR, REPORT TO CONGRESS: ENDANGERED AND THREATENED SPECIES RECOVERY PROGRAM 32 (1994) [hereinafter FWS REPORT TO CONGRESS].

5. See generally Federico Cheever, *The Road to Recovery: A New Way of Thinking About the Endangered Species Act*, 23 *ECOLOGY L.Q.* 1, 6-7 (1996); see also Oliver A. Houck, *The Endangered Species Act and Its Implementation by the U.S. Departments of Interior and Commerce*, 64 *U. COLO. L. REV.* 277, 344-51 (1993).

6. NAT'L MARINE FISHERIES SERV., U.S. DEP'T OF COMMERCE, PROPOSED RECOVERY PLAN FOR SNAKE RIVER SALMON (1995) [hereinafter PROPOSED RECOVERY PLAN].

it relates these tasks to existing requirements under the statute. For these reasons, the plan may serve as a useful prototype for future recovery plans.

Nevertheless, recovery is a mandate that needs to be better articulated and more explicitly required by the Act itself. In 1988, Congress amended the ESA by improving the procedural elements in recovery planning; now it is time for Congress to improve the substantive elements and better relate recovery planning to recovery implementation. First, recovery should be made a clear, affirmative mandate. This will enable the Act to work as Congress originally intended: to ultimately make itself obsolete by recovering and delisting species rather than having them teeter along the razor's edge of survival and extinction. Second, given a clear requirement to recover the species in biological terms, there should be an explicit allowance for flexibility in choosing a wide range of managerial, administrative, regulatory and financial alternatives among all user groups for achieving recovery.

Section II of this article explores the scientific justification for recovery and conservation of species. Section III examines the legal framework for recovery and conservation. The Snake River Salmon Proposed Recovery Plan is considered as a case study in Section IV, and Section V suggests improvements that could be made to the recovery mandate.

II. SCIENTIFIC BASIS FOR RECOVERY AND CONSERVATION

It may seem axiomatic that recovery of endangered and threatened species should be the fundamental premise of any law designed to protect species from extinction. As one commentator notes, "the ultimate goal of the ESA is to make itself obsolete."⁷ Whereas survival implies the maintenance of a species at the minimal level of existence, recovery implies a species' return to a healthy viable state.⁸ However, many critics of the ESA consider recovery to be biologically unnecessary as well as economically impractical.⁹ Consequently, this article begins with an analysis of the meaning of recovery and the scientific requirements for recovery.

7. DANIEL J. ROHLF, *THE ENDANGERED SPECIES ACT: A GUIDE TO ITS PROTECTIONS AND IMPLEMENTATION* 100 (1989).

8. *See infra* text accompanying notes 168-83.

9. *See* CHARLES C. MANN & MARK L. PLUMMER, *NOAH'S CHOICE: THE FUTURE OF ENDANGERED SPECIES* 212-19 (1995). Mann and Plummer consider the bare survival of certain species to be unnecessary. *Cf.* EDWARD O. WILSON, *THE DIVERSITY OF LIFE* 331-32 (1992). "In theory at least, the minimization of extinction rates and the minimization of economic costs are compatible: the more that other forms of life are used and saved, the more productive and secure our own species will be." *Id.*

A. Defining Recovery

The ESA itself does not define recovery. Rather, it is left to the agencies responsible for implementing the ESA—the Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) (collectively, the Services).¹⁰ In their regulations governing consultations pursuant to section 7 of the Act, the Services have defined recovery as “improvement in the status of listed species to the point at which listing is no longer appropriate under the criteria set out in section 4(a)(1) of the Act.”¹¹ This definition intrinsically involves not only a biological analysis, but a legal analysis as well: the biological status must improve and the legal criteria for delisting must be satisfied. A listed species is one that is either endangered or threatened, where the former is defined as “any species which is in danger of extinction throughout all or a significant portion of its range,”¹² and the latter is “any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.”¹³ Consequently, a recovered species is one that is not threatened, *i.e.*, not likely to become an endangered species in the foreseeable future. This definition may be problematically circular; there is no elucidation on what it means to be not endangered in the foreseeable future.¹⁴ However, the lack of specificity in these definitions allows determinations to be made on a species-by-species basis.

Consistent with the Services’ criteria for an initial determination that a species is threatened or endangered, the determination that a species is recovered is to be based on the same criteria.¹⁵ In the regulations imple-

10. See 16 U.S.C. § 1532(15). The ESA provides that both the Secretary of the Interior and the Secretary of Commerce shall be responsible for implementing the Act according to their respective responsibilities under the Reorganization Plan No. 4 of 1970. Under the Reorganization Plan, the Secretary of the Interior has jurisdiction over terrestrial species, while the Secretary of Commerce has jurisdiction over most marine species. See Reorganization Plan No. 4 of 1970, 84 Stat. 2090 (1970), reprinted in 5 U.S.C. app. at 1557 (1994). The Secretaries of the Interior and Commerce have in turn delegated responsibility for implementation of the Act to the FWS and NMFS, respectively.

11. 50 C.F.R. § 402.02 (1995). The Services have explicitly stated that “recovery is not attained until the threats to the species as analyzed under section 4(a)(1) of the Act have been removed.” 51 Fed. Reg. 19,935 (1986).

12. 16 U.S.C. § 1532(6).

13. 16 U.S.C. § 1532(20).

14. See COMMITTEE ON SCIENTIFIC ISSUES IN THE ENDANGERED SPECIES ACT, NATIONAL RESEARCH COUNCIL, SCIENCE AND THE ENDANGERED SPECIES ACT 156 (1995) [hereinafter NRC REPORT].

The definition of an endangered species as one that is already in danger of extinction and a threatened species as one that is likely to become an endangered species implies that a species listed as endangered is at greater risk of extinction than a threatened one. The determination that a species should be removed from the list implies that its risk of extinction has decreased to the point where it is no longer considered threatened.

Id.

15. See 16 U.S.C. § 1533(a)(1). These criteria are:

menting section 7, the Services have specifically stated that these criteria must demonstrate that the threats facing the species have been removed.¹⁶ A recent court decision has also affirmed this analytical standard for recovery.¹⁷ For example, the habitat must be protected or stabilized; the species cannot be overutilized; there must be no disease or predation causing a decline; regulatory mechanisms must be adequate for the species' protection; there must be no other factors causing the species' decline. When such findings are made by the Service, the species can be considered to be recovered and can then be delisted.¹⁸ One difficult question concerns the burden of proof, or presumption, in making such findings; just as the burden of proof should require that species be listed in the face of uncertainty, the burden should be reversed in delisting decisions, so that species should be delisted only with probative evidence of recovery.¹⁹

The Services have further defined recovery in their guidance documentation. The FWS states that recovery is "the process by which the decline of an endangered or threatened species is arrested or reversed, or threats to its survival neutralized so that its long-term survival in nature can be ensured."²⁰ This definition, unlike that in the Part 402 regulations, is based solely on biological criteria, and can be broken down into three factors: (1) stabilizing or improving population abundance; (2) removing or mitigating threats and adverse impacts to the species; and (3) achieving

- (A) the present or threatened destruction, modification, or curtailment of its habitat or range;
- (B) overutilization for commercial, recreational, scientific, or educational purposes;
- (C) disease or predation;
- (D) the inadequacy of existing regulatory mechanisms; or
- (E) other natural or manmade factors affecting its continued existence.

Id.

16. 51 Fed. Reg. 19,926 (1986). "[R]ecover is not attained until the threats to the species as analyzed under section 4(a)(1) of the Act have been removed." *Id.* at 19,935.

17. *Fund for Animals v. Babbitt*, 903 F. Supp. 96, 105 (D.D.C. 1995). "To initiate a delisting process, the FWS must publish a notice of a proposed regulation that concludes that delisting is appropriate in light of the same five factors considered for listing a species." *Id.* See also *Northern Spotted Owl v. Hodel*, 716 F. Supp. 479, 480 & n.3 (W.D. Wash. 1988) (decision to list species based solely on evaluation of the biological risks faced by the species).

18. 16 U.S.C. § 1533(a)(2). As a procedural matter, the Secretary of the Interior can delist species upon the appropriate determination pursuant to section 4(a)(1); however, if the Secretary of Commerce determines that such species should be delisted (or reclassified from endangered to threatened), "he shall recommend such action to the Secretary of the Interior, and the Secretary of the Interior, if he concurs in the recommendation, shall implement such action." 16 U.S.C. § 1533(a)(2)(B). Thus, pursuant to section 4(a)(2), the Secretary of Commerce can make determinations that a species is threatened or endangered, or should be reclassified from threatened to endangered, and the Secretary of the Interior "shall list such species" without a substantive concurrence, while for delistings and downlistings, concurrence by the Secretary of the Interior is required. *Id.*

19. NRC REPORT, *supra* note 14, at 168-69.

20. FWS REPORT TO CONGRESS, *supra* note 4, at 15.

a naturally self-sustaining population. In many instances, the third factor is a consequence of achieving the first two, but recovery requires that all three factors be achieved.²¹ These factors are analyzed below.

B. *Achieving Recovery*

Population abundance, in some ways, is the most straightforward of the three factors. As the basic measure of the number of individuals comprising a species, the question is simply how many is enough. An analysis of the impacts or threats facing a species and its habitat will measure the future prospects of the current population. A self-sustaining population is measured by the cohort replacement ratio—the number of adults in one generation divided by the number of adults in the previous generation²²—and presents the most insightful question for recovery: whether the species can sustain itself given its current population and threats likely to reduce that population.

1. *Population Abundance*

Population abundance is a much maligned, even if simple, concept. The question of how much is enough is often a lightning rod for critics of the ESA, who attack the notion of returning to former population levels of many species. Images of herds of buffalo roaming the streets of Chicago are glibly pictured, as are images of wolves rampant through the west-

21. See AD HOC COMMITTEE ON ENDANGERED SPECIES, ECOLOGICAL SOCIETY OF AMERICA, STRENGTHENING THE USE OF SCIENCE IN ACHIEVING THE GOALS OF THE ENDANGERED SPECIES ACT 14-15 (1995).

The first goal of a recovery plan is to stop the population decline before the species is on the brink of extinction . . . A good recovery plan for an endangered species typically has three goals for achieving viable populations. First, it calls for the establishment of multiple populations, distributed so that migration among them is possible, so that a single catastrophic event cannot wipe out the whole species. Second, it moves to stop known threats that guarantee the continued decline and eventual extinction of the population. Third, it plans for achieving annual population growth rates greater than zero, which will increase the size of populations to levels where demographic and normal environmental uncertainties are less threatening.

Id.

22. PROPOSED RECOVERY PLAN, *supra* note 6 at IV-10. The cohort replacement ratio is defined as the “number of naturally-produced and naturally-spawning adults in one generation divided by the number of naturally-spawning adults (regardless of parentage) in the previous generation.” *Supra*, at IV-11. A rate greater than 1.0 indicates that the population of successive generations is increasing. That this rate needs to be greater than 1.0 in order for the species to recover is actually quite academic; the real question is how much greater than 1.0 the rate should be. For example, the Recovery Team recommended an eight-year geometric mean natural cohort replacement rate of 2.0 or greater for spring/summer and fall chinook. While NMFS recognized that such a steep population increase may be necessary initially, this figure will eventually level off close to 1.0 as the population stabilizes and recovers by the time delisting may be considered. *Supra*, at IV-11 to IV-12.

ern United States and elephants ravaging the landscape of southern and eastern Africa. Recovery does not imply a return to original populations of species that once might have been plentiful throughout the world.²³ Indeed, Congress had no such intention when it passed the Act. Recovery seeks to ensure that the species can survive without the special protections of the ESA. As Congress noted, recovery requires only that the species return to the point "where they are viable components of their ecosystems."²⁴

Survival of a species requires that there be a certain minimum viable population (MVP).²⁵ At the very least, this level would need to be attained in order for the population to be considered recovered; arguably, the population may need to be greater. Viability is based on two factors—population distribution and population size²⁶—and is estimated

23. NAT'L MARINE FISHERIES SERV., U.S. DEP'T OF COMMERCE, RECOVERY PLANNING GUIDELINES 4 (1992) [hereinafter NMFS RECOVERY PLANNING GUIDELINES]. "Recovery under the ESA does not necessarily mean historic or current carrying capacity." *Id.* See also 57 Fed. Reg. 53,097 (1992).

24. H.R. REP. NO. 1625, 95th Cong., 2d Sess. 5 (1978), reprinted in SENATE COMM. ON ENVIRONMENT AND PUBLIC WORKS, 97TH CONG., 2D SESS., A LEGISLATIVE HISTORY OF THE ENDANGERED SPECIES ACT OF 1973, AS AMENDED IN 1976, 1977, 1978, 1979 AND 1980 at 729 (Comm. Print 1982) [hereinafter A LEGISLATIVE HISTORY OF THE ACT].

25. Below this level, a population can slip into an "extinction vortex" based on purely random, or stochastic, events. See WILSON, *supra* note 9, at 227.

Theory confirms common sense with the following theorem: the smaller the average population size of a given species through time, and the more the size fluctuates from generation to generation, the sooner will the population drift all the way down to go extinct . . . [I]magine that we could protect a local population from catastrophic destruction. The habitat is kept intact, a steady food source is ensured, and no devastating diseases or predators are allowed to sweep the area. The fluctuations in the number of individuals in the population are then based on pure chance in the events of birth and death—how many females are mated that year, how many young survive infancy, and so on. Chance itself is the summed outcome of many other largely unpredictable events in rainfall, temperature, food supply, and enemy assault. Mathematical models of the history of such steady-state populations reveal that population size and fluctuations can have enormous effects on longevity . . . Expressed in more practical terms, there is a threshold below which the population is in eminent danger of extinction from one year to the next.

Supra, at 227-28.

26. GRANT G. THOMPSON, DETERMINING MINIMUM VIABLE POPULATIONS UNDER THE ENDANGERED SPECIES ACT: NOAA TECHNICAL MEMORANDUM 1 (1991).

Stated simply, the central questions of population viability analysts are, "What, where, when, and how many?" The first three of these are questions of population distribution. "What" refers to the distribution of qualitative characteristics within a population, reflecting the fact that the presence or absence of certain kinds of individuals can affect a population's viability. For example, if a particular species' life history exhibits a maximum age of reproduction, then a population composed entirely of individuals older than that maximum age will not be viable. "Where" and "when" refer to the distribution of a population in space and time, which can also affect population viability. For example, if males segregate from females consistently in space or time, the population that they comprise will not be viable. The fourth question, "how many," refers to the size of a population. Generally, it is assumed that population viability decreases as population size becomes small.

Id. at 1. Population distribution addresses whether a population is self-sustaining.

through any number of population viability analyses that consider a wide range of genetic, biological and ecological factors.²⁷ Just as viability can only be estimated, so too can extinction only be estimated; each is a measure of probability or stochasticity (of random character).²⁸ Population stochasticity has, in turn, been divided into specific demographic, environmental, genetic and catastrophic components.²⁹

While there is no specific scientific definition of endangerment, any definition will require assumptions for the probability of persistence and time; assumptions range from a 99% probability of persistence over 1000 years to a 95% probability of persistence over 100 years.³⁰ Because of this range of assumptions, it is easier to define "threatened" in relation to "endangered" than it is to define "endangered" in the abstract.³¹ Working

27. ECOLOGICAL SOCIETY OF AMERICA, *supra* note 21, at 9-10.

28. THOMPSON, *supra* note 26, at 3. "[T]he process of extinction is best viewed as stochastic, and that endangerment should therefore be defined probabilistically . . ." As a stochastic phenomenon, extinction is somewhat random. Endangerment could thus be defined as the "probability of persistence over time." *Supra*. See also NRC REPORT, *supra* note 14, at 140-41.

29. THOMPSON, *supra* note 26, at 3-4.

Demographic stochasticity arises from the fact that populations consist of individuals, each of which is subject to demographic processes that can be treated probabilistically . . . Environmental stochasticity is a means of interpreting unpredictable changes in vital rates. Genetic stochasticity is used to account for the impacts of founder effect, genetic drift, or inbreeding. Catastrophes are extreme events (e.g., floods, fires, and droughts) that can be thought of as occurring randomly . . .

Although it has so far proven infeasible to incorporate the four sources of stochasticity into a single model, it does appear that some consensus exists regarding their relative importance, except for catastrophes. Of the other three sources, the conclusion seems to be that environmental stochasticity is the most important and genetic stochasticity is the least, except in very small . . . populations . . .

[D]ata limitations cause catastrophes to be ignored or treated on an *ad hoc* or subjective basis . . .

Supra. For a general discussion of these elements, or "sources of risk," see NRC REPORT, *supra* note 14, at 125-34.

30. See THOMPSON, *supra* note 26, at 31. Another typical assumption is 90% probability of persistence for 200 years. See ECOLOGICAL SOCIETY OF AMERICA, *supra* note 21, at 10. In discussing the pros of using such numerical assumptions rather than subjective determinations, the National Research Council states that "providing quantitative guidance [makes] it possible to discuss or disagree with [the] definition objectively and apply the definition in a standard manner," even though such guidance may have limited applicability. NRC REPORT, *supra* note 14, at 152.

31. See THOMPSON, *supra* note 26, at 36.

Since a threatened species is defined as one which is "likely to become endangered within the foreseeable future," one need only interpret the terms "likely" and "foreseeable future" to relate the "threatened" MVP [minimum viable population] to the "endangered" MVP. A reasonable interpretation of a "likely" event would be one which has at least a 50% chance of occurring. Quantifying "foreseeable future" is not so straightforward, but perhaps something like 10 years would be satisfactory. In other words, the "threatened" MVP is the population size that gives a 50% chance of reaching the "endangered" MVP within 10 years.

Supra.

backwards, once the MVP for a "threatened" species is established, it is fairly straightforward to define the MVP for a "recovered" species: a population size that is not likely to become threatened, *i.e.*, one that has less than a 50% chance of sinking below the MVP. Although there is no criterion relating to time, it is plausible to assume that a species should be recovered for the foreseeable future.

Establishing the relationship of viability for endangered, threatened, and recovered populations only begs the question: what are the actual MVP estimates?³² Several approaches have been developed to estimate MVPs. Generally, the MVP size is the "ideal population of breeding individuals produced each generation by random union of an equal number of male and female gametes randomly drawn from the previous generation."³³ This number can be derived through analytic modeling,³⁴ simulation modeling,³⁵ or a "rule of thumb."³⁶

Although this last approach is often used because the numbers used provide an easily understandable, easily measurable crutch to avoid the difficult decisions required in case-by-case analyses,³⁷ it is the most vulnerable to misuse and abuse, and contains several serious flaws. First, it fails to account for the difference between effective population sizes and actual or census population sizes.³⁸ Second, and more importantly, such

32. See NRC REPORT, *supra* note 14 at 140. The National Research Council notes, however, that "[i]n general, it is probably more useful to estimate extinction probabilities as a function of time for different population sizes than to identify some specific MVP." *Supra*.

33. THOMPSON, *supra* note 26, at 7.

34. THOMPSON, *supra* note 26, at 9-19. Population genetic models examine a number of factors, including inbreeding rates, genetic drift, sex ratio, number of progeny of a mating pair, and overall population size, to determine the effective population size. *Supra*.

35. THOMPSON, *supra* note 26, at 19-25. Simulation models rely on computer programs to generate population estimates based on varying assumptions.

36. THOMPSON, *supra* note 26, at 25-26. Such rules of thumb are designed "in an across-the-board, 'one size fits all' fashion." *Supra*, at 7. While there is no "'magic number' above which populations are 'safe' and below which they face an unacceptable risk of extinction," the numbers most often invoked are 50/500. These numbers prescribe a "a short-term effective population size of 50 to prevent an unacceptable rate of inbreeding, and a long-term [size] of 500 to maintain overall genetic variability." *Supra*, at 6.

37. For example, the Parties to the Convention on the International Trade of Endangered Species of Fauna and Flora (CITES) considered amending the criteria for placing species on the appendices of the treaty to straight numerical criteria. This proposal was ultimately rejected by the Parties in favor of a flexible, subjective set of criteria in which numbers are used as examples. See Conf. Res. 9.24, CITES SECRETARIAT, Proceedings of the Ninth Conference of the Parties to CITES, U.N./Cites Doc. 9.24 (1994) (replacing Conf. Res. 1.1 and 1.2).

Several bills to reauthorize the ESA also seek to amend the Act by using population size as the sole criterion for determining whether a species is endangered or threatened. See, *e.g.*, S. 1364, 104th Cong., 1st Sess. (1995) (sponsored by Senator Kempthorne).

38. THOMPSON, *supra* note 26, at 7. This difference may be as great as 25-33%, resulting in effective population sizes and actual population sizes between 150/1,500 and 200/2,000, respectively. *Supra*. Of course, this correction in essence is creating a second "magic number" or "rule of thumb" that seeks to translate the effective population size to the actual population size. Because this correc-

rules of thumb cannot be effectively applied to individual cases, especially given the tremendous variability among individual cases.³⁹ Rather than being the preferred method, it should be the method of last resort.⁴⁰ To the extent practicable, two or more models should be used in order to confirm the conclusions and negate the shortcomings of the others.⁴¹

2. Mitigation of Adverse Impacts

Population abundance alone, however, is not a sufficient criterion for recovery. Even if population abundance is greater than the MVP, threats and adverse impacts facing that population may quickly reduce it below minimum viability. Consequently, adverse impacts must be mitigated or eliminated in order to allow a population to remain above minimum viability and thus be considered recovered. Adverse impacts may be natural (such as disease or predation), human-caused, or some combination of the two. For example, human-caused threats may reduce populations of a species so drastically that natural threats may spell the death-knell for the species.⁴² Three major human-caused threats have led to the decline or extinction of species: overhunting or overharvesting, either intentionally or incidentally to other activities; introduction of nonnative or exotic species; and loss or destruction of habitat.⁴³ In most cases, there is some combination of threats facing the species. The decline of most species, however, particularly those on land, is the result of habitat destruction or degradation.⁴⁴

tion does not allow for individual case-by-case determinations, it has the same inherent weakness as the 50/500 rule of thumb, while providing a more conservative estimate. *Supra*, at 8.

39. THOMPSON, *supra* note 26, at 8. This is especially true of highly migratory, long-lived marine species. For example, the ratio of effective population to actual population for fish species might approach 10%, resulting in a short-term MVP of 500 and a long-term MVP of 5,000. *Supra*.

40. THOMPSON, *supra* note 26, at 26. "[T]he plight of endangered species is so urgent and widespread that it may be logistically impossible to undertake viability analyses on more than a relative few of them in the time available . . . In a triage-type situation, rules of thumb may be the only practical option." *Supra*.

41. THOMPSON, *supra* note 26, at 32. "If a variety of approaches or models yield confirmatory results, their conclusion is obviously strengthened. Although . . . all of the common approaches have shortcomings, it is just as true that all can be a useful part of population viability analysis." *Supra*.

42. Such is the case with several species of salmonid stocks that outmigrate from Lake Washington, Washington, to the Pacific Ocean, via the Ballard Locks. In passing through the locks, they are easy prey for California sea lions, that find the fish worth the long trip from California. One particular stock of steelhead trout has been so depleted that the predation of the sea lions threatens to eliminate the stock altogether. Under the 1994 amendments to the Marine Mammal Protection Act, 16 U.S.C. §§ 1361-1421h (1994), NMFS may issue a letter of authorization to lethally remove sea lions known to be preying on depleted stocks of fish. 16 U.S.C. § 1389.

43. See NRC REPORT, *supra* note 14, at 73. "[F]or animals with known causes of extinction, hunting (mostly unregulated) caused extirpation of 23%, introduced animals caused 39%, and habitat loss accounted for the loss of 36%." *Supra*.

44. NRC REPORT, *supra* note 14, at 35.

Habitat loss may take a number of different forms: loss of sheer volume; loss of habitat function; or loss of habitat quality.⁴⁵ The first is the most basic; a direct relationship exists between the amount of habitat and the number of species that can be supported by that habitat.⁴⁶ Habitat loss will thus result in loss of species. This relationship goes beyond mere formulaic equations—it is common sense. Take away the resources upon which a species depends and the species has no means of survival.⁴⁷ In addition to quantity of habitat, habitat function may change with a change in human use, so that habitat can no longer support certain species dependent upon a particular function. Lastly, quality may be affected by various types of pollution, which in turn could have a deleterious effect on species. Congress has repeatedly recognized habitat loss as the major factor in the decline of species in the United States,⁴⁸ and has shaped the ESA over the years to better address issues relating to habitat.⁴⁹

While habitat loss may be the greatest threat, often it is overhunting

45. NRC REPORT, *supra* note 14, at 35-37.

46. The relationship between species diversity and habitat has been expressed as $S = CA^z$, where S is the number of species, A is the area of habitat, and C is an empirically determined multiplier that varies from place to place and among taxa. The exponent z varies according to topographic diversity and isolation of the habitat, z is usually larger for islands (around 0.3) than for mainland habitat (often 0.2).

NRC REPORT, *supra* note 14, at 72. See also ROBERT H. MAC ARTHUR & EDWARD O. WILSON, *THE THEORY OF ISLAND BIOGEOGRAPHY* 8-18 (1967).

47. Charles Mann and Mark Plummer dismiss this relationship and recount the development of the species-area curve in a narrative noted for its subtle cynicism, thinly veiled behind objective analysis. They describe how "an amateur biologist . . . had sown the seeds of the extinction crisis [with] a wild, almost unintelligible salad of algebraic manipulation [that] set off an explosion in theoretical ecology." MANN, *supra* note 9, at 53-55 (1995). Despite the fact that Mann and Plummer recognize that the relationship between species diversity and area had been generally accepted by biologists with little or no argument, both before and since this formula was developed, they argue that this formula might be useful only as "empirical reality, like the dog owner's observation that mutts are more likely to have pleasant temperaments than purebreds," rather than "a law of nature." *Supra*, at 57.

Most laws of physics and chemistry originated as "dog owner's observations," but aside from this generalization of the process of scientific discovery, the particular relationship of habitat to species diversity is much more firmly established than they imply. "Despite uncertainties in the actual mathematical relationship between habitat size and the number of species in that habitat, there is no disagreement in the ecological literature about one fundamental relationship: sufficient loss of habitat will lead to species extinction." NRC REPORT, *supra* note 14, at 72.

48. See S. REP. NO. 307, 93d Cong., 1st Sess. 2 (1973), reprinted in *A LEGISLATIVE HISTORY OF THE ACT*, *supra* note 24, at 301 ("The two major causes of extinction are hunting and destruction of natural habitat."). See also H.R. REP. NO. 1625, 95th Cong., 2d Sess. 5 (1978), reprinted in *A LEGISLATIVE HISTORY OF THE ACT*, *supra* note 24, at 729 ("The loss of habitat for many species is universally cited as the major cause for the extinction of species worldwide.").

49. In 1973, Congress allowed for land acquisition in section 5 of the ESA; in 1978, Congress established the requirements for critical habitat in sections 4 and 7 of the ESA; in 1982, Congress provided for the development of habitat conservation plans in section 10 as a means to protect habitat. In 1966, Congress passed the National Wildlife Refuge Act, Pub. L. No. 89-669, 80 Stat. 927, thereby creating the National Wildlife Refuge System as another means to protect habitat. See 16 U.S.C. §§ 668dd-668ee (1994).

or overharvesting that causes the most dramatic decline of a particular species. Such actions may be intentional, such as the hunting of the great whales for many centuries, the killing of alligators in the Southeastern United States, or poaching of any of the so-called megafauna in Asia and Africa (such as the rhinoceros, elephant, and tiger). Such harvest also may be incidental or unintentional, such as the taking of sea turtles by shrimp fishermen. The distinction is sometimes blurred, however, as in the case of fishermen who target one species of non-endangered salmon and incidentally capture another species of endangered salmon that is indistinguishable from the other.⁵⁰

Introduction of nonnative species has also had a significant impact on wild native populations, although the evidentiary nexus is often difficult to establish.⁵¹ Island ecosystems, because of their isolation, are the most vulnerable to exotic species and the most susceptible to extinctions of native species. One researcher estimated that "introduced species were responsible for 39% of all animal extinctions whose causes were known," and another "concluded that 12.7% of threatened terrestrial vertebrate species on mainland areas and 31% on islands were affected by introductions."⁵² As one particularly graphic example, the introduction of the Nile perch in Lake Victoria as a human food source has led to the extinction or depletion of about 200 of the 300 native cichlid fishes found in the lake.⁵³

Where any of these threats exist, healthy species may decline to the point of endangerment, and endangered species may be extirpated. Reversing this trend and recovering species will occur only if threats are addressed and mitigated, if not eliminated. A viable population needs to be accompanied by a viable environment.

50. See *Pacific Northwest Generating Coop. v. Brown*, 38 F.3d 1058 (9th Cir. 1994). Plaintiffs (electricity users) argued that fishermen should not be entitled to harvest any salmon in the Columbia River or the Pacific Ocean because they were purposefully taking salmon that were indistinguishable from endangered salmon; plaintiffs argued this amounted to a taking prohibited by the ESA. *Id.* at 1067. The court held that even though the salmon protected under the ESA were indistinguishable from other non-protected salmon, the protected salmon were not the intended catch of the fishermen and were, therefore, taken incidentally. *Id.* at 1068.

51. NRC REPORT, *supra* note 14, at 37.

52. NRC REPORT, *supra* note 14, at 37 (citing B. GROOMSBIDGE, *GLOBAL BIODIVERSITY: STATUS OF THE EARTH'S LIVING RESOURCES* (B. Groomsbridge ed., 1992), and I.A.W. MACDONALD ET AL., *Wildlife Conservation and the Invasion of Nature Reserves by Introduced Species: A Global Perspective*, *BIOLOGICAL INVASIONS: A GLOBAL PERSPECTIVE* (J.A. Drake et al. eds., 1989)).

53. NRC REPORT, *supra* note 14, at 38.

3. *Self-sustaining Populations*

The third element of recovery—achieving a naturally self-sustaining population—is essentially an offshoot of the first two, but because it does not necessarily exist even if the other two do, it should be considered an independent requirement. The third element requires the existence of a population in the wild that can sustain itself over the long term, without losing viability, without succumbing to stochastic events, and without artificial supplementation or captive propagation. In pure biological terms, to establish a viable population, the third element requires a cohort replacement value of at least one so that each generation replaces itself. Without this final element, recovery will not be sustained.

III. LEGAL FRAMEWORK FOR RECOVERY

In crafting the Endangered Species Act of 1973, Congress recognized the extreme importance of preserving all species,⁵⁴ as well as preserving the “balance of nature” between humans and their environment.⁵⁵ In this context, Congress emphasized the prospective nature of the ESA.⁵⁶ The

54. See H.R. REP. NO. 412, 93d Cong., 1st Sess. 1, 3 (1973), *reprinted in* A LEGISLATIVE HISTORY OF THE ACT, *supra* note 24, at 140, 142.

From all evidence available to us, it appears that the pace of disappearance of species is accelerating. As we homogenize the habitats in which these plants and animals evolved, and as we increase the pressure for products that they are in a position to supply . . . we threatened their—and our own—genetic heritage.

The value of this genetic heritage is, quite literally, incalculable . . . From the most narrow possible point of view, it is in the best interests of mankind to minimize the losses of genetic variations. The reason is simple: they are potential resources. They are keys to puzzles which we cannot solve, and may provide answers to questions which we have not yet learned to ask.

Supra, at 143-44.

55. 119 CONG. REC. 30,166 (1973) (statement of Rep. Harrington), *reprinted in* A LEGISLATIVE HISTORY OF THE ACT, *supra* note 24, at 202-03.

It seems to me that man may lose more than he thinks, if he does not act to correct his interference with nature. A particular animal or plant species contributes much more to the world than general esthetic pleasure; it contributes to that much-used but little-understood phrase “the balance of nature.”

Supra. See also 119 CONG. REC. 30,166 (1973) (statement by Rep. Annunzio), *reprinted in* A LEGISLATIVE HISTORY OF THE ACT, *supra* note 24, at 203.

We have mistreated our wildlife—one of nature’s greatest gifts—and we are paying a high price. We have made attempts to stop the ravage of wild animals, but unless we do more, the price we pay will be still higher . . . The balance of nature, on which we depend for our survival, depends on the survival of our wildlife.

Supra.

56. See 119 CONG. REC. 30,167 (1973) (statement of Rep. Clausen), *reprinted in* A LEGISLATIVE HISTORY OF THE ACT, *supra* note 24, at 204.

In the past, little action was taken until the situation became critical and the species was dangerously close to total extinction. This legislation provides us with the means for preventive action.

Supreme Court has observed, based on the simple but strong language of the Act as well as its legislative history, that Congress has afforded the protection of endangered and threatened species the highest of priorities.⁵⁷ In accomplishing this task, Congress deferred to science, and required throughout the ESA that decisions be made on the basis of the best scientific information available.⁵⁸

While Congress stated its purpose to protect species in no uncertain terms, the means to accomplish that purpose was not always clearly delineated in the Act. Over the course of several years and several amendments, Congress refined its vision that species could be protected at different levels: populations could be stabilized, or increased; adverse impacts could be reduced, or eliminated; habitat loss could be halted, or reversed. These two levels of protection eventually evolved into the distinction between survival and recovery. This bifurcation has resulted in the current limitations within the Act in fully protecting listed species. However, if the law is to satisfy the original intent of Congress as expressed in the 1973 Act, to preserve species within viable ecosystems,⁵⁹ then recovery of threatened and endangered species needs to be achieved. This section analyzes the three major provisions of the Act by which that purpose can be accomplished: recovery planning and implementation; the general duty of federal agencies to conserve listed species; and the duty of non-federal entities to conserve listed species in mitigation for an otherwise prohibited taking of a listed species.

A. *General Requirements of Recovery Planning*

1. *Congressional Mandate*

There were two legislative precursors to the 1973 Act: one passed by Congress in 1966 and another in 1969.⁶⁰ While both provided for the conservation of endangered and threatened species—and in doing so,

As I am certain everyone will agree, it is far wiser to take such preventive steps to keep a species or subspecies from reaching this critical point than to stand idly by until emergency action is necessary which may not in every case be successful.

Supra.

57. *Tennessee Valley Authority v. Hill*, 437 U.S. 153, 174 (1978).

58. See 16 U.S.C. § 1533(b) (determinations that a species is endangered or threatened); 16 U.S.C. § 1536(a)(2) (development and conclusion of biological opinions); 16 U.S.C. § 1539 (issuance of incidental take permits).

59. See 16 U.S.C. § 1531(b).

60. Endangered Species Preservation Act of 1966, Pub. L. No. 89-669, 80 Stat. 926 (1966) (repealed 1973); Endangered Species Conservation Act of 1969, Pub. L. No. 91-135, 83 Stat. 275 (1969) (repealed 1973). For a summary of each act and the need for additional legislation, see H.R. REP. NO. 412, 93d Cong., 1st Sess. 2-9 (1973), reprinted in *A LEGISLATIVE HISTORY OF THE ACT*, *supra* note 24, at 141-48.

implicitly required the species' recovery—neither Act contained an explicit mandate relating to recovery or how to achieve it. The 1966 law stated that “the purposes of this Act are to provide a program for the conservation, protection, restoration, and propagation of selected species of native fish and wildlife . . . that are threatened with extinction”⁶¹ It further required that the Secretary utilize programs under his jurisdiction and encourage other agencies to use their programs to further the purposes of the Act.⁶² The 1969 Act elaborated on the listing process, strengthened protections for listed species, and instituted trade restrictions, but did not expound on the conservation requirements.⁶³

The Endangered Species Act of 1973 forms the basis of the law in effect today. The provisions relating to recovery, however, were not included in the ESA until 1978.⁶⁴ The basic recovery requirement has remained unchanged since then: “the Secretary shall develop and implement plans (hereinafter . . . referred to as ‘recovery plans’) for the conservation and survival of [listed] species, unless he finds that such plan will not provide for the conservation of the species.”⁶⁵ Procedurally, the 1978 amendments provided that the Secretary “may procure the services of appropriate public and private agencies and institutions, and other qualified persons.”⁶⁶ Congress removed a significant hurdle to the usual procurement of such services by explicitly exempting recovery teams from the Federal Advisory Committee Act.⁶⁷

The requirement to develop and implement recovery plans was included in the original bill introduced by Representative Leggett in 1978.⁶⁸ One purpose of the 1978 amendments was to provide a blueprint for the recovery of listed species on a comprehensive scale, whereas other provisions of the Act, such as section 7 and section 10, focus on individual projects.⁶⁹ Legislative history reveals that the bill language finally adopt-

61. Pub. L. No. 89-669, § 1(a), 80 Stat. 926 (1966).

62. Pub. L. No. 89-669, § 2(d), 80 Stat. 926, 927 (1966).

The Secretary [of the Interior] shall review other programs administered by him and, to the extent practicable, utilize such programs in furtherance of the purposes of this Act. The Secretary shall also encourage other Federal agencies to utilize, where practicable, their authorities in furtherance of the purpose of this Act and shall consult with and assist such agencies in carrying out endangered species program [sic].

Id.

63. See Pub. L. No. 91-135, 83 Stat. 275 (1969).

64. Pub. L. No. 95-632, § 11(5), 92 Stat. 3751, 3766 (1978).

65. 16 U.S.C. § 1533(f)(1).

66. 16 U.S.C. § 1533(f)(2).

67. *Id.* The Federal Advisory Committee Act (FACA), 5 U.S.C. app. §§ 1-15 (1994), requires that committees organized to advise the government be chartered and proceed by strict rules for public observation, participation and reporting. 5 U.S.C. app. § 10.

68. H.R. 14104, 95th Cong., 2d Sess. 5 (1978), reprinted in A LEGISLATIVE HISTORY OF THE ACT, *supra* note 24, at 668.

69. H.R. REP. NO. 1625, 95th Cong., 2d Sess. 19 (1978), reprinted in A LEGISLATIVE HISTORY

ed does not exactly track the report language accompanying the bill; the 1978 Amendment clearly requires, however, that the Secretary provide for the conservation *and* survival of listed species.⁷⁰

All revisions since 1978 have been procedural and administrative; the simple substantive mandate to develop and implement plans to recover the species had not been challenged until this year's reauthorization debates.⁷¹ In 1982, Congress amended section 4(f) to state that plans "shall,

OF THE ACT, *supra* note 24, at 743. The Report focuses on the amendments to the consultation process and the creation of the exemption process. The report contains a short discussion relating to provision requiring recovery plans.

The bill adds a new subsection (g) to section 4 which would require the Secretary to develop and implement recovery plans for listed species. Such plans would be designed to ensure the conservation or survival of each listed species. Recovery teams may be appointed by the Secretary, where appropriate, to aid in developing or implementing a recovery plan for a particular species. Such plans shall be as long and as detailed as is necessary and consonant with their purpose of providing a framework for actions directed at conserving or, at least, insuring the survival of the subject species. Although recovery plans are implicit in the Endangered Species Act, the Act does not specifically mandate recovery plans. As a result, recovery plans have been given a low priority within the Endangered Species Act budget.

The committee intends the Secretary to establish recovery teams to assist with: (1) the development of plans; (2) periodic amendment of plans; and (3) the implementation of the plans. The committee hopes that the Secretary will appoint full-time professionals to insure that planning and implementation proceed expeditiously.

Supra.

70. The original language stated that recovery plans are to provide "for the conservation *or* survival of [listed] species." H.R. 14104, 95th Cong., 2d Sess. 5 (1978), *reprinted in* A LEGISLATIVE HISTORY OF THE ACT, *supra* note 24, at 668 (emphasis added). This language was also approved by the House Committee on Merchant Marine and Fisheries, and referred to the floor of the House of Representatives. *Supra*, at 698. The Committee Report that accompanied this bill stated that recovery plans "would be designed to ensure the conservation or survival of each listed species," and to "provid[e] a framework for actions directed at conserving or, at least, insuring the survival of the subject species." *Supra*, at 743.

The Senate bill, introduced by Senator Culver, contained no similar provision relating to recovery plans. S. 2899, 95th Cong., 2d Sess. (1978), *reprinted in* A LEGISLATIVE HISTORY OF THE ACT, *supra* note 24, at 905. There was no discussion on the floor of the House or Senate on recovery plans; the discussion focused primarily on the consultation and exemption processes of section 7 and, to a lesser extent, critical habitat.

The bill that emerged from conference between the House and Senate not only contained the recovery plan requirement, but the bill had modified it in a slight but significant manner. In stating the nature of recovery plans, it changed the "or" to "and" so the bill read: "The Secretary shall develop and implement plans . . . for the conservation *and* survival of [listed] species." H.R. CONF. REP. NO. 1804, 95th Cong., 2d Sess. 15 (1978), *reprinted in* A LEGISLATIVE HISTORY OF THE ACT, *supra* note 24, at 1206 (emphasis added). Interestingly, the explanatory statement of the Conference Report provides the same language as in the House committee report on recovery plans (using "or" rather than "and"). *Supra*, at 1219. The statutory language that recovery plans must provide for the conservation and survival of listed species is thus not entirely consistent with the legislative history that recovery plans would be designed for the conservation or survival of the species. Subsequent amendments to the ESA in 1982 and 1988 buttressed the language that recovery plans are to provide for the recovery of listed species and not merely their survival.

71. See *infra* notes 272-75 and accompanying text.

to the maximum extent practicable, give priority to those [listed] species most likely to benefit from such plans, particularly those species that are, or may be, in contact with construction and other developmental projects or other forms of economic activity"⁷² Congress noted that this change "is to ensure that such conflicts, or potential conflicts, receive priority attention from the Secretary so as to limit the occasions upon which major problems under section 7 may arise."⁷³ Congress established this priority in light of the limited funding available for recovery planning.⁷⁴

In 1988, Congress again amended section 4(f), adding an elaborate set of procedural requirements.⁷⁵ With respect to prioritizing recovery plans, Congress explicitly stated that the Services are not to give different priority to different taxonomic classifications.⁷⁶ With respect to individual plans, Congress required additional direction and information to be included in recovery plans, including a description of site-specific management measures to achieve recovery, objective and measurable criteria for delisting, and estimates of both the time and cost necessary to achieve recovery.⁷⁷ Congress also required that the Secretary provide public no-

72. Pub. L. No. 97-304, 96 Stat. 1415 (1982) (codified at 16 U.S.C. § 1533(f)(1) (1994)).

73. H.R. REP. NO. 567, 97th Cong., 2d Sess. 22 (1982), *reprinted in* 1982 U.S.C.C.A.N. 2807, 2822. The Report further noted that "[t]he Committee does not intend that this requirement divert attention from critically endangered species that benefit from recovery plans but are not threatened with conflicts with human activity and has included the words 'to the maximum extent practicable' to express this intent." *Id.*

74. *Id.* at 2812. The legislative history also reveals that

[o]ther witnesses [during hearings] discussed the implementation of recovery plans which provide an essential program to improve a species' status. However, with limited resources, the Secretary must judiciously choose where those resources will accomplish the maximum amount of recovery for a depleted species. Resources should first be directed to recover species which are in direct conflict [sic] with human activities, such as construction and development projects, and H.R. 6133 provides for this.

Id.

75. Pub. L. No. 100-478, 102 Stat. 2307 (1988).

76. 16 U.S.C. § 1533(f)(1)(A).

The Secretary, in developing and implementing recovery plans, shall, to the maximum extent practicable—(A) give priority to those endangered species or threatened species, without regard to taxonomic classification, that are most likely to benefit from such plans, particularly those species that are, or may be, in conflict with construction or other development projects or other forms of economic activity."

Id.

77. 16 U.S.C. § 1533(f)(1)(B).

The Secretary, in developing and implementing recovery plans, shall, to the maximum extent practicable—(B) incorporate in each plan (i) a description of such site-specific management actions as may be necessary to achieve the plan's goal for the conservation and survival of the species; (ii) objective, measurable criteria which, when met, would result in a determination, in accordance with the provisions of this section, that the species be removed from the list; and (iii) estimates of the time required and the cost to carry out those measures needed to achieve the plan's goal and to achieve intermediate steps toward that

tice and an opportunity to comment on proposed recovery plans and that he consider all information received during the comment period.⁷⁸ Amendments to section 4(f) also included the requirement that the Services report to Congress on the progress of recovery efforts.⁷⁹

Congress' intent behind these amendments was to strengthen the goal of recovery by mandating recovery plans that provided explicit, meaningful guidance and cost estimates for conservation, and that ensured public involvement through notice and comment procedures.⁸⁰ The amendments were not intended to change the substantive requirement of recovery in any way, however.⁸¹ In creating an elaborate, open, public process that would consider all aspects of protecting listed species—biological, environmental, social, and economic—Congress compensated for the insularity of both the listing and consultation processes, which are based solely on scientific findings. While the listing process determines whether the species is endangered or threatened, in purely biological terms, and the consultation process determines whether a federal action is likely to jeopardize the species, again in purely biological terms, the recovery process determines how to recover the species by taking into account all relevant factors.⁸²

Although Congress strengthened the requirements for the development of recovery plans by the Services, the requirements for implementation of the plans remained vague. The Services are the only federal agencies required to develop and implement recovery plans.⁸³ No comparable requirement exists for other federal agencies, which are under no obligation to undertake measures to recover listed species. Congress did require

goal.

Id.

78. 16 U.S.C. § 1533(f)(4).

79. 16 U.S.C. § 1533(f)(3).

80. H.R. CONF. REP. NO. 928, 100th Cong., 2d Sess. 21 (1988), reprinted in 1988 U.S.C.C.A.N. 2738, 2739.

The Senate amendment also required the Secretary to provide public notice and an opportunity for public review of proposed recovery plans, and to consider public comments before approving the plan. The Conferees agreed that the requirement for public notice and review does not necessitate a rulemaking procedure.

Id. See also U.S. GEN. ACCOUNTING OFFICE, MANAGEMENT IMPROVEMENTS COULD ENHANCE RECOVERY PROGRAM (1988).

81. H.R. CONF. REP. NO. 928, 100th Cong., 2d Sess. 21 (1988), reprinted in 1988 U.S.C.C.A.N. 2738, 2739. "The Conferees agree that this amendment [to section 4(f)] merely imposes new procedural requirements . . . [T]he development and the content of the recovery plans will continue to be based solely on biological considerations." *Id.* See also 134 CONG. REC. 19,273 (1988) (statement of Sen. Mitchell). Recovery plans are to be "based solely on the best available scientific data." *Id.*

82. See Karl Gleaves & Katharine Wellman, *Economics and the Endangered Species Act*, 13 PUB. LAND L. REV. 149, 159-60 (1992).

83. 16 U.S.C. § 1533(f)(1). Only "the Secretary shall develop and implement [recovery] plans." *Id.*

that “[e]ach agency shall, prior to implementation of a new or revised recovery plan, consider all information presented during the public comment period [of such plan].”⁸⁴ However, this is far from a mandate that each federal agency actually implement recovery plans; while it may be implied, this provision requires only that the other federal agencies consider public information when implementing plans.⁸⁵

Congress sought to monitor the progress of recovery efforts by mandating that the Services report to Congress on their recovery efforts.⁸⁶ Congress also provided for continued monitoring requirements for recovered species. Specifically, the “Secretary shall implement a system in cooperation with the States to monitor effectively for not less than five years the status of all species which have recovered [and been delisted].”⁸⁷ In the event that a recovered species may face “a significant risk to [its] well being,” the Secretary may invoke the emergency rulemaking provisions in the ESA and waive the informal rulemaking requirements of the Administrative Procedure Act and the procedural listing requirements in the ESA itself to prevent such a risk.⁸⁸

In sum, there remains a significant gap between the requirements for development of recovery plans and the requirements for implementation of those plans. While Congress has improved the process for developing plans by providing specific guidance, Congress has yet to provide any meaningful requirement to implement recovery plans or to require recovery goals and tasks in other provisions of the Act. Without an effective implementation mandate, the content of recovery plans, no matter how detailed and superlative, has limited value; recovery goals will remain unfulfilled.

84. 16 U.S.C. § 1533(f)(5).

85. H.R. CONF. REP. NO. 928, 100th Cong., 2d Sess. 21 (1988), *reprinted in* 1988 U.S.C.C.A.N. 2738, 2739. As Congress noted, the “amendment merely imposes new procedural requirements. For example, the substantive requirements of section 7(a)(1) of the law are not affected by this amendment. Similarly, the development and the content of recovery plans will continue to be based solely on biological considerations.” *Id.*

86. 16 U.S.C. § 1533(f)(3). The Conference Report noted that the Senate bill contained the amendments to section 4(f), while the House bill was silent on provisions relating to recovery. The conferees adopted the Senate version with one modification: the Secretary’s report to Congress would be biannual instead of annual. As for content, the conferees agreed that “the report should provide general information on the status of each listed species and on the progress in developing and implementing recovery plans for each such species. The Secretary should set up a management tracking system to facilitate the preparation of the report.” H.R. CONF. REP. NO. 928, 100th Cong., 2d Sess. 21 (1988), *reprinted in* 1988 U.S.C.C.A.N. 2738, 2739.

87. 16 U.S.C. § 1533(g)(1).

88. 16 U.S.C. § 1533(g)(2). This provision provides that “[t]he Secretary shall make prompt use of the authority under paragraph 7 of subsection (b) of this section to prevent a significant risk to the well being of any such recovered species.” *Id.* This allows for publication of a final rule in the Federal Register without notice-and-comment; the rule becomes effective upon publication for a 240-day period. *See* 16 U.S.C. § 1533(b)(7).

2. Administrative Implementation

The successive amendments by Congress in 1982 and 1988 reflect the growth of knowledge and experience in recovery planning since the passage of the Act in 1973. This learning curve was paralleled by the agencies implementing the Act as much as by Congress in amending the Act. In the late 1970s and early 1980s, recovery was a poorly defined goal. In 1983, the FWS instituted priority guidelines, which assisted FWS in deciding what to recover, but provided little guidance in how to recover.⁸⁹ Finally, with the 1988 amendments, the Services began developing—at the national level—general guidelines for preparing and implementing recovery plans, and began including—at the regional level—direct, meaningful guidance in specific recovery plans.⁹⁰ FWS and NMFS consider recovery plans to be general guidance documents that outline goals, objectives, and recommendations for both research and management; management actions by federal agencies that follow from or implement recovery plans are considered independent actions.⁹¹ For this reason, recovery plan development is generally excluded from the requirements of the National Environmental Policy Act (NEPA).⁹²

The general guidelines prepared by FWS identified several objectives for the recovery program: “(1) complete development of recovery plans within 2.5 years, to the maximum extent possible, (2) determine tasks necessary to reduce or eliminate the threats to the highest priority species, (3) apply available resources to the highest priority recovery tasks, and (4) reclassify and delist species as appropriate.”⁹³ NMFS has prepared similar guidelines for its recovery planning and implementation program.⁹⁴

89. 48 Fed. Reg. 43,098 (1983).

90. See generally U.S. FISH AND WILDLIFE SERV., U.S. DEP'T OF INTERIOR, POLICY AND GUIDELINES FOR PLANNING AND COORDINATING RECOVERY OF ENDANGERED AND THREATENED SPECIES (1990) [hereinafter FWS RECOVERY PLANNING GUIDELINES]; NMFS RECOVERY PLANNING GUIDELINES, *supra* note 23.

91. FWS RECOVERY PLANNING GUIDELINES, *supra* note 90, at 1-2.

A recovery plan delineates, justifies, and schedules the research and management actions necessary to support recovery of a species, including those that, if successfully undertaken, are likely to permit reclassification or delisting of the species . . . Although recovery plans do not, of themselves, commit manpower or funds, they are used in setting regional and national funding priorities.

Supra.

92. 42 U.S.C. §§ 4321-4370d (1994). The FWS guidance states that “recovery plan development is categorically excluded from complying with NEPA based on the consultative and technical assistance nature of recovery planning. However, implementation of a specific task in a plan may require NEPA compliance if that task constitutes a major federal action.” FWS RECOVERY PLANNING GUIDELINES, *supra* note 90, at 6.

93. FWS REPORT TO CONGRESS, *supra* note 4, at 15.

94. See generally NMFS RECOVERY PLANNING GUIDELINES, *supra* note 23.

The guidelines developed by FWS and NMFS are fairly similar, although the FWS guidelines are much more detailed. In terms of recovery plan content, both recommend that plans begin with a discussion on the status of the species, including biological requirements of the species, as well as the various factors affecting the species. While the objective of every plan should be recovery, the plan should include "objective, measurable criteria" by which to measure recovery.⁹⁵ Unlike the NMFS guidelines, the FWS guidelines provide that the objective of the plan need not be complete delisting. The FWS guidelines recommend that in developing a plan objective, the agency should "choose among delisting, downlisting, or protection of existing populations for a specific time period for the foreseeable future."⁹⁶ While the goal should be ambitious, it should not be unobtainable.⁹⁷ The guidelines also provide a great deal of latitude in developing quantifiable criteria, which "calls for creative thought, and . . . may require educated guesswork."⁹⁸ These criteria, however, are necessary, and "represent the central pillar of the recovery plan," in that they provide focus to the overall plan and promote necessary funding.⁹⁹

The plan should identify needed recovery actions, set forth an implementation schedule and prioritization of recovery actions, and estimate the costs and time necessary for completion of the actions.¹⁰⁰ The guidance documents do not identify specific types of recovery actions that could be

95. NMFS RECOVERY PLANNING GUIDELINES, *supra* note 23, at 5.

These quantitative criteria can be stated in biological or other terms appropriate for the species, its situation, and available information. For example, the recovery criteria may be to establish additional populations and/or attain a certain population level. Alternatively, a recovery criterion may be to remove certain threats facing the species.

Supra. See also FWS RECOVERY PLANNING GUIDELINES, *supra* note 90, at 3-4.

96. FWS RECOVERY PLANNING GUIDELINES, *supra* note 90, at 1-5.

97. FWS RECOVERY PLANNING GUIDELINES, *supra* note 90, at 1-5.

98. FWS RECOVERY PLANNING GUIDELINES, *supra* note 90, at 1-11.

99. FWS RECOVERY PLANNING GUIDELINES, *supra* note 90, at 1-11.

100. See FWS RECOVERY PLANNING GUIDELINES, *supra* note 90, at 4.

A recovery plan must estimate the time frame required for accomplishing recovery, assuming that sufficient funds are provided and in accordance with the schedule of the plan. Estimates of the time to recovery must be based on known biological factors and a determination of the likelihood that other management programs, including regulatory and law enforcement programs, might facilitate or detract from task accomplishment.

Supra. The ESA states that recovery plan shall include "estimates of the time required and the cost to carry out those measures needed to achieve the plan's goal . . ." 16 U.S.C. § 1533(f)(1)(B)(iii). As noted above, Congress mentioned that this requirement was to allow "better assessment of the adequacy of annual budget requests and appropriations for these [recovery] activities . . ." S. REP. NO. 240, 100th Cong., 2d Sess. 10 (1988), reprinted in 1988 U.S.C.C.A.N. 2700, 2709. Based on this language, NMFS has interpreted costs of recovery to be only those direct costs relating to specific activities in implementing the recovery plan, and not socioeconomic costs that may accrue as a result of recovery efforts. See Memorandum from Michael H. Bancroft, Staff Attorney, Northwest Regional Office of General Counsel, Nat'l Oceanic and Atmospheric Admin., to Donald Bevan, Chairman, Snake River Salmon Recovery Team (Sept. 23, 1993) (on file with author).

undertaken. Rather, all actions designated to conserve listed species should be included in the plan, at the discretion of the Service.¹⁰¹ In addition to specific actions, FWS recommends the inclusion of "strategies" to be applied to known threats in order to achieve the recovery objective. These strategies are broader in scope than the specific actions recommended, and include "research on disease, habitat protection, protection from taking, captive propagation, reintroduction, control of competing species, etc."¹⁰² Monitoring and research are also important elements to be included in recovery plans.

Additionally, FWS has established a recovery priority system with two criteria. The first criterion is a species recovery priority system that ranks (at the time of listing) individual species from 1 to 18 based on "the degree of threat, recovery potential, taxonomic distinctness, and presence of an actual or imminent conflict between the species' conservation and development or other economic activities"¹⁰³ The second criterion is a recovery task priority system that ranks particular tasks in any given recovery plan from 1 to 3 based on "the relative contribution they may make to species recovery."¹⁰⁴ Thus, with existing budget constraints, funding should be directed at priority-1 tasks for priority-1 species, with priority-3 tasks for priority-18 species receiving the least funding.

Both Services stress the process as much as the substance in recovery planning. In terms of timing, FWS states that recovery planning should begin even before the species is actually listed, and that a recovery outline is required at the time of listing.¹⁰⁵ In terms of scope, the Services include interested parties as much as possible as a matter of political comity, legal necessity, and administrative efficiency.¹⁰⁶ This requires coordi-

101. The FWS Recovery Planning Guidelines state:

Actions not known to be required for recovery, even though possibly beneficial, may be included. Though most of the tasks included . . . should be those that are expected to be carried out in the near future, all tasks necessary to achieve full recovery of the species should be identifiedSpecifically identify . . . any recommendation for the protection of habitat that is essential to the speciesAvailable options for land protection (e.g., fee purchase, easement, etc.) should be considered as options.

FWS RECOVERY PLANNING GUIDELINES, *supra* note 90, at I-12 to I-13.

102. FWS RECOVERY PLANNING GUIDELINES, *supra* note 90, at I-13.

103. FWS RECOVERY PLANNING GUIDELINES, *supra* note 90, at 4-5.

104. FWS RECOVERY PLANNING GUIDELINES, *supra* note 90, at 5. "Any task receiving a Priority 1 designation in the Implementation Schedule must be justified in the Narrative Outline as necessary to prevent extinction." *Supra*, at I-13.

105. See FWS RECOVERY PLANNING GUIDELINES, *supra* note 90, at 6.

106. See NMFS RECOVERY PLANNING GUIDELINES, *supra* note 23, at 1.

Recovery efforts must involve not only NMFS, but must include a coordinated effort by other Federal agencies, state and local governments, private industry, conservation organizations, subsistence/traditional native users, the public, and in some cases sovereign Indian tribes. The development and implementation of recovery plans will help combine the

nation among tribes, states, local governments, and the private sector; coordination occurs through formalized channels—such as publication in the Federal Register—but can be expanded through the development of informal agreements and other planning initiatives. Because recovery planning is one of the key areas in which the ESA requires a consideration of economic costs, affected parties should be given ample opportunity to participate in the recovery planning process.

With respect to the mechanics of recovery planning, while the Services anticipate that recovery plans are to be developed by recovery teams appointed by them, outside contractors or the agency itself may prepare a plan. Recovery teams are appointed by the Services. FWS encourages the team leader to be a Service employee but allows for working groups and outside advisors;¹⁰⁷ NMFS encourages the use of technical advisors and outside agencies for assistance.¹⁰⁸ This flexibility exists because of the exemption of recovery teams from the requirements of FACA, which would otherwise severely hamper the recovery planning process.¹⁰⁹ The recovery team advises and assists the Services in developing and implementing recovery plans, including drafting the plans, prioritizing tasks, evaluating progress towards recovery, and recommending revisions to existing plans.¹¹⁰ Notices are published in the Federal Register to announce the development of a recovery plan and to provide opportunity to comment on the draft plan (typically the plan developed by the recovery team).¹¹¹ The Services may or may not provide an additional round of public notice and comment. Plans are to be based on the best available scientific information, reviewed periodically, and updated as necessary, to ensure that high standards are maintained.

Of 893 species under FWS jurisdiction, 484 (54%) have final approved recovery plans, and 185 (21%) have draft recovery plans; another 159 plans are under development.¹¹² Of twenty-nine species listed by

programs and expertise of these agencies and organizations into effective recovery efforts.

Supra.

107. FWS RECOVERY PLANNING GUIDELINES, *supra* note 90, at II-2.

108. NMFS RECOVERY PLANNING GUIDELINES, *supra* note 23, at 8.

Because of the small size of teams, team members should consult with other qualified individuals and organizations in developing plans and carrying out their functions Recovery teams can request assistance or recommendations from scientists, conservation organizations, State and Federal agencies involved with research or management of the species, and other interested parties. Specialists in other fields, who are not team members, may be invited to attend team meetings when their expertise is required.

Supra, at 7-8.

109. See *supra* note 67 and accompanying text.

110. NMFS RECOVERY PLANNING GUIDELINES, *supra* note 23, at 8.

111. See 16 U.S.C. § 1533(f)(4).

112. FWS REPORT TO CONGRESS, *supra* note 4, at 12 (figures represent status as of September 30, 1994).

NMFS, final approved recovery plans exist for ten species; plans are currently being developed for another six species.¹¹³ Congressional appropriations for recovery programs in 1996 included \$40 million for FWS, and \$13.3 million for NMFS.¹¹⁴ Much of this money, however, is earmarked by Congress for certain species.¹¹⁵ Apart from these numbers, the plans can vary tremendously in all aspects. In terms of goals, many recovery plans establish as a goal the recovery of the species. In some cases, this goal entails a no-jeopardy alternative as well.¹¹⁶ In other cases, such as the recovery plan for the northern right whale, the goal is to reclassify the species from endangered to threatened.¹¹⁷ NMFS recognizes this as an interim goal, which is likely to take between 70 and 150 years to attain, depending on recruitment rates for the species.¹¹⁸ This is a good example of the need for flexibility in establishing goals and criteria for recovery, as provided in the Services' guidance documents.

The costs and mechanics of recovery plans can vary widely as well. Recommendations in plans may be implemented by the Services, by other agencies as part of their own programs, by state and tribal entities, or through interagency agreements among some combination of interested parties. Some plans even provide for foreign government involvement.¹¹⁹ Costs can also range significantly from plan to plan.¹²⁰ Most importantly,

113. NAT'L MARINE FISHERIES SERV., U.S. DEP'T OF COMMERCE, ENDANGERED SPECIES ACT BIENNIAL REPORT TO CONGRESS: STATUS OF RECOVERY PROGRAMS, JANUARY 1992-JUNE 1994 3-30 (1994).

114. Omnibus Consolidated Rescissions and Appropriations Act of 1996, Pub L. No. 104-134, 110 Stat. 1321 (1996).

115. H.R. CONF. REP. NO. 537, 104th Cong., 2d Sess. (1996) (referring to line item appropriations in H.R. CONF. REP. NO. 378, accompanying H.R. 2076, 104th Cong., 2d Sess. (1996)).

116. *See, e.g.*, U.S. FISH AND WILDLIFE SERV., U.S. DEP'T OF INTERIOR, RECOVERY IMPLEMENTATION PROGRAM FOR ENDANGERED FISH SPECIES IN THE UPPER COLORADO RIVER BASIN 2 (1993). [T]he Recovery Implementation Program Recovery Action Plan identifies the feasible actions which are necessary to recover the endangered fishes . . . [and] also identifies the specific recovery actions which must be accomplished in order for the recovery program to serve as the reasonable and prudent alternative to jeopardy for the endangered fishes in section 7 consultations

Id.

117. NAT'L MARINE FISHERIES SERV., U.S. DEP'T OF COMMERCE, FINAL RECOVERY PLAN FOR THE NORTHERN RIGHT WHALE 14 (1991).

118. *Id.*

119. *See, e.g.*, NAT'L MARINE FISHERIES SERV., U.S. DEP'T OF COMMERCE, RECOVERY PLAN FOR THE KEMP'S RIDLEY SEA TURTLE 17 (1992). This Plan makes substantial recommendations for improvement in protection of the Kemp's ridley nesting beach at Rancho Nuevo, Mexico, including expansion of the reserve, additional surveys, and restriction of development. *Id.*

120. The General Accounting Office (GAO) recently studied the costs of implementing 58 plans, and found total costs ranging from \$145,000 for the White River spinedace to \$153.8 million for the green sea turtle. U.S. GEN. ACCOUNTING OFFICE, ESTIMATED COSTS TO RECOVER PROTECTED SPECIES, GAO/RCED-96-34R (1996) [hereinafter GAO REPORT] (although the cost for recovery of the green sea turtle overlaps significantly with cost for loggerhead sea turtle recovery and includes signifi-

however, there is a tremendous disparity between the costs identified in the plans and the actual expenditures in implementing the plan, with the latter figure generally being very much lower.¹²¹ While this may reflect the fact that such actions are not necessary—and there are species that are recovering without expending all funds identified in the recovery plan¹²²—it may also reflect the fact that the recovery budget is woefully underfunded.

In July of 1994, the Services jointly published six policies relating to various aspects of ESA implementation. Four of the policies touch on some element of recovery planning.¹²³ One policy, dealing exclusively with recovery planning, clarified both the process and substance of plans. It stated that socioeconomic costs associated with recovery should be minimized. It established an elaborate Participation Plan to include all stakeholders to formally be involved in the planning process beyond notice and comment. Recovery teams are to include specific diverse representation. Plans for multiple species should be made a priority and all plans are to be completed within 2.5 years of listing. A second policy addressed the role of states in ESA implementation and provided that, with respect to recovery planning, the Services will solicit input from the states; with respect to monitoring for status reviews and conditions on delisted species, state authority shall be used. A third policy calls for an ecosystem-based approach to ESA implementation and provides that recovery plans for multiple species should be undertaken whenever possible. Another policy seeks peer review of decisions under the ESA (including the development

cant purchases of nesting habitat for both species). The GAO report also observed that 34 of the 58 plans contained total cost estimates for the plan, while 23 contained costs for only the initial three years of the recovery process. *Id.* at 2. However, this GAO study was limited by the fact that it looked only at plans for species facing a high degree of threat that also had a high potential for recovery; such plans would entail greater costs than plans for species that were not so critically endangered. Letter from John Rogers, Acting Director, U.S. Fish and Wildlife Service, to Barry Hill, Associate Director, Natural Resources Management Issues, U.S. General Accounting Office 4 (Dec. 5, 1995), reprinted in GAO REPORT, at 17, enclosure II (stating that “[t]he more imperiled a species is . . . the more dire the need and, frequently, the more expensive the emergency tasks required to prevent extinction.”). Furthermore, the costs are recognized to be highly subjective, based on best guesses, and not the product of rigorous economic analysis. GAO REPORT, at 1.

121. Letter from John Rogers, Acting Director, U.S. Fish and Wildlife Service, to Barry Hill, Associate Director, Natural Resources Management Issues, U.S. General Accounting Office 4 (Dec. 5, 1995), reprinted in GAO REPORT, *supra* note 120, at 17, enclosure II.

Rarely do the actual funds spent match the recovery plan implementation schedule’s estimates for any specific year. For example, for FY 1993, the recovery plan for the Lost River sucker estimates an expenditure of \$2,950,600; \$953,600 was actually spent; for FY 1992, the recovery plan for the black-capped vireo estimate an expenditure of \$16,274,000; \$1,087,000 was actually spent.

Id.

122. *Id.* (citing the examples of the Ozark big-eared bat and green pitcher plant).

123. See 59 Fed. Reg. 34,270 (1994).

of recovery plans) in order to ensure the use of the best available data.

3. *Judicial Interpretation*

Few courts have faced issues related to the development and implementation of recovery plans. Those courts that have examined recovery plans focused on the basic legal issues and requirements of section 4(f) of the Act; these cases will, most likely, provide a foundation for later cases addressing the more difficult issues related to recovery. As there is an extensive body of case law on the listing requirement of section 4(a) and 4(b), the consultation requirement of section 7, and the takings prohibition of section 9, it can be expected that a similar body of case law will develop for recovery planning, which remains one of the few unlitigated requirements of the ESA.¹²⁴

One court, in *Sierra Club v. Lujan*, recognized that the development and implementation of recovery plans are nondiscretionary actions by the Secretary that are reviewable by a court.¹²⁵ That case concerned several species resident to the Edwards Aquifer in Texas that were listed by FWS, and for which recovery plans were either not developed or developed but not implemented.¹²⁶ Federal defendants argued that the Secretary has discretion to develop and implement recovery plans and to determine whether recovery plans will conserve listed species, "particularly in light of the severe budget constraints."¹²⁷ The court rejected this argument and stated that "the ESA § 4 duty to develop and implement a recovery plan is mandatory, not discretionary."¹²⁸

While there is an exception if a plan will not promote conservation, which was invoked by Federal defendants in the litigation, the court found that FWS "demonstrated no rational basis for a finding that a recovery plan for the Texas Blind Salamander 'would not promote the conservation

124. See Cheever, *supra* note 5, at 58-72 (including an excellent discussion on cases related to recovery planning and conservation).

125. *Sierra Club v. Lujan*, 36 ERC (BNA) 1533, 1541 (W.D. Tex. 1993).

126. *Id.* at 1548. There are two ecosystems within the Edwards: the San Marcos Springs and the Comal Springs. Both are home to listed species that require certain minimum springflows from the two ecosystems. Over a period of seven years FWS had developed a recovery plan for San Marcos Springs but had failed to implement it (by failing to identify the minimum springflow requirements for survival and recovery of certain species). FWS had failed to develop a recovery plan for Comal Springs. The San Marcos plan also supported "a vigorous pursuit" of a "systematic procedure" for consultations required under section 7 of the ESA, although FWS had not requested any consultations at all until recently. Although a "vigorous pursuit of systematic procedure of consultation" may be vague and discretionary, the court found that the ESA provision was not satisfied because no consultations had been requested by FWS for many years (and only one at that).

127. *Id.* at 1542 (citing Federal Defendants' Brief, p. 16).

128. *Id.* at 1541. The court also noted that budgetary constraints cannot justify inaction. *Id.* at 1542 (citing *Northern Spotted Owl v. Lujan*, 758 F. Supp 621, 629 (W.D. Wash. 1991)).

of the species.”¹²⁹ Even if the status and location of the species is unknown, recovery plans are required if threats facing the species are known and can be mitigated.¹³⁰ Concluding that FWS “failed to take timely action to implement key steps in the San Marcos Recovery Plan, critical to the survival of the species,” the court stated such failure amounted to arbitrary and capricious agency action.¹³¹

Another court, in *Fund for Animals v. Babbitt*,¹³² delved into a more specific analysis of the content of recovery plans. The court reached a number of conclusions on how to interpret and how to review recovery plans. It first looked at the definition of measures required in recovery plans, the allowable discretion in determining those measures, and the required specificity in such measures; it then looked at the definition of objective, measurable criteria for delisting species. FWS had issued a final recovery plan for the grizzly bear in September 1993 and was sued by environmental groups for allegedly failing to set forth “site-specific management actions,” or “objective, measurable criteria,” as required by section 4(f), and generally for failing to mitigate threats to the survival of the grizzly bear.

The court first defined the term “site-specific management actions.” Relying on the plain meaning and grammar of the phrase, it upheld FWS’ argument that “the ‘site-specific’ provision [requires] the FWS to identify specific ‘sites’ inhabited by grizzly bears and to describe management actions for each of these ‘sites.’”¹³³ It further required that the Service, “in designing management actions, consider the distinct needs of separate ecosystems or recovery zones occupied by a [listed] species.”¹³⁴ The court then considered the nature or type of management actions required. The court looked at the definition of conservation in the Act and examined the legislative history to observe that while many conservation tools are suggested, none are mandated. It held that the “FWS has the flexibility un-

129. *Id.* at 1546. The court further observed that “the usual basis for such a finding is that a recovery plan identifying the locations where, for example, an endangered plant is found would expose it to collectors.” *Id.*

130. *Id.* at 1546-47.

131. *Id.* at 1551.

The Court does not conclude the Federal Defendants must, without exception, immediately implement every step in every recovery plan. The Court concludes, however, the Federal Defendants may not arbitrarily, for no reason or for inadequate or improper reasons, choose to remain idle. Inaction eviscerates the recovery planning provisions of the ESA and amounts to an abdication of the Federal Defendants’ statutory responsibility to plan for the survival and recovery, not the extinction, of endangered and threatened species.

Id.

132. 903 F. Supp. 96 (D.D.C. 1995).

133. *Fund for Animals*, 903 F. Supp. at 106. “The hyphen in ‘site-specific’ indicates that the word ‘specific’ modifies the word ‘site,’ not the term ‘management actions.’” *Id.*

134. *Id.*

der the ESA to recommend a wide range of 'management actions' on a site-specific basis."¹³⁵

With respect to the degree of detail required in such measures, the court gave significant latitude to the FWS. Although section 4(f)(1) requires FWS to identify such measures "to the maximum extent practicable"—which "imposes a clear duty on the agency to fulfill the statutory command to the extent that it is feasible or possible"¹³⁶—the court nevertheless found that FWS had included sufficient detail to satisfy the statute given the practical realities it faced.¹³⁷ The court looked not only at practical realities to support its holding, but, more significantly, it looked at the recovery requirement in relation to other provisions in the Act. It stated that although the recovery plan provision is a separate obligation under the Act, the plan recommendations are implemented through other, more specific and more detailed actions, which would compensate and allow for more flexibility in the recovery plans themselves.¹³⁸

As a general rule, the court noted that the ESA requires the "identification of management actions necessary to achieve the Plan's goals for the conservation and survival of the species."¹³⁹ A recovery plan that discussed threats to the species but failed to identify management measures to address those threats, or a plan that simply ignored such threats, would not survive judicial scrutiny.¹⁴⁰ As for specific management measures,

135. *Id.* "Congress recognized that a wide range of actions could be needed to conserve diverse species and the need for flexibility in choosing those actions." *Id.*

136. *Id.* at 107.

137. *Id.*

The reality faced by the FWS . . . is that myriad factors potentially affect the grizzly bears. It is not feasible for the FWS to attempt to address each possibility. By the time an exhaustively detailed recovery plan is completed and ready for publication, science or circumstances could have changed and the plan might no longer be suitable. Thus, the FWS recognized in the Plan that it would be reviewed every five years and revised as necessary. In these circumstances, the Court concludes that the FWS has provided sufficient detail to satisfy the statute.

Id.

138. *Id.*

It is not necessary for a recovery plan to be an exhaustively detailed document. Several other ESA provisions, some of which do not afford the FWS much discretion, already place limits on activities that may affect the grizzlies or empower the FWS to restrict threatening activities as needed . . . [T]he plan's recommendations are implemented through FWS programs, cooperation and consultation with states, and the obligations of federal agencies to consult with the FWS or to implement conservation programs. These programs may in many cases require the development of detailed and possibly site or situation specific restrictions to protect the grizzly bear. Because science and circumstances change, however, the FWS needs, and the statute provides, some flexibility as it implements the recovery plan.

Id. at 107-08 (citations omitted).

139. *Id.* at 108. *See also* 16 U.S.C. § 1533(f)(1)(B).

140. *Fund for Animals*, 903 F. Supp. at 108.

the court refused to substitute its view for that of the agency's when the agency's view was reasonable.¹⁴¹

Despite the deference shown to the FWS in identifying management measures in the plan, the court read a clear statutory mandate in the identification of objective and measurable criteria for delisting. Plaintiffs argued that the criteria must specifically "assess whether the threats that originally led to a decision to list a species have been remedied in ways that would permit biological recovery of the listed species."¹⁴² Defendants argued that, because such an assessment would be required in a delisting action, which is independent of recovery planning, there was no obligation to address the five factors identified in section 4(a)(1) in the recovery plan itself. The court rejected defendants' argument, and held that "FWS, in designing objective, measurable criteria, must address each of the five statutory delisting factors and measure whether threats to the grizzly bear have been ameliorated."¹⁴³ The court then analyzed each criterion for recovery as to whether it addressed the five factors considered for listing: habitat loss, overutilization, disease or predation, inadequacy of existing regulatory mechanisms, or other natural or manmade factors. The court held that the FWS plan did not identify criteria to measure these factors, including habitat loss, disease, livestock predation, or the adequacy of existing regulatory mechanisms.¹⁴⁴

The court also analyzed the issues of monitoring methods and population targets in the recovery plan and found that the FWS acted capriciously with regard to the first issue and reasonably with regard to the second. First, FWS used a monitoring method that the plan itself recognized as unreliable. Second, although plaintiffs alleged that FWS had not conducted a population viability analysis, defendants demonstrated that there was substantial disagreement within the scientific community as to the correct population size for viability. The court held that "[t]he fact that there is such disagreement does not render the agency's action arbitrary and capricious, however."¹⁴⁵

141. *Id.* at 108-10. In one odd footnote, the court additionally noted that social factors as well as biological factors can be considered in recovery plans, and that such consideration is not violative of the mandate to use the best available data, as long as such social factors have biological consequences for the species. The court made this statement, however, to justify a decision to not include linkage zone protection for the grizzly. *Id.* at 110 n.4. While recovery plans must identify socioeconomic costs, their goals and criteria are to be based on scientific data. *Id.*

142. *Id.* at 111.

143. *Id.* "Congress has spoken in clarion terms: the objective, measurable criteria must be directed towards the goal of removing the endangered or threatened species from the list." *Id.*

144. *Id.* at 110-13.

145. *Id.* at 113-15 (citing *Greenpeace Action v. Franklin*, 982 F.2d 1342, 1350 (9th Cir. 1992)). "While deference does not require the Court to accept the population targets if there is no scientific support for them or if they are blatantly wrong, the fact that a judgment may be disputable does not

Taken together, the two cases discussed immediately above indicate that courts will broadly examine the Services' actions to determine whether the agency complied generally with the requirements of section 4(f) of the Act; the agency must develop a recovery plan that contains some recommendations to conserve the species and addresses the threats facing the species. However, courts will take a very deferential view of what those measures should be and the extent to which they should be implemented.

The *Sierra Club v. Lujan* court established that both the development and implementation of recovery plans are mandatory, nondiscretionary actions of the Secretary that are reviewable by a court. Although plans need not be developed or implemented if they will not conserve the species, a court would examine this decision under the arbitrary and capricious standard of review.¹⁴⁶ While development of a plan may be measured simply and objectively by the mere existence of a plan, the implementation of a plan would require a much more difficult review by the court. While some cases, such as *Sierra Club v. Lujan*, involve egregious examples of noncompliance for which a court could readily find that the Service acted in an arbitrary and capricious manner, for the most part implementation of a plan—often involving broad goals and vague standards—would require a more subjective measure of compliance by a court and would likely entail greater deference to the Services. In addition, development and implementation of plans are required only by the Services, so that implementation of recovery plans by other agencies is a discretionary act, not reviewable by a court.

The *Fund for Animals v. Babbitt* court held that the FWS did not violate section 4(f) due to the lack of detail in its recovery measures; it found that the recovery measures addressed the threats to the grizzly bear and recommended actions to conserve the species and achieve the plan's goal, which was sufficient to pass muster.¹⁴⁷ In contrast, the court noted that if a plan should ignore the threats to the species, or recognize the threats but fail to identify measures to address those threats—egregious forms of noncompliance—the plan would violate the ESA.¹⁴⁸

The difficulty in finding an enforceable standard for recovery plans was demonstrated in *National Wildlife Federation v. National Park Service*.¹⁴⁹ The court refused to find the Park Service acted in an arbitrary and capricious manner when it did not close a campground, even though

render it arbitrary and capricious." *Id.* at 114.

146. See 5 U.S.C. § 706(2)(A) (1994).

147. *Fund for Animals*, 903 F. Supp. at 108.

148. *Id.*

149. 669 F. Supp. 384 (D. Wyo. 1987).

the guidelines in the recovery plan for grizzly bears called for minimizing encounters between bears and humans.¹⁵⁰ The court first noted that failure to close the campground did not violate the Park Service's conservation duty under section 7(a)(1) of the ESA because the Service had the discretion of choosing among the available conservation methods.¹⁵¹ It also rejected the plaintiff's argument that the Service cannot "selectively decide" which provisions in the recovery plan to implement, stating that it "will not attempt to second guess the Secretary's motives for not following the plan."¹⁵² Thus, a court will not require an agency to comply with every measure identified in a recovery plan, but will leave it to the agency's discretion as part of its section 7(a)(1) conservation obligation.

As difficult as the question of enforceability of a recovery plan is, it is only the tip of a large, hidden iceberg of litigation on the recovery mandate. The different standards and requirements applied to the Services and other federal agencies and non-federal entities is one such untested issue. Specifically, development and implementation of plans are required only by the Services, which may impose a non-discretionary duty on them; but implementation of recovery plans by other federal agencies is a discretionary act, presumably not reviewable by a court. While the aforementioned cases touch on this issue, they do not explicitly address the difference in standards.

In addition, the role of recovery planning in relation to other requirements of the ESA is amorphous. Some cases, such as *Palila v. Hawaii Department of Land and Natural Resources*, have relied on recovery plans for evidence to reach conclusions regarding alleged violations of other provisions of the ESA.¹⁵³ However, the extent to which recovery plans can be used for such purposes is unclear.¹⁵⁴ For example, given the current implementation of section 7 and the separation of survival and recovery, it is doubtful that a court would rely on a recovery plan to determine the no-jeopardy standard; as one court demonstrated, it would likely refuse

150. *National Wildlife Federation*, 669 F. Supp. at 385-86, 392.

151. *Id.* at 387-88.

152. *Id.* at 388-89.

153. 471 F. Supp. 985, 989 & n.6 (D. Haw. 1979) (relying on the recovery plan's conclusion that the palila was endangered primarily because of the loss to its historical range to support a finding that the significant habitat modification caused by the maintenance of the feral sheep and goat herds was an unlawful taking under the ESA), *aff'd*, 639 F.2d 495 (9th Cir. 1981). *See also* Cheever, *supra* note 5, at 44.

154. *See* Cheever, *supra* note 5, at 48. Cheever argues persuasively that recovery serves an interpretive function by providing guidance in the interpretation of other provisions of the ESA. *Supra*. However, he is unclear in how that interpretive function becomes a legal obligation under the ESA. While he argues that the ESA need not be amended to incorporate recovery planning into other aspects of the Act's implementation—even where this might be done using existing legal authority—one must query whether it will be done without any further legal obligation.

to draw any lines at all.¹⁵⁵

Yet another untouched issue is the regulatory compliance requirements of recovery plans. While no one argues that recovery plans are regulations, Congress has already addressed several regulatory requirements in relation to recovery planning: it mandated in the ESA itself that plans must go through notice-and-comment procedures, and it waived the requirement that outside advisory groups developing and implementing recovery plans comply with FACA. Congress has not addressed NEPA¹⁵⁶ requirements, however, and while the Services have historically maintained that plans are not subject to NEPA because they are purely advisory, this is a tenuous argument at best, open to litigation.¹⁵⁷

Perhaps the largest issue in recovery planning ripe for litigation is ripeness itself. There is a serious question as to whether a plaintiff meets the Article III requirements of standing in bringing a challenge on the contents of a recovery plan. As stated by the Supreme Court in *Lujan v. Defenders of Wildlife*, Article III standing requires, at a minimum, an injury in fact, an injury fairly traceable to the challenged action of the defendant, and an injury that is likely to be redressed by a favorable decision.¹⁵⁸ Given that a recovery plan is purely advisory, and can only be implemented through subsequent, specific actions, there is a strong argument that a plaintiff does not have standing to bring a suit challenging a recovery plan: the plaintiff will not suffer an injury in fact until the subsequent action is either taken or not taken; the plaintiff's injury would not be fairly traceable to the recovery plan itself—which does not mandate any particular course of action—but only to the independent action by the implementing third party; the plaintiff's injury would not be redressable by a favorable judgment, because federal agencies could still apply their own discretion to fulfill their conservation duty, regardless of the content of a recovery plan. This issue on standing is currently pending review by the Supreme Court in the context of biological opinions and the relationship of biological opinions to federal actions.¹⁵⁹ The Court's decision would

155. See *infra* text accompanying notes 168-83.

156. National Environmental Policy Act, 42 U.S.C. §§ 4321-4370d (1994).

157. NEPA requires that an environmental impact statement (EIS) be prepared for all major Federal actions significantly affecting the human environment. 42 U.S.C. § 4332(2)(C). Regulations drafted by the Council on Environmental Quality (CEQ) implementing NEPA define "major Federal action" to include "[a]doption of formal plans, such as official documents prepared or approved by federal agencies which guide or prescribe alternative uses of Federal resources, upon which future agency actions will be based." 40 C.F.R. § 1508.18(b)(2) (1995).

158. 504 U.S. 555, 560-61 (1992).

159. *Bennett v. Plenert*, 63 F.3d 915 (9th Cir. 1995), cert. granted, 116 S. Ct. 1316 (1996). See Brief for the Respondents in Opposition to Petition.

The biological opinion at issue in this case sets forth the FWS's views as to the likely effects on listed species of the Klamath Project's continued operation. The FWS, however,

likely be applicable to recovery plans as well.

The uncertain prospects for litigation related to recovery stems in large part from the uncertain nature of the recovery mandate itself. The ambiguous mandate and the amorphous requirements will likely make it difficult to establish strong case law for recovery planning, as exists with other provisions of the Act.¹⁶⁰ Just as the biological requirements of species and the administrative needs of resource users would benefit by a recovery mandate that is more explicitly required, more clearly elucidated, and more elaborately identified, so too would the legal parameters and interpretations of the ESA benefit by a strong and clear recovery mandate. This would explicitly link the operative provisions of the Act with its purpose, and thus provide a solid foundation for clear jurisprudence on the essential purpose of the ESA.

B. *The Duty to Conserve*

1. *General Requirements*

Congress created a wide-ranging arsenal of weapons to recover listed species when it defined conservation as broadly as it did.¹⁶¹ Conservation is thus the means by which recovery is to be achieved. However, Congress did not make it clear when that arsenal could be dusted off and used. The ESA specifically provides for conservation in section 7(a)(1) (relating to federal agencies) and section 10(a)(2) (relating to non-federal entities). Much latitude exists, however, in implementing these sections.

Section 7(a)(1) provides that "Federal agencies shall . . . utilize their authorities in furtherance of the purposes of [the ESA] by carrying out programs for the conservation of [listed] species."¹⁶² Although this lan-

does not determine whether a project or other action will proceed. Rather, the choice of whether and in what manner to go forward rests with the action agency . . . It is [the action agency's] ultimate decisions regarding the allocation of Klamath Project water that are subject to judicial review, and a reviewing court may examine the biological opinion only in evaluating the reasonableness and legality of those decisions.

Id. at 10.

160. See, e.g., *Tennessee Valley Authority v. Hill*, 437 U.S. 153, 173 (1978) (stating that "[o]ne would be hard pressed to find a statutory provision whose terms were any plainer than those in § 7 of the Endangered Species Act.").

161. 16 U.S.C. § 1532(3). "Conservation" is defined as

[t]he use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to [the ESA] are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.

Id.

162. 16 U.S.C. § 1536(a)(1).

guage is mandatory, agencies maintain significant discretion in determining the extent to which they must engage in conservation activities.¹⁶³

Section 10(a) of the ESA provides an exception to the takings prohibition of section 9 for the taking of a species "incidental to" an action by a non-federal entity.¹⁶⁴ The incidental take permit, issued by NMFS or FWS to authorize the taking, is conditioned on the development and implementation of a conservation plan that minimizes and mitigates the impacts of the taking.¹⁶⁵ Despite the name "conservation plan," the bottom-line threshold for approving the plan is the no-jeopardy mandate,¹⁶⁶ so that there is no way to compel applicants to assist in recovering a species (unless recovery was required for survival). Both Services are actively negotiating several conservation plans with large landowners to lock in protections for both listed and non-listed species as those landowners apply for permits for their actions. Much of the impetus for these plans has been the issuance of new policies by the Services, in particular the "No Surprises" policy, that provides assurances "that no additional land restrictions or financial compensation will required from an HCP [Habitat Conservation Plan] permittee for species adequately covered by a properly functioning HCP in light of unforeseen or extraordinary circumstances."¹⁶⁷

Both sections 7(a)(1) and 10(a) provide mechanisms for federal and non-federal entities to engage in tasks related to recovery. Even if such tasks do not rise to the level of legal mandates, these sections certainly provide the authority for implementing recovery tasks at the discretion of the entity taking the action. Under the ESA as it presently stands, there is no clear link between survival and recovery efforts in these various sections; establishing such a link would strengthen the ESA as a whole by clarifying the biological goals of the law and coordinating the managerial tools of the law.

163. See *Carson-Truckee Water Conservancy Dist. v. Clark*, 741 F.2d 257, 262-63 (9th Cir. 1984). See also *Pyramid Lake Paiute Tribe v. United States Dep't of Navy*, 898 F.2d 1410, 1418 (9th Cir. 1990) (holding the "Secretary is to be afforded some discretion in ascertaining how best to fulfill the mandate to conserve under section 7(a)(1).").

164. 16 U.S.C. § 1539(a)(1).

165. 16 U.S.C. § 1539(a)(2)(A).

166. FWS or NMFS must find that the incidental taking "will not appreciably reduce the likelihood of survival and recovery of the species in the wild." 16 U.S.C. § 1539(a)(2)(B). This is the same standard as the section 7 no-jeopardy requirement, as defined by the regulations implementing section 7. See 16 U.S.C. § 1536(a)(2). See also 50 C.F.R. § 402.02 (1995).

167. U.S. FISH AND WILDLIFE SERV., U.S. DEP'T OF INTERIOR & NAT'L MARINE FISHERIES SERV., U.S. DEP'T OF COMMERCE, NO SURPRISES: ASSURING CERTAINTY FOR PRIVATE LANDOWNERS IN ENDANGERED SPECIES ACT HABITAT CONSERVATION PLANNING 2 (1994).

2. Relationship of Survival to Recovery

One of the most complex issues in the ESA—described by one court as a “bombshell issue”¹⁶⁸—is the relationship of survival to recovery, and the relationship of each to jeopardy. The crux of the issue is that while the ESA requires federal and non-federal entities to ensure that their actions do not jeopardize the survival of listed species, it merely encourages such entities to actually recover the species. As a practical matter, however, it is impossible to know where survival ends and recovery begins. Both the statute and the implementing regulations discuss the relationship between survival and recovery, as does one particular court.

Section 7(a)(2) of the Act requires that federal agencies insure that their actions are “not likely to jeopardize the continued existence of [listed] species;”¹⁶⁹ the regulations, in turn, define “jeopardize” as “engag[ing] in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.”¹⁷⁰ While this definition uses the terms “survival” and “recovery,” only “recovery” is defined in the regulations.¹⁷¹

In order to conclude that a species is jeopardized or that habitat is adversely modified, the Services emphasized that they “must identify detrimental impacts to ‘both the survival and recovery’ of the listed species.”¹⁷² Thus survival and recovery are related but independent concepts. The Services envision that survival can occur without recovery, and interpret the section 7(a)(2) mandate against jeopardizing a listed species’ continued existence as relating to survival rather than recovery.¹⁷³ How-

168. *Idaho Dep’t of Fish and Game v. Nat’l Marine Fisheries Serv.*, 850 F. Supp. 886 (D. Or. 1994), *vacated*, 56 F.3d 1071 (9th Cir. 1995). The district court characterized the bombshell issue as “where do [NMFS’] ESA obligations under § 7(a)(2) to avoid jeopardy end and either discretionary, voluntary conservation measures to promote recovery under § 7(a)(1) or true recovery plans under § 4 begin?” *Idaho Dep’t of Fish and Game*, 850 F. Supp. at 891 (emphasis in original).

169. 16 U.S.C. § 1636(a)(2).

170. 50 C.F.R. § 402.02 (1995).

171. *See id.* The Services decided not to adopt a regulatory definition of survival because “this concept varies widely among listed species;” nevertheless, they entertained a definition with which they agreed: “‘survival’ for a species means retention of a sufficient number of individuals and/or populations with necessary habitat to ensure that the species will keep its integrity in the face of genetic recombination and known environmental fluctuations.” 51 Fed. Reg. 19,934 (1986). It is somewhat incongruous that the Services defined recovery and not survival, although part of the answer lies in the fact that recovery is virtually a pure legal term rather than a biological one.

172. 51 Fed. Reg. 19,934 (1986). The Services further noted that “[t]he conjunction ‘and’ was used in the 1978 rule’s definitions of these phrases, but the word ‘both’ was added by the proposed rule to emphasize that, except in exceptional circumstances, injury to recovery alone would not warrant the issuance of a ‘jeopardy’ biological opinion.” *Id.*

173. In addressing criticism that the Services ignore the conservation requirements of the Act by

ever, there may be instances in which a species is so depleted or recovery so impaired that the continued existence of a species is jeopardized by a reduction in the likelihood of recovery alone. In other words, some level of recovery may be necessary to ensure the survival, or continued existence, of the species.¹⁷⁴

This blurred distinction was recognized by the court in *Idaho Department of Fish and Game v. National Marine Fisheries Service*,¹⁷⁵ in which plaintiffs challenged NMFS' biological opinion on the operation of the Federal Columbia River Power System (FCRPS). The FCRPS is a series of dams operated by the Army Corps of Engineers and managed by the Bonneville Power Administration which significantly affects three species of listed Snake River salmon. Plaintiffs challenged the biological opinion for its reliance on certain models and alleged that NMFS did not require sufficient protections for the fish because it established a benchmark that was too conservative. Industry defendants alleged that NMFS was requiring actions for recovery that exceeded its statutory authority. The court refused to engage in "impos[ing] bright-line definitions upon . . . the terms 'survival' vs. 'recovery.'"¹⁷⁶ Even though it was ultimately vacated by the Circuit Court for mootness, the district court decision provides valuable insight into the relationship between the two terms and the court's role in distinguishing between them: such line-drawing is a matter for the expert agency, not the court.¹⁷⁷ The court concluded that the no-jeopardy threshold is the single guiding requirement and it left to

interpreting the no-jeopardy mandate to apply to survival and not recovery, the Services noted that "the purpose of consultation is to identify conflicts between proposed Federal actions and the 'jeopardy' standard of section 7(a)(2). The 'continued existence' of the species is the key to the jeopardy standard, placing an emphasis on injury to a species 'survival.'" *Id.*

174. *See id.*

[S]ignificant impairment of recovery efforts or other adverse effects which rise to the level of 'jeopardizing' the 'continued existence' of a listed species can also be the basis for issuing a 'jeopardy' opinion. The Service acknowledges that, in many cases, the extreme threats faced by some listed species will make the difference between injury to 'survival' and to 'recovery' virtually zero.

Id.

175. 850 F. Supp. 886 (D. Or. 1994), *vacated*, 56 F.3d 1071 (9th Cir. 1995).

176. *Idaho Dep't of Fish and Game*, 850 F. Supp. at 895.

177. The district court stated that

[w]here section 7 consultation parameters end and section 4 recovery measures begin is not a proper matter for judicial bright-line decision making and in any event, such a distinction should not be premised upon the nature or quality of an agency activity, but instead, pursuant to the mandate of the ESA, must focus upon the listed species. "Congress intended that the 'jeopardy' standard be the ultimate barrier past which Federal actions may not proceed absent the issuance of an exemption." 51 Fed. Reg. at 19,934. Thus, NMFS should have discretion to determine the appropriate scope of reasonable and prudent alternatives and measures with a single guiding standard in mind—that is jeopardy.

Id. at 895-96.

NMFS the determination of that threshold. Whether NMFS determines that it is a measure of survival, or recovery, or some combination, is within its discretion, to be evaluated under an arbitrary and capricious standard.¹⁷⁸

The court arrived at its conclusions by recognizing what the situation did not require: a segregation of activities that were adversely affecting listed species and a segregation of the authorities that were used to address those activities. Plaintiffs had argued that NMFS failed to distinguish between adverse impacts attributable to the existence or construction of the dams on the Columbia River and those impacts attributable to the continued operations of the dams. As a result, they had argued that NMFS did not require enough changes to the hydropower system to adequately mitigate the adverse impacts of dam operations and existence.¹⁷⁹ Intervenor-defendants argued, conversely, that NMFS failed to distinguish among the different tools available under the ESA—some mandatory and some discretionary. Defendants alleged NMFS had required more changes to the system than the ESA authorized.¹⁸⁰

With respect to the existence-operations dichotomy, the court observed that section 7 places no temporal limitations on the types of actions that can be required, and that “operational changes as well as systemic or facility changes to the dams’ existence may well be available.”¹⁸¹ With respect to the survival-recovery dichotomy, the court first observed that the regulatory definition for jeopardy refers to both survival and recovery, and that in some cases, the injury to survival is the same as that to recovery. The court then noted that “[i]nstead of a ‘bright line’, Congress has provided a gray segment . . . consist[ing] of four different procedures which sound alike, but, according to Congress, are very different”¹⁸² These four procedures are reasonable and prudent alternatives, reasonable and prudent measures, conservation recommendations, and recovery plans. The court rejected arguments that “these are discrete categories” and that NMFS “failed to appreciate the differences.”¹⁸³ The court recognized that the proper approach may fall somewhere along a continuum rather than into one particular box.

178. *Id.* at 896. “In any event, NMFS should provide sufficient reasoned analysis of its consideration of alternatives and measures considered within the section 7 consultation process to permit judicial review.” *Id.*

179. *Id.* at 894.

180. *Id.*

181. *Id.*

182. *Id.* at 895.

183. *Id.*

IV. CASE STUDY: SNAKE RIVER SALMON PROPOSED RECOVERY PLAN

A. Background

Salmon are a unique species; they are born in the freshwater, migrate to the ocean where they mature, and return three or four years later to spawn in the same freshwater pools in which they were born. For centuries, the salmon in the Northwestern United States held a vital cultural, ecological, economic, and aesthetic role for many peoples, including numerous Native American groups, early settlers, and present day residents. There are five species of salmon—pink, chinook, sockeye, chum, coho—and several other species of salmonids—including rainbow, steelhead, cutthroat trout and masu.¹⁸⁴ Because salmonids have such accurate homing abilities to return to their place of birth, there are numerous distinct populations that comprise these larger species. The ESA allows for the listing of distinct population segments (DPS) of vertebrates,¹⁸⁵ and NMFS has defined a distinct population segment to be an evolutionarily significant unit (ESU).¹⁸⁶ An ESU must satisfy two criteria: it must be reproductively isolated and it must contribute to the evolutionary significance of the species as a whole.¹⁸⁷ Presently, there are three ESUs of salmon that are treated as a species and listed as either threatened or endangered: the Snake River spring/summer chinook,¹⁸⁸ the Snake River fall chinook,¹⁸⁹ and the Snake River sockeye.¹⁹⁰ There are another five ESUs currently proposed for listing as either threatened or endangered,¹⁹¹ and status reviews are in progress for all other salmonid species along the Pacific coast.¹⁹²

184. The genus *Onchorynchus* (Pacific Salmon) includes the species *nerka* (sockeye), *gorbuscha* (pink), *keta* (chum), *tshawytscha* (chinook), *kisutch* (coho), *masou* (masu), *mykis* (rainbow), and *clarki* (cutthroat). PROPOSED RECOVERY PLAN, *supra* note 6, at II-1.

185. See 16 U.S.C. § 1532(16).

186. Policy on Applying the Definition of Species Under the Endangered Species Act to Pacific Salmon, 56 Fed. Reg. 58,612 (1991). See ROBIN S. WAPLES, DEFINITION OF "SPECIES" UNDER THE ENDANGERED SPECIES ACT: APPLICATION TO PACIFIC SALMON (National Marine Fisheries Service Technical Memorandum 1991); Karl Gleaves et al., *The Meaning of Species Under the Endangered Species Act*, 13 PUB. LAND L. REV. 25 (1992).

187. 56 Fed. Reg. 58,612 (1991).

188. 57 Fed. Reg. 14,653 (1992).

189. *Id.*

190. 56 Fed. Reg. 58,619 (1991).

191. Three ESUs of coho salmon from central California through Oregon are proposed as threatened. 60 Fed. Reg. 38,011 (1995). The Umpqua River cutthroat trout is proposed as endangered. 59 Fed. Reg. 35,089 (1994). The Klamath Mountain Province steelhead is proposed as threatened. 60 Fed. Reg. 14,253 (1995).

192. See 60 Fed. Reg. 38,011 (1995).

1. *Status of Snake River Salmon*

Columbia River chinook salmon populations were once the largest in the world; at the turn of the century, between 10 to 16 million salmon returned to spawn in the Columbia River Basin each year.¹⁹³ Of this number, perhaps 2.5 to 3.0 million were spring/summer chinook, with 1.5 million returning to the Snake River basin. In 1979, less than 1,200 returned to the Snake River basin to spawn.¹⁹⁴ Fall chinook salmon fared equally poorly this half-century, declining from an estimated 72,000 annual returns in the 1940s to 400 in 1994.¹⁹⁵ Sockeye salmon have plummeted from approximately 75,000 recorded in one year to single digit figures in the 1990s.¹⁹⁶

These numbers reflect a stark portrait of the dire condition of the salmon today and speak to our profound ability to so quickly and efficiently place a species on the brink of extinction. The decline of the salmon runs has multifarious reasons—some natural, but most human-caused. Ocean and in-river fishing, both commercial and recreational, have taken a great toll. Dam construction throughout the entire Snake River Basin and the mainstem Columbia has resulted in both direct and indirect losses, by killing juvenile outmigrants and adult returners, as well as eliminating essential production areas and migratory corridors throughout much of the Snake and Columbia Rivers. Grazing, logging, mining, irrigation, and development destroyed many spawning and rearing areas. Hatcheries multiplied in an effort to supplement the disappearing salmon and only exacerbated the decline of the wild stocks.

Distribution has also been greatly reduced. Spring/summer chinook historically spawned “in virtually all accessible and suitable habitat in the Snake River upstream from its confluence with the Columbia River.”¹⁹⁷ Fall chinook reached Shoshone Falls in Idaho, more than 900 miles from the Pacific, and spawned throughout the mainstem Salmon River and its tributaries.¹⁹⁸ Snake River sockeye spawned in the headwaters of the Salmon River in Stanley Basin, as well as in Big Payette Lake, Idaho, and Wallowa Lake, Oregon.¹⁹⁹ The Hells Canyon Dam complex, completed

193. PROPOSED RECOVERY PLAN, *supra* note 6, at II-9.

194. PROPOSED RECOVERY PLAN, *supra* note 6, at II-13. Recent returns of natural stocks were 3,410 in 1991, 3,493 in 1992, 7,901 in 1993, and 1,822 in 1994. *Supra*.

195. PROPOSED RECOVERY PLAN, *supra* note 6, at II-9. Natural fall chinook returns were 78 in 1990, 318 in 1991, 533 in 1992, 742 in 1993, and 404 in 1994. *Supra*.

196. PROPOSED RECOVERY PLAN, *supra* note 6, at II-14. Sockeye returns between 1985-93 were 12, 29, 16, 1, 1, 0, 4, 1 and 8, respectively. *Supra*.

197. PROPOSED RECOVERY PLAN, *supra* note 6, at II-7.

198. PROPOSED RECOVERY PLAN, *supra* note 6, at II-7.

199. PROPOSED RECOVERY PLAN, *supra* note 6, at II-7.

in 1967, obliterated virtually all of the spawning grounds of fall chinook that were above the dam, as well as much spawning habitat for sockeye and spring/summer chinook.²⁰⁰ Snake River sockeye have returned to only Redfish Lake in the Stanley Basin, if they have returned at all in recent years, while spring/summer chinook are sparsely distributed throughout the Snake River basin.

It wasn't until 1990 that several groups petitioned NMFS to determine whether the Snake River sockeye and chinook were either endangered or threatened.²⁰¹ NMFS conducted a status review and found that the fall chinook, sockeye, and spring/summer salmon were ESUs for purposes of the ESA. NMFS determined that the Snake River sockeye salmon was endangered,²⁰² and that the Snake River spring/summer chinook salmon and the Snake River fall chinook salmon were threatened.²⁰³

2. *Development of the Proposed Recovery Plan*

After listing the species, NMFS appointed the Snake River Salmon Recovery Team (Team) on January 13, 1992, to make recommendations for the recovery of the three listed species of Snake River salmon. The Team, consisting of three fish biologists, one ecologist, two engineers, and one resource economist, conducted an open public process in developing its recommendations.²⁰⁴ Final recommendations were issued in May of 1994 and an independent economic assessment of the Team's recommendations was published separately in January of 1995.²⁰⁵

The Team's recommendations formed the basis for the Proposed Recovery Plan (PRP or Plan), published by NMFS in March of 1995. NMFS also considered information made available subsequent to the Team's recommendations, as well as other regional conservation strategies, such as the Strategy for Salmon developed by the Northwest Power Plan-

200. PROPOSED RECOVERY PLAN, *supra* note 6, at II-11. In preventing fall chinook from reaching their natural spawning grounds, the Hells Canyon hydroelectric system consequently altered their life-cycle: instead of beginning their outmigration in mid-May through June, juvenile fall chinook now outmigrate between mid-June and August.

201. The Shoshone-Bannock Tribes petitioned NMFS to list the Snake River sockeye as endangered. 55 Fed. Reg. 22,942 (1990). Several environmental groups petitioned NMFS to list four stocks in the Snake and lower Columbia River as endangered or threatened. 55 Fed. Reg. 37,342 (1990).

202. 56 Fed. Reg. 58,619 (1991) (codified at 50 C.F.R. § 222.23 (1995)).

203. 57 Fed. Reg. 14,653 (1992) (codified at 50 C.F.R. § 227.4 (1995)).

204. PROPOSED RECOVERY PLAN, *supra* note 6, at I-6. The Team held 27 meetings throughout Idaho, Washington and Oregon, and collected information from interested parties, including states, industry, environmentalists, tribes, local governments, and other user-groups. On October 20, 1993, the Team published its draft recommendations for peer review and public comment. More than 180 comments were received during the 45-day comment period. The administrative record for the Team's recommendations is available for public inspection in five different locations. See *supra*, at I-7 to I-8.

205. PROPOSED RECOVERY PLAN, *supra* note 6, at I-8.

ning Council (NPPC).²⁰⁶ NMFS and the NPPC have agreed to coordinate planning and implementation efforts in recovering species presently listed and to protect species to avoid future listings. In addition to collaborating with other conservation efforts, NMFS developed a policy for fulfilling the requirements of the ESA in light of United States treaty obligations and trust responsibilities to Native American tribes.²⁰⁷

Upon publication of the PRP, NMFS provided a 90-day comment period, with 13 public hearings in Idaho, Washington, Oregon and Montana.²⁰⁸ The comment period was extended until Dec. 11, 1995, after NMFS published a supplemental analysis of the direct costs of the Plan.²⁰⁹

B. Summary of the Proposed Recovery Plan

1. Scope and Strategy

The PRP addresses, as an initial matter, all three listed species of Snake River salmon. This multi-species approach seems quite straightforward given that many of the needs of, and threats to, the three species are the same. On a broader level, however, the Plan seeks to improve the overall health of the Columbia River Basin ecosystem, in keeping with the broad purpose of the ESA. While there are no recovery tasks designed specifically for non-listed species, the tasks that are identified take into account impacts on non-listed species.

One obstacle that NMFS faced in developing the PRP was the lack of

206. The Northwest Power Planning Council (NPPC), created by the Northwest Power Act of 1980, 16 U.S.C. §§ 839-839h (1994), was directed to "promptly develop and adopt . . . a program to protect, mitigate, and enhance fish and wildlife, including related spawning grounds and habitat, on the Columbia River and its tributaries." 16 U.S.C. § 839b(h)(1). The Strategy for Salmon seeks to restore salmon and steelhead populations, as well as improve the overall health of the Columbia River Basin ecosystem. See 59 Fed. Reg. 67,351 (1994). On December 15, 1994, the NPPC adopted amendments to their Fish and Wildlife Program. These amendments called for the development of six subregional plans covering 31 subbasins, addressing the needs of all resident fish and wildlife. PROPOSED RECOVERY PLAN, *supra* note 6, at I-8.

207. PROPOSED RECOVERY PLAN, *supra* note 6, at I-13 to I-14. This policy states that the Federal government will not impose restrictions on the exercise of treaty-reserved and other Federally recognized Indian fishing rights which result in the incidental take of listed Snake River salmon stocks unless: (1) the restrictions are reasonable and necessary for the conservation of the fishery resource; (2) the restrictions are the least restrictive measures available to achieve the conservation principle; (3) the restrictions, either as stated or as applied, do not discriminate against treaty activities; (4) the restrictions are necessary because the conservation purpose cannot be achieved through reasonable regulation of non-treaty activities; and (5) the restrictions are necessary because voluntary tribal conservation measures are not adequate to achieve the conservation purpose.

Supra.

208. See 60 Fed. Reg. 32,303 (1995).

209. 60 Fed. Reg. 56,575 (1995).

available science on many aspects of salmon life-cycle history, as well as a lack of scientific information on the impacts affecting that history. Specifically, NMFS could not “establish precisely the degree of improved survival that would result from specific management tasks.”²¹⁰ NMFS’ response to this scientific uncertainty was two-fold: first, reaffirm that the recovery tasks identified in the Plan relied on the best available data and, therefore, need to be implemented without delay despite any existing uncertainty; second, develop an overall Plan that is itself adaptive in the event that new information is presented.²¹¹ With these considerations, NMFS identified two criteria for delisting the species: increasing natural productivity (*i.e.*, achieving a natural cohort replacement rate greater than 1.0),²¹² and increasing the abundance of listed species to viable, self-sustaining levels.²¹³ With respect to the first criterion, NMFS required that the mean natural cohort replacement rate exceed 1.0 for an eight-year period (approximately two generations of salmon).²¹⁴ The second criterion is measured by numerical escapement goals, which determine a population’s ability to avert risks associated with a small population size and, therefore, measure a population’s ability to be self-sustaining; numerical escapement goals vary by species.²¹⁵ While these criteria focus on the status of the species, they really depend upon the ability to address the underlying threats facing the species; achieving the delisting criteria will necessarily require mitigation of these threats. For this reason, it is redundant to establish as a delisting criterion a reduction in the threats facing the listed species.

210. PROPOSED RECOVERY PLAN, *supra* note 6, at I-9.

211. PROPOSED RECOVERY PLAN, *supra* note 6, at I-9.

This recovery strategy is adaptive, it places higher priority on actions that are most likely to provide the most immediate benefits, the greatest long-term benefits, and the best opportunity to identify those factors limiting recovery. This strategy ensures that the recovery plan remains dynamic, allowing actions to be added, deleted, or refined following an adaptive management approach based on evolving scientific information and analysis . . .

[S]cientific uncertainty does not diminish the need to implement without delay the recovery tasks identified in this Plan.

Supra.

212. See *supra* notes 22-41 and accompanying text.

213. PROPOSED RECOVERY PLAN, *supra* note 6, at IV-10.

214. PROPOSED RECOVERY PLAN, *supra* note 6, at IV-10. For spring/summer chinook, this replacement rate must exceed 1.0 for 80% or more of the index areas available for natural cohort replacement rate estimation. *Supra.*

215. For Snake River sockeye, the numerical escapement goal is an eight-year geometric mean of 1,000 or more natural spawners annually in Redfish Lake and 500 or more natural spawners in each of two other Snake River Basin lakes. PROPOSED RECOVERY PLAN, *supra* note 6, at IV-15. For fall chinook, it is an eight-year geometric mean of at least 2,500 natural spawners in the mainstem Snake River annually. *Supra*, at IV-17. For Snake River spring/summer chinook, it is an eight-year geometric mean equal to 60% of the pre-1971 brood year average redd counts for 80% of available index areas. *Supra*, at IV-20.

2. Recommendations on Institutional Structures

The PRP devotes a section to the existing institutional structures responsible for protecting listed salmon species and the reform that is needed. The number of Native American governments, federal agencies, and state and local governments that have jurisdiction over the various activities affecting the salmon is enormous; add to this the number of environmental organizations and user groups that have an interest in the salmon and the number becomes even greater. Decisions are often made by one or several groups independent of decisions made by other groups; decisionmakers are often not cognizant of the interrelated jurisdictions.²¹⁶ Each group advocates its distinct parochial position and each is supported by its own authority and funding. Aside from these systemic jurisdictional problems, logistical problems abound: controversial decisions often get delayed or not implemented; coordination, when attempted, is often difficult; funding is often lacking.

The PRP recognizes that a new decisionmaking regime is needed. The PRP sets forth two criteria that should guide the new model: coordination among different entities and adaptive management based on sound science. While this new regime does not envision a significant change in jurisdictional roles or legal authorities, it would replace the existing balkanized and ad hoc decisionmaking process that currently exists. The new regime would be characterized by a multi-step process that treats the science and policy separately.²¹⁷ The PRP specifically proposes to create two independent bodies—a Salmon Recovery Implementation Team and a Scientific Advisory Panel—to maintain a coordinated approach to management and conservation that is based on sound science.²¹⁸ The study and management scope of these bodies extends to all anadromous fishery resources in the Columbia River Basin, not only the listed stocks.²¹⁹

The Salmon Recovery Implementation Team (Implementation Team) would “coordinate and oversee implementation of recovery measures” by involving all managers of resources, as well as the public, in decisions relating to management and conservation of the listed stocks.²²⁰ Perhaps

216. PROPOSED RECOVERY PLAN, *supra* note 6, at III-1.

217. PROPOSED RECOVERY PLAN, *supra* note 6, at III-4. The basis for management decisions would lie in the rigid testing of scientific hypotheses. This would entail identification of key hypotheses, use of scientific panels to review hypotheses, scientific peer review of experimental designs, a mechanism for prioritizing and coordinating experimental designs, a mechanism for collaboration between implementors and researchers, and peer review of results. *Supra* (citing letter from J. Edwards to William Stelle, NMFS Northwest Regional Director, recommending a scientifically linked decision making resolution process (Jan. 19, 1995)).

218. PROPOSED RECOVERY PLAN, *supra* note 6, at III-5.

219. PROPOSED RECOVERY PLAN, *supra* note 6, at III-5.

220. PROPOSED RECOVERY PLAN, *supra* note 6, at III-5. Specifically, the Implementation Team

most importantly, the Implementation Team would assist NMFS in developing a dispute resolution process.²²¹ The Implementation Team would include federal, state and tribal governmental agencies. Furthermore, federal agencies are encouraged to develop a unified federal position. This should be facilitated by the creation of a Memorandum of Agreement for Pacific Salmon Conservation in October 1994 among seven federal agencies,²²² the parties to which shall also serve on the Implementation Team. Decisions by the Implementation Team should be made by consensus, but in the event that consensus cannot be reached, the ultimate decision would be made by NMFS.

The Scientific Advisory Panel (SAP) "would provide advice and recommendations on scientific and technical issues" to the Implementation Team.²²³ The SAP would be merged with the already existing Independent Scientific Group established under the NPPC Fish and Wildlife Program. This merger would streamline the decisionmaking process, mitigate differences among different scientific bodies, and reduce conflicting scientific recommendations.²²⁴ NMFS and NPPC would appoint members with expertise in biology, ecology, hydrology, and engineering to the SAP from

will

identify and recommend solutions to problems and issues affecting recovery schedules, direct research toward resolution of critical uncertainties, recommend modifications to the recovery plan, and prepare an annual review[It] will have a lead role in formulating, implementing, evaluating, and monitoring the adaptive management process. The Implementation Team also will work closely with the NPPC and related coordination mechanisms . . . to ensure effective conservation of listed and unlisted fish and populations throughout the Columbia River basin ecosystem.

Supra, at III-6 to III-7.

221. PROPOSED RECOVERY PLAN, *supra* note 6, at III-13. NMFS proposes to establish a dispute resolution process similar to that developed by the court in *United States v. Oregon*. See *United States v. Oregon*, 699 F. Supp. 1456, 1460 (D. Or. 1988), *aff'd*, 913 F.2d 576 (9th Cir. 1990).

222. Memorandum of Agreement on Pacific Salmon Conservation (Oct. 1994) (on file with author) (reflecting an understanding among the Director, White House Office of Environmental Policy (presently Council of Environmental Quality), the Secretaries of Commerce (NMFS), Interior (Bureau of Land Management, Bureau of Reclamation, Bureau of Indian Affairs, National Park Service, National Resource Conservation Service, National Biological Service, and Fish and Wildlife Service), Army (Corps of Engineers), Energy (Bonneville Power Administration, and Agriculture (Forest Service), and the Administrator, Environmental Protection Agency)). The Memorandum establishes a national-based Pacific Salmon Task Force and a regional-based Pacific Salmon Coordinating Committee. The former is chaired by the Director of the Council on Environmental Quality; the latter is chaired by NMFS. Memorandum of Understanding on Pacific Salmon Restoration 2-3 (Oct. 1994) (on file with author). See PROPOSED RECOVERY PLAN, *supra* note 6, at III-5 to III-6.

223. PROPOSED RECOVERY PLAN, *supra* note 6, at III-7. Such issues include "monitoring and measurement protocols, Columbia Basin anadromous fish research priorities, hypotheses to be tested, and other adaptive management measures." *Supra*, at III-8.

224. PROPOSED RECOVERY PLAN, *supra* note 6, at III-7. In addition, the Independent Scientific Group is charged to consider the entire Columbia River Basin ecosystem, so that it will bring a broad dimension to scientific planning and research necessary for the listed species.

nominations received from federal, state, tribal, academic and private entities,

Both the Recovery Team and NMFS emphasize the importance of specialized committees and work groups to develop findings and recommendations on specific management decisions; these working groups would serve on a permanent or ad hoc basis, as necessity requires.²²⁵ The committees would work with the SAP to present data and recommendations to the Implementation Team. As much as possible, existing groups should be utilized, and should include members from all relevant public and private entities.

The PRP further seeks to “[c]oordinate conservation and management among all related Columbia Basin anadromous fish stocks,”²²⁶ primarily by working closely with other agencies and through existing initiatives that have broad authorities to protect the entire ecosystem. In particular, the Plan proposes a Coordinated Information System as a single source of information and data for regional conservation efforts.²²⁷ In addition, the Plan proposes to develop a consistent modeling approach to be used in biological analyses and hydrological analyses.²²⁸ In recent years, the number of models to calculate impacts to salmon stocks has increased in number and in complexity. The assumptions used in such models can also vary widely, creating extremely disparate results even within one particular model. Consequently, a unified method of model testing and comparison is vital to a better understanding of human related impacts to the salmon.²²⁹

3. Recovery Tasks for the Four Sectors Affecting the Listed Species

The four sectors affecting the various life stages of Pacific salmonids are known generally, if not somewhat inaccurately, as the four H’s: habi-

225. PROPOSED RECOVERY PLAN, *supra* note 6, at III-9. Specific committees proposed include: (1) a Technical Management Team, to advise agencies operating the Federal Columbia River Power System and Juvenile Transport Program on a continuous basis; (2) a Passage Advisory Committee, to consider fish passage improvements in the migratory corridors of the salmon; (3) a Habitat Committee, to develop and coordinate activities relating to habitat protection and restoration; and (4) a Fish Production Committee (with two related subcommittees), to study enhancement of natural production, supplementation and broodstock operations. *Supra*, at III-10 to III-12.

226. PROPOSED RECOVERY PLAN, *supra* note 6, at III-13.

227. PROPOSED RECOVERY PLAN, *supra* note 6, at III-15.

228. PROPOSED RECOVERY PLAN, *supra* note 6, at III-18.

229. The need for such coordination cannot be underscored enough. A vivid example of scientists unwittingly working at odds with each other was demonstrated during vociferous debates on ozone depletion in the mid-1980s. It wasn’t until the United Nations convened a panel and discovered that each group of scientists was using different assumptions that a uniform model was established that drew large consensus within the scientific community regarding the extent of the problem. See RICHARD BENEDICK, OZONE DIPLOMACY 9-18 (1991).

tat, harvest, hydropower operations and hatcheries. The recommendations for these individual sectors affecting salmon cannot be viewed in isolation; they are mutually dependent on recommendations in each of the other sectors. For example, improvement in passage survival rates for returning adults will be lost if spawning habitat is not improved and returning adults that survive the treacherous journey home find no place to spawn. As spawning rates improve, increasing juvenile populations will suffer with limited carrying capacity and competition by hatchery stocks. Larger populations will in turn be subject to greater harvest levels which are tied to escapement size. Thus, while the PRP recommends changes in each of the four sectors, the changes must be treated as parts of a single comprehensive plan.

Spawning and rearing habitat in the tributary ecosystem have been affected by “[l]and and water management actions, including water withdrawals, unscreened water diversions, stream channelization, road construction, timber harvest, livestock grazing, mining, and outdoor recreation.”²³⁰ This has resulted in both fragmentation and degradation of habitat, including lack of pools, high water temperatures, poor water chemistry, low flow levels, and high sediment loads.²³¹ The PRP outlines a three-step approach to protect tributary ecosystem health: “(1) [p]rotect remaining high quality habitat by ceasing activities that would degrade ecosystem functions and values that listed fish need, (2) restore degraded habitat, and (3) provide connectivity between high quality habitats.”²³² Accomplishing these three goals will require extensive ecosystem-based surveys of entire watersheds and river subbasins, which has been done thus far only in certain areas.²³³ Priority watersheds are to be defined, and specific guidelines for federal activities within those watersheds are provided.²³⁴ Although management of both federal and non-federal lands

230. PROPOSED RECOVERY PLAN, *supra* note 6, at ES-4. See also *supra*, at V-1-5.

231. PROPOSED RECOVERY PLAN, *supra* note 6, at V-1-2.

232. PROPOSED RECOVERY PLAN, *supra* note 6, at ES-4. See also *supra*, at V-1-6 to V-1-10.

233. These surveys “will ensure that all the physical, biological, and chemical processes and conditions that contribute to the development of productive salmon habitat are maintained.” PROPOSED RECOVERY PLAN, *supra* note 6, at V-1-7. One reason why efforts to protect anadromous fish, including the establishment of refugia, have not succeeded thus far, is that the efforts have not been approached from a watershed perspective. *Supra*, at V-1-8. Only two notable surveys have been undertaken: one by the Forest Ecosystem Management Assessment Team and one by the Eastside Forests Scientific Society Panel. *Supra*, at V-1-7 to V-1-8.

234. In Priority Watersheds, for example, all new mining should occur outside riparian habitat conservation areas (RHCAs), and any new mines should be preceded by a watershed analysis. Logging should be generally prohibited in RHCAs and salvage logging that is allowed is not to be conducted prior to watershed analysis. Road maintenance, including closure and obliteration, will be studied, with a goal to achieve a road density of no more than 2 roads/square mile; new roads will require completion of a watershed analysis. Currently, roadless areas of 5,000 acres or more are protected, and any road construction requires an Environmental Impact Statement. Areas of 1,000 acres should receive

should be integrated, "Federal lands and Federal actions should bear, as much as possible, the burdens of recovering listed salmon species and their habitat."²³⁵ Non-federal lands, comprising 35% Snake River salmon habitat, should be managed with input from all stakeholders. The Plan focuses on Habitat Conservation Plans under section 10 of the ESA and cooperative agreements with states under section 6 of the ESA as fora for such management.

The extensive federally managed and operated hydroelectric power system that dominates the mainstem Columbia River ecosystem, used as a migratory corridor for both outmigrating juvenile salmon and returning adults, has been the single greatest factor in the decline of the salmon. Eight dams lining the Columbia and Snake Rivers have converted 70% of the 482 miles between the Pacific Ocean and the upper reaches of the Snake River from a free-flowing river into reservoirs.²³⁶ Juveniles outmigrating to the ocean face several dismal options: be spilled over the crest of the dams, which can result in certain physiological problems such as gas-bubble disease; be routed into fish byways, with poor screens and funnel systems; pass through the giant turbines themselves, with sometimes grisly consequences; or leave the river altogether to be barged or trucked downstream, with yet unknown long-term effects (but apparently high smolt-to-juvenile survival rates). Returning adults generally fare better with fish ladders at the dams, but the added hurdles contribute to mortality.

The PRP proposes "a long-term adaptive management approach that will depend upon a combination of improved in river migration conditions, improved transportation, and major structural changes at the dams."²³⁷ At

additional study as well. Livestock grazing in RHCAs is not to be conducted if it adversely affects listed salmon. Habitat restoration should focus on areas adjacent to high quality habitat in order to restore connectivity and bolster salmon recolonization. Recommendations for non-Priority Watersheds are not as stringent. PROPOSED RECOVERY PLAN, *supra* note 6, at V-1-23 to V-1-33.

235. PROPOSED RECOVERY PLAN, *supra* note 6, at ES-4. There are a number of Federal programs in place for short-term strategies to avoid further degradation of anadromous fish habitat. The most notable is PACFISH, a joint program of the Bureau of Land Management and the Forest Service that identified management objectives and standards and guidelines to manage riparian areas. See U.S. FOREST SERV., U.S. DEP'T OF AGRIC., ENVIRONMENTAL ASSESSMENT FOR THE INTERIM STRATEGY FOR MANAGING ANADROMOUS FISH-PRODUCING WATERSHEDS IN EASTERN OREGON AND WASHINGTON, IDAHO, AND PORTIONS OF CALIFORNIA (1995); 60 Fed. Reg. 11,655 (1995). The Recovery Plan proposes to use the criteria in PACFISH as the foundation for recovery tasks relating to habitat in riparian areas, although some changes are recommended. PROPOSED RECOVERY PLAN, *supra* note 6, at V-1-17 to V-1-19.

236. PROPOSED RECOVERY PLAN, *supra* note 6, at ES-5.

237. PROPOSED RECOVERY PLAN, *supra* note 6, at ES-5. As the Recovery Team, NMFS places emphasis on flow augmentation. In improving flows, NMFS recommends adjustments to winter operations and drafting of reservoirs in order to make actual flows available in the summer; NMFS also recommends an in-season, flexible management process to make real-time decisions on flow levels, based on actual salmon migrations and water volume. *Supra*, at V-2-17 to V-2-29. NMFS also recom-

the same time, extensive research would be undertaken to determine the feasibility of natural river drawdowns and spillway crest drawdowns in an effort to restore the river to some semblance of its natural state.²³⁸ This two-prong approach would provide measures to increase survival in the short-term, determine the long-term efficaciousness of these measures in recovering the salmon, and study other long-term alternatives for which information is currently lacking. With immediate efforts to improve the species under the existing regime and additional research into other regimes to improve the species, NMFS would be in a position in 1999 to determine which regime to pursue as a long-term objective.²³⁹ In addition to the dams, the Plan addresses other aspects of mainstem passage, such as predation by birds and other fish and marine mammals, maintenance of navigation channels, and water quality.²⁴⁰

Harvest of salmon cuts across several ecosystems and several life-cycles of the species, including the salmon's growth and maturity from subadult to adult in the ocean, and the salmon's adult return to spawn in the river. Harvest of listed Snake River species is incidental to the harvest of non-listed species of salmonids sharing the same habitat, and it includes commercial and recreational ocean fisheries stretching from southern California to Alaska (the migratory range of the salmon), as well as in-river fisheries by commercial and recreational fishermen and several Native American groups.

The Plan seeks to reduce current harvest levels in order to meet biologically determined criteria (such as escapement goals); some level of harvest, however, is still recognized. Although in-river commercial harvest of any subspecies of sockeye salmon no longer is allowed, sockeye are still taken in tribal ceremonial and subsistence fisheries and incidentally in fisheries for other species.²⁴¹ Ocean harvest of Snake River spring/summer chinook is estimated to be less than 5%, and given the lack of available data, no management measures for this harvest can be pro-

mends measures to increase passage of fish over spillways and through bypass systems, which are the safest in-river routes of passage, in order to achieve a fish passage efficiency target of 80% at each dam except Bonneville. *Supra*, at V-2-32 to V-2-49. Transport operations, which have a higher survival rate from smolt to juvenile stages than in-river passage, are to be increased and improved. *Supra*, at V-2-50 to V-2-53.

238. Natural river drawdowns would decrease travel time and eliminate mortality associated with the reservoirs and dam passage; spillway crest drawdowns would decrease travel time, but would not eliminate all reservoirs and would create other problems for returning adult fish. PROPOSED RECOVERY PLAN, *supra* note 6, at V-2-53. Both options need further study to determine feasibility. *Supra*, at V-2-56 to V-2-59.

239. PROPOSED RECOVERY PLAN, *supra* note 6, at ES-5.

240. PROPOSED RECOVERY PLAN, *supra* note 6, at V-2-70 to V-2-87.

241. Total catch of sockeye since 1988 has ranged from 2,100 to 5,000 fish. PROPOSED RECOVERY PLAN, *supra* note 6, at V-3-3.

posed.²⁴² In-river harvest is managed under the Columbia River Fisheries Management Plan (CRFMP), a process involving tribes, states and the federal government, established through litigation.²⁴³ The Plan proposes harvest rates for all tribal fisheries of 5% for upriver spring chinook and 3% for upriver summer chinook, and a harvest rate for nontreaty fisheries of 1% each for summer and spring chinook.²⁴⁴ Snake River fall chinook are taken in both ocean troll and sport fisheries in the United States and Canada, as well as in-river recreational, commercial and treaty fisheries. The Plan recommends that an ocean management strategy be adopted in keeping with the Pacific Salmon Commission's rebuilding program, developed pursuant to the Pacific Salmon Treaty between the United States and Canada.²⁴⁵ For in-river management under the CRFMP, the Plan recommends a stepped schedule of incidental harvest rates ranging from 15% to 45%.²⁴⁶ The Plan also recommends long-term institutional changes, such as amendment to the CRFMP to specifically address listed species' needs, and development of subbasin harvest management plans. The Plan also calls for research into new fishing techniques and vessel and license buy-back programs.

Hatchery operations—more generically referred to as artificial propagation, captive propagation, or controlled propagation—have been in existence for more than 110 years, and have been greatly expanded during the last thirty. Originally a means to mitigate the loss of salmon as a result of overharvest, habitat degradation and hydropower operations, hatchery releases have actually exacerbated the decline of wild stocks of salmon. The problems are numerous but amorphous: introgression into natural gene pools through interbreeding and straying; ecological pressures such as competition, predation, displacement, and disease transfer; and encouragement of poor management practices, such as continued overfishing.²⁴⁷ The situation is further complicated by the fact that some hatcheries are currently propagating stocks that comprise part of the listed species' ESUs.²⁴⁸

To help conserve the listed fish, the PRP addresses five issues associated with the hatcheries: captive broodstock, gene banks, supplementation,

242. PROPOSED RECOVERY PLAN, *supra* note 6, at V-3-3 to V-3-7.

243. See *supra* note 221 and accompanying text.

244. PROPOSED RECOVERY PLAN, *supra* note 6, at V-3-16 to V-3-17.

245. PROPOSED RECOVERY PLAN, *supra* note 6, at V-3-13 to V-3-15. However, the two countries have failed to agree on reduced harvest rates for the past three years and escapement goals remain at levels close to those of 1984, when the program was adopted, so that the goals of the rebuilding program are not likely to be met on schedule in 1998.

246. PROPOSED RECOVERY PLAN, *supra* note 6, at V-3-18, Table 3-2.

247. PROPOSED RECOVERY PLAN, *supra* note 6, at ES-7.

248. PROPOSED RECOVERY PLAN, *supra* note 6, at V-4-3.

reintroduction, and research.²⁴⁹ The Plan recommends the development of management plans for these different activities, including the identification of specific numerical goals, times and methods of release, genetic and disease management strategies, monitoring and evaluation, and reintroduction and supplementation strategies.²⁵⁰ With respect to other hatcheries, the Plan seeks to minimize adverse impacts on listed fish by developing management plans to reduce disease transmission and reduce stray rates, and limiting annual releases of hatchery stocks.²⁵¹

C. *The Proposed Recovery Plan as a Prototype*

The Snake River Salmon Proposed Recovery Plan is fairly unique in how it seeks to strengthen the recovery planning process at both the development and implementation stages. For this reason, the Plan serves as a valuable prototype for other recovery efforts. However, the uniqueness of the Plan, to some extent, undermines its usefulness as a prototype; if the Plan is unique compared with past recovery plans, then one must consider how valuable it will be as a prototype for future plans. The answer depends in part on the impetus behind the Plan's new approach and in part on the application of the new approach to other recovery situations.

The impetus behind NMFS' new approach in this case is a confluence of factors relating to policy changes in the general implementation of the Act, new scientific understanding regarding the role of species to larger ecosystems, and the particularly vexing problems associated with protecting Northwest salmon stocks. The new policies by FWS and NMFS seek to improve recovery plan development as envisioned by the 1988 amendments; in some ways, the new policies go further than the amendments require. The PRP is one of the first plans to incorporate the Services' new policies,²⁵² and for this reason serves as a prototype. New scientific understanding has led to a greater emphasis on a more broad-based ecosystem protection, which the Plan seeks to accomplish. Finally,

249. Captive broodstock is a procedure that attempts to provide more juveniles for outplanting (to conserve natural populations) by collecting adults or juveniles from a local stock, rearing them to maturity, and then producing juveniles for release into the wild. Based on both NMFS and joint FWS/NMFS policies, this method is to be used only as a last resort for conserving the species. PROPOSED RECOVERY PLAN, *supra* note 6, at V-4-8 to V-4-10. Supplementation involves the planting of all life stages of hatchery fish into the wild to enhance natural stocks of the same species. Both captive propagation and gene pooling may provide the fish to be used in supplementation. *Supra*, at V-4-10 to V-4-11.

250. PROPOSED RECOVERY PLAN, *supra* note 6, at V-4-12 to V-4-28.

251. PROPOSED RECOVERY PLAN, *supra* note 6, at V-4-29. In 1994, approximately 20.2 million hatchery-raised fish were released in the Snake River, with 197.4 million fish released throughout the Columbia River basin; of this number, only 1.2 million fish were released to support recovery of the three listed ESUs. *Supra*.

252. See *supra* note 123 and accompanying text.

recovery of Pacific salmonids poses truly complicated problems because of the multifarious threats causing the species' decline, the expansive range and life-cycle of the species, the enormous scientific uncertainty that exists, and the numerous parties involved. These problems were exacerbated by the fact that the species were not listed until they were so very close to extinction. These factors forced NMFS to develop a creative solution that can serve as a model for future recovery efforts.

Even though the Plan evolved from a particular situation for a particular species, many of its recommendations and structural components have wide application to diverse situations. The Plan's solutions can certainly be applied elsewhere even though they might not have been developed without the dire need presented by the salmon's unique scenario. There is, however, one unique element of the Plan that might not apply to other recovery situations, which, if anything, lends support to the argument that the ESA should be amended to make this element universal rather than unique. This element is the relation of recovery plan goals and measures to other mandates of the Act; specifically, because some level of recovery is needed to ensure bare survival, the recovery measures in the Plan will approximate the force of law.

The PRP serves as a valuable model for future plans for several reasons. First, and foremost, its value lies in its sheer detail. That the Plan is so comprehensive and thorough serves to give all affected parties a clear indication of the proposed strategy for recovery and the biological requirements of that strategy; this will serve well in all aspects of ESA implementation. Such detail in the biological requirements is often a missing element of recovery plans. Second, the management considerations of the Plan serve as a valuable prototype; the emphasis on streamlining and coordinating among all entities with jurisdiction over resources in the Columbia River Basin underscores the importance of collaborative efforts on an ecosystem-wide basis. In addition, the establishment of a new institutional, scientific, and managerial framework provides an excellent model for an adaptive management approach to resource conservation that must rely upon the best available science.

The PRP contains one inherent limitation, however: the implementation of the Plan through adoption of recovery recommendations is voluntary on all parties but NMFS. With respect to process, there is no mechanism to compel participation by other groups on the Implementation Team, the Advisory Team, or any of the subcommittees. Substantive requirements likewise are discretionary. However, in this particular case, the listed Snake River salmon stocks are so depleted that the requirements for recovery are virtually identical to those for survival, so that it can be expected that biological opinions and section 10 permits will mirror the recommendations in the recovery plan. Because of this particular situation,

the Plan's recommendations will carry more weight, both biologically and legally, than those contained in other plans in shaping the requirements of other federal and non-federal entities under the Act. In this sense, the Plan will be much more effective than other plans in directing which activities to undertake and establishing a holistic program that will in large part be fully implemented.

1. *Biological Standards*

While most recovery plans identify biological standards for the conservation of the species, the PRP for Snake River salmon is unique because of its detail. The particular standards identified are specific for each broad sector of impacts, similar to a biological opinion reviewing a particular project. Indeed, in many cases, the tasks are accompanied with dates for completion, specific management plans, and monitoring requirements. This detail will enable more public review of both specific efforts to protect the species and the overall direction on how to conserve the listed species. Many plans, even after the 1988 amendments, fail to provide much detail, limiting their effectiveness in conservation. The PRP provides a welcome departure from this norm.

The PRP is also unique because it clearly prioritizes recovery tasks. While the Services' recovery guidelines require that priorities be assigned, NMFS is more specific in delineating which actions are required to avoid extinction, which are required to prevent further decline, and which should ensure sustained recovery.

The Plan explicitly connects the biological standards identified in the PRP to those used in other aspects of ESA implementation. NMFS has stated that actions consistent with the proposed Plan will be equated with a no-jeopardy finding under section 7 and approval of a habitat conservation plan under section 10. While survival and recovery are not always equated, there may be instances in which the difference is nil; NMFS has essentially taken the position that this is one such situation. Often, the standards identified in recovery plans are made in the abstract and have little if any bearing on other aspects of the ESA in protecting the species in question.

Finally, the Plan not only addresses multiple species listed under the ESA, it addresses the needs of the entire ecosystem. This allows many of the fundamental concepts developed and applied in the Plan to be used for other salmonid species and ecosystems.²⁵³ In addition, while the Plan

253. See PROPOSED RECOVERY PLAN, *supra* note 6, at I-10.

This Plan addresses Snake River salmon collectively to ensure that recovery actions are comprehensive and mutually beneficial to each listed species. The proposed recovery strate-

considers the needs of the three listed Snake River salmon, it does not ignore the needs of other non-listed and listed species or the larger ecosystem. This holistic approach to reach beyond the listed species is unique. To some extent, it stems from the practical need to work in conjunction with other ongoing efforts to restore the Columbia River basin (such as those of the Northwest Power Planning Council), but it also stems from the recognition that such a proactive approach would more efficiently recover the listed species while preventing the listing of additional species.²⁵⁴

2. Management Considerations

The PRP establishes two unique management approaches that make this Plan a valuable prototype; the first deals with the holistic nature of the management measures and the second deals with the adaptive nature of the management measures. First, the Recovery Plan provides a cohesive and comprehensive approach to recovery. It is not simply a hodgepodge of tasks designed to address individual and isolated impacts to the species. The Plan recognizes that no one set of tasks will achieve recovery; it must be taken as a whole.²⁵⁵ The PRP is a true blueprint for future actions.

gies and tasks are directed at restoring and maintaining the ecosystems upon which these species depend, thereby increasing the stocks' abundance to the point where protections afforded by the ESA are no longer necessary. The fundamental concepts of this Plan—preservation of stock diversity, emphasis on natural production, and habitat protection and improvement—also provide a framework for conserving salmonids elsewhere.

Supra.

254. The Northwest Power Planning Council (NPPC) was given broad authority under the Northwest Power Act of 1980, 16 U.S.C. §§ 839-839h (1994), to protect and restore Columbia River salmonids and to address the larger ecological concerns of fish and wildlife in the region. The NPPC is required to develop six subregional plans for resident fish and wildlife in the Columbia River basin. See PROPOSED RECOVERY PLAN, *supra* note 6, at I-11 to I-12. In relating the Proposed Recovery Plan to the NPPC effort, NMFS stated,

[t]his Proposed Recovery Plan . . . will be an integral part of that subregional planning effort. NMFS has made a commitment to the Council to coordinate planning and implementation efforts. This cooperation is essential to achieving the maximum benefits of shared regional resources and commitments. It will also aid in recovering listed fish while significantly rebuilding other fish and wildlife populations and avoid further listings.

Supra, at I-12.

255. PROPOSED RECOVERY PLAN, *supra* note 6, at I-10 to I-11.

NMFS has concluded . . . that no single solution is likely to lead to recovery of Snake River salmon. It is recognized that certain factors are a major cause of the current depleted status of the listed species, in particular the construction and operation of the Federal Columbia River Power system. NMFS concludes however, that the many different factors affecting Snake River salmon survival must be addressed comprehensively to first avoid extinction, and then maximize the probability of achieving population rebuilding and sustained recovery. NMFS also believes that recovery tasks must be planned to ensure the best use of available resources. Although immediate benefits are expected from tasks that can be implemented right away, many other measures will require substantial preparation. There-

Second, the Plan is founded upon several levels of adaptive management processes, particularly in the context of hydropower operations. This multi-tiered approach to adaptive management is fairly unique. The Plan itself is an adaptive management process, designed to synthesize several different approaches to recovery. The Plan calls for improving existing dam operations *and* conducting drawdowns—immediately moving in two directions to arrive at a point at which a decision can be made as to which direction will be more effective in the long-term. The purpose of this strategy is to take immediate steps to recover the species under the existing infrastructure; immediate action will clearly have the most immediate benefits for the species. The Plan also calls for a simultaneous study of potentially effective longer-term means to recover the species under different infrastructures.²⁵⁶ It is, in essence, a means of hedging one's bets on recovery planning in light of uncertain information.

Another adaptive approach, a subset of the first, is set up to make decisions on specific actions, based on the best information available at that time. This flexible, real-time decision making ability should enable NMFS (and other implementing agencies) to readily adapt to ever changing biological information and ever changing ecological conditions. In this sense, it represents a marked departure from previous recovery plans, such as the grizzly bear recovery plan at issue in *Fund for Animals v. Babbitt*, which focused solely on currently available information with the intention of revising it every five years. It was precisely the lack of adaptiveness that persuaded the court in *Fund for Animals* to allow the FWS to bow to ever-changing science. Somewhat ironically, however, adaptive management in recovery plans may increase the Services' accountability in such plans, as new information could be addressed as part of the original plan rather than waiting for the development of a revised one. In addition to those management approaches, the PRP addresses scientific information and research in a way that can serve as a useful model. The Plan recognizes the need for a single clearinghouse for obtaining available information, synthesizing that information, coordinating the analysis of it, and determining what information still needs to be obtained.

Lastly, the Plan recognizes the need for coordinated decision-making,

fore, progress towards recovery will escalate over a period of several years.

Supra.

256. PROPOSED RECOVERY PLAN, *supra* note 6, at I-9.

This recovery strategy is adaptive, it places higher priority on actions that are most likely to provide the most immediate benefits, the greatest long-term benefits, and the best opportunity to identify those factors limiting recovery. This strategy ensures that the recovery plan remains dynamic, allowing actions to be added, deleted, or refined following an adaptive management approach based on evolving scientific information and analysis.

Supra.

and in this regard, creates specific mechanisms to include affected parties. The plan also envisions a dispute resolution process to be developed. These measures, while not changing the legal or political boundaries of affected entities, would help bring them together effectively.

V. IMPROVING THE RECOVERY AND CONSERVATION MANDATE

Reform of the Endangered Species Act is extremely contentious and divisive, although there is one fact on which almost all agree: some level of reform is needed. Of course, once this fact is recognized, one must concede that the Act isn't working effectively to recover species in its present state. Proposals to reform the recovery and conservation mandate of the ESA may be legislative or administrative. Legislatively, there are essentially two basic choices: recognize that recovery is an integral part of the ESA and make it a readily achievable goal; or recognize that recovery is too difficult a goal to achieve and eliminate it as a statutory requirement. Administratively, numerous initiatives have been undertaken by the Services to streamline and strengthen the recovery process. Whether legislative or administrative, the changes need to address not only the biological requirements of recovery, but the administrative, managerial and financial aspects of recovery as well. This section first considers the need for improvement, then examines the relative advantages of legislative and administrative changes, discussing specific proposals by Congress and the Clinton Administration, and, lastly, identifies different means to improve recovery planning with respect to biological requirements and administrative and financial considerations.

A. *The Need for Improvement*

There is a wide range of possibility for improving the goal of recovery and the means to achieve it. Many of these changes will be necessary to fulfil the ultimate purpose of the ESA—to protect and conserve threatened and endangered species and the ecosystems upon which they depend. Without such changes, species will continue to teeter on the edge of bare survival rather than actually improving to the point of recovery. Populations may stabilize as a result of the prohibitions against jeopardy and takings, but it is unlikely that the populations would actually recover unless a specific provision of the ESA eliminated the threats facing that species. Consider that 41% of all 909 listed species have stabilized or are improving; of that number, however, only 8% are actually improving while 33% are stabilized.²⁵⁷ This statistic yields tremendous insight into

257. FWS REPORT TO CONGRESS, *supra* note 4, at 32.

Of the 108 species listed between 1968 and 1973, 58 percent are currently known to be

the ability of the ESA to do what it specifically provides for: to prevent species from going extinct. Indeed, "the fact that almost 99 percent of listed species remain extant speaks to the success of the Act as a mechanism for conservation of species at risk of extinction."²⁵⁸ This statement is only partially correct; the Act has demonstrated success as a mechanism for the *survival* of species, but not for their *conservation* or *recovery*. The no-jeopardy mandate and takings provision, the two most explicit and strongest provisions in the Act, have successfully halted the decline of 41% of the listed species by reducing threats facing them. The recovery mandate, vague and lifeless, has had minimal effect in recovering the vast majority of species on the list. While legislative amendments would be the most efficacious means of strengthening recovery goals, there are administrative means of improving the recovery and conservation processes.

Even with the minimal recovery mandate that does exist in the ESA, there are significant shortcomings in its implementation. These shortcomings reach across all aspects of recovery—from recovery plan development to subsequent plan implementation. The causes of these shortcomings also run the gamut, including the severe lack of biological information on rare species, a severe lack of funding, and, occasionally, poor management and administration.

The most disturbing problem is in the recovery goal itself. Two of the most definitive factors—population size and number of populations—have been set, in many cases, *below* the point at which the species was listed as threatened or endangered in the first place.²⁵⁹ The numbers have been set without "biologically defensible estimates that will ensure population viability."²⁶⁰ Worse yet, these numbers may be below the level considered to be endangered.²⁶¹ Such goals "risk extinction rather than

stable or improving in their native habitats. Of the 294 species listed between 1989 and 1993, only 22 percent have recovered to the point that they are stable or increasing . . .

The extraordinary success of the recovery program is demonstrated by the fact that even with a substantial increase in the number of species listed over the past decade, over 41 percent of the 909 species listed as of September 30, 1994, have stabilized or are improving . . . [E]fforts have similarly managed to hold those species with declining population trends to an overall average of 35 percent of total listed species.

Supra.

258. FWS REPORT TO CONGRESS, *supra* note 4, at 32.

259. Timothy H. Tear et al., *Status and Prospects for Success of the Endangered Species Act: A Look at Recovery Plans*, 262 SCIENCE 976 (1993) [hereinafter *A Look at Recovery Plans*]. The authors analyzed all 314 available recovery plans prepared by FWS and NMFS. With respect to population size, 15 out of the 54 (28%) threatened and endangered species for which population size data were available had recovery goals set at or below the existing population size at the time the plan was written. With respect to numbers of populations, "recovery goals . . . were even less ambitious than those for population size: 60 out of 163 species (37%) had recovery goals set at or below the existing number of populations." *Id.*

260. *Id.*

261. *Id.*

ensure survival."²⁶² Indeed, even ensuring survival is inadequate; the goal needs to not only ensure survival, but accomplish recovery.

Aside from inadequate goals, other criticisms leveled at recovery plans include the failure to objectively distinguish between endangered and threatened species, the vagueness and generality of recovery plan guidelines, the ineffective application of population viability analyses, favoritism toward vertebrate species, and failure to use a multi-species approach.²⁶³ These problems frequently surface due to a lack of biological data, which in turn stems from a lack of funding.²⁶⁴ Despite Congressional amendment to the Act in 1988 specifically aimed at improving the recovery planning process, "the distribution of information available in recovery plans has remained relatively constant."²⁶⁵ Indeed, less information is usually provided on precisely the issues that require the most information.²⁶⁶ However—and most importantly—this dearth of information is not due to any "deficiency in recovery plans," but rather "reflects the fact that we have only begun to seriously study most of the earth's species and biological processes."²⁶⁷ That more money is not available makes such studies difficult, so that information continues to lag. Nevertheless, there are ways in which the Services can compensate for this lack of information, as discussed below.

In addition to the biological issues in recovery planning, political and socioeconomic considerations contribute to the problems associated with recovery plan implementation. It is not so much that these issues should not be considered—indeed, the only effective means to recover species will be to incorporate them—but that they are often considered in a fairly haphazard and arbitrary manner that leads to a weakening of the biological goals identified in recovery planning.²⁶⁸

Though no universally accepted criteria for endangerment exist, Mace and Lande developed criteria for ranking levels of extinction risk for vertebrates. Using their criteria, we calculated that 18 out of 30 (or 60% of the total number of species for which estimates were possible) of the ESA's threatened and endangered vertebrates had recovery goals below what Mace and Lande set for endangered status, the second most risky of their categories. According to these measures, even if population goals were achieved, 60% of the ESA's threatened or endangered vertebrate species would remain in peril, with roughly a 20% probability of extinction within 20 years or 10 generations, whichever is longer.

Id.

262. *Id.*

263. Timothy H. Tear et al., *Recovery Plans and the Endangered Species Act: Are Criticisms Supported by Data?*, 9 CONSERVATION BIOLOGY 182, 183-92 (1995) [hereinafter *Are Criticisms Supported by Data?*].

264. *Id.* at 184-85.

265. *Id.* at 185.

266. *Id.*

267. *Id.* at 190.

268. Tear, *A Look at Recovery Plans*, *supra* note 259, at 976-77. The failure to identify biologi-

An overall lack of funding also causes problems in the recovery of listed species. Even if a recovery plan establishes a goal of complete recovery and delisting, tasks will be prioritized based on the importance of the task to survival of the species. Funding may be so limited that it is only those Priority-1 tasks that get funded, thus in effect supporting actions that ensure the survival of the species, but not those necessary to recover the species. This prioritization, together with limited funds, relegates the process of recovery as a means to reinforce and bolster the no-jeopardy mandate, rather than imposing additional protective measures for recovery. Another problem, exacerbated by the steadily accelerated pace of listings, is the backlog in recovery plan development. Even though the Services maintain a 2.5 year timeframe for developing plans, the process usually takes longer. When Congress strengthened the recovery plan provisions in 1988, only 56% of the listed species had approved recovery plans. By 1992 this figure had improved to 61%; it then slipped to 53% in 1993 due to additional listings.²⁶⁹

Implementation of recovery plans also lags. For example, over 50% of the recovery objectives have been accomplished for only 68% of the species listed.²⁷⁰ The Services are correct to focus their limited resources on listings themselves to ensure the survival of those species, but recovery planning and implementation have been sacrificed as a priority. New mechanisms must be developed to ensure adequate funding for the recovery and conservation mandate of the ESA.

B. *Legislative versus Administrative Proposals*

Reform proposals take the form of both legislative amendments and administrative initiatives and address the biological, economic, political and administrative aspects of recovery. As demonstrated using the Snake River Salmon Proposed Recovery Plan as a prototype, much can be done administratively without changing the Act. Many of the recommendations regarding biological requirements and administrative mechanisms discussed below on a generic level have already been identified by the Services in their recent policies and are similar to elements contained in the PRP. One commentator has offered a bold and creative interpretation of the recovery mandate, using it essentially as a lens through which other provisions of the ESA are viewed in order to provide an overarching and

cally defensible goals that will ensure population viability "suggest[s] that political, social, or economic considerations may have been operating that reduced recovery goals so that they were below what might have been set if they had been developed strictly on biologically based estimates." *Supra*.

269. NRC REPORT, *supra* note 14, at 81.

270. NRC REPORT, *supra* note 14, at 81.

holistic focus to species preservation.²⁷¹

There are, however, inherent limitations in how far such administrative initiatives and interpretations can go—and how successful they will ultimately be—based on limitations in the ESA itself. Because implementation of recovery plans is not mandatory for any agency but the Services, recommendations in the plans, no matter how superlative, are purely voluntary, with no legal mechanism to compel participation by other groups. Because there is a distinction between survival and recovery—notwithstanding certain situations presented by Snake River salmon and discussed in *Idaho Department of Fish and Game v. National Marine Fisheries Service*—there is a limit to the legal authority in viewing the section 7 and section 10 no-jeopardy requirement through a section 4 lens. Mandatory implementation of recovery goals requires a legislative change. Other initiatives that can be pursued administratively, such as the identification of certain biological standards and the establishment of new funding mechanisms and incentives, would be greatly empowered and expanded if they were authorized through legislative change.

As for legislative proposals, the ESA was up for reauthorization in 1992, but while many bills have been introduced in both houses of Congress to amend and reauthorize the ESA, no serious initiative has been undertaken. This past year witnessed the greatest movement towards reauthorization; the situation has now quieted and it is likely to remain quiet until after the 1996 elections. The upcoming reauthorization provides a perfect opportunity to revamp and strengthen the recovery requirements of the ESA and to make them an integral part of the Act's implementation, along with section 7 consultations and the section 10 habitat conservation plans.

The most basic change needs to be legislative; the recovery mandate should be made clear and unambiguous. That the ESA has worked so effectively to halt the further decline of many species after listing, but has not resulted in recovery but for a small minority of these species, does not imply failure of the Act; rather, it implies success for that portion of the Act that seeks to halt the further decline. One should conclude that the Act should be strengthened in its weak areas rather than scaled back in all areas. The frequent success achieved in halting species' decline undermines the argument that survival and recovery are impossible goals. They are not merely possibility, they are reality.

While recovery implementation should be required under the Act, further questions relate to the breadth and scope of this requirement. At the very least, recovery implementation should be required of all federal

271. Cheever, *supra* note 5, at 6.

agencies. Imposing requirements upon private and non-federal entities presents the more difficult question. Questions of equity and burden-sharing (not to mention the constitutional issues of takings and just compensation) would be raised in applying the recovery mandate to non-federal entities. While non-federal entities may not need to affirmatively recover listed species, their actions should be consistent with general recovery principles and should not interfere with the recovery plan's timeline. Because such entities are required to submit a habitat conservation plan in connection with any authorized incidental taking, some degree of responsibility on their part is already assumed. The applicant's specific role in recovery should be addressed in much the same way conservation recommendations under section 7 are addressed, with the difference being that some minimal standard would be required to maintain consistency with recovery plan requirements.

Such changes, together with the specific recommendations in the following sections, would have several added benefits. It would give the force of law to the notion that recovery planning should guide interpretation and implementation of the other provisions of the ESA. It would also remove the uncertainties in litigating cases involving recovery planning and implementation and provide explicit standards that would be judicially reviewable. It would provide additional impetus to more fully fund actions to recover listed species beyond those merely necessary for survival. Lastly, it would provide certainty to all affected parties, minimize the long-term impacts on them, and formalize their role in the recovery process beyond mere notice and comment.

However, each of the major bills introduced in both houses thus far do not merely weaken the recovery requirements in the current law, but thoroughly eviscerate them. Bills introduced by Slade Gorton²⁷² and Dirk Kempthorne²⁷³ in the Senate and Don Young and Richard Pombo²⁷⁴ in the House all eliminate the requirement to recover listed species. Rather, each bill allows the Secretary to establish one of several goals for a listed species, ranging from barely no protection at all to complete recovery.²⁷⁵

272. S. 768, 104th Cong., 1st Sess. (1995).

273. S. 1364, 104th Cong., 1st Sess. (1995).

274. H.R. 2275, 104th Cong., 1st Sess. (1995).

275. *See, e.g.*, H.R. 2275, 104th Cong., 1st Sess. § 501 (1995).

(B) The conservation objective may be, in the discretion of the Secretary—

(i) recovery of the listed species;

(ii) such level of conservation of the species which the Secretary determines practicable and reasonable to the extent that the benefits of the potential conservation measures outweigh the economic and social costs of such measures, including but not limited to maintenance of existing population levels;

(iii) no federal action other than enforcement against any person whose activity violates the prohibitions specified in section 9(a), including any activity that results in a taking of the

While this type of flexibility may at first blush appear enticing, it is a red herring; a Secretary unsympathetic to the resource may, by merely changing the conservation goal, undo many years, money and effort previously spent trying to recover the same species. The bills would destroy continuity in recovery efforts and species would most likely remain on the verge of extinction for extended periods; this proposed approach would incur tremendous long-term costs and instill tremendous antipathy in parties taking part in recovery efforts.

It is patently counterproductive to write off recovery because species are not quick to recover. If any intent is to be given to preserving listed species, then preserving them on the razor's edge of survival and extinction is not going to save human resources or endangered species; it will instead generate an indefinite expenditure of funds with little gain resulting from the effort. Proposals that profess to protect species and eliminate any requirement for recovery are profoundly hypocritical. Only one proposal is courageous enough to state that certain species should be allowed to go extinct or at least be cut loose from the sometimes quixotic attempt by humans to save them from extinction.²⁷⁶ However, if species preservation is to remain a goal of the law, then recovery needs to be an integral part of the law; as this article has suggested, this is a scientific reality. As discussed below, this is administrative and economic practicality as well.

FWS and NMFS, under the Clinton Administration, recently issued a "10 Point Plan" for the Endangered Species Act, which includes proposals for both legislative and administrative reforms.²⁷⁷ While only one point

species, unless the taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity; or

(iv) such other objective as the Secretary may determine that does not provide a lesser level of protection than the level described in clause (iii).

Id.

276. See MANN, *supra* note 9, at 212-16.

The thought of deliberately abandoning the effort to save some biological entities is disagreeable, and scaling back the Endangered Species Act is tantamount to endorsing such an unpleasant prospect. The discomfort is enough to push some into the warmly comforting arms of the Noah Principle [that every species must be saved]. That would be a mistake. Crying no more extinctions produces a noble sound, but it does nothing to stop extinction. And it has the potential to worsen the plight of biodiversity, because demanding the perfect can prevent us from obtaining the merely good. To do better, we will have to accept the responsibility that comes with being human at this time in history. That is, we must choose to play Noah, however imperfectly.

Supra, at 215.

277. PROTECTING AMERICA'S LIVING HERITAGE: A FAIR, COOPERATIVE AND SCIENTIFICALLY SOUND APPROACH TO IMPROVING THE ENDANGERED SPECIES ACT (1995) (on file with author). The ten principles are to:

base ESA decisions on sound and objective science; minimize social and economic impacts; provide quick, responsive answers and certainty to landowners; treat landowners fairly and with consideration; create incentives for landowners to conserve species; make effective use

focuses on recovery specifically, four deal with conservation generally, and all ten can be applied to recovery and conservation efforts. The principle relating to recovery includes legislative and administrative changes, with a general thrust emphasizing the importance of recovery.

Recovery should be the central focus of efforts under the ESA. Plans for the recovery of listed species should be more than discretionary blueprints. They should be meaningful and provide for implementation agreements that are legally binding on all parties. They should prescribe those measures necessary to achieve a species' recovery in as comprehensive and definitive manner as possible in order to provide greater certainty and quicker decisions in meeting the requirements of the ESA.²⁷⁸

The specific legislative proposals include: identification of definitive, scientifically sound recovery objectives for populations; participation of all stakeholders in development and implementation of plans; requirements to minimize social and economic costs; facilitation of integrating all programs relating to natural resources; emphasis on multi-species, ecosystem-based strategies.²⁷⁹ In addition, the 10 Point Plan recommends that the recovery planning process be exempt from NEPA. In achieving these proposals, the 10 Point Plan recommends that all relevant state and federal agencies be required to draft an implementation agreement, binding upon all parties, that would limit liability under sections 7 and 10, but also ensure that actions meet or exceed the requirements of the ESA.²⁸⁰ Such proposals would go a long way towards fulfilling the need to make recovery a mandatory goal of the ESA. The 10 Point Plan also recommends that critical habitat be designated in conjunction with recovery plans rather than with listings.²⁸¹

In sum, legislative amendments could greatly improve the recovery mandate, addressing both the biological requirements and the socioeconomic considerations of recovery plans. However, many changes could be done administratively, such as the issuance of the joint FWS and NMFS policies in July of 1994. Internal guidance may also be developed to incorporate specific elements consistent with the statute and existing policy.

of limited public and private resources by focusing on groups of species dependent on the same habitat; prevent species from becoming endangered or threatened; promptly recover and de-list threatened and endangered species; promote efficiency and consistency; provide state, tribal and local governments with opportunities to play a greater role in carrying out the ESA.

Id. at 3-4.

278. *Id.* at 10.

279. *Id.* at 10-11.

280. *Id.* at 11.

281. *Id.*

Specific recommendations regarding biological and socioeconomic aspects of recovery are discussed below.

C. *Biological Requirements*

As an initial matter, recovery planning needs to be based on an adequate scientific foundation, which often does not exist. Consequently, reform needs to focus on the dire need to collect data and survey threatened and endangered species.²⁸² A process should be articulated to evaluate and review the available science and reach some consensus on what is known, what is uncertain, and what needs to be known.²⁸³ This entails not only research priorities for new information, but also uniform measures for evaluating existing information. Even if much science is unavailable and conclusions will differ, the assumptions need to be the same.

Biological criteria must be better addressed in the recovery planning process, and biological requirements must be better elucidated for implementation. The 1988 amendments addressed these problems by requiring that plans include objective, measurable criteria for delisting and site-specific measures to achieve recovery. However, the amendments did not go far enough in creating a comprehensive, holistic process that synthesizes the available information, fills information gaps, develops specific guidelines and criteria, and addresses uncertainty and risk.

As noted above, politics and economics compromise biological goals so that recovery plans "manage for extinction" rather than recovery. It may seem trivial, but Congress should require "biologically defensible recovery goals," with adequate criteria to define those goals.²⁸⁴ If necessary, because of limited resources, goals should be prioritized as either long-term or short-term and each group should have timeframes for completion.²⁸⁵ Such prioritization can also be a means to include socioeconomic considerations. It is important, however, that priorities go beyond those necessary for no-jeopardy, and require additional actions for affirmative recovery.

Criteria should be established to distinguish among threatened, endangered and recovered populations, and provide standards for recovery.

282. See WILSON, *supra* note 9, at 312. Wilson places such surveys first on his agenda for protecting biodiversity and describes a layered network of surveys ranging from ecosystems to genes. *Id.*

283. Tear, *Are Criticisms Supported By Data?*, *supra* note 263, at 193. To improve the recovery process, Tear recommends that the Services "[e]stablish research priorities for gathering information specifically needed to assess whether recovery efforts are achieving the goal of establishing or maintaining viable populations in the ecosystems in which they occur." *Supra.*

284. Tear, *A Look at Recovery Plans*, *supra* note 259, at 977.

285. Tear, *Are Criticisms Supported By Data?*, *supra* note 263, at 193. See also J. Michael Scott et al., *Socioeconomics and the Recovery of Endangered Species: Biological Assessment in a Political World*, 9 CONSERVATION BIOLOGY 214 (1995).

These criteria could include population size, number, and probabilities of persistence over time. Guidance should be developed on the use of subpopulations and metapopulations to measure the health of a species and its rate of recovery. These guidelines "would serve as an important initial step toward separating biology and politics in the recovery process."²⁸⁶ They should not be delayed by lack of existing information; it is possible to use available information in a scientifically rigorous manner to "establish[] a firm biological foundation on which to plan recovery."²⁸⁷ In addition to these elements, guidelines should provide for identifying and protecting the habitat requirements of the species.

Recovery plans must address the risks associated with species extinction and endangerment and the uncertainties related to recovery efforts. This includes not only risk associated with species endangerment and extinction, but also risk associated with land-use restrictions and unnecessary expenditures.²⁸⁸ Both forms of risk exist because of uncertainty and lack of data. Recovery plans should include a risk assessment and provide for the risk management associated with uncertainty in establishing biologically defensible standards and criteria for recovering listed species.²⁸⁹ In this sense, risk should be one of the factors considered when establishing criteria for recovery standards.²⁹⁰ It should also be considered in determining a means to balance the costs of a particular recovery task or regime with the expected benefit to the species' likelihood of persistence.

Recovery plans should also emphasize the original congressional intent of the ESA to recover species in their natural ecosystems. In one study, approximately 70% of the recovery tasks for 314 plans included translocation, and 64% included captive propagation.²⁹¹ Greater emphasis should be placed on recovery tasks within the natural ecosystem. In a larger context, Congress should mandate that recovery plans address the overall ecosystem health in recovery plans for individual species.²⁹² While such requirements may need to be flexible, as they reach beyond the

286. Tear, *Are Criticisms Supported By Data?*, *supra* note 263, at 191.

287. Tear, *Are Criticisms Supported By Data?*, *supra* note 263, at 191. "Adopting strictly biological criteria for assessing extinction threats . . . , using measures such as population size and numbers of populations, and explicitly stating the risk associated with these levels" will provide for a firm biological foundation on which to plan recovery. *Supra*.

288. NRC REPORT, *supra* note 14, at 124.

289. NRC REPORT, *supra* note 14, at 150.

290. NRC REPORT, *supra* note 14, at 152-71. "To ensure that ESA decisions to protect endangered species as they are intended to and to do so in a scientifically defensible way requires objective methods for assessing risk of extinction and for assigning species to categories of protection according to their risk of extinction." *Supra*, at 152.

291. Tear, *A Look at Recovery Plans*, *supra* note 259, at 977.

292. See generally INTERAGENCY ECOSYSTEM MANAGEMENT TASK FORCE, *THE ECOSYSTEM APPROACH: HEALTHY ECOSYSTEMS AND SUSTAINABLE ECONOMIES* (1995).

ESA's authority, it is important to efficiently achieve meaningful recovery and to prevent further listings of species.²⁹³

D. Administrative and Financial Mechanisms

The recovery planning process should be better elucidated to address not only the biological information necessary for recovery, but also the social, economic, and larger environmental issues associated with recovery. The 1988 amendments required an identification of costs and a public review process but included few specifics and little direction. They did recognize, however, the need to address both economic considerations and public participation simultaneously.

With respect to the administrative process, development of recovery plans need not comply with NEPA. Recovery planning could be structured to serve as the functional equivalent of the environmental impact statement (EIS) process, or, alternatively, as a displacement of the NEPA requirements.²⁹⁴ Certainly, if all stakeholders are given a more active role in recovery planning (beyond opportunity to comment on a draft plan), NEPA need not apply. However, preparation of an EIS, with clearly articulated alternatives to meet recovery goals, may go a long way in defusing the controversies and tensions surrounding ESA issues and creating a broader dialog.

With respect to economic considerations, Congress should mandate that not only are costs to be identified, but that the least costly means to achieve the biological goals are to be implemented. One researcher suggests that the biological goals could be modified based on risk assessment and risk management, given that the accuracy of models in predicting long-term persistence of a species is relatively weak.²⁹⁵ Long-term goals

293. See Tear, *Are Criticisms Supported By Data?*, *supra* note 263, at 194. Tear recommended that the Services "[p]lace more emphasis on multi-species and ecosystem-level recovery plans (especially plans with multiple taxonomic groups) as an interim step towards broader, ecosystem-level protection . . ." *Supra*.

294. See *Pacific Legal Foundation v. Andrus*, 657 F.2d 829, 835 (6th Cir. 1981) (holding that an EIS is not required when FWS lists a species as endangered or threatened); *Getty Oil Co. v. Ruckelshaus*, 467 F.2d 349, 359 (3d Cir. 1972) (holding that the Clean Water Act is a functional equivalent of NEPA). See also *Douglas County v. Babbitt*, 48 F.3d 1495, 1507-08 (9th Cir. 1995) (holding that ESA procedures for designating critical habitat displace NEPA's requirements). In *Douglas County*, the Ninth Circuit noted that "displacement" and "functional equivalency" are different arguments supporting a waiver of NEPA requirements. "The 'displacement' argument asserts that Congress intended to displace one procedure with another. The 'functional equivalent' argument is that one process requires the same steps as another." *Id.* at 1504 n.10.

295. See Scott, *supra* note 285, at 215.

Short- and long-term recovery goals will differ in the way that nonbiological considerations are handled, and these differences will be reflected in the specified probabilities of persistence. First, long-term recovery goals will be based solely on biological considerations, including habitat restoration and protection. Predictive models will have a relatively low

should be based solely on biological criteria and clearly delineated; short-term goals could include a range of tasks based on biological and nonbiological considerations.²⁹⁶ Of necessity, however, the short-term tasks chosen must promote the long-term goals.²⁹⁷

Another scholar has emphasized the need to address not only socio-economic factors but bioeconomic factors as well.²⁹⁸ Such factors would formally recognize the economic value in the species and resources conserved in connection with the species. This economic value can be derived from sustained use of the resource, such as chemical prospecting, or tangential use of the resource, such as recreation and tourism.²⁹⁹

As for social concerns, the recovery process needs to move beyond mere public notice and comment. It must include some formal participation among all sectors—private groups (both industry and environmental), local and state governments, tribal governments, and all relevant federal agencies—beginning in the early stages of planning and running through the plan's completion. Agreements for such participation are currently being undertaken pursuant to the Services' joint policy on recovery planning and within the context of habitat conservation planning pursuant to section 10 of the Act. The Act itself, however, should provide the framework for these agreements and make obligations on parties a requirement.

The need for better involvement in these planning efforts is already universally recognized by all groups. Two commentators who are critical of the current ESA identify four principles that should be followed in making decisions on species preservation: the system for making choices

precision at these longer time scales, a problem exacerbated by limited, variable information available for most threatened and endangered species. Consequently, we propose that long-term viability assessment of management options could tolerate reduced probabilities of persistence Reducing the probability of persistence to this degree could decrease the minimum population sizes estimated to meet recovery criteria, which in turn might decrease the number of tasks identified or the sequence of implementation reported in recovery plans.

Supra.

296. Scott, *supra* note 285, at 215.

297. Scott, *supra* note 285, at 215. "[P]ublic input is incorporated into choosing short-term management strategies, but the ultimate success of the interim strategies is judged against the yardstick of the long-term, biologically-based goal." *Supra.*

298. See WILSON, *supra* note 9, at 319.

As species inventories expand, they open the way to bioeconomic analysis, the broad assessment of the economic potential of entire ecosystems. Every community of organisms contains species with potential commodity value—timber and wildplant products to be harvested on a sustainable basis, seeds and cuttings that can be transplanted to grow crops and ornamentals elsewhere, fungi and microorganisms to be cultured as sources of medicinals, organisms of all kinds offering new scientific knowledge that points to still more practical considerations.

Id.

299. *Id.* at 319-21.

must be ethical, practicable, knowledgeable and political.³⁰⁰ Although they promote these principles in lieu of the "Noah Principle"—the principle that every species must be saved—certainly these principles can be applied in conjunction with the Noah Principle as well.³⁰¹ On the other side of the equation, a Federal interagency task force on ecosystem management touted ecosystem management more as a management tool than a scientific tool in order to facilitate planning and communication, public involvement, resource allocation, and management of information.³⁰² The basis for these recommendations in the context of ecosystem management exists in applying the same recommendations in the context of species recovery planning, which itself could parallel ecosystem-based management.³⁰³

Recovery plans should be legislatively incorporated into the broad framework of the ESA so that the standards, guidelines, objectives and measures defined in the recovery planning process are actually carried out. The implementation agreement identified in the 10 Point Plan would accomplish that goal.

In addition, the ESA's provisions relating to habitat protection can be amended by Congress to make them more meaningful biologically and more responsive to socioeconomic costs. Presently, critical habitat is designated at the time of listing, with a focus on elements necessary for conservation and a consideration of economics.³⁰⁴ However, the listing process generally does not involve economic issues and does not gather suffi-

300. MANN, *supra* note 9, at 216-24. These principles are intended to: facilitate discussion among parties with conflicting interests and give every interested party a voice; establish attainable goals with existing means; improve knowledge for decisionmaking; and make biodiversity a political choice rather than a scientific necessity. *Id.*

301. MANN, *supra* note 9, at 216-24. Mann and Plummer fault the ESA for not allowing decisions that may risk the extinction of a species. However, the ESA explicitly allows such decisions to be made under section 7 of the ESA by the Exemption Committee, also known as the "God Squad," for the very reason that it can decide the ultimate fate of a species. *See* 16 U.S.C. § 1536(e). Mann's and Plummer's wholesale criticism of the broad purpose of the ESA should be more accurately, and more productively, narrowed to be a criticism of the exemption process under section 7.

302. *See* INTERAGENCY ECOSYSTEM MANAGEMENT TASK FORCE, *supra* note 292, at 13-15.

303. The report identifies over 30 recommendations touching on federal coordination, coordination with nonfederal entities, communication with the public, resource and budget allocation, support of the role of science, and information management. Some of these specific recommendations include: regional interagency collaboration; reciprocal management agreements to overcome administrative boundaries; Federal technical assistance to private landowners in ecosystem management; improvement in public access to information; training of Federal agencies in community relations and public involvement; coordination of agency budgets for related ecosystem projects; establishment of regional science planning bodies; development of standards for natural resource studies, evaluation and monitoring; and collaboration of regional data management efforts. *Id.* at 9-15.

304. Critical habitat is defined as the specific areas, either within or outside the geographic area occupied by the species at the time it is listed, that are "essential to the conservation of the species." 16 U.S.C. § 1532(5). *See also* 16 U.S.C. § 1533(b)(2).

cient information to determine conservation requirements. Consequently, critical habitat designations would take on much more meaning as an element of recovery planning, when both conservation and economics are at issue, than they do as an element in the listing process. This could entail so-called recovery zones for species, in which habitat is classified in accordance with its importance to the species' survival and recovery.³⁰⁵ If habitat is essential for the species' survival, it could be designated at the time of listing; other habitat would be designated in conjunction with recovery planning.³⁰⁶

The most potential for reform lies in the development of financial and administrative incentives for both federal and non-federal entities to engage in initiatives toward recovery, or in the least, to conform their projects to recovery goals. Many of the bills recently introduced in Congress provide for such incentives, although the payback for the stakeholder in some instances is a wholesale exemption from the ESA requirements, affording listed species little long-term protection.

There are a range of other possibilities, however, that are more biologically defensible and more legally consistent with the existing purpose of the ESA. For example, several proposals seek to amend the tax provisions for land ownership and transfer in order to encourage land to be dedicated to endangered species protection. Federal tax credits can be given for certain management practices; estate taxes can be reduced for land gifts and transfers to conservation organizations; property taxes can be reduced for conservation easements or agreements entered into by the landowner.³⁰⁷ Another proposal advocates the use of "safe harbors" to protect landowners from subsequent ESA regulation if the landowner agrees to protect certain habitat for species today.³⁰⁸ This approach would discourage the widely publicized practice of quickly destroying essential habitat for candidate species before ESA prohibitions take effect. It would also serve as a quick fix to protect the habitat in the short-term, admittedly leaving long-term protections uncertain. Public financing could be used to fund conservation efforts, which may entail the issuance of bonds by state and local municipalities or the development of a state or local revolving loan fund. While such municipalities would increase their debt service with such additional financing, it would allow investors to take advantage of tax-exempt financing, and would provide capital for such projects that are currently underfunded (if they are funded at all). A

305. See ROHLF, *supra* note 7, at 102-04.

306. See NRC REPORT, *supra* note 14, at 75-76.

307. See THE KEYSTONE CENTER, THE KEYSTONE DIALOGUE ON INCENTIVES FOR PRIVATE LANDOWNERS TO PROTECT ENDANGERED SPECIES: FINAL REPORT 26-36 (1995).

308. *Id.* at 4-7.

revolving loan fund, currently used for wastewater treatment projects under the Clean Water Act, would be particularly appealing; municipalities could issue bonds collectively under one issuer, obtain income from the sale of bonds, and use that income to finance projects on a long-term basis. Repayment could be made through revenue receipts, particularly if the conservation projects entail user fees, such as park entrance fees, or general income tax receipts.

VI. CONCLUSION

The Endangered Species Act is a dying breed of environmental statutes; it is short, concise, simple, and manifestly clear and unambiguous in its purpose. In its simplicity, its mandate is straightforward. As the Supreme Court observed in *Tennessee Valley Authority v. Hill*, it is difficult to imagine that Congress could have crafted a simpler mandate than the prohibition against jeopardizing the continued existence of listed species. Also in its simplicity, its implementation is flexible. The Services have wide latitude in interpreting and implementing the statute. Both Congress in amending the ESA, and the Services in implementing the ESA, should remain faithful to the purpose and design of the original law. Congress and the Services should pursue the purpose of the ESA with clear, biologically defensible goals and flexible management to meet those goals.

The goals to ensure the continued existence of listed species and to prohibit the take of endangered species have been extremely successful at stabilizing or improving a large percentage of species listed and ensuring their survival. While survival is vital, however, it is not sufficient. Recovery is also necessary. It is only with stronger, more elaborate provisions relating to recovery that the original purpose of the ESA can be fulfilled efficiently and quickly. However, in exchange for strengthening the recovery requirements, the ESA must also strengthen the requirements to consider and minimize socioeconomic impacts, identify innovative mechanisms in undertaking conservation efforts, and include all affected entities in the process.

The ESA cannot be considered a success if species remain terminally listed as threatened or endangered. Just as a company can invoke the protections under bankruptcy law until it can reorganize and re-enter the economy in a healthy state and thereby minimize the overall impacts to society, so too must endangered species be afforded the protection of the ESA to recover and resume their role in the ecosystem, in a healthy, strong, viable condition, and thereby minimize overall impacts to the environment—social as well as natural—in which we live.