Federal Protection Of Endangered Species: A Policy Of Overkill?

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I
INTRODUCTION

Though cynics may believe that the only thing a person will protect at all cost is his own life, Congress enacted legislation in 1973[1] to protect every plant and animal species in danger of extinction, regardless of cost. Inevitably this mandate conflicts with development in a society bent on progress. In the celebrated *Tellico Dam* case,[2] concern for the Snail Darter, an otherwise little-known fish, temporarily halted construction of a multi-million-dollar dam whose completion threatened the extinction of that fish. The resulting public outcry led Congress to backpedal by

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1. Endangered Species Act of 1973, Pub. L. No. 93-205, 87 Stat. 884 (codified as amended at 16 U.S.C. §§ 1531-1543 (1982) [hereinafter cited as ESA].

2. TVA v. Hill, 437 U.S. 153 (1978).

requiring a cost-benefit analysis where conflicts between species protection and a major federal project appear insoluble.[3] This requirement raises a fundamental and as yet largely unaddressed question: What is the value of a species?

The answer depends on the objectives in protecting species. Only a well-reasoned value system can support a policy of species protection which will withstand the inevitable pressures from competing forces. National wildlife legislation has notably failed to adequately address its underlying justification.

This comment explores the objectives underlying endangered species protection in the United States, and attempts to determine whether present legislation can accomplish these goals. Part II briefly reviews the history of wildlife regulation and examines its legislative history and judicial interpretation to determine the motivations behind such protection. Because different objectives dictate different strategies of species protection, Part III explores the justifications for endangered species protection. Finally, Part IV considers how endangered species protection should be changed to accomplish its intended goals.

II

DEVELOPMENT OF FEDERAL WILDLIFE PROTECTION

A. Prior to 1973

Clearly anthropocentric motivation underlay early measures to protect wildlife in the United States. Until the middle of the twentieth century, mankind protected threatened species only when such protection offered a clear and direct benefit.[4] Until the middle of this century, the states traditionally exercised primary responsibility for wildlife regulation with only occasional, and cautious, federal intervention.[5]

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3. *See infra* text accompanying notes 116-18.

4. In the early years of the American Colonies, the English legal tradition of limiting hunting and possession of wild game to the upper classes was briefly followed. However, the prevalence of game in the extensive wilderness, coupled with the economic necessity of relying on wild animals for food, ultimately led to a policy of free taking for all. In the western states, trapping became an important element of the developing economy and the right to take animals was jealously guarded. In fact, hunting was often permitted, even on another's land, without liability for trespass. The history of wildlife conservation laws in this country has recently received extensive treatment and will be only briefly summarized here. For more detailed treatments, *see* M. BEAN, THE EVOLUTION OF NATIONAL WILDLIFE LAW (1977) (Report to the Council on Environmental Quality); T. LUND, AMERICAN WILDLIFE LAW (1980).

5. The notion that resident wildlife belongs to the state and is thus beyond the scope of federal legislation is derived from the English Crown's sovereign regulatory

The first major federal action to protect wildlife was the Lacey Act of 1900,[6] enacted in direct response to the rapid decline in numbers of the passenger pigeon.[7] The Lacey Act banned illegally taken game from interstate commerce and authorized the Secretary of Agriculture to preserve, distribute, introduce, and restore game and other wild birds.[8]

The next federal excursion into wildlife protection was the Migratory Bird Protection Act of 1913.[9] Designed to give the Secretary of the Interior vast discretion in protecting migratory birds, this Act declared that all migratory birds were "within the custody and protection of the government of the United States" and could be hunted only pursuant to federal permits and according to federal regulations.[10] Two federal district courts invalidated the Migratory Bird Protection Act as an unwarranted extension of federal power, unjustified by either the interstate commerce[11] or property clauses[12] of the United States Constitution. While the issue of the Act's validity was on appeal,[13] the Department of State signed a treaty with Great Britain protecting migratory birds. The Migratory Bird Treaty Act of 1918,[14] implementing the agreement, enacted essentially the same provisions as had the Migratory Bird Protection Act of 1913. The 1920 landmark case *Missouri v. Holland*[15] definitively established the federal treaty-

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power over game animals. *See* Lund, *British Wildlife Law Before the American Revolution: Lesson from the Past*, 74 MICH. L. REV. 49 (1975).

6. Ch. 553, 31 Stat. 187 (1900). The current version of the Lacey Act, as amended and expanded over the years, is codified at 16 U.S.C. § 701 (1982) and at 18 U.S.C. § 42 (1982). *See* M. BEAN, *supra* note 4, at 20-22, 109-25 for a detailed analysis. The Act was upheld as a valid exercise of the Commerce Power. Rupert v. United States, 181 F. 87 (8th Cir. 1910); Eager v. Jonesboro, Lake City and E. Express Co., 103 Ark. 288, 147 S.W. 60 (1912).

7. M. BEAN, *supra* note 4, at 21.

8. Ch. 553, § 1, 31 Stat. 187 (1900) (current version at 16 U.S.C. § 701 (1982); now applicable to the Secretary of the Interior).

9. Ch. 145, 37 Stat. 828 (1913) (repealed 1918).

10. *Id.* at 37 Stat. 847.

11. United States v. McCullagh, 221 F. 288 (D. Kan. 1915). "The Congress shall have Power . . . [t]o regulate commerce with foreign Nations, and among the several States, and with the Indian Tribes . . . ." U.S. CONST., art. I, § 8, cl. 3.

12. United States v. Shauver, 214 F. 154 (E.D. Ark. 1914), *appeal dismissed*, 248 U.S. 594 (1918). "The Congress shall have Power to dispose of and make all needful Rules and Regulations respecting the Territory or other Property belonging to the United States . . . ." U.S. CONST., art. IV, § 3, cl. 2.

13. The Supreme Court granted certiorari before dismissing the case. United States v. Shauver, 248 U.S. 594 (1918).

14. Ch. 128, 40 Stat. 755 (1918) (current version at 16 U.S.C. §§ 703-712 (1982)).

15. 252 U.S. 416 (1920).

making power[16] as authority for federal wildlife protection and laid to rest the argument that state ownership of wildlife precluded federal regulation.[17]

Despite judicial approbation, the federal government exercised its power to protect threatened species only rarely during the next half century. Although various statutes were enacted to protect certain species, or at most, groups of species,[18] Congress made no attempt until the 1960's to formulate a comprehensive program of protection.

The Endangered Species Preservation Act of 1966[19] marked the beginning of federal protection of species in danger of immediate extinction. For the first time, this Act declared a national policy of preservation of endangered species, and directed the Secretaries of Agriculture, Defense, and the Interior to conserve certain species of native animals threatened with extinction.[20] The 1966 Act was largely hortatory, however. It directed the Secretary of the Interior to conserve, protect, restore, and propagate endangered species by exercising his limited authority to acquire land.[21] The 1966 Act made no attempt to rectify other factors contributing to species extinction, such as overexploitation, disease, and predation.[22] It directed certain federal agencies to protect endangered species, but only "insofar as is practicable and consistent with the primary purposes" of those agencies.[23] Further, the Act affected only native species; it afforded no protection to foreign species in

16. "This Constitution, and the Laws of the United States which shall be made in Pursuance thereof; and all treaties made, or which shall be made, under the Authority of the United States, shall be the supreme Law of the Land . . . ." U.S. CONST., art. VI, cl. 2 (the Supremacy Clause).

17. Justice Holmes, writing for the majority, stated:

> But for the treaty and the statute there soon might be no birds for any powers to deal with. We see nothing in the Constitution that compels the Government to sit by while a food supply is cut off and the protectors of our forests and our crops are destroyed. It is not sufficient to rely upon the States. The reliance is vain . . . .

252 U.S. at 435. For a discussion of the rise of federal regulation, *see* particularly M. BEAN, *supra* note 4, at 20-34; Coggins and Hensley, *Constitutional Limits on Federal Power to Protect and Manage Wildlife: Is the Endangered Species Act Endangered?*, 61 IOWA L. REV. 1099, 1108-12 (1976).

18. Bald Eagle Protection Act, 16 U.S.C. §§ 668-668d (1982); Marine Mammal Protection Act, 16 U.S.C. §§ 1361-1362, 1371-1384, 1401-1407 (1982); Wild Free-Roaming Horses and Burros Act, 16 U.S.C. §§ 1331-1340 (1982).

19. Pub. L. No. 89-669, 80 Stat. 926 (1966).

20. *Id.* at § 1(a), (b).

21. *Id.* at § 2(a).

22. M. BEAN, *supra* note 4, at 372.

23. *Id.* at § 1(b).

danger of extinction.[24] Although the 1966 Act did establish a principle of endangered species protection, it contained serious limitations.[25]

The Endangered Species Conservation Act of 1969[26] rectified some of these deficiencies,[27] but species protection remained limited. The 1969 Act increased appropriations to acquire private lands,[28] and expanded the definition of "fish or wildlife."[29] It also authorized the Secretary of the Interior to promulgate a list of species and subspecies threatened with worldwide extinction and to prohibit their importation to the United States,[30] and required that an international ministerial meeting be held to organize a convention on the conservation of endangered species.[31]

The Convention on International Trade in Endangered Species of Wild Flora and Fauna[32] was held in February 1973 and made two significant innovations. First, the Convention would protect plants as well as animals.[33] Second, it recognized that species not in imminent danger of extinction might nevertheless need protection.[34] The Convention categorized protected species as those in immediate danger of extinction, those which may be endangered if remedial steps are not taken, or those which nations will unilaterally choose to protect within their own boundaries.[35] Trade restrictions on a species would vary depending on the species' category.[36]

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24. *Id.*

25. The 1966 Act failed to restrict the taking of endangered species and interstate commerce in endangered species. M. BEAN, *supra* note 4, at 374.

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

27. M. BEAN, *supra* note 4, at 374-75.

28. Pub. L. No. 91-135, § 12(b), (c), 83 Stat. 275, 282 (1969).

29. "Fish or wildlife" were defined as "any wild mammal, fish, wild bird, amphibian, reptile, mollusk, or crustacean." *Id.* at § 1. Although the earlier legislation had left the term undefined, the Department of the Interior had limited its reach to vertebrate animals. *See* Letter from the Assistant Secretary of the Interior to the Speaker of the House of Representatives (Jan. 17, 1969) in H.R. REP. No. 382, 91st Cong., 1st Sess. 14 (1969). Neither mollusks nor crustaceans are vertebrates. Note that the Lacey Act only applies to game and wild birds. 16 U.S.C. § 701 (1982).

30. Pub. L. No. 91-135, §§ 3(a), 4(d), 83 Stat. 275 (1969).

31. *Id.* at § 5(b).

32. *International Conference Concludes Convention on Trade in Endangered Species of Wildlife*, 68 DEP'T ST. BULL. 608 (May 14, 1973) [hereinafter cited as *Convention*].

33. *Convention, supra* note 32, at 619 (Text of the Convention). For an analysis of the special problems involved in the protection of endangered plants, *see* Comment, *Legal Protection for Rare Plants*, 29 AM. U.L. REV. 515 (1980).

34. *Convention, supra* note 32, at 620 (Text of the Convention, art. II, para. 2).

35. *Convention, supra* note 32, at 615.

36. *Convention, supra* note 32, at 620-22.

B. The Endangered Species Act (ESA) of 1973

Congressional attempts to protect endangered species prior to 1973 legislated too little, too late in an effort to preserve the status quo.[37] Although some species were saved,[38] most legislation was not very effective because it attempted to protect individual species without developing a comprehensive program of habitat and ecosystem protection.[39]

During the early 1970's, public interest in saving species from extinction grew with increasing awareness of the problem's magnitude and complexity. The plight of the magnificent whooping crane,[40] its habitat rapidly disappearing in the wake of rural expansion, caught the public attention.[41] No longer a concern of a mere handful of ecologists, extinction became a public concern. The public became aware that protection of species depends on protection of species' habitats and ecosystems. President Nixon recognized that existing legislation "simply [did] not provide the kind of management tools needed to act early enough to save a vanishing species."[42] Endangered species protection became a political cause.

Against this background of public fervor, Congress enacted the Endangered Species Act of 1973,[43] "the most comprehensive legislation for the preservation of endangered species ever enacted by any nation."[44] The ESA provided a multifaceted approach to species protection. Finding that endangered species have "esthetic,

37. The Lacey Act, ch. 553, 31 Stat. 187 (1900), current codification at 16 U.S.C. § 701 (1982) and 18 U.S.C. § 42 (1982), was passed in response to the rapid disappearance of the passenger pigeon, but its protections came too late to prevent the species' ultimate extinction and were ineffective to prevent a similar fate for other migratory birds.

38. For example, the Marine Mammal Protection Act, 16 U.S.C. §§ 1361-1362, 1371-1384, 1401-1407 (1982), has been largely responsible for the resurgence of sea otter (*Enhydra lutris*) populations. However, the Southern Right whale (*Eubalaena australis*), the Bowhead whale (*Balaena mysticetus*), the Humpback whale (*Megaptera novaeangliae*), and the Blue whale (*Sibbaldus musculus*) are now virtually extinct. *See* P. EHRLICH & A. EHRLICH, EXTINCTION 253-55 (1981) [hereinafter cited as EHRLICH].

39. For a readable exposition on the biological principles underlying effective species protection, *see* EHRLICH, *supra* note 38.

40. *Grus americana*. EHRLICH, *supra* note 38, at 257.

41. The Whooping Crane, which has received more publicity than any other endangered species in history, has been the subject of conservation measures since 1937. EHRLICH, *supra* note 38, at 213-14 and references therein.

42. *The President's 1972 Environmental Program*, 8 WEEKLY COMP. PRES. DOC. 218, 223-24 (Feb. 8, 1972).

43. 16 U.S.C. §§ 1531-1543 (1982).

44. TVA v. Hill, 437 U.S. 153, 180 (1978).

ecological, educational, historical, recreational, and scientific value,"[45] Congress enacted the ESA "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, [and] to provide a program for the conservation of such . . . species."[46] The ESA directs that all federal agencies "shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes of this [Act]."[47] The terms are defined so broadly as to give the ESA a potentially vast sweep.[48]

For a species to receive protection under the ESA, the Secretary of the Interior[49] must determine that it is either endangered or threatened.[50] Once a species achieves endangered status, substantive protections come into play.[51] The ESA directly prohibits

45. 16 U.S.C. § 1531(a)(3) (1982).

46. 16 U.S.C. § 1531(b) (1982).

47. 16 U.S.C. § 1531(c) (1982). Conspicuously absent from this statement is the phrase "insofar as is practicable" which severely modified the reach of the 1966 Act. Pub. L. No. 89-669, § 1(b), 80 Stat. 926. *See supra* text accompanying note 23.

48. The mandated conservation measures include "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 this chapter are no longer necessary." 16 U.S.C. § 1532(3) (1982). The term "fish or wildlife" and "plants" are given their widest possible scope: "any member of the animal kingdom" and "any member of the plant kingdom." 16 U.S.C. § 1532(8), (14) (1982). In the 1973 ESA, species were broadly defined as "any subspecies of fish or wildlife or plants and any other group of fish or wildlife of the same species or smaller taxa in common spatial arrangement that interbreed with (sic) mature." 16 U.S.C. § 1532(11) (1976). *See infra* note 111 for the current definition.

49. The Secretary of the Interior has authority over all species except some marine species, over which the Secretary of Commerce exercises control as per the Executive Reorganization Plan of 1970. Reorg. Plan No. 4 of 1970, 35 Fed. Reg. 15,627 (1970), 84 Stat. 2090 (1970). For these marine species, the Secretary of Commerce may determine that a species is endangered or threatened; the Secretary of the Interior has the duty to effectuate such listing.

50. "Endangered" is defined as being "in danger of extinction throughout all or a significant portion of its range." 16 U.S.C. § 1532(6) (1982). "Threatened" is defined as "likely to become an endangered species within the foreseeable future." 16 U.S.C. § 1532(20) (1982). Such determinations are to be based on five criteria:

> (A) the present or threatened destruction, modification, or curtailment of its habitat or range;
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> (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

16 U.S.C. § 1533(a)(1) (1982).

51. The ESA employs four tools of resource management: prohibitions on taking, regulation of trade, habitat acquisition and management, and requirements that federal agencies consider the impact of their activities on endangered species. *See infra* text accompanying notes 52-59.

"taking,"[52] a significant protection for endangered species. The ESA also prohibits importation, exportation, and sale of protected species in interstate commerce.[53]

Unlike its predecessors, the ESA addresses the need for habitat conservation to protect endangered species.[54] In fact, habitat preservation is an integral part of the program, on a par with species protection.[55] The ESA also grants authority to the Secretary of the Interior to acquire lands and waters to implement a conservation program for threatened or endangered species.[56] Further, the ESA empowers the Secretary to designate for protection the "critical habitat" of each endangered species.[57]

Potentially the most potent, and indeed the most controversial, element of the ESA, however, is the now famous[58] section 7, which states in part:

> All other Federal agencies shall, in consultation with, and with the assistance of the Secretary, . . . [carry] out programs for the conser-

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52. "Take" is broadly defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." 16 U.S.C. § 1532(19) (1982).

53. 16 U.S.C. § 1538(a) (1982). These prohibitions are enforceable by both civil and criminal penalties. 16 U.S.C. § 1540 (1982).

54. 16 U.S.C. § 1532(5) (1982).

55. 16 U.S.C. § 1534 (1982).

56. 16 U.S.C. § 1534(b) (1982).

57. 16 U.S.C. § 1533(a)(3) (1982). The term "critical habitat" is defined in the ESA as follows:

> (i) specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 1533 of this title, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and
>
> (ii) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 1533 of this title, upon a determination by the Secretary that such areas are essential for the conservation of the species.

16 U.S.C. § 1532(5)(A)(i), (ii) (1982).

A more helpful definition is provided in the Code of Federal Regulations:

> any air, land or water area . . . and constituent elements thereof, the loss of which would appreciably decrease the likelihood of the survival and recovery of a listed species or a distinct segment of its population. The constituent elements of critical habitat include, but are not limited to: physical structures and topography, biota, climate, human activity, and the quality and chemical content of land, water, and air.

50 C.F.R. § 402.02 (1983).

58. These two sentences of section 7 have been called "the two most controversial sentences in the history of the conservation movement." *Hearings Before the Subcomm. on Fisheries and Wildlife Conservation and the Environment of the House Comm. on Merchant Marine and Fisheries*, 96th Cong., 1st Sess. (1979).

> vation of endangered species and threatened species . . . by [taking steps to] insure that any action authorized, funded, or carried out by [them] is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species. . . .[59]

In addition to these substantive protections, the ESA articulates a policy of state and federal cooperation.[60] The ESA recognizes the need for a global approach to endangered species protection and implements the Convention on International Trade in Endangered Species of Wild Flora and Fauna.[61] Further, a citizen suit provision allows individuals to enforce federal responsibilities to conserve wildlife.[62]

Section 7 was enacted with little notice.[63] It seems doubtful that legislators at the time of its passage appreciated its potential for disrupting federal projects.[64] Commentators, however, quickly recognized the mandate's scope and inflexibility and predicted intractable conflicts.[65] As one particularly well-documented analy-

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59. 16 U.S.C. § 1536(a)(1), (2) (1982).

60. The federal government provides grants, permitting the states to develop and enforce conservation programs consistent with federal guidelines. 16 U.S.C. § 1535 (1982).

61. *See supra* text accompanying notes 32-36.

62. 16 U.S.C. § 1540(g)(1) (1982).

63. The Senate Report merely delineated the provision. S. REP. No. 307, 93d Cong., 1st Sess. 8-9 (1973). The Conference Report omitted all reference to section 7. H.R. REP. No. 740, 93d Cong., 1st Sess. 25 (1973). The analysis in the House Report is perhaps illustrative of the perceived reach and effect of section 7. After reciting the duties imposed, the House Report gives the following illustration:

> Under the authority of this paragraph, for example, the Director of the Park Service would be required to conform the practices of his agency to the need for protecting the rapidly dwindling stock of grizzly bears within Yellowstone Park. These bears, which may be endangered, and are undeniably threatened, should at least be protected by supplying them with carcasses from excess elk within the park, by curtailing the destruction of habitat by clearcutting National Forests surrounding the Park, and by preventing hunting until their numbers have recovered sufficiently to withstand these pressures.

H.R. REP. No. 412, 93d Cong., 1st Sess. 14 (1973). The mandate here seems temperate when viewed in the light of a single large species which, although dangerous, nonetheless has the intelligence and stature to captivate man's imagination. Further, the example envisions a situation which can be easily rectified while imposing little inconvenience on society.

64. For a review of the legislative history, *see* Lachenmeier, *The Endangered Species Act of 1973: Preservation or Pandemonium?*, 5 ENVTL. L. 29 (1974); and Note, *Obligations of Federal Agencies Under Section 7 of the Endangered Species Act of 1973*, 28 STAN. L. REV. 1247 (1976).

65. Lachenmeier, *supra* note 64; Wood, *Section 7 of the Endangered Species Act of 1973: A Significant Restriction for All Federal Activities*, 5 ENVTL. L. REP. 50,189 (1975).

sis stated: "A careful reading of the Act suggests that an agency must always avoid the proscribed impacts on protected species regardless of cost, and may not balance other benefits against possible injury to a protected population in deciding whether to undertake a particular action."[66] Judicial review seemed inevitable.

C. Judicial Interpretation

Three major cases have arisen under section 7,[67] remarkably few in light of the approximately 4,500 consultations between federal agencies and the Fish and Wildlife Service (FWS).[68] Apparently, mandated interagency cooperation resolves the vast majority of conflicts. Nonetheless, these suits demonstrate the intractability of the remaining few conflicts.

In *Sierra Club v. Froehlke*,[69] plaintiffs sued to halt construction of the Meramec Park Lake Dam, an Army Corps of Engineers project. The project when completed would flood certain caves in which the endangered Indiana Bat[70] lived. The Eighth Circuit declined to enjoin construction of the dam on the ground that it would not violate the ESA[71] since it did not sufficiently threaten

66. Note, *supra* note 64, at 1253.

67. Sierra Club v. Froehlke, 534 F.2d 1289 (8th Cir. 1976); National Wildlife Federation v. Coleman, 529 F.2d 359 (5th Cir.), *cert. denied*, 429 U.S. 979 (1976); TVA v. Hill, 437 U.S. 153 (1978).

68. *See* S. REP. NO. 874, 95th Cong., 2d Sess. 3 (1978). The Department of the Interior delegated its authority under the ESA to the Fish and Wildlife Service (FWS); the Department of Commerce has delegated its authority to the National Marine Fisheries Commission (NMFC).

69. 534 F.2d 1289 (8th Cir. 1976). The plaintiffs amended their complaint to include the endangered species claim only ten days before the trial. At that time the critical habitat for the bat had not been designated. *Id.* at 1302.

70. The bats used the caves for roosting and hibernation. *Id.* at 1303.

71. *See* Stromberg, *The Endangered Species Act of 1973: Is the Statute Itself Endangered?*, 6 ENVTL. AFF. 511 (1977), which argues *inter alia*:

> Several aspects of *Froehlke* deserve criticism. In ruling for the Corps, the district court apparently gave less weight to the testimony of a professor of zoology, who had conducted extensive research on the Indiana bat, than to the Corps' conclusion that "the Project would probably have no more than an infinitesimal effect upon the Indiana bat population in the Meramec basin." However, the court noted the professor's statement that the Indiana bat would probably become extinct even if the project were not built. While the court certainly has discretion to weigh the credibility of the conflicting evidence presented, it does not seem to have recognized the inherent prejudice of the federal agency contemplating construction of the project. By either party's evidence, some effect on the endangered species was stipulated, as was the fact that the species was on the verge of extinction anyway. The district court, therefore, should have employed the protections afforded by ESA, especially

the species.[72]

In *National Wildlife Federation v. Coleman*,[73] there was no question that the contested project would critically affect an endangered species. A proposed segment of interstate highway in Mississippi was slated to bisect the last remaining habitat of the Mississippi Sandhill Crane,[74] a species with only forty individuals extant. The district court's attempt to balance the benefits of the highway against the loss of the species[75] was soundly overruled on appeal.[76] The Fifth Circuit held that the duty to avoid harm to the species was absolute and enjoined further construction pending modifications to mitigate the effects on the cranes.[77]

The outcomes of these cases can be reconciled as arising from radically different fact situations. In *Froehlke*, no detrimental effect on the species was found. In *Coleman*, the detrimental effect was certain, but the necessity of modifications was at issue. Both cases are consistent with the probable Congressional intent underlying the ESA. The marginal effect on a rather commonplace animal in *Froehlke* could be effectively discounted as *de minimis* when compared to a wide-ranging water project. In *Coleman*, on the other hand, the preservation of an admittedly appealing bird whose existence was undeniably and critically endangered could be achieved with little inconvenience. Not until *TVA v. Hill*[78]—dubbed the Snail Darter Case—did the full potential of section 7 become apparent.

The Tennessee Valley Authority's (TVA) Tellico Dam Project has had a long and tortured history. Construction began in the middle 1960's[79] and was repeatedly but temporarily halted by a

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in light of the congressional intent that the Act's provisions extend to protect species already on the way to extinction.

Id. at 522.

72. The bat population was then estimated at 700,000 of which only 10,000 to 15,000 would have been affected by the dam. *Froehlke*, 534 F.2d at 1303.

73. 529 F.2d 359 (5th Cir.), *cert. denied*, 429 U.S. 979 (1976).

74. *Grus canadensis*. EHRLICH, *supra* note 38, at 257.

75. National Wildlife Federation v. Coleman, 400 F. Supp. 705 (S.D. Miss. 1975).

76. *Coleman*, 529 F.2d 359 (5th Cir.), *cert. denied*, 429 U.S. 979 (1976).

77. *Id.* at 375. The court stated that the Department of Transportation failed to take the necessary steps to "insure" that the interstate highway would not jeopardize the crane or modify its habitat. *Id.* at 373.

78. 437 U.S. 153 (1978).

79. In this area of the Little Tennessee River the Tennessee Valley Authority, a wholly owned public corporation of the United States, began constructing the Tellico Dam and Reservoir Project in 1967, shortly after Congress appropriated initial funds for its development. Tellico is a multipurpose regional development project designed principally to stimulate shoreline development, generate sufficient electric current to

series of citizen's suits[80] claiming that the dam's construction failed to comply with the National Environmental Policy Act (NEPA).[81] After judicial approval of the final environmental impact statement,[82] construction resumed.

With its discovery in 1973, a small fish became an unexpected and powerful ally of environmentalists.[83] On petition from a citizen's group, the Secretary of the Interior added the Snail Darter to the list of endangered species in 1975 and designated its critical habitat as that portion of the Little Tennessee River to be flooded by the Tellico Reservoir.[84] In 1976, opponents of the project sued to halt construction,[85] claiming that continued construction would violate section 7 because it would lead to the extinction of the Snail Darter. In the words of one observer, the Darter had met the dam.[86]

The district court acknowledged that completion of the Tellico Reservoir would significantly modify if not completely destroy the

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> heat 20,000 homes, and provide flatwater recreation and flood control, as well as improve economic conditions in an area characterized by underutilization of human resources and outmigration of young people.

Id. at 157 (citations omitted).

Environmentalists and landowners opposed the dam from the beginning, contending that it would flood prime agricultural land, destroy important archaeological sites adjacent to the banks of the river, and remove the last free-flowing portion of the river, a source of recreational activities and great natural beauty. *See id.* at 156-57 for a description of the above.

80. Environmental Defense Fund v. TVA, 492 F.2d 466 (6th Cir. 1974), *aff'g* 371 F. Supp. 1004 (E.D. Tenn. 1973); 468 F.2d 1164 (6th Cir. 1972), *aff'g* 339 F. Supp. 806 (E.D. Tenn. 1972).

81. The National Environmental Policy Act, 42 U.S.C. §§ 4321-4370 (1976 & Supp. V 1981), requires the filing of an environmental impact statement for major federal projects.

82. Environmental Defense Fund v. TVA, 492 F.2d 466 (6th Cir. 1974).

83. The Snail Darter, *Percina (Imostoma) tanasi*, was first described in 1973, the year of the ESA's passage. Etnier, *Percina (Imostoma) Tanasi, A New Percid Fish From The Little Tennessee River, Tennessee*, 88 PROC. BIOLOGICAL SOC'Y WASH. 469, 470 (1976). The fish, a member of the perch family, is approximately three inches long and brownish-gray. *Id.* at 481.

84. Hill v. TVA, 419 F. Supp. 753, 756 (E.D. Tenn. 1976).

85. Hill v. TVA, 419 F. Supp. 753 (E.D. Tenn. 1976). Since the discovery of the Snail Darter, the TVA had been aware of its existence and had undertaken efforts to transplant individual Snail Darters to other areas. Although the TVA had consulted with the FWS, it remained steadfast in its resolve that the only alternative to the dam was no dam at all. Construction on the dam hastened as the TVA relied on the ESA's non-retroactive application to a largely completed project. Meanwhile, Congress continued to appropriate funds for the dam. In its June 20, 1975 report, the House Committee recommended that an additional $23 million be appropriated for the project. H.R. REP. No. 319, 94th Cong., 1st Sess. 76 (1975).

86. Comment, *The Mandate of Section 7 of the Endangered Species Act of 1973: The Darter Meets the Dam*, 47 U. CIN. L. REV. 613 (1978).

Snail Darter's critical habitat.[87] However, the court refused to grant injunctive relief. It concluded that continued Congressional appropriations represented a legislative decision that the survival of this species did not warrant halting construction of a public project which by then was more than eighty percent complete and in which some eighty million dollars had been invested.[88]

In a move that took many by surprise, the Sixth Circuit reversed,[89] finding that completion of the dam would clearly violate section 7. Holding that the only relevant legislation was the ESA itself, the court rejected the defendant's argument that continued appropriations signified an implied Congressional exemption of the TVA project from the ESA.[90] It further dismissed the defendant's argument that the project's near completion should excuse judicial review.[91] Recognizing that such relief would cause the loss of millions of dollars of public funds, the court nonetheless enjoined[92] the project until such time as Congress should specifically exempt the project from compliance with the ESA, or until the Snail Darter should be removed from the endangered species list.[93]

The Supreme Court affirmed the Sixth Circuit's decision,[94] interpreting literally the mandate of section 7: "This language admits of no exception."[95] The Court further relied on the lack of language modifying the ESA's scope or reach.[96]

The majority opinion seemed to invite Congressional reappraisal of the ESA.[97] Justice Powell made this invitation explicit

87. Hill v. TVA, 419 F. Supp. at 757.
88. *Id.* at 759-60.
89. Hill v. TVA, 549 F.2d 1064 (6th Cir. 1977).
90. *Id.* at 1071.
91. *Id.*
92. *Id.* at 1074.
93. *Id.*
94. TVA v. Hill, 437 U.S. 153, 195 (1978).
95. *Id.* at 173.
96. *Id.* at 185. *See supra* note 47.
97. Congress has spoken in the plainest of words, making it abundantly clear that the balance has been struck in favor of affording endangered species the highest of priorities . . . .

Our individual appraisal of the wisdom or unwisdom of a particular course consciously selected by the Congress is to be put aside in the process of interpreting a statute . . . .

. . . [I]n our Constitutional system the commitment to the separation of powers is too fundamental for us to pre-empt congressional action by judicially decreeing what accords with "common sense and the public weal". . . .

TVA v. Hill, 437 U.S. at 194-95.

in a strong dissent.[98]

D. The 1978 ESA Amendments

As expected, Congress moved to amend the ESA after the Tellico Dam decision.[99] The main provision of the ESA Amendments established an Endangered Species Committee (ESC) to consider and grant exemptions from section 7.[100] Under the amendments the federal agency contemplating a project must consult with the Fish and Wildlife Service (FWS).[101] The Secretary of the Interior must then issue an opinion indicating the project's impact on any endangered species and suggest "reasonable and prudent alternatives"[102] to avoid jeopardizing the species or its habitat. If the project will detrimentally affect a protected species, an exemption from section 7 may be requested.[103] The application for exemption is considered first by a three-member review board (Review Board)[104] which initially determines whether an insoluble conflict exists. If such a conflict exists and if the Secre-

98. "I have little doubt that Congress will amend the Endangered Species Act to prevent the grave consequences made possible by today's decision." *Id.* at 210 (Powell, J., dissenting). Justice Powell further predicted that the majority's opinion, which he characterized as "an extreme example of a literalist construction," would cast

> [a] long shadow over the operation of even the most important projects, serving vital needs of society and national defense, whenever it is determined that continued operation would threaten extinction of an endangered species or its habitat. . . . The only precondition, according to respondents, to thus destroying the usefulness of even the most important federal project in our country would be a finding by the Secretary of the Interior that a continuation of the project would threaten the survival or critical habitat of a newly discovered species of water spider or amoeba.

Id. at 195-96, 202-04.

99. Several amendments were introduced, including one which would have all but scrapped section 7: Senator Stennis (D-Miss.) introduced an amendment which inserted an "insofar as practicable" clause into section 7 and allowed numerous exceptions. 124 CONG. REC. 21,285 (July 18, 1978). Although defeated, the amendment was supported by almost one-quarter of the Senate. *Id.* at 21,335. Eventually a compromise solution was adopted in an attempt to leave the ESA substantially intact and to introduce a measure of flexibility into its rigid mandate. Senators Baker (R-Tenn.) and Culver (D-Iowa) forged the compromise. It passed by a vote of 94-3. *Supreme Court Protects Snail Darter from TVA; Congress Poised to Weaken Endangered Species Act*, 8 ENVTL. L. REP. 10,154, 10,158 & 10,158 n.45 (1978).

100. 16 U.S.C. § 1536(e), (h) (1982).

101. *See supra* note 68.

102. 16 U.S.C. § 1536(b)(3)(A) (1982).

103. The federal agency, the governor of the state in which the action would occur, or a permit or license applicant may apply to the Secretary of the Interior for an exemption from section 7. *See* 44 Fed. Reg. 7,777 (1979).

104. One member of the review board is appointed by the Secretary of the Interior, one is appointed by the President (from the state in which the action is or will be carried out), and the third member is an administrative law judge. *Id.*

tary of the Interior finds that the agency consulted in good faith with the FWS, attempted to consider all reasonable modifications or alternatives to the project, complied with the requirements for assessing the project's biological impact, and refrained from committing resources irreversibly or irretrievably in the interim,[105] the Secretary reports the matter to the ESC.[106] On the basis of evidence submitted and testimony taken, the ESC may grant an exemption if it determines that there are no reasonable and prudent alternatives to the project, that the benefits of the proposed project clearly outweigh those of the alternatives, that the action is of regional or national significance, and that neither the federal agency concerned nor the exemption applicant has made any irreversible commitment of resources.[107] In granting an exemption, the ESC must establish reasonable mitigation and enhancement measures to minimize the adverse effects of the exemption on the species.[108]

Although specific measures to exempt Tellico Dam from the ESA had been defeated in Congress, a special provision in the ESA Amendments allowed the project to bypass the Review Board and be considered on an expedited schedule by the ESC.[109] The exemption was denied by a unanimous vote of the Committee, but ultimately Congress exempted the Tellico Dam project from the provisions of the ESA.[110]

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105. 16 U.S.C. § 1536(g)(3)(A) (1982).

106. 16 U.S.C. § 1536(g)(5) (1982). The Secretary of the Interior is chairman of the ESC. The other members are the Secretaries of Agriculture and the Army, the Chairman of the Council of Economic Advisors, the Administrators of the Environmental Protection Agency and the National Oceanic and Atmospheric Administration, and one member from each affected state appointed by the President. 16 U.S.C. § 1536(e)(3), (e)(5)(B) (1982).

107. 16 U.S.C. § 1536(h)(1)(A) (1982).

108. 16 U.S.C. § 1536(h)(1)(B) (1982).

109. Endangered Species Act Amendments of 1978, Pub. L. No. 95-632, § 5(i), 92 Stat. 3751, 3761. The proposed Grayrocks Dam project which would reduce stream flow in the Platte River, threatening the Whooping Crane, was also exempted from Review Board consideration. *Id.*

110. The Committee concluded that converting the project to a free-flowing river development was a feasible and prudent alternative and that the benefits of completing the project did not clearly outweigh the benefit of the alternatives which would additionally protect the Snail Darter.

The saga of Tellico Dam and the Snail Darter did not stop here. Immediately after the denial of the exemption, Senator Baker introduced a bill to abolish the ESC altogether, S. 242, 96th Cong., 1st Sess. (1979), but later retracted it. He and Senator Sasser each introduced legislation to exempt the Tellico project from section 7. S. 243 & S. 298, 96th Cong., 1st Sess. (1979). The Senate Committee on Environment and Public Works voted 8 to 3 against Senator Baker's bill. The House, however, voted by a margin of 258 to 156 to exempt the project from ESA and all other federal laws. Through a rider attached to the Energy and Water Development Appropriations Act

The 1978 Amendments introduced several additional changes into the ESA. First, the definition of "species" was restricted.[111] The Amendments also modified the determination of critical habitats. Most critical habitats will not include the entire geographical area which the endangered species can occupy.[112] Furthermore, critical habitats must be designated "to the maximum extent prudent and determinable"[113] at the time a species is listed as endangered.[114] Because habitats are often poorly known and difficult to determine,[115] this new requirement may substantially extend the time necessary to list a species as endangered.

Most significantly, however, the Amendments changed the basis for designating critical habitats.[116] The Secretary of the Interior must consider the economic impact of listing an area as a critical habitat.[117] Combined with the economic balancing in the exemption process, this new provision marks a major shift in direction

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of 1980, Pub. L. No. 96-69, 93 Stat. 449 (1979), the Senate concurred with the House; the vote on September 10, 1979 was 48 to 44. *See* Rosenberg, *Federal Protection of Unique Environmental Interests: Endangered and Threatened Species*, 58 N.C.L. REV. 491, 520-24 (1980), for the legislative history of the Tellico exemption. Twelve hours after President Carter signed the bill on September 15, 1979, construction on the dam resumed. EHRLICH, *supra* note 38, at 185. The gates were closed to begin flooding the reservoir on November 29, 1979. Ironically, the Snail Darter has since been found in three other places and may not be endangered after all. *Snail Darter's Status Threatened*, 212 SCI. 761 (May 1981).

111. The definition of "species" was modified: any "subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature." 16 U.S.C. § 1532(16) (1982). *Cf.* the earlier definition of species in note 48, *supra*. "Vertebrates" refers to animals classified in the subphylum Vertebrata of the phylum Chordata, and includes mammals, fish, birds, reptiles, and amphibians. These are distinguished by the presence of a backbone, or vertebral column. All other animals are together called invertebrates. This new definition works a major change in the scope of the ESA. Of the estimated two million species now extant, only some 50,000 are vertebrates. At its base, this definitional change seems to reflect a preference for the protection of vertebrates.

112. 16 U.S.C. § 1532(5)(C) (1982).

113. 16 U.S.C. § 1533(a)(3) (1982).

114. 16 U.S.C. § 1533(a)(3)(A) (1982).

115. "Some species have no clearly ascertainable habitat . . . [and] the process of research and discovery of a habitat is expensive and lengthy (1-5 years)." Note, *Endangered Species Act Amendments*, 19 NAT. RESOURCES J. 933, 938 (1979).

116. 16 U.S.C. § 1533(b)(2) (1982).

117. The Secretary shall designate critical habitat . . . on the basis of the best scientific data available and after taking into consideration the economic impact, and any other relevant impact, of specifying any particular area as critical habitat. The Secretary may exclude any area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines . . . that the failure to designate such area as critical habitat will result in the extinction of the species concerned.

16 U.S.C. § 1533(b)(2) (1982).

for the ESA. Endangered species are no longer considered to have "incalculable"[118] value such that they must be protected at any cost. Rather, a cost-benefit analysis helps determine whether an endangered species is entitled to protection. Consequently a new question arises: What is the value of a species?

III

WHY PROTECT ENDANGERED SPECIES?

The ESA of 1973 heralded a new era in species conservation: all species were to be protected at any cost.[119] But even though the ESA purported to consider the welfare of species as the ultimate goal, it spoke of potential benefit to mankind.[120] If species are to be protected because of their value to mankind, the means pursued to protect a species will depend on the value attached to the individual species.[121] Indeed, even with virtually unlimited funds, we cannot save every endangered species.[122] Prohibitions on hunting may sufficiently restore populations of species whose greatest threat is man the predator. The greatest threat to endangered species, however, is habitat destruction, an inevitable result of the expanding human population.[123] Extinctions will continue so long as development continues. Thus, man must develop a conservation strategy which will withstand pressures for change. Which species should be given priority?

The 1978 ESA Amendments mandated a cost-benefit approach to set priorities in species protection.[124] Such an analysis depends ultimately on valuing the species in question. Determining a species' value, however, is difficult, in part because the objectives of protection have not been clearly delineated. Well-defined goals are necessary for the promulgation of rational guidelines to establish priorities. Thus, this section will examine possible justifications for preserving species and will analyze whether present legislation adequately considers these justifications.

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118. H.R. REP. No. 412, 93d Cong., 1st Sess. 4 (1973).

119. *See supra* text accompanying notes 56-59.

120. The ESA begins with the finding that "these [endangered] species of fish, wildlife, and plants are of esthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people." 16 U.S.C. § 1531(a)(3) (1982).

121. This value can be thought of as the benefit mankind will receive if the species is preserved.

122. Ramsay, *Priorities in Species Preservation*, 5 ENVTL. AFF. 595, 595 (1976).

123. *See* TVA v. Hill, 437 U.S. 153, 179 (1978), for a discussion and authorities.

124. *See supra* text accompanying notes 117-18.

A. Arguments Against Endangered Species Protection

Species evolve through the process of natural selection[125] to fit particular habitats. The ecological role of a species in a particular habitat is termed its "niche."[126] In a relatively homogeneous world—one with little environmental diversity—there are few potential niches and consequently few species.[127] But many different species exist in a world such as ours which is characterized by great environmental heterogeneity.[128]

Extinctions result from species' inability to adapt to changes in the environment. Environmental changes can reflect either changes in the quality of niches[129] or changes in the quantity of niches.[130] Changes in niche quality eliminate species which cannot readily adapt to the changed conditions. Over time, however, new species will probably evolve to fill these empty, albeit modified, niches.[131] The elimination of the niche itself by decreasing the heterogeneity of the environment results in extinction of species also.[132] Species diversity remains low after the extinction event until environmental change restores the level of environmental diversity.[133]

The most popular argument against species protection asserts that extinctions are a natural and necessary aspect of life on earth

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125. The process of natural selection was first detailed by Charles Darwin in ON THE ORIGIN OF SPECIES (1859).

126. The concept of the niche received its most extensive theoretical analysis in Hutchinson, *Concluding Remarks*, 22 COLD SPRING HARBOR SYMPOSIA ON QUANTITATIVE BIOLOGY 415 (1957).

127. *See* J. VALENTINE, EVOLUTIONARY PALEOECOLOGY OF THE MARINE BIOSPHERE 358-59 (1973).

128. Life on earth arose at least 3.5 billion years ago, J. VALENTINE, *supra* note 127, at 1, although complex multicellular animals did not appear until approximately 700 million years ago. It is estimated that there have been on the order of 100 million species since life began. Of these, approximately two million are alive today, the others having become extinct. The number of species now living is probably many times greater than the average number of species extant in any particular past period. *See*, Valentine, *General Patterns of Metazoan Evolution*, in PATTERNS OF EVOLUTION AS ILLUSTRATED BY THE FOSSIL RECORD (A. Hallam ed. 1977).

129. These changes have been termed "diversity-independent," J. VALENTINE, *supra* note 127, at 291, and include such extrinsic physical factors as temperature, rainfall, and soil composition. *See* D. MERRELL, ECOLOGICAL GENETICS 168 (1981).

130. These changes have been termed "diversity-dependent," J. VALENTINE, *supra* note 127, at 291, and include such factors as food shortages, competition, parasites, and predation. *See* D. MERRELL, *supra* note 129, at 168.

131. J. VALENTINE, *supra* note 127, at 291-92.

132. *See supra* note 130 and accompanying text.

133. J. VALENTINE, *supra* note 127, at 291-92.

and would occur without human influence.[134] Thus, its proponents argue, society need not be concerned about a few vanishing species.[135] This argument, however, may disregard man's impact on the environment.

Whether primitive man's activities resulted in significant extinctions is disputed.[136] Since the rise of industrial society, however, man has increasingly contributed to extinction rates. Many modern extinctions result from large-scale habitat destruction—notably, deforestation of the tropics[137]—as human development encroaches on pristine environments. Destruction of habitats reduces environmental diversity, lowering the number of species the world can accommodate.[138]

Thus, although extinctions of some species certainly result from a natural process, it seems wholly unrealistic to view as benign the increased extinction rates caused by man's dramatic impact on the environment.

B. Justifications for Preserving Species

With the ESA, Congress enacted a comprehensive system of species preservation intended to protect the broadest possible range of species.[139] Although many different justifications were advanced when Congress enacted the ESA,[140] it is not clear that all or any provide a sound basis on which to legislate such drastic measures. Justifications for species protection fall into two categories: utilitarian concerns, including both immediate and potential benefits;[141] and non-utilitarian concerns, such as ethical and aesthetic benefits.[142]

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134. *See* EHRLICH, *supra* note 38, at 7.

135. *See* EHRLICH, *supra* note 38, at 7-13.

136. It has been postulated that as a result of his hunting, early man contributed to the extinction of animals in North America and adjacent islands. Hester, *The Agency of Man in Animal Extinctions*, in PLEISTOCENE EXTINCTION: THE SEARCH FOR A CAUSE 169, 171 (P. Martin & H. Wright eds. 1967).

137. EHRLICH, *supra* note 38, at 159-64. Ranching and logging are two of the main causes of tropical rainforest destruction. *Id.* at 162.

138. *See supra* text accompanying notes 127-31.

139. *See supra* note 48 and accompanying text.

140. *See infra* text accompanying notes 143-63.

141. These include food, recreation, and ecosystem stability as well as benefits which may result in the future from utilization of a species' genetic resources.

142. These include the perception of the value and meaning of life, and insights into mankind's heritage and evolution.

1. Non-Utilitarian Perspectives

It has been contended that all living things have a right to exist and that mankind should not play God by eliminating other species.[143] A nearly universal and innate drive to protect other forms of life has been said to provide the impetus for all species protection.[144] A basis for species protection grounded in appreciation of the sanctity of all life would seem to demand equal protection for all species.[145]

Other commentators argue that aesthetic considerations alone justify preservation.[146] Beauty and the sense of wonder occasioned by wildlife are sufficiently important to man to require species protection.[147]

One commentator, Sagoff,[148] suggests that a non-utilitarian approach based on symbolic value in part justifies wildlife conservation.[149] He perceives species as paradigms of qualities which man admires and cherishes, and views man's treatment of the paradigm as tantamount to his regard for the quality itself.[150]

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143. EHRLICH, *supra* note 38, at 48.

144. Tribe argues that the innately perceived obligation to protect environmental elements should not be articulated "wholly in terms of human needs and preferences," because this only serves "to legitimate a system of discourse which so structures human thought and feeling as to erode, over the long run, the very sense of obligation which provided the original impetus for his own protection efforts." Tribe, *Ways Not to Think About Plastic Trees: New Foundations for Environmental Law*, 83 YALE L.J. 1315, 1330-31 (1974).

145. Ehrlich and Ehrlich make a strong plea for the preservation of all species based on such an ethical principle.

> [W]e think the same principle [an "unimpeachable right to continued existence"] applies to the Snail Darter, the Houston Toad, the Furbish Lousewort, and the myriad other threatened life forms that, since they are less akin to *Homo sapiens* than gorillas, less easily elicit compassion from people. We think they must be granted the right to exist, regardless of whether human beings find them attractive or useful.

EHRLICH, *supra* note 38, at 49-50.

Even Ehrlich and Ehrlich admit the difficulty of basing policy on such a theory. If given the means to selectively exterminate the Anopheles mosquito, which transmits malaria, they indicate they would be hard pressed to argue against eradication. *Id.* at 11-12.

146. *See, e.g.*, EHRLICH, *supra* note 38, at 38-48.

147. *Id.* at 43.

148. Sagoff, *On Preserving the Natural Environment*, 84 YALE L.J. 205 (1974).

149. "The fact that the wilderness and the objects in it, given our cultural history, are the paradigms of the qualities we most cherish—freedom, innocence, courage, strength—is not itself a sufficient condition for a protectionist policy . . . . But it is an important consideration, nonetheless." *Id.* at 228.

150. What we do with the symbols (the paradigms as we have said) in which we find exemplified certain qualities is a logical condition of how well we respect, or how much we despise, those qualities themselves . . . . A society which values freedom and which makes its forests or the wild-

Sagoff's notion that species should be protected as paradigms of values man admires cannot be used to justify equal protection for all species. Although the eagle, the wild horse, and the whale may embody qualities Sagoff admires, few would think that a river fluke or a banana slug represented man's highest aspirations. Sagoff's is a myopic view of the biological world, valuing only those species which man believes symbolize desirable qualities.

Arguments for protecting species based on ethical and aesthetic grounds have appeal because they contain an instinctively satisfying respect for life. They do not, however, have great influence in a society which makes decisions largely on a utilitarian calculus. These arguments do not persuasively justify expensive and inconvenient conservation policies with intangible aims. In our wildlife legislation, species preservation ultimately depends on utilitarian concerns.[151]

2. Utilitarian Perspectives

Arguments of immediate or potential benefits to society have been advanced to justify much species protection.

Man depends on plants and animals for nourishment. Although most of man's foodstuffs—particularly in industrialized societies—come from domesticated animals and cultivated crops, a portion continues to come from wild species.[152] Marine fish in particular provide an important food source.[153] Wild animals and plants also supply recreational benefits for which some people are willing to pay.[154] For the relatively few species which provide

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> life in them the expressive symbols of freedom will not treat the forests or the wildlife frivolously, nor discard them without a second thought. If it does, then this act will count as evidence that the society either no longer values freedom or that its paradigms of freedom have changed.

Id.

151. *Endangered Species Conservation Act of 1972: Hearings on S. 249, S. 3199, and S. 3818 Before the Subcomm. on the Environment of the Senate Comm. on Commerce*, 92d Cong., 2d Sess. 122 (1972) (prepared statement of Senator Alan Cranston (D-Cal.)) [hereinafter cited as *Hearings*].

152. EHRLICH, *supra* note 38, at 62.

153. *Id.* at 67.

154. *Id.* at 46-47. For example, there are eight million birdwatchers in the United States. The Lindblad *Explorer*, a luxury cruise ship which journeys to places of interest to naturalists, is booked years in advance by people willing to pay thousands of dollars to experience the sights of penguins, seals, and albatrosses. *Id.* at 46.

"It can be argued that the future economic prosperity of large areas of Africa would . . . almost certainly be better served by maintaining some . . . areas as tourist meccas, with elephants the top tourist attraction." *Id.* at 12.

tangible benefits to mankind, the justifications for and economics of preservation are obvious.

The vast majority of species, however, provide man with no direct tangible benefits. Preservation is more difficult to justify for these species on value-maximizing grounds alone. In the 1972 Senate hearings on the Endangered Species Conservation Act, Senator Cranston argued that providing for species' well-being promotes man's well-being.[155] An environment no longer tolerable for one species is likely inhospitable for others as well.

A related argument states that every species is part of the "web of life," and elimination of any one species threatens the continued stability of local, and even global, ecosystems.[156] As Ehrlich and Ehrlich have stated: "It is impossible to separate protection of species from protection of natural ecosystems; they are two aspects of the same fundamental set of resources . . . and continued extinctions in the system are *certain* to cause disruption."[157]

The notion that all species are indispensable elements in the web of life is not new. However, the elimination of one species will not necessarily cause the entire ecosystem to collapse.[158] Reasoned judgments can be made as to those species whose absence would most likely disrupt the ecosystem.

The most common justification for species protection based on potential benefits is that any species may potentially benefit mankind enormously because of its genetic constitution. This argument was eloquently summarized in a 1973 House Report:

> As we homogenize the habitats in which these plants and animals evolved, and as we increase the pressure for products that they are

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155. If we undertake measures that will insure the preservation of other life forms, we will also insure the survival of man. As we take steps to preserve the environment of endangered fish and wildlife in some liveable form—to clean the air, purify the water and preserve open spaces and wilderness, we will in the process, preserve at least some of our own environment in a condition where we and our children can survive.

Hearings, supra note 151, at 119 (prepared statement of Senator Alan Cranston (D.-Cal.)).

156. *See, e.g.*, EHRLICH, *supra* note 38, at 78 & 97.

157. *Id.* at 86.

158. If the ecological function of an extinct species is performed by a still-existing species, the ecosystem is more likely to remain stable. Thus, the Snail Darter might well be considered expendable, since ten to twelve similar species are found in the Little Tennessee River. Etnier, *supra* note 83, at 486. However, some species, termed "keystone species," appear to be critical to the stability of an ecosystem. If a keystone species is removed from its ecosystem, its loss may cause further extinctions. For example, the preferred prey of an extinct predator may outcompete other species in the ecosystem, forcing them to local extinction. EHRLICH, *supra* note 38, at 96-97.

> in a position to supply (usually unwillingly) we threaten 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 . . . .
>
> Who knows, or can say, what potential cures for cancer or other scourges, present or future, may lie locked up in the structures of plants which may yet be undiscovered, much less analyzed? . . . Sheer self-interest impels us to be cautious.[159]

The protection of genetic variation suggests a strategy of species preservation inconsistent with the human-centered perspective. If species are protected so that one species may someday provide a cure for cancer or other disease, then species most unlike us should be protected, because they contain the most divergent genetic information.[160]

Further, the most unusual species with few close relatives have genetic material valuable because of its uniqueness. Species have varying numbers of closely related species. In the Linnaean hierarchical system of classification animals are grouped into increasingly broad categories. The highest such category of animals, below the general Animal Kingdom, is the Phylum, made up of animals with similar body structures.[161] Some phyla have hundreds of thousands or more species; others have only a few. Because differences between phyla are so great, more genetic information is maintained by preserving a range of species representing every phylum, rather than just a few.

This principle may unexpectedly affect species preservation policies. For example, the Phoronida,[162] a phylum of small marine worms, has only twelve species extant. These worms live partially buried, often in estuarine or other near-shore environments which, because of development, are rapidly disappearing. Phoronids could be considered the archetype of an obscure species. Yet because phoronids are so very different from man, their

159. H.R. REP. No. 412, 93d Cong., 1st Sess. 4-5 (1973).

160. F. AYALA & J. VALENTINE, EVOLVING 237-44 (1979)

161. *Id.* at 228-29.

162. Much of this information on Phoronids came from discussions with Professor James Valentine, of the University of California at Santa Barbara.

genetic information is valuable.[163] Because there are so few phoronids, the availability of this genetic information is threatened. It might be disturbing to choose to save phoronids rather than the great apes; however, a strictly utilitarian calculus based only on preservation of genetic variability would dictate this course of action.

Each of the justifications for species preservation discussed above depends upon assessing the value attributed to the species to determine whether the species merits preservation. Only purely ethical considerations suggest that all species should be protected equally; this argument is not persuasive when the costs and inconvenience of protection are great, as they are often likely to be. Because no single objective justifies protecting all species equally, priorities must be established for protecting different species. Existing law indicates that these priorities are to be established case by case with cost-benefit analysis. Part IV considers whether this priority-assigning procedure can be modified to better effect endangered species preservation.

IV

THE POLITICS OF PRESERVATION: A PROPOSAL

The 1978 ESA Amendments were enacted as a response to public sentiment that halting a massive water project was too great a price to pay to protect the obscure Snail Darter. As indicated above, only the appreciation of the sanctity of life suggests that all species should be protected equally.[164] All species cannot be preserved, however, given mankind's present insistence on development. Therefore, introducing priorities into the preservation strategy would dictate which species it is most reasonable to preserve. However, the method the ESA adopts—dealing with insoluble conflicts through case-by-case exemptions with cost-benefit analysis—is fraught with difficulties. Instead of introducing flexibility, individual cost-benefit analysis undermines protection by virtually ensuring that the federal project will prevail when balanced against protection of an endangered species.

Cost-benefit analysis is especially poorly suited to resolving conflicts involving species protection. Where an organism is perceived as socially useful, whether commercially, recreationally, or

163. *See supra* text accompanying note 160. The Phoronids are relatively poorly known, particularly at the genetic level.

164. *See supra* note 145 and accompanying text.

aesthetically, market value techniques may relatively easily determine the value of the species.[165] The sheer number and obscurity of species presently endangered, however, indicate that even these determinations would not easily be made.[166] Most species provide mankind with no tangible benefits; they are protected, if at all, for their potential to benefit mankind. Cost-benefit analysis simply does not deal adequately with problems involving uncertain variables.[167]

Furthermore, a case-by-case exemption is fatally flawed: a built-in imbalance of interests stacks the deck against any single species when the value of its continued existence is compared with the far-reaching benefits of a major federal project.[168] This inequality of interests has affected outcomes in other environmental litigation where a court balances the benefits society gains from a polluting industry against the harm the polluter causes a single plaintiff.[169] Therefore, species preservation should be determined by a comprehensive protection policy before conflict arises and before this balancing procedure comes into play to doom a single endangered species pitted against a federal project.

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165. These techniques could include public surveys and mock auctions.

166. There are currently 714 animals and 71 plants on the endangered and threatened species list. UNITED STATES FISHERY AND WILDLIFE SERVICE, ENDANGERED SPECIES PROGRAM, 9 TECHNICAL BULL. No. 1 (Jan. 1984). Unquestionably, these numbers vastly underestimate the total number of species endangered and threatened, indicating that many more may be proposed in the future.

167. These determinations are similar to "zero-infinity" problems: is it worth great cost to preserve a remote chance of obtaining a great benefit? The terminology "zero-infinity" is borrowed from Professor James Krier, of the University of Michigan School of Law.

168. It is true that in the Tellico Dam case, the Snail Darter "won" when the ESC declined to exempt the Tellico Dam from the ESA. *See supra* text accompanying note 110. However, this Committee decision can be considered a defeat for the dam rather than a victory for the Snail Darter. In response to a Congressional request following the Sixth Circuit's decision, the General Accounting Office (GAO) prepared a report on the Tellico project's costs, benefits, and alternatives. The report questioned the continued validity of the original cost-benefit analysis used to justify the project. GENERAL ACCOUNTING OFFICE, THE TENNESSEE VALLEY AUTHORITY'S TELLICO DAM PROJECT—COST, ALTERNATIVES AND BENEFITS 27-36 (EMD-77-58, Oct. 14, 1977). Further, although the GAO agreed with TVA that the costs of removing completed construction should be taken into account, *id.* at 9-10, it rejected both high and low estimates of the proportion of the investment that could provide some economic benefit if construction were stopped. The GAO concluded that approximately $56.3 million of the $103 million then invested would be of such benefit. *Id.* at 14. Proponents of the dam attacked the ESC's cost-benefit analysis, which was based largely on the GAO report, as "creative accounting." 125 CONG. REC. 23,866 (1979) (remarks of Senator Sasser). *See also* Rosenberg, *supra* note 110, at 522 nn.145-47.

169. *See, e.g.*, Boomer v. Atlantic Cement Co., 26 N.Y.2d 219, 257 N.E.2d 870, 309 N.Y.S.2d 312 (1970).

Because species are to be protected for mankind's benefit, the value allocated to a species ultimately depends on mankind's motivation for preserving it. No single objective should underlie endangered species protection. No one criterion justifies the preservation of all species, because species offer different benefits in light of different human objectives. Legislation should preserve a diversity of species consistent with a variety of utilitarian and non-utilitarian concerns.

The ESA as amended provides a workable framework on which to structure endangered species protection, but requires substantial procedural modification. At present, the Secretary of the Interior may propose adding a species to or removing one from the endangered species lists,[170] and an interested person may petition the Secretary to take such action.[171] This system allows a range of interests to be represented. The present list of protected species is biased toward vertebrates.[172] A vigorous attempt should be made to disseminate information to the general public, special interest groups, and the scientific community concerning the ESA's provisions so that a wider range of organisms may be protected. Furthermore, the Department of the Interior should widen the range of species which it presents for listing.

As indicated above, priorities of species preservation must be established before insoluble conflicts arise. Currently, a listed species is classified as "endangered" or "threatened."[173] The Department of the Interior should also classify a species according to the importance of its protection: absolute, high, or low priority.[174]

The determination of a species' priority depends on the species. The easiest priority to determine is that of a species from which man derives a direct commercial benefit, such as salmon or Douglas fir. The value man attributes to such a species is reflected in its market value. The value of a species providing no utilitarian benefits but having clearly perceived public appeal could be similarly

170. 16 U.S.C. § 1533(a), (c) (1982).

171. 5 U.S.C. § 553(e) (1982) (right to petition); 16 U.S.C. § 1533(b) (1982) (evaluation of petition and publication of response).

172. The approximately 714 species of animals on the endangered and threatened species list (*see supra* note 166) represent only three phyla (Chordata, Mollusca, and Arthropoda) of the approximately 35 existing today. Vertebrates, a subphylum of Chordata, make up only 50,000 species of the total of 100,000,000 species existing today. Valentine, *How Many Marine and Vertebrate Fossil Species? A New Approximation*, 44 J. OF PALEONTOLOGY 410-15 (1970).

173. *See supra* note 50.

174. The FWS has investigated priority systems in the past, but has adopted none. *See* Ramsay, *supra* note 122, at 608.

determined because public opinion would provide an important indicator of value.[175] Examples might include butterflies or the swallows of Capistrano.[176]

Lesser-known species, or species of only presumed or potential benefit to mankind, present a more difficult case for priority ranking because they cannot be valued on the basis of public sentiment or economics.[177] In these cases, scientists and other experts can provide insight into a species' value. The factors these experts should consider include the species' importance to ecosystem stability, its character as an environmental indicator, and its potential for containing important genetic information.[178] Of course, those species with the greatest scientific value would receive highest priority.

The Department of the Interior should place species into priority classifications because it currently receives information relevant to the endangered species listing process and thus is in an appropriate position to assemble relevant scientific and social input. Evidence of a species' characteristics relevant to the criteria suggested above should be solicited from the parties proposing the listing as well as from other interested and disinterested groups.

While a process of establishing priority classification based on the specific attributes of a species obviously demands time and resources, it has one important advantage over the ESA's present cost-benefit analysis system. The ESA provides that critical habitats must be determined using cost-benefit analysis when a species is listed as endangered.[179] Such an analysis requires much more

175. These priority decisions are certainly not simple to make and can be criticized as subjective. In the field of endangered species protection, however, both goals and decisions are necessarily subjective. But the decision must be made and the Department of the Interior is in the best position to assemble and review relevant information. *See infra* text following note 178.

176. Other non-utilitarian species include those that have symbolic value, such as the eagle and the wild horse.

177. Determining the value to the public of a virtually unknown species would be nearly impossible. Even if information about the species were disseminated, many people would not take the time to read it, and thus could not make informed decisions about the particular species.

178. It is interesting to note that the Snail Darter would probably not have fared well under such an evaluation. It has no known commercial value and aside from its fame as the fish that stopped the dam, has no perceived symbolic value. Its population is small, suggesting that its elimination by itself would have little effect. Furthermore, it is one of ten to twelve closely related species inhabiting the area, which suggests that its biological niche could be absorbed by the other species. *See supra* note 158. Also, these closely related species may contain genetic information similar to that of the Snail Darter.

179. *See supra* notes 116-18 and accompanying text.

information at the beginning of an endangered species' inquiry than called for by the proposal outlined above. The above proposal requires only that the *benefits* of a species be considered in order to arrive at a priority ranking.

A species' assigned priority would determine to what extent resources are committed to ensure its continued existence, because each priority would entail a particular level of scrutiny. Species with absolute priority would, by definition, warrant protection at virtually any cost. Species of high priority would be sacrificed only when their existence would conflict with a compelling interest. Those of low priority would be protected only if cost-benefit analysis dictated protection. The ESC, which now considers exemptions under section 7 of the ESA, would perform a similar function under the priority system by using the scrutiny levels to decide when a species could be sacrificed.

V
CONCLUSION

The ESA provides a solid framework upon which endangered species protection can be structured. However, a more efficient and objective procedure for valuing species is needed.

The valuing of an endangered species is not an exact science. A good valuation procedure would test the benefits offered by a species in different areas, such as public sentiment, commercial value, and scientific and environmental importance. Once these factors were considered, the species would be categorized objectively. Different categories would be given different levels of scrutiny. This procedure would minimize the difficulty of resolving formerly "insoluble" conflicts between an endangered species and a federal project.

A cost-benefit analysis of protection of a particular species during the heat of the battle between project and species might very well tend to favor completion of the project or lead to an underestimation of the species' benefits. Assignment of a priority level to each endangered species *before* conflict arises would ensure that the species would be dealt with as fairly and as objectively as possible.